

#### *EMC Test Report Application for Grant of Equipment Authorization 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 95054

TEST SITE(S): Elliott Laboratories 684 W. Maude Avenue Sunnyvale, CA 94085 and 41039 Boyce Road. Fremont, CA. 94538-2435

IC SITE REGISTRATION #:

2845A-1; 2845A-2; 2845B-3; 2845B-4, 2845B-5

REPORT DATE: March 5, 2010

FINAL TEST DATES:

January 28, 29, 31, February 3, 4, 9 and 11, 2010

AUTHORIZED SIGNATORY

Mark E. Hill Staff Engineer Elliott Laboratories



Testing Cert #2016-01

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#### **REVISION HISTORY**

Rev#	Date	Comments	Modified By
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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 5.15 – 5.25 GHz Band**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407(e)		Indoor operation only	Refer to user's manual	N/A	Complies
15.407(a) (1)		26dB Bandwidth	Limits output power if	< 20MHz	N/A
15.407 (a) (1)	A9.2(1)	Output Power	802.11a: 13.0 dBm n20: 11.6 dBm n40: 13.5 dBm	17dBm	Complies
15.407 (a) (1)	-	Power Spectral	a: 2.4dBm/MHz n20: 1.0 dBm/MHz	4 dBm/MHz	Complies
-	A9.5 (2)	Density	n40: 0.8 dBm/MHz	5 dBm/MHz	Complies
15.407(b) (5) / 15.209	A9.3	Spurious Emissions below 1GHz	No emissions detected	Refer to Standard	Complies
15.407(b) (2)	A9.3	Spurious Emissions above 1GHz	53.7dBµV/m @ 5149.6MHz (-0.3dB)	Refer to Standard	Complies
15.407(a)(6)	-	Peak Excursion Ratio	12.98 dB	< 13dB	Complies

#### **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	N/A
15		Chainer Selection	Measurements on three channels in each band	and center 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	Device does not operate in either 5470 – 5725 or 5250 – 5350 MHz bands.		N/A
15.407 (h2)	A9.4	Dynamic frequency Selection (device with radar detection)	Device does not operate in either 5470 – 5725 or 5250 – 5350 MHz bands.		N/A
	A9.9g	User Manual information	Refer to Exhibit 6 for details	Refer to standard	Complies

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	The antennas are attached via internal u.FL connectors.	Refer to standard	Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	42.4dBµV/m @ 3076.4MHz (- 11.6dB)	Refer to standard	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	38.2dBµV @ 2.442MHz (-7.8dB)	Refer to standard	Complies (-?.? dB)
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		Statement required regarding non- interference	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	a: 17.4 MHz n20: 18.5 MHz n40: 37.0 MHz	Information only	N/A

#### GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

#### 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	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions Radiated Emissions Radiated Emissions Radiated Emissions	0.15 to 30 0.015 to 30 30 to 1000 1000 to 40000	$\pm 2.4 \\ \pm 3.0 \\ \pm 3.6 \\ \pm 6.0$

#### 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 January 25, 2010 and tested on January 28, 29, 31, February 3, 4, 9 and 11, 2010. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Avaya	AP8120	802.11abgn AP	Prototype	X7CAP8120

#### 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 antenna system consists of 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	POE Injector	D094565000005	-
	9001G		8BA00	

#### EUT INTERFACE PORTS

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

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

#### EUT OPERATION

During testing, the EUT was configured to transmit continuously on the noted channel. Data rate was set to 6Mbs 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 on January 28, 29, 31, February 3, 4, 9 and 11, 2010 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
5110	FCC	Canada	
SVOATS #2	90593	2845A-2	684 West Maude Ave, Sunnyvale CA 94085-3518
Chamber 3	769238	2845B-3	41039 Boyce Road
Chamber 4	211948	2845B-4	Fremont,
Chamber 5	211948	2845B-5	CA 94538-2435

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 with the exception, on OATS sites, of predictable local TV, radio, and mobile communications traffic. 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.

#### CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

#### RADIATED EMISSIONS CONSIDERATIONS

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

#### 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.

#### LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

#### FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

#### ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

#### ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a nonconductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 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.

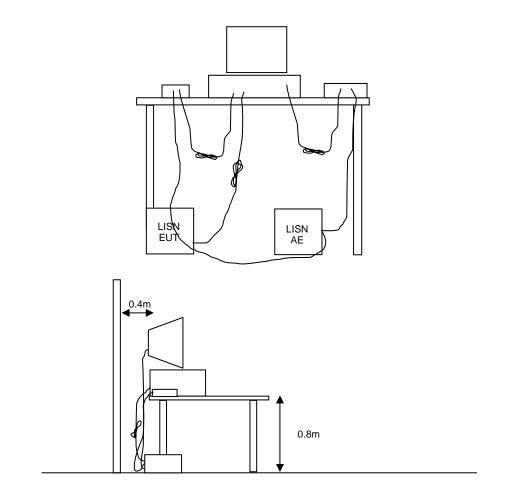
#### TEST PROCEDURES

#### 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.



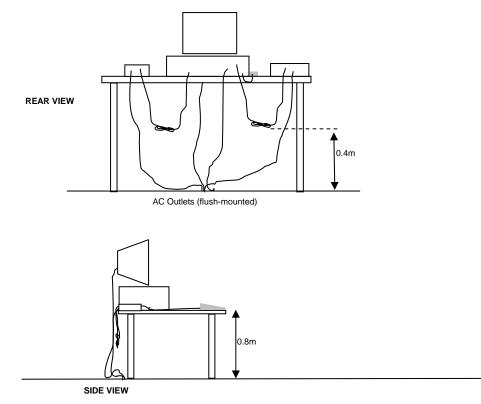
#### RADIATED EMISSIONS

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.

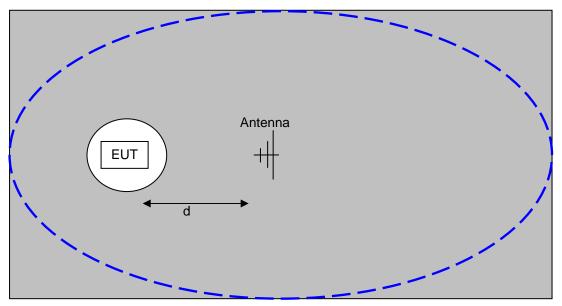
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

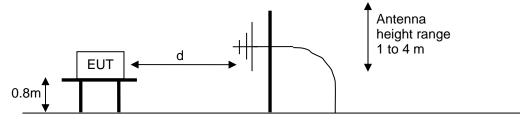
When testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



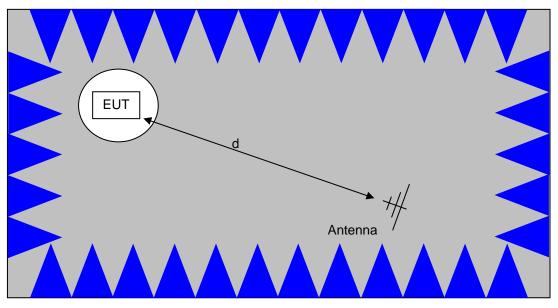
Typical Test Configuration for Radiated Field Strength Measurements



The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test distances (d) of 3m and 10m. Refer to the test data tables for the actual measurement distance.

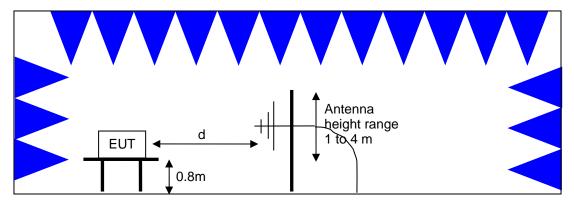


<u>Test Configuration for Radiated Field Strength Measurements</u> <u>OATS- Plan and Side Views</u>



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

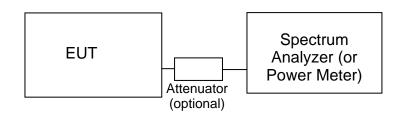
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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

#### CONDUCTED EMISSIONS FROM ANTENNA PORT

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



#### Test Configuration for Antenna Port Measurements

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and 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>1</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>&</sup>lt;sup>1</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	$250 \text{ mW} (24 \text{ dBm})^2$ 1W (30dBm) eirp	11 dBm/MHz
5470 - 5725	250 mW (24 dBm) <sup>3</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 10log(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.

#### OUTPUT POWER AND SPURIOUS LIMITS –UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of -27dBm/MHz, which is a field strength of 68.3dBuV/m/MHz at a distance of 3m. This is an average limit so the peak value of the emission may not exceed -7dBm/MHz (68.3dBuV/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 -17dBm/MHz.

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

<sup>&</sup>lt;sup>3</sup> If EIRP exceeds 500mW the device must employ TPC

#### SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

 $R_r =$  Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

#### SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:

 $F_d$  = Distance Factor in dB  $D_m$  = Measurement Distance in meters  $D_s$  = Specification Distance in meters

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

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

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

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

 $R_c = R_r + F_d$ 

 $M = R_c - L_s$ 

where:

and

 $R_r$  = Receiver Reading in dBuV/m

- $F_d$  = Distance Factor in dB
- $R_c$  = Corrected Reading in dBuV/m
- $L_{S}$  = Specification Limit in dBuV/m
- M = Margin in dB Relative to Spec

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

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

 $E = \frac{1000000 \sqrt{30 P}}{3}$  microvolts per meter 3 where P is the eirp (Watts)

### Appendix A Test Equipment Calibration Data

Radio (Spurious Emis	ssions), 29-Jan-10			
<u>Manufacturer</u>	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	6/3/2010
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	6/22/2010
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/10/2010
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	2/10/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	9/30/2010
TX Spurious Emission	ns, 29-Jan-10			
Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	2/26/2010
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40)	8564E (84125C)	1771	9/30/2010
	Purple			
Tx/Rx Spurious Emis	-			
Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	870	8/19/2010
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/10/2010
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	9/30/2010
Radio Antenna Port (I Manufacturer	Power and Spurious Emissions), ( Description	J3-Feb-10 Model	Asset #	Cal Due
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT		<u>ASSEL#</u> 1393	4/10/2010
	(SA40) Blue	(011200)		
Rohde & Schwarz	ÈMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	2/10/2010

### Appendix B Test Data

T7813119 PagesT7813224 PagesT782498 Pages



# EMC Test Data

211 Arbidio	2 company		
Client:	Avaya	Job Number:	J78065
Model:	AP 8120	T-Log Number:	T78071
		Account Manager:	Dean Eriksen
Contact:	Vipin Naik		-
Emissions Standard(s):	FCC 15.E	Class:	В
Immunity Standard(s):	-	Environment:	-

### **EMC** Test Data

For The

### Avaya

Model

AP 8120

Date of Last Test: 2/10/2010



## EMC Test Data

Client: Avaya	Job Number: J78065
Madal AD 0120	T-Log Number: T78071
Model: AP 8120	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A
RSS 210 and FCC 15.407 (UNI	I) Radiated Spurious Emissions

#### **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:	18.9 °C
	Rel. Humidity:	37 %

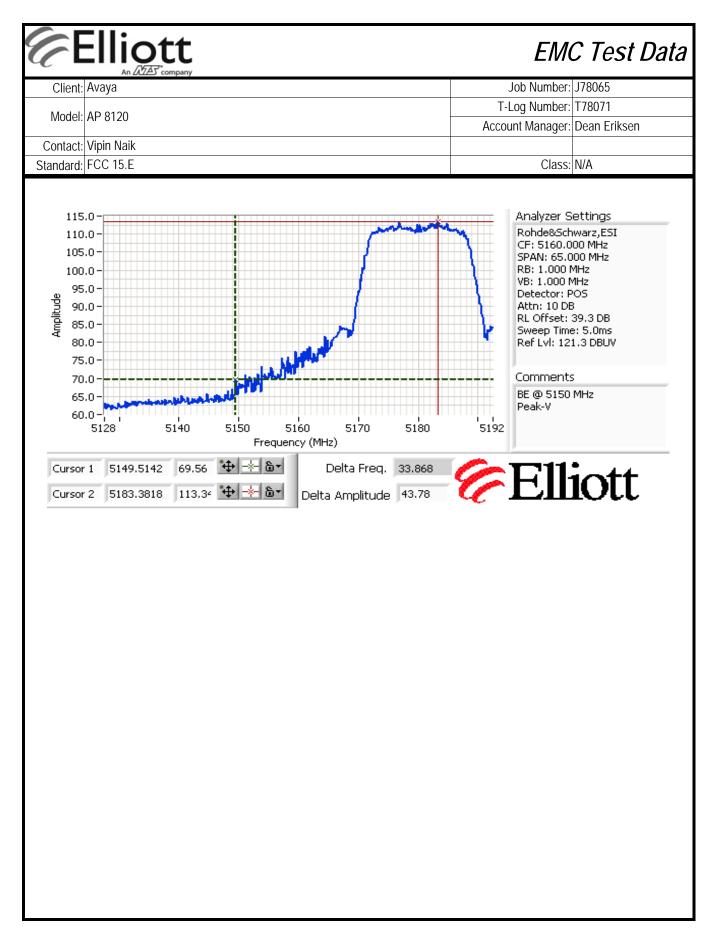
#### Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
	802.11a Chain A	36	-	-	Restricted Band Edge at 5150 MHz	15.209	51.2dBµV/m @ 5147.4MHz (-2.8dB)
1	802.11a Chain A	36	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.9dBµV/m @ 5013.6MHz (-3.1dB)
I	802.11a Chain A	40	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	47.1dBµV/m @ 5033.5MHz (-6.9dB)
	802.11a Chain A	48	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	47.5dBµV/m @ 5415.5MHz (-6.5dB)
	802.11 n20	36	-	-	Restricted Band Edge at 5150 MHz	15.209	49.7dBµV/m @ 5147.7MHz (-4.4dB)
2	802.11 n20	36	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	42.5dBµV/m @ 1115.5MHz (-11.5dB)
Z	802.11 n20	40	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	40.7dBµV/m @ 1110.0MHz (-13.3dB)
	802.11 n20	48	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	41.5dBµV/m @ 1119.2MHz (-12.5dB)
3	802.11a n40	38	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	60.8dBµV/m @ 10383.7MHz (-7.5dB)
3	802.11a n40	46	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	61.3dBµV/m @ 10460.3MHz (-7.0dB)
4	802.11a n40	38	-	-	Restricted Band Edge at 5150 MHz	15.209	53.7dBµV/m @ 5149.6MHz (-0.3dB)

# Elliott

# EMC Test Data

odifications Made During Testing         omodifications were made to the EUT during testing         eviations From The Standard         o deviations were made from the requirements of the standard.         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate: Preliminary testing showed no radio related emissions below 1 GHz and abord         ate of Test: 1/28/2010         Test Engineer: Suhaila Khushzad         Test Location: Chamber #5         at at Low Channel         rt:       Main         ientation: Up Right(Main Antenna)         50 MHz Band Edge Signal Radiated Field Strength         equency       Level       Pol         FCC 15.209       Detector       Azin         MHz       dBµV/m       v/h       Limit       Margin       Pk/QP/Avg       21         144.0	250 MHz Band, Legacy A M	T78071 Dean Eriksen N/A
Contact:       Vipin Naik         Standard:       FCC 15.E         odifications       Made During Testing         o modifications were made to the EUT during testing         eviations       From The Standard         o deviations were made from the requirements of the standard.         ote:       Preliminary testing showed no radio related emissions below 1 GHz and abord         un #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150- Date of Test:       1/28/2010         Test Engineer:       Suhaila Khushzad         Test Location:       Chamber #5         un #1a:       Low Channel         ort:       Main         rientation:       Up Right(Main Antenna)         50       MLz Band Edge Signal Radiated Field Strength         requency       Level       Pol       FCC 15.209       Detector       Azin         MHz       dBµV/m       v/h       Limit       Margin       Pk/QP/Avg       degr         1149.510       69.6       V       74.0       -8.3       Pk       21         105.0       100.0       -       105.0       21       21	Account Manager: Class: ve 18 GHz. 2250 MHz Band, Legacy A Mo	Dean Eriksen N/A
Contact: Vipin Naik         Standard: FCC 15.E         Indiffications Made During Testing         o modifications were made to the EUT during testing         reviations From The Standard         o deviations were made from the requirements of the standard.         other Standard         o deviations were made from the requirements of the standard.         other Standard         o deviations were made from the requirements of the standard.         other Standard         o deviations were made from the requirements of the standard.         other Standard         other Standard         other Standard         other Standard         Int #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150-         Date of Test: 1/28/2010         Test Engineer: Suhaila Khushzad         Test Location: Chamber #5         un #1a: Low Channel         ort: Main         mintentation: Up Right(Main Antenna)         ISO MHz Band Edge Signal Radiated Field Strength         requency Level Pol FCC 15.209 Detector Azin         MHz	/e 18 GHz.	N/A
Standard:       FCC 15.E         Iodifications Made During Testing         o modifications were made to the EUT during testing         Deviations From The Standard         o deviations were made from the requirements of the standard.         ote:       Preliminary testing showed no radio related emissions below 1 GHz and abord         un #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150- Date of Test: 1/28/2010         Test Engineer:       Suaila Khushzad         Test Location:       Chamber #5         un #1a:       Low Channel         ort:       Main         rientation:       Up Right(Main Antenna)         150 MHz       BaptV/m       v/h         Limit       Margin       Pk/OP/Avg       degr         5147.430       51.2       V       54.0       -2.8       Avg       21         5149.510       69.6       V       74.0       -8.3       Pk       21         5146.510       65.7       H       74.0       -8.3       Pk       21         105.0	ve 18 GHz. 3250 MHz Band, Legacy A Mo	
Indifications Made During Testing         o modifications were made to the EUT during testing         Deviations From The Standard         o deviations were made from the requirements of the standard.         ote: Preliminary testing showed no radio related emissions below 1 GHz and abord         un #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150- Date of Test: 1/28/2010         Test Engineer: Suhaila Khushzad         Test Location: Chamber #5         un #1a: Low Channel         ort:       Main         rientation: Up Right(Main Antenna)         150 MHz Band Edge Signal Radiated Field Strength         requency       Level       Pol         FCC 15.209       Detector       Azin         MHz       dBµV/m       v/h       Limit       Margin       Pk/QP/Avg       degr         5149.510       69.6       V       74.0       -2.8       Avg       21         144.040       50.6       H       54.0       -3.4       Avg       21         105.0	ve 18 GHz. 3250 MHz Band, Legacy A Mo	
o modifications were made to the EUT during testing Peviations From The Standard o deviations were made from the requirements of the standard. ote: Preliminary testing showed no radio related emissions below 1 GHz and above un #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150- Date of Test: 1/28/2010 Test Engineer: Suhaila Khushzad Test Location: Chamber #5 un #1a: Low Channel ort: Main rientation: Up Right(Main Antenna) 150 MHz Band Edge Signal Radiated Field Strength <u>frequency Level Pol FCC 15.209 Detector Azim</u> <u>MHz dBµV/m v/h Limit Margin Pk/QP/Avg degr</u> 5147.430 51.2 V 54.0 -2.8 Avg 21 5149.510 69.6 V 74.0 -4.4 Pk 21 5140.510 65.7 H 74.0 -8.3 Pk 21 105.0 105.0 105.0	250 MHz Band, Legacy A M	ode
MHz         dBμV/m         v/h         Limit         Margin         Pk/QP/Avg         degr           5147.430         51.2         V         54.0         -2.8         Avg         21           5149.510         69.6         V         74.0         -4.4         Pk         21           5144.040         50.6         H         54.0         -3.4         Avg         21           5146.510         65.7         H         74.0         -8.3         Pk         21           105.0		
MHz         dBμV/m         v/h         Limit         Margin         Pk/QP/Avg         degr           5147.430         51.2         V         54.0         -2.8         Avg         21           5147.430         51.2         V         54.0         -2.8         Avg         21           5149.510         69.6         V         74.0         -4.4         Pk         21           5144.040         50.6         H         54.0         -3.4         Avg         21           5146.510         65.7         H         74.0         -8.3         Pk         21           105.0	th Height Comments	
5147.430       51.2       V       54.0       -2.8       Avg       21         5149.510       69.6       V       74.0       -4.4       Pk       21         5149.510       69.6       V       74.0       -4.4       Pk       21         5144.040       50.6       H       54.0       -3.4       Avg       21         5146.510       65.7       H       74.0       -8.3       Pk       21         105.0	5	
5149.510         69.6         V         74.0         -4.4         Pk         21           5144.040         50.6         H         54.0         -3.4         Avg         21           5146.510         65.7         H         74.0         -8.3         Pk         21           105.0		
5146.510 65.7 H 74.0 -8.3 Pk 21 105.0 - 100.0 -		
105.0 -		
100.0-	1.2	
95.0- 90.0- 85.0- 98.0- 975.0- 4775.0- 65.0-	Analyzer S Rohde&Sch CF: 5160.0 SPAN: 65.0 RB: 1.000 VB: 10 Hz Detector: F Attn: 10 DI RL Offset: Sweep Tim Ref Lvl: 12	hwarz,ESI 000 MHz 000 MHz MHz 905 8 39.3 DB e: 16.5s
60.0 - 55.0 - 50.0 - 45.0 - 5128 5140 5150 5160 5170 518 Frequency (MHz) Cursor 1 5147.4297 51.21 ↔ 중 한 Delta Freq. 35.8	Comment BE @ 5150 Avg-V	



Æ								EM	C Test Data
Client:		company						Job Number:	J78065
							T-	Log Number:	T78071
Model:	AP 8120								Dean Eriksen
	Vipin Naik								
Standard:	FCC 15.E							Class:	N/A
Amplitude (dBuV/m)	100.0 - 90.0 - 80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 30.0 - 20.0 - 1000	 Iwhuk	M M M M M M M M M M M M M M M M M M M	heddrawer ,	Frequenc			10000	18000
	adiated Emis		15.00		Datastan	A - inc. th	11-1-1-1-1-1	Commonte	
requency MHz	Level dBµV/m	Pol v/h	Limit	9 / 15E Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	
013.570	50.9	V	54.0	-3.1	AVG	207	1.2	RB 1 MHz; V	VB: 10 Hz
014.240	60.1	V	74.0	-13.9	PK	207	1.2	RB 1 MHz; V	
541.150	32.1	V	54.0	-21.9	AVG	192	1.0	RB 1 MHz; V	
533.020	44.2	V	74.0	-29.8	PK	192	1.0	RB 1 MHz; V	VB: 1 MHz
200.000	38.5	V	54.0	-15.5	Peak	134	1.0	Peak vs Avç	g Limit
359.070	40.5	V	68.3	-27.8	Peak	190	1.3	Peak vs Avç	
	For emission 27dBm/MHz			e limit of 15.2	209 was used.	For all othe	r emissions,	the average	e limit was set to -

Client	Avaya							Job Number:	J78065
	10.0100						T-	Log Number:	T78071
Model	AP 8120				Ассо	unt Manager:	Dean Erikse		
Contact	Vipin Naik							0	
	FCC 15.E							Class:	N/A
		nel 40 @ 520							
Fundamen Frequency		e <i>ld Strength</i> Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	COMMENIS	
	nt - Aux ante		LIIIII	iviai giri	TNOTAV	uegrees	IIICICI 3		
5196.270	101.9	V	-	-	AVG	165	1.3	RB 1 MHz;	/B <sup>.</sup> 10 Hz
5197.900	110.6	V	-	-	PK	165	1.3	RB 1 MHz;	
5203.500	98.5	H	-	-	AVG	172	1.0	RB 1 MHz;	
5198.030	107.1	Н	-	-	PK	172	1.0	RB 1 MHz;	
EUT Uprigl	nt - Main ant	enna							
5196.200	102.5	V	-	-	AVG	178	1.4	RB 1 MHz; Y	VB: 10 Hz
5197.100	111.2	V	-	-	PK	178	1.4	RB 1 MHz;	VB: 1 MHz
	Main Antenn								
5196.170	96.6	V	-	-	AVG	125	1.4	RB 1 MHz; Y	
5194.670	105.3	V	-	-	PK	125	1.4	RB 1 MHz; Y	
5203.800	92.3	Н	-	-	AVG	314	1.5	RB 1 MHz; V	
5203.930	101.0	Н	-	-	PK	314	1.5	RB 1 MHz; V	VB: 1 MHz
	ge - Main An								
5196.200	96.6	V	-	-	AVG	204	1.0	RB 1 MHz;	
5198.130	105.1	V	-	-	PK	204	1.0	RB 1 MHz;	
	101.5	H	-	-	AVG	179	1.2	RB 1 MHz;	
5196.330 5194.670	109.7		-	-	PK	179	1.2	RB 1 MHz; V	VR·1MHz

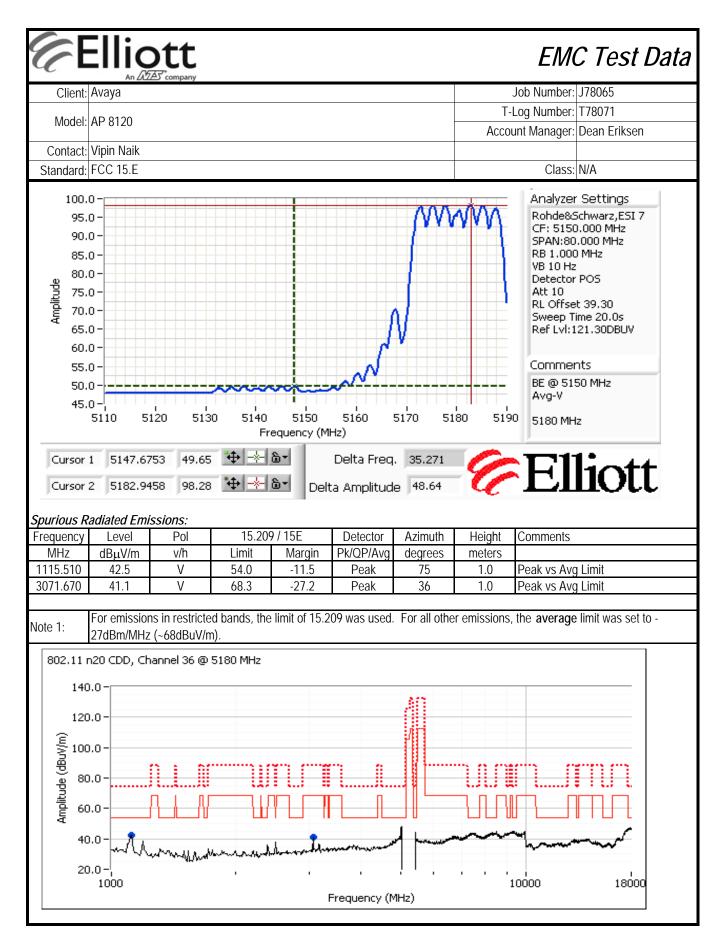
E	Ellic							EM	C Test Data
Client:		🗠 company						Job Number:	J78065
							T-	Log Number:	T78071
Model:	AP 8120							-	Dean Eriksen
Contact:	Vipin Naik								
Standard:	FCC 15.E							Class:	N/A
Amplitude (dBuV/m)	100.0 - 90.0 - 80.0 - 70.0 - 60.0 - 50.0 - 40.0 - 30.0 - 20.0 - 1000	 	hayuday	L	Frequency			10000	
ourious R	adiated Emis	s <i>sions:</i> Pol	15 20	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	COMMENTS	
033.530	47.1	V	54.0	-6.9	AVG	218	1.3	RB 1 MHz; '	VB: 10 Hz
035.930	57.2	V	74.0	-16.8	PK	218	1.3	RB 1 MHz;	
402.880	42.4	V	68.3	-25.9	Peak	175	1.0	Peak vs Avg	g Limit
784.870	40.4	Н	54.0	-13.6	Peak	11	2.2	Peak vs Ave	g Limit
526.500	41.8	V	54.0	-12.2	Peak	144	1.0	Peak vs Ave	
17.580	43.7	V	54.0	-10.3	Peak	93	1.0	Peak vs Ave	
125.180 118.380	29.6 41.6	V V	54.0 74.0	-24.4 -32.4	AVG PK	63 63	1.0 1.0	RB 1 MHz; ' RB 1 MHz; '	
te 1:	For emission 27dBm/MHz			e limit of 15.2	209 was used.	For all othe	r emissions,	the average	e limit was set to -

Client: Avaya Model: AP 81 Contact: Vipin I Standard: FCC 1 Run #1c: High Cl Port: Main Drientation: Uprig Spurious Radiate Frequency Le MHz dBµ 1198.840 39 5415.520 47 5432.250 44 5432.120 56 10466.670 46	120 Naik 15.E hannel ght	15.209 Limit 54.0 54.0 54.0 54.0	9 / 15E Margin -14.5	Detector Pk/QP/Avq	Azimuth	T-	Job Number: Log Number: unt Manager: Class:	T78071 Dean Eriksen
Model: AP 81 Contact: Vipin I Standard: FCC 1 Run #1c: High Cl Port: Main Drientation: Upric Spurious Radiate Frequency Le MHz dBµ 1198.840 39 5415.520 47 5432.120 56 10466.670 46	120 Naik 15.E hannel ght ed Emissions: evel Pol aV/m V/h 9.5 H 7.5 H 7.5 H 4.5 H	Limit 54.0 54.0	Margin				unt Manager:	Dean Eriksen
Contact: Vipin I Standard: FCC 1 Run #1c: High Cl Port: Main Drientation: Upric Spurious Radiate Frequency Lee MHz dBµ 1198.840 39 5415.520 47 5432.250 44 5432.250 44 5432.120 56 10466.670 46	Naik         15.E         hannel         ght         ed Emissions:         evel       Pol         µV/m       v/h         9.5       H         7.5       H         4.5       H         6.8       H	Limit 54.0 54.0	Margin				unt Manager:	Dean Eriksen
Standard:         FCC 1           Run #1c:         High Cl           Port:         Main           Drientation:         Uprig           Spurious         Radiate           Frequency         Le           MHz         dBµ           1198.840         39           5415.520         47           5432.250         44           5432.120         56           10466.670         46	15.E hannel ght ed Emissions: evel Pol aV/m v/h 9.5 H 7.5 H 4.5 H 6.8 H	Limit 54.0 54.0	Margin				Class:	N/A
Run #1c: High Cl           Port:         Main           Drientation: Uprig           Spurious Radiate           Frequency         Le           MHz         dBµ           1198.840         39           5415.520         47           5432.250         44           5432.120         56           10466.670         46	hannel           ght           ed Emissions:           evel         Pol           uV/m         v/h           9.5         H           7.5         H           4.5         H           6.8         H	Limit 54.0 54.0	Margin				Class:	N/A
Port:         Main           Drientation:         Uprig           Spurious         Radiate           Frequency         Le           MHz         dBµ           1198.840         39           5415.520         47           5432.250         44           5432.120         56           10466.670         46	ght           ed Emissions:           evel         Pol           uV/m         v/h           9.5         H           7.5         H           4.5         H           6.8         H	Limit 54.0 54.0	Margin					
MHz         dBµ           1198.840         39           5415.520         47           5432.250         44           5432.120         56           10466.670         46           For er	uV/m v/h 9.5 H 7.5 H 4.5 H 6.8 H	Limit 54.0 54.0	Margin					
MHz         dBµ           1198.840         39           5415.520         47           5432.250         44           5432.120         56           10466.670         46           For er	uV/m v/h 9.5 H 7.5 H 4.5 H 6.8 H	Limit 54.0 54.0	Margin			Height	Comments	
1198.840         39           5415.520         47           5432.250         44           5432.120         56           10466.670         46           For er	9.5 H 7.5 H 4.5 H 6.8 H	54.0 54.0	<u>v</u>		degrees	meters	Comments	
5415.520         47           5432.250         44           5432.120         56           10466.670         46           For er	7.5 H 4.5 H 6.8 H	54.0		Peak	138	1.6	Peak vs Avg	ı Limit
5432.120 56 10466.670 46 Jote 1: For er	6.8 H	54.0	-6.5	Peak	226	1.0	Peak vs Avg	
10466.670 46		34.0	-9.5	AVG	194	1.1	MHz; VB: 1	
For er	6.1 H	74.0	-17.2	PK	194	1.1	MHz; VB: 1	MHz
		68.3	-22.2	Peak	236	1.0	Peak vs Avg	y Limit
	m/MHz (~68dBuV/r nnel 40 @ 5240 MH	-	l l l l l l l l l l l l l l l l l l l	Frequency (M				18000

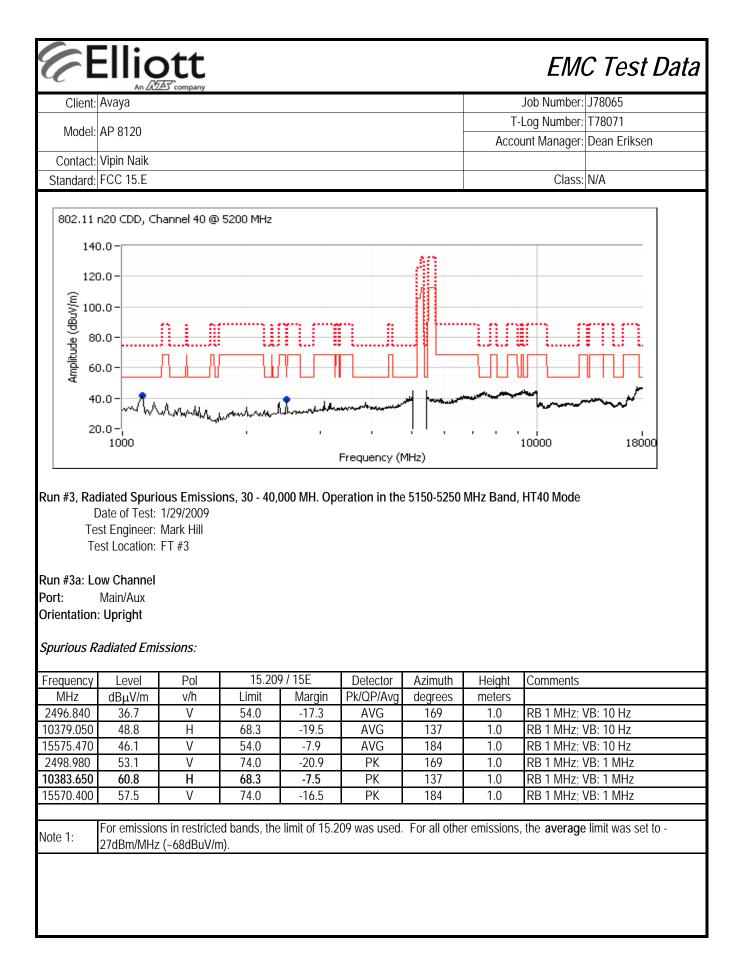
# Flliott

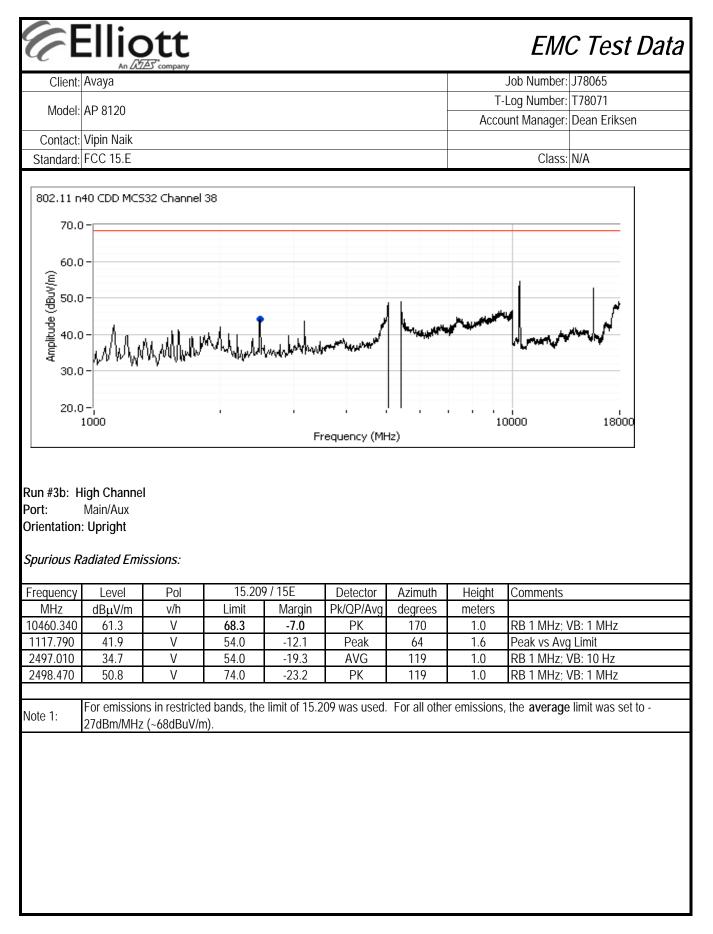
# EN/C Tost Data

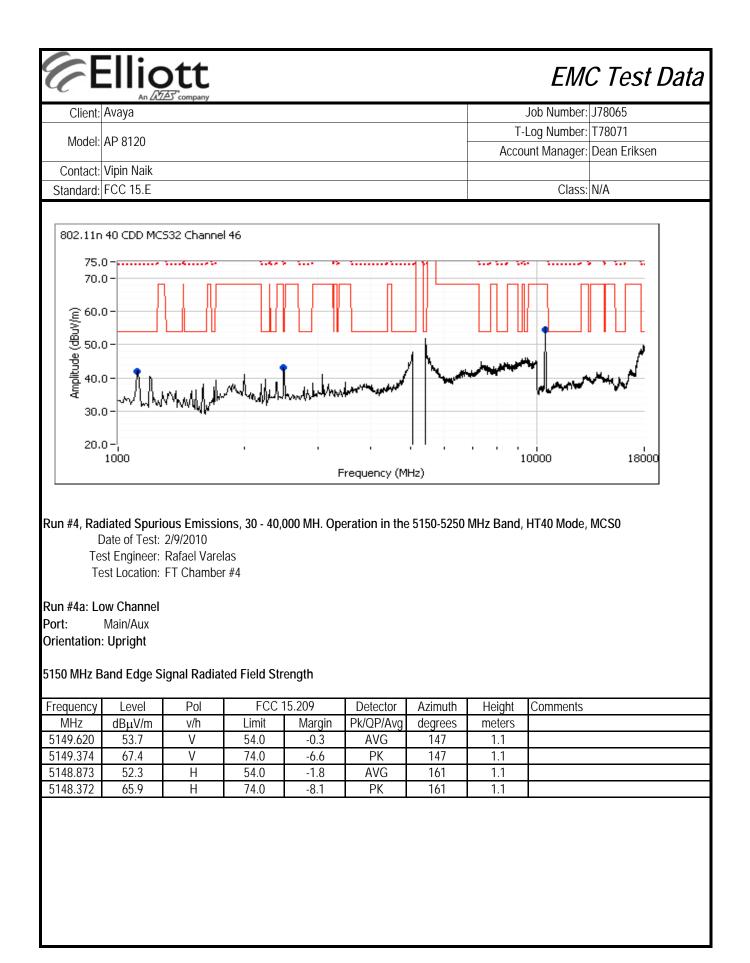
	An /AZ	A company						EM	
Client:	ent: Avaya							Job Number:	
Model	Model: AP 8120						T-l	_og Number:	T78071
							Αςςοι	int Manager:	Dean Eriksen
	Vipin Naik								
Standard:	FCC 15.E							Class:	N/A
I Te Te	Date of Test: est Engineer: est Location: <b>Dw Channel</b> Main/Aux	1/28/2010 Rafael Varel	las	оо мн. Ор	eration in the	0100-0200	MH2 Dahu, I	n 120 Mode	
150 MHz E	Band Edge S	<i>ignal Radia</i> Pol		ength	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5147.675	49.7	V	54.0	-4.4	Avg	200	1.2		
5135.491	62.9	V	74.0	-11.1	Pk	200	1.2		
5137.575	48.6	Н	54.0	-5.5	Avg	195	1.0		
5146.874	61.6	Н	74.0	-12.4	Pk	195	1.0		
110.0	)					M	1		Settings chwarz,ESI 7
105.0 100.0 95.0 90.0 85.0 80.0 75.0 70.0	) = - - - - - - - - - - - - -							CF: 5150 SPAN:80, RB 1.000 VB 1.000 Detector Att 10 RL Offset Sweep Tin Ref LvI:1:	000 MHz MHz MHz POS : 39.30 me 5.0ms 21.30DBUV
100.0 95.0 90.0 91110 85.0 80.0 75.0	) = - - - - - - - - - - - - -				w			CF: 5150 SPAN:80. RB 1.000 VB 1.000 Detector Att 10 RL Offset Sweep Tin Ref Lvl:1:	000 MHz MHz POS : 39.30 me 5.0ms 21.30DBUV
100.0 95.0 90.0 85.0 85.0 75.0 70.0 65.0 60.0	) = ) = ) = ) = ) = ) = ) = <b>vpd_vag</b>	3-49-799-1-49-			w			CF: 5150 SPAN:80. RB 1.000 VB 1.000 Detector Att 10 RL Offset Sweep Tin Ref Lvl:1: Commen BE @ 515	000 MHz MHz POS : 39.30 me 5.0ms 21.30DBUV
100.0 95.0 90.0 85.0 80.0 75.0 75.0 65.0 65.0 55.0	) = ) = ) = ) = ) = ) = ) = <b>vpd_vag</b>	20 5130		5150	5160 5	170 518		CF: 5150 SPAN:80, RB 1.000 VB 1.000 Detector Att 10 RL Offset Sweep Tin Ref Lvl:1: Commen BE @ 515 PK-V	000 MHz MHz POS : 39.30 me 5.0ms 21.30DBUV its
100.0 95.0 90.0 85.0 80.0 75.0 75.0 65.0 65.0 55.0	) = ) = ) = ) = ) = ) = ) = ) =	20 5130			5160 5			CF: 5150 SPAN:80, RB 1.000 VB 1.000 Detector Att 10 RL Offset Sweep Tir Ref Lvl:1: Commen BE @ 515 PK-V	000 MHz MHz POS : 39.30 me 5.0ms 21.30DBUV its
100.0 95.0 90.0 85.0 80.0 75.0 75.0 65.0 65.0 55.0	) - ) - ) - ) - ) - ) - ) - ) - ) - ) -		Fre	5150 quency (MH	5160 5			CF: 5150 SPAN:80, RB 1.000 VB 1.000 Detector Att 10 RL Offset Sweep Tin Ref Lvl:1: Commen BE @ 515 PK-V 5180 MH2	000 MHz MHz POS : 39.30 me 5.0ms 21.30DBUV its

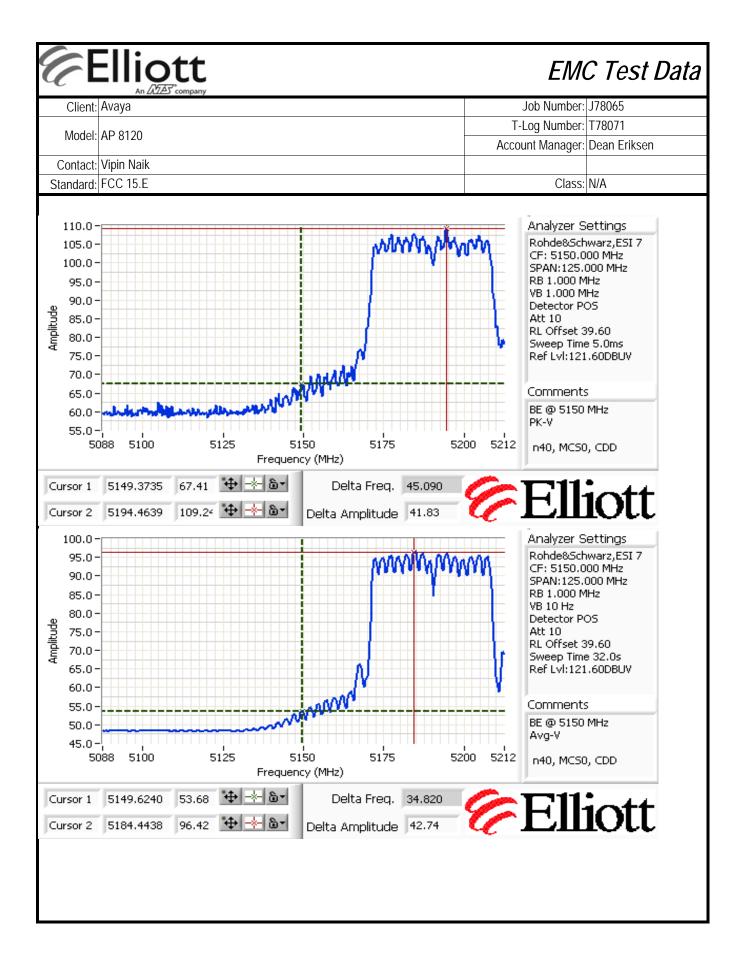


	: Avaya							Job Number: J78065		
Model	AP 8120						T-Log Number: T78071			
							Ассо	unt Manager: Dean Eriksen		
	Vipin Naik									
Standard:	FCC 15.E							Class: N/A		
Port: Drientation	Center Chanr Main/Aux I: Upright Radiated Emi									
Frequency	Level	Pol	15.209	9/15E	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
1110.000	40.7	V	54.0	-13.3	Peak	75	1.0	Peak vs Avg Limit		
2494.170	38.8	V	54.0	-15.2	Peak	128	1.0	Peak vs Avg Limit		
lote 1:		ns in restricte : (~68dBuV/n		limit of 15.2	09 was used.	For all othe	r emissions	, the average limit was set to		
121 (m/\n) 81 61 81 41	0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 0.0 - 1000		ليا ليا المحمد المحمد ا		Frequency (N	1Hz)				
Qun #2c+ F	Main/Aux							-		
Port: Drientation <i>Spurious R</i>	Radiated Emi					Azimuth	Lloight			
Port: Drientation Spurious R Frequency	Radiated Emi	Pol		9 / 15E	Detector		Height	Comments		
Port: Drientation Spurious R	Radiated Emi		15.209 Limit 54.0	9 / 15E Margin -12.5	Detector Pk/QP/Avg Peak	degrees 87	meters 1.0	Comments		











	An UTAS company		
Client:	Avaya	Job Number:	J78065
Madal	AP 8120	T-Log Number:	T78071
would.	AF 0120	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.

## General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

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

Ambient Conditions:	Temperature:	19.3 °C
	Rel. Humidity:	39 %

## Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11a Chain A	40	Rx	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	39.5dBµV/m @ 3076.5MHz (-14.5dB)
2	802.11 n20	40	Rx	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	40.4dBµV/m @ 3076.5MHz (-13.6dB)
3	802.11a n40 MCS0	46	Rx	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	42.4dBµV/m @ 3076.4MHz (-11.6dB)

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

## 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.

#### Elliott EMC Test Data Client: Avaya Job Number: J78065 T-Log Number: T78071 Model: AP 8120 Account Manager: Dean Eriksen Contact: Vipin Naik Standard: FCC 15.E Class: N/A Run #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150-5250 MHz Band, Legacy A Mode Date of Test: 1/31/2010 Test Engineer: Rafael Varelas Test Location: Chamber #4 Run #1: Center Channel 40 @ 5200 MHz **Orientation: Upright** Spurious Radiated Emissions: 15.209 / 15E Frequency Level Pol Detector Azimuth Height Comments MHz dBµV/m Pk/QP/Avg v/h Limit Margin degrees meters 3076.510 39.5 V 54.0 AVG RB 1 MHz; VB: 10 Hz -14.5 76 1.4 44.9 V ΡK RB 1 MHz; VB: 1 MHz 3076.460 74.0 -29.1 76 1.4 1125.010 V -22.5 RB 1 MHz; VB: 10 Hz 31.5 54.0 AVG 89 1.0 1125.170 42.0 V 74.0 -32.0 ΡK 89 1.0 RB 1 MHz; VB: 1 MHz 802.11a Channel 40 80.0 70.0 40.00 (gBuV/m) 20.00 (dBuV/m) 40.0 30.0 20.0-18000 1000 10000 Frequency (MHz)

#### Elliott EMC Test Data Client: Avaya Job Number: J78065 T-Log Number: T78071 Model: AP 8120 Account Manager: Dean Eriksen Contact: Vipin Naik Standard: FCC 15.E Class: N/A Run #2, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150-5250 MHz Band, HT20 Mode Date of Test: 1/31/2010 Test Engineer: Rafael Varelas Test Location: Chamber #4 Run #2: Center Channel 40 @ 5200 MHz **Orientation: Upright** Spurious Radiated Emissions: 15.209 / 15E Frequency Level Pol Detector Azimuth Height Comments MHz dBµV/m Pk/QP/Avg v/h Limit Margin degrees meters 3076.470 40.4 V 54.0 MHz; VB: 10 Hz -13.6 AVG 50 1.0 ΡK 50 3076.650 46.2 V 74.0 -27.8 1.0 MHz; VB: 1 MHz 1117.810 V MHz; VB: 10 Hz 36.4 54.0 -17.6 AVG 101 1.0 1119.370 49.5 V 74.0 -24.5 ΡK 101 1.0 MHz; VB: 1 MHz 802.11n 20 CDD Channel 40 80.0 70.0 Amplitude (dBuV/m) 60.0 50.0 40.0 30.0 20.0-18000 10000 1000 Frequency (MHz)

#### Elliott EMC Test Data Client: Avaya Job Number: J78065 T-Log Number: T78071 Model: AP 8120 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 5150-5250 MHz Band, HT40 Mode Date of Test: 1/31/2010 Test Engineer: Rafael Varelas Test Location: Chamber #4 Run #3: High Channel 46 @ 5230 MHz **Orientation: Upright** Spurious Radiated Emissions: 15.209 / 15E Frequency Level Pol Detector Azimuth Height Comments MHz dBµV/m Pk/QP/Avg v/h Limit Margin degrees meters 3076.440 42.4 V 54.0 AVG MHz; VB: 10 Hz -11.6 50 1.0 47.2 V ΡK 50 MHz; VB: 1 MHz 3076.520 74.0 -26.8 1.0 1117.870 V MHz; VB: 10 Hz 35.4 54.0 AVG 62 1.0 -18.6 1118.250 48.2 V 74.0 -25.8 ΡK 62 1.0 MHz; VB: 1 MHz 802.11n 40 CDD MCS32 Channel 46 80.0 70.0 (m/vme (dBuv/m) 2000 4000 4000 30.0 20.0-18000 10000 1000 Frequency (MHz)



Job Number:	J78065
T-Log Number:	T78071
Account Manager:	Dean Eriksen
	-
Class:	В
Environment:	-
	Job Number: T-Log Number: Account Manager: Class: Environment:

# **EMC** Test Data

For The

## Avaya

Model

AP 8120

Date of Last Test: 2/12/2010

#### Elliott EMC Test Data Client: Avaya Job Number: J78065 T-Log Number: T78071 Model: AP 8120 Account Manager: Dean Eriksen Contact: Vipin Naik Standard: FCC 15.247 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. Config. Used: 1 Date of Test: 2/3/2010 0:46 Config Change: None Test Engineer: Rafael Varelas Test Location: Fremont Chamber #4 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: 19.1 °C Temperature: Rel. Humidity: 40 % Summary of Results Run # Test Performed Limit Result / Margin Pass / Fail 15.407(a) (1), (2) Power, 5150 - 5250MHz 13.0 dBm Pass 1 PSD, 5150 - 5250MHz 15.407(a) (1), (2) 2.4 dBm/MHz Pass 1 26dB Bandwidth 15.407 20.0 MHz 1 RSS 210 99% Bandwidth 17.4 MHz 1 2 Peak Excursion Envelope 15.407(a) (6) 11.9 dB Pass Antenna Conducted - Out of Band All emissions below the 3 15.407(b) Pass Spurious -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	
Madal							T-I	_og Number:	T78071	
Wodel:	AP 8120						Αссоι	unt Manager:	Dean Erikse	n
Contact:	Vipin Naik									
Standard:	FCC 15.247							Class:	N/A	
Run #1: Bai Port: Main	ndwidth, Ou	tput Power	and Power s	pectral Den	5	a Gain (dBi):	5.91			
Frequency	Software	Band	width	Output Po	ower <sup>1</sup> dBm	Power	Р	SD <sup>2</sup> dBm/Mł	Ηz	Resul
(MHz)	Setting	26dB	99% <sup>4</sup>	Measured	_	(Watts)	Measured	FCC Limit	RSS Limit <sup>3</sup>	resul
5180	-	20.0	17.4	13.0	17.0	0.020	2.2	4.0	4.1	Pass
5200	-	21.7	17.4	12.8	17.0	0.019	2.4	4.0	4.1	Pass
5240	-	21.1	17.4	12.8	17.0	0.019	2.4	4.0	4.1	Pass
Note 2: Note 3:	was configur integration o Measured us For RSS-21( 10dBm/MHz PSD (calcula the measure	ed with a ga ver 50 MHz sing the sam ) the limit for . The limits a sted from the d value exce	e analyzer se the 5150 - 52 are also corre	ttings used to 250 MHz bar cted for insta ower divided age by more	analyzer was for output por nd accounts ances where I by the meas than 3dB.	s only sweep wer. for the anter the highest sured 99% b	bing when the ma gain as the measured val andwidth) by	e device was ne maximum lue of the PS more than 3	uous but the transmitting) eirp allowed i D exceeds th dB by the am	and pow
Note 3: Note 4:	was configur integration o Measured us For RSS-21( 10dBm/MHz PSD (calcula the measure 99% Bandwi	ed with a ga ver 50 MHz sing the sam ) the limit for . The limits a sted from the d value exce	e analyzer se the 5150 - 52 are also corre measured po eeds the avera	ttings used to 250 MHz bar cted for insta ower divided age by more	analyzer was for output por nd accounts ances where I by the meas than 3dB.	s only sweep wer. for the anter the highest sured 99% b	bing when the ma gain as the measured val andwidth) by	e device was le maximum lue of the PS more than 3 ixRB	transmitting) eirp allowed i D exceeds th dB by the am er Settings	and pow s e averaç ount tha
Note 2: Note 3: Note 4: 5. -10. -15. -15. -15. -15. -20. -23. -30. -35.	was configur integration o Measured us For RSS-210 10dBm/MHz PSD (calcula the measure 99% Bandwi 0	ed with a ga ver 50 MHz sing the sam ) the limit for . The limits a sted from the d value exce	e analyzer se the 5150 - 52 are also corre measured po eeds the avera	ttings used to 250 MHz bar cted for insta ower divided age by more	analyzer was for output por nd accounts ances where I by the meas than 3dB.	s only sweep wer. for the anter the highest sured 99% b	bing when the ma gain as the measured val andwidth) by	e device was ne maximum lue of the PS more than 3 ixRB Analyze Rohde8 CF: 518 SPAN:5 RB 1.00 VB 3.00 Detecto Att 20 RL Offs Sweep	transmitting) eirp allowed i D exceeds th dB by the am er Settings Schwarz,ESI 0.000 MHz 0.000 MHz 0.000 MHz	and pow s e averaç ount tha
Note 2: Note 3: Note 4: 5. 0. -55. -10. -15. -15. -15. -20. -25. We -30.	was configur integration o Measured us For RSS-210 10dBm/MHz PSD (calcula the measure 99% Bandwi 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	ed with a ga ver 50 MHz sing the sam ) the limit for . The limits a ated from the d value exce dth measure	ted sweep size analyzer see the 5150 - 52 are also correct measured point accordar and a straight for the st	uch that the ttings used f 250 MHz bar cted for insta ower divided age by more nce with RSS	analyzer was for output poind accounts ances where by the mease than 3dB. S GEN - RB s	s only sweep wer. for the anter the highest sured 99% b > 1% of spar	bing when the ma gain as the measured val andwidth) by	e device was le maximum lue of the PS more than 3 ixRB Analyze Rohde8 CF: 518 SPAN:5 RB 1.00 VB 3.00 Detecto Att 20 RL Offs Sweep T Ref Lvl: Comme 99% B' Power:	transmitting) eirp allowed i D exceeds th dB by the am er Settings Schwarz,ESI 0.000 MHz 0.000 MHz 0 MHz 0 MHz 0 MHz r Sample et 11.00 Time 5.0ms 10.00DBM	and pow s e averaç ount that
Note 2: Note 3: Note 4: 5. 0. -5. -10. -15. -99 -20. -15. -25. -10. -15. -30. -35. -40. -45. -50.	was configur integration o Measured us For RSS-210 10dBm/MHz PSD (calcula the measure 99% Bandwi 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	ed with a ga ver 50 MHz sing the sam ) the limit for . The limits a ated from the d value exce dth measure	ted sweep size analyzer see the 5150 - 52 are also correct measured por beds the averaged in accordar	uch that the ttings used f 250 MHz bar cted for insta ower divided age by more nce with RSS 5 5180 equency (M	analyzer was for output poind accounts ances where by the mease than 3dB. S GEN - RB s	s only sweep wer. for the anter the highest sured 99% b > 1% of spar	na gain as the measured va andwidth) by <u>n and VB &gt;=3</u>	e device was ne maximum lue of the PS more than 3 xRB Analyze Rohde8 CF: 518 SPAN:5 RB 1.00 VB 3.00 Detecto Att 20 RL Offs Sweep Ref Lvl: Comme 99% B' Power:	transmitting) eirp allowed i D exceeds th dB by the am er Settings Schwarz,ESI 0,000 MHz 0 MHz 0 MHz 0 MHz o MHz r Sample et 11.00 Fime 5.0ms 10.00DBM ents W: 17.40 MH 12.99dBm	and pow s e averaç ount that
Note 2: Note 3: Note 4: 5. 0. -55. -10. -15. -99 -20. -15. -10. -15. -25. -30. -40. -55.	was configur integration o Measured us For RSS-210 10dBm/MHz PSD (calcula the measure 99% Bandwi 0 - 5155 5166 - - - 1 - - - - - - - - - - - - -	ed with a ga ver 50 MHz sing the sam ) the limit for . The limits a ated from the d value exce dth measure 0 5165	ted sweep size analyzer see the 5150 - 52 are also correct measured por beds the averated in accordar	ttings used f 250 MHz bar cted for insta ower divided age by more nce with RSS 5 5180 equency (M	analyzer was for output poind accounts ances where by the mease than 3dB. S GEN - RB = S GEN - RB =	s only sweep wer. for the anter the highest sured 99% b > 1% of spar	na gain as the measured va andwidth) by <u>n and VB &gt;=3</u>	e device was ne maximum lue of the PS more than 3 xRB Analyze Rohde8 CF: 518 SPAN:5 RB 1.00 VB 3.00 Detecto Att 20 RL Offs Sweep Ref Lvl: Comme 99% B' Power:	transmitting) eirp allowed i D exceeds th dB by the am er Settings Schwarz,ESI 0.000 MHz 0.000 M	and pow s e averaç ount that

	An DEAS company		
Client:	Avaya	Job Number:	J78065
Model	AP 8120	T-Log Number:	T78071
WOUEI.	AF 0120	Account Manager:	Dean Eriksen
Contact:	Vipin Naik		
Standard:	FCC 15.247	Class:	N/A

### Run #2: Peak Excursion Measurement

Elliott

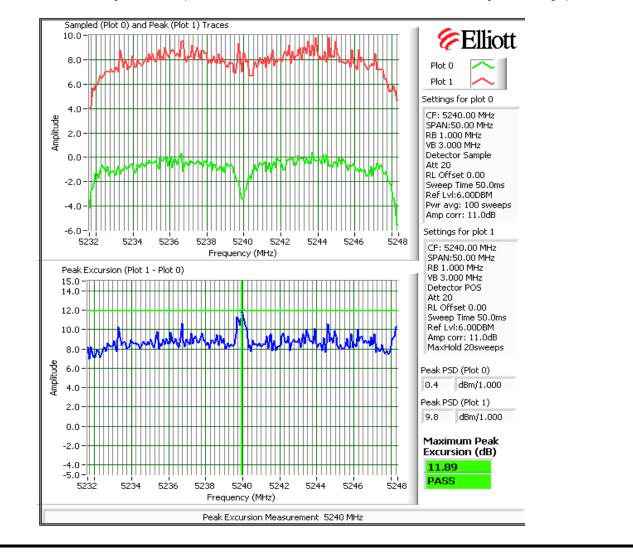
#### Device meets the requirement for the peak excursion

ſ	Freq	Peak Exc	ursion(dB)	Freq	Peak Exc	ursion(dB)	Freq	Peak Exc	ursion(dB)
ľ	(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
	5180	11.6	13.0	5260		13.0	5500		13.0
	5200	11.8	13.0	5300		13.0	5580		13.0
	5240	11.9	13.0	5320		13.0	5700		13.0

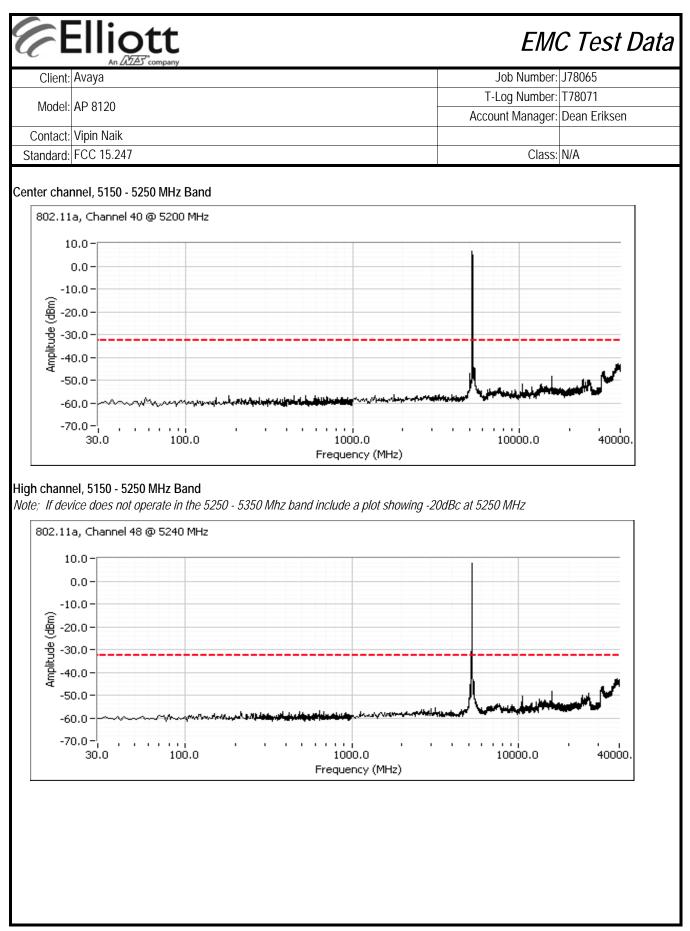
#### Plots Showing Peak Excursion

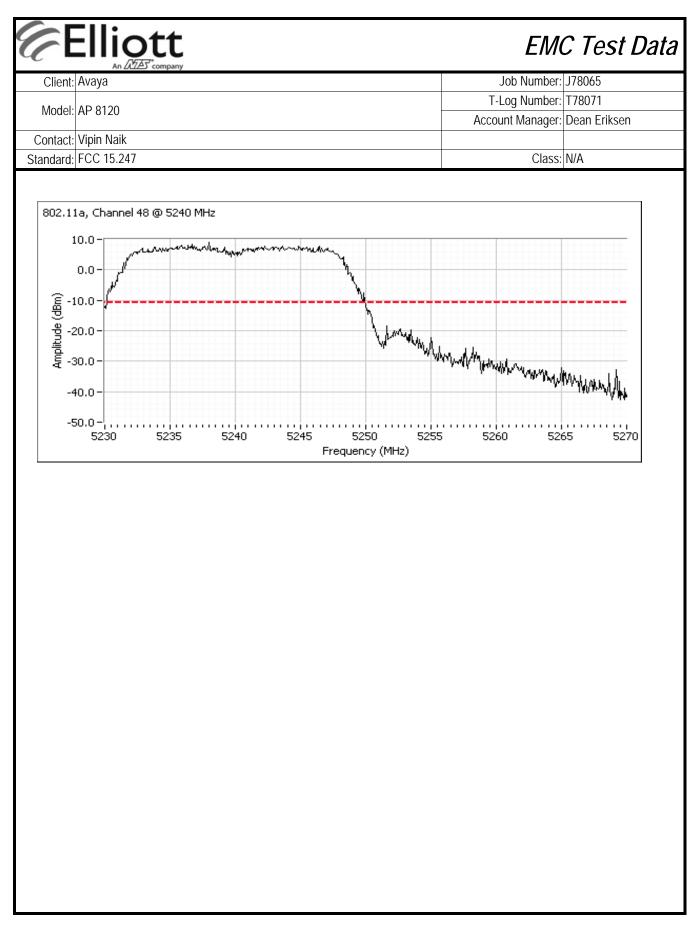
Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

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



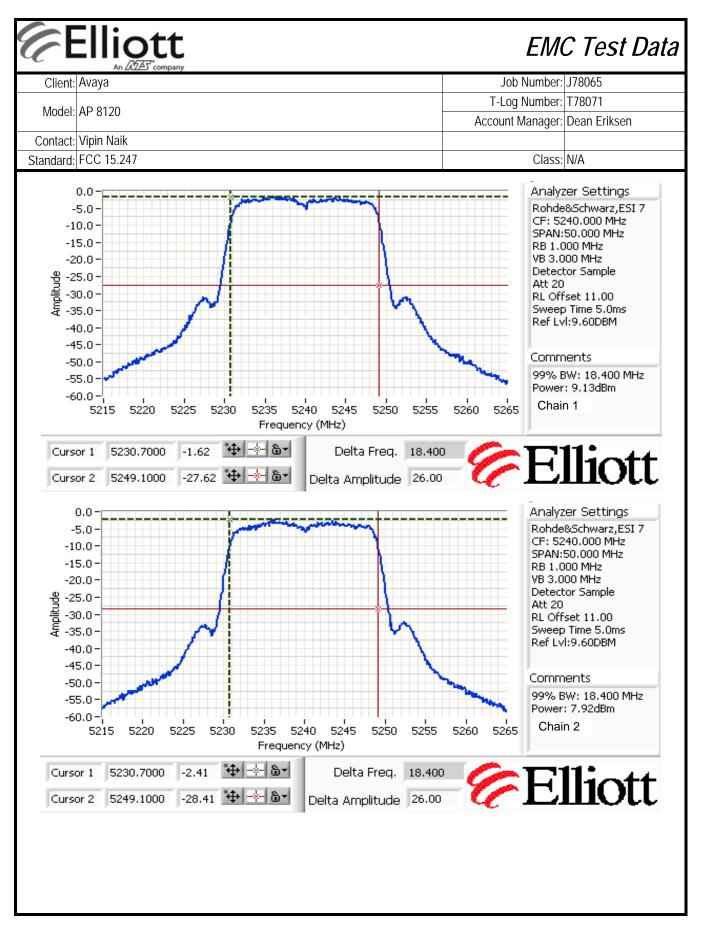
Client: Ava	An ZAZZED company		EMO	C Test Da
	ауа		Job Number:	J78065
			T-Log Number:	
Model: AP	8120		Account Manager:	
Contact: Vip	in Naik			
andard: FC	C 15.247		Class:	N/A
#3: Out O	f Band Spurious Emissions - Ante	enna Conducted		
	Maximum Antenna Gain: Spurious Limit:	5.9 dBi -27.0 dBm/MHz eirp		
	Limit Used On Plots Note 1:	-32.9 dBm/MHz Average -12.9 dBm/MHz Peak Lin	Limit (RB=1MHz, VB=10Hz) nit (RB=VB=1MHz)	
e 1: cor mo	e -27dBm/MHz limit is an eirp limit. nsideration the maximum antenna ga re than 50MHz from the bands and own at these frequencies.	ain (limit = -27dBm - antenna gair	n). Radiated field strength me	easurements for sig
	spurious signals below 1GHz are m	easured during digital device radi	ated emissions test.	
	nals within 10MHz of the 5.725 or 5			
	ne device is for outdoor use then the			
e 5: Sig	nals that fall in the restricted bands	of 15.205 are subject to the limit	of 15.209.	
	5150 - 5250 MHz Band	ng Out-Of-Band Emissions (RB)		
				he radiated emissio
pliance with	5150 - 5250 MHz Band			he radiated emissio
pliance with	150 - 5250 MHz Band In the radiated limits for the restricted			he radiated emissio
npliance with 5. 302.11a, ⊂h 10.0 -	n the radiated limits for the restricted			he radiated emissio
npliance with 5. 802.11a, ⊂h 10.0 - 0.0 -	n the radiated limits for the restricted			he radiated emissio
ipliance with 302.11a, Ct 10.0 - 0.0 - -10.0 -	n the radiated limits for the restricted			he radiated emissio
ipliance with 302.11a, Ct 10.0 - 0.0 - -10.0 -	n the radiated limits for the restricted			he radiated emissio
ipliance with 302.11a, Ct 10.0 - 0.0 - -10.0 -	n the radiated limits for the restricted			he radiated emissio
ipliance with 302.11a, Ct 10.0 - 0.0 - -10.0 -	n the radiated limits for the restricted			he radiated emissio
pliance with 502.11a, Ch 10.0- -10.0- - 留 -20.0- - 教 -30.0-	n the radiated limits for the restricted			he radiated emissio
npliance with 	n the radiated limits for the restricted			he radiated emissio





<b>C</b>	Ellic	<b>ott</b>			EM	C Test Data		
Client:	Avaya				Job Number:	J78065		
Madal	AD 0100			T-l	og Number:	T78071		
Model:	AP 8120			Αςςοι	int Manager:	Dean Eriksen		
Contact:	Vipin Naik							
Standard:	FCC 15.247				Class:	N/A		
RSS-210 (LELAN) and FCC 15.407(UNII) Antenna Port Measurements Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions								
Test Spec	ific Detail	S						
	Objective:	The objective of this test session is to specification listed above.	perform final qualificatio	n testing of th	e EUT with r	espect to the		
Date of Test:2/4/2010 1:45Config. UsedTest Engineer:Rafael VarelasConfig ChangeTest Location:Fremont Chamber #4EUT Voltage				None				
analyzer or allow for the Ambient	power meter	Rel. Humidity:						
Ru	n #	Test Performed	Limit	Pass / Fail	Result	/ Margin		
		Power, 5150 - 5250MHz	15.407(a) (1), (2)	Pass		dBm		
		PSD, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	1.0 dB	m/MHz		
		26dB Bandwidth	15.407	-		MHz		
		99% Bandwidth	RSS 210	-		MHz		
	2	Peak Excursion Envelope Antenna Conducted - Out of Band	15.407(a) (6)	Pass		5 dB ns below the		
	}	Spurious	15.407(b)	Pass		MHz limit		
No modifica Deviation	iions were m s From Th	e During Testing ade to the EUT during testing ne Standard e from the requirements of the standard	J.					

Model: A Contact: V Standard: F Run #1: Banc /IMO Device	(ipin Naik CC 15.247 dwidth, Ou							∟og Number: unt Manager:		en
Contact: V Standard: F Run #1: Band	(ipin Naik CC 15.247 dwidth, Ou						Αссоι	unt Manager:	Dean Erikse	en
Standard: F Run #1: Band	CC 15.247 dwidth, Ou									
Run #1: Band	dwidth, Ou									
		tput Power a						Class:	N/A	
	<b>!</b>	•	and Power s	spectral Der	nsity					
F							F	1		
L	Antonna		Chain 1	Chain 2	Chain 3		Effective <sup>5</sup>			
	Antenna	a Gain (dBi):	5.91	5.91		Yes	8.9			
Frequency	Software	26dB BW	Moasuro	ed Output Po	wor <sup>1</sup> dBm	To	otal		Max Power	
(MHz)	Setting	(MHz)	Chain 1	Chain 2	Chain 3	mW	dBm	Limit (dBm)	(W)	Pass or F
5180	43.0	21.8	8.9	8.1	Chain 3	14.2	<u>иып</u> 11.5	14.1	()	PASS
5200	42.0	21.8	8.7	8.0		13.7	11.4	14.1	0.014	PASS
5240	42.0	21.5	9.1	7.9		14.4	11.6	14.1		PASS
						1				
Frequency	<b>99</b> % <sup>4</sup>	Total	P	SD <sup>2</sup> dBm/Mł	Ηz	Tota	PSD	Lir	nit	Pass or F
(MHz)	BW	Power	Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 <sup>3</sup>	
5180	18.3	11.5	-1.9	-2.4		1.2	0.9	1.1	1.1	PASS
5200 5240	18.4 18.5	11.4 11.6	-1.9 -1.6	-2.7 -2.4		1.2 1.3	0.7 1.0	1.1 1.1	1.1 1.1	PASS PASS
Note 1: w in Note 2: M	vas configui ntegration o Aeasured us	red with a <b>ga</b> ver <b>50</b> MHz sing the same	ted sweep s	such that the ettings used	averaging or analyzer was for output po	s only sweep wer.	ing when the	e device was	transmitting)	and powe
Note 3: P th	0dBm/MHz PSD (calcula ne measure	. The limits a ated from the d value exce	re also corre measured peds the ave	ected for insta bower divided rage by more		the highest r sured 99% b	measured va andwidth) by	lue of the PS more than 3	D exceeds th	ne averag
					S GEN - RB				f the individu	al chains
For MIMO systems the total output power and total PSD are calculated form 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.										



 An AZZAS company

 Client:
 Avaya

 Model:
 Job Number:

 Job Number:
 T78071

 AP 8120
 Account Manager:

 Dean Eriksen

 Contact:
 Vipin Naik

 Standard:
 FCC 15.247

### Run #2: Peak Excursion Measurement

Elliott

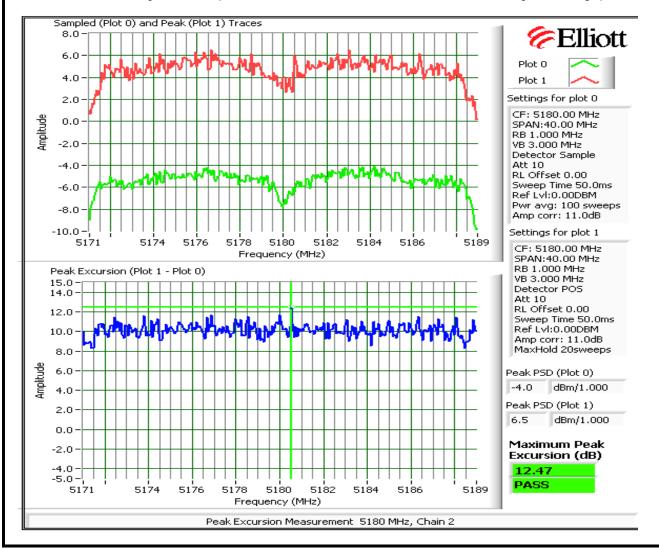
#### Device meets the requirement for the peak excursion

	Freq	Peak Exc	ursion(dB)	Freq	Peak Exc	ursion(dB)	Freq	Peak Exc	ursion(dB)
ĺ	(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
	5180	12.5	13.0	5260		13.0	5500		13.0
	5200	11.9	13.0	5300		13.0	5580		13.0
ĺ	5240	11.9	13.0	5320		13.0	5700		13.0

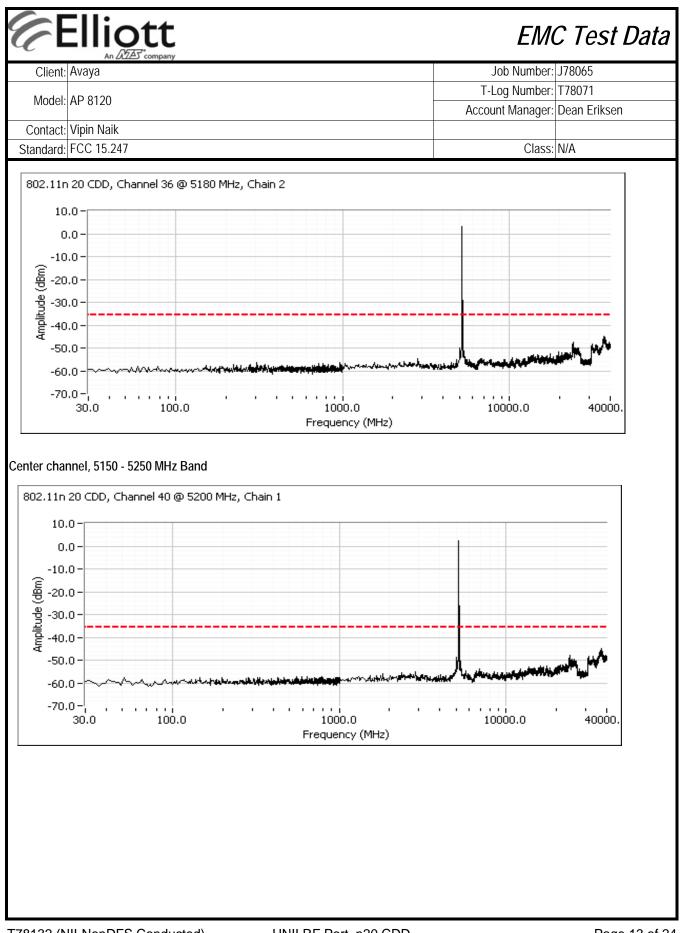
### Plots Showing Peak Excursion

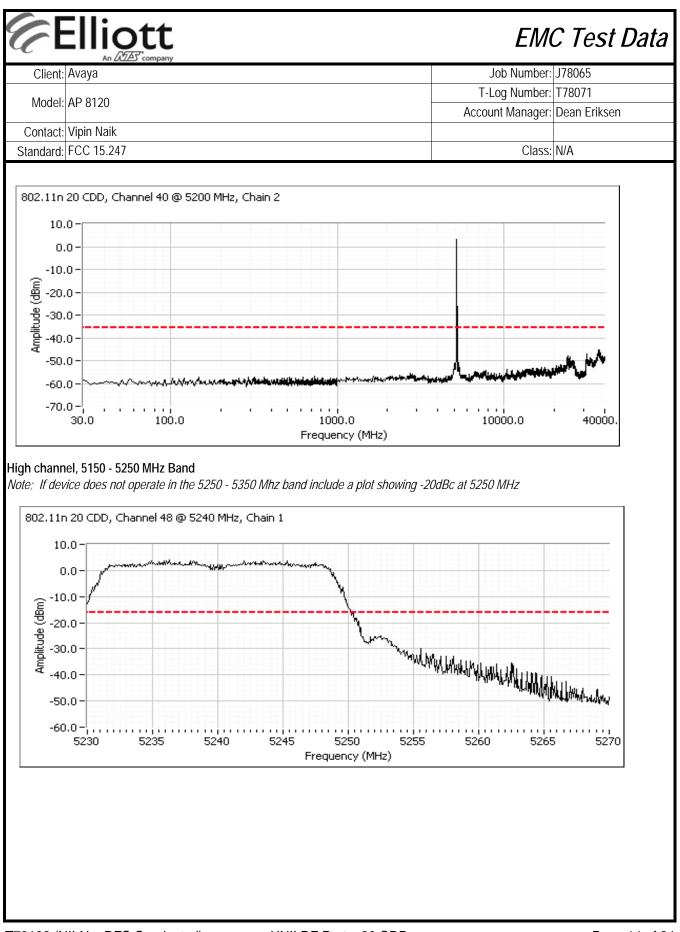
Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

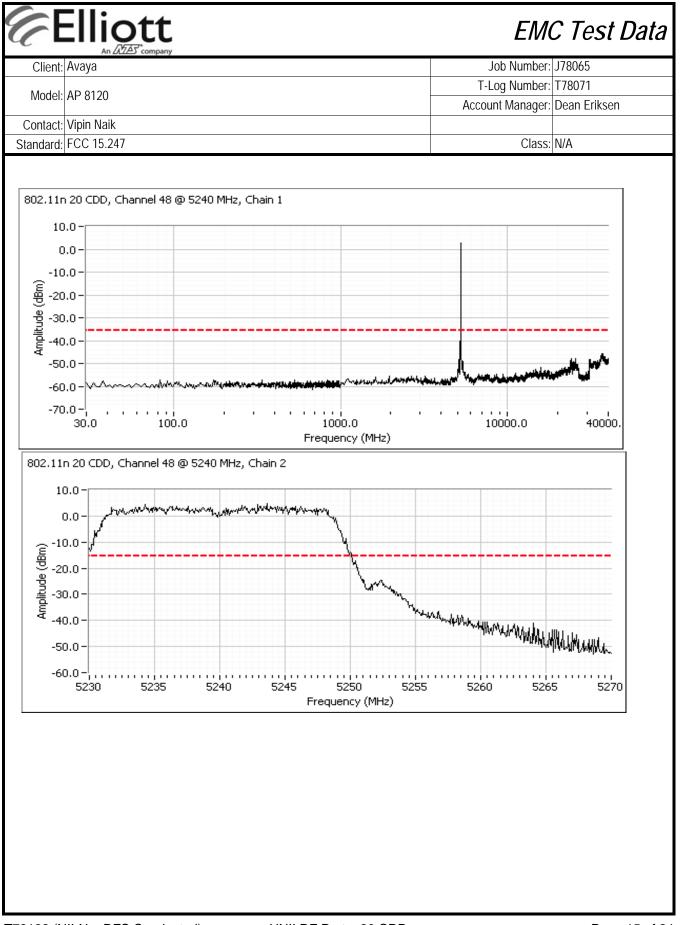
Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)

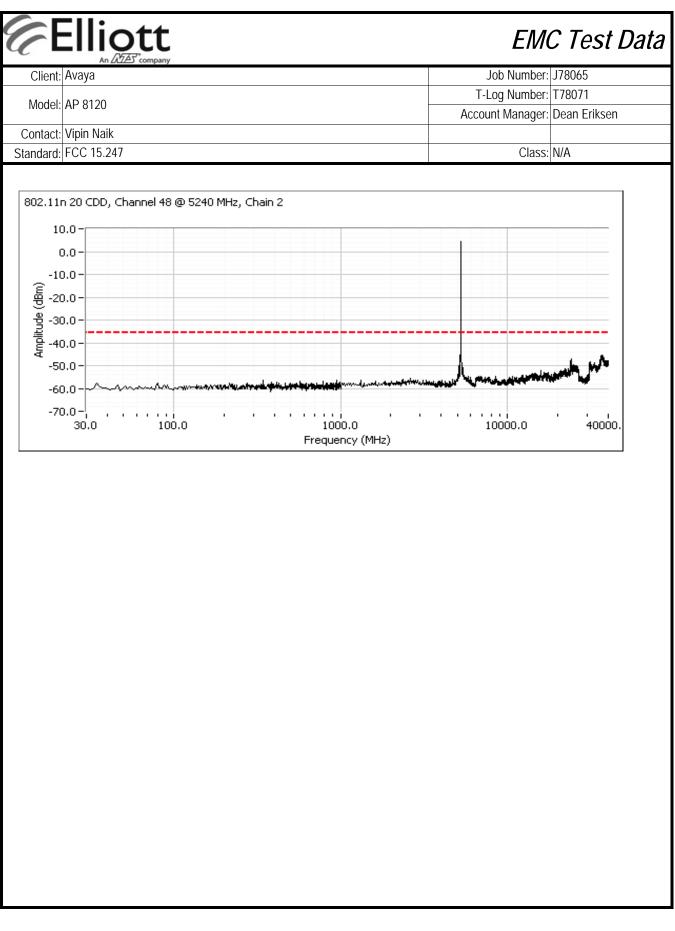


(CE		EMO	C Test Data
Client:	in bulk company	Job Number:	J78065
	·	T-Log Number:	T78071
	AP 8120 Vipin Naik	Account Manager:	Dean Eriksen
	FCC 15.247	Class:	N/A
	t Of Band Spurious Emissions - Antenna Conducted		
	ces: Antenna gain used is the effective gain calculated in the power section ndividually and the limit was adjusted to account for all chains transmitting s Number of transmit chains:Number of transmit chains:2Maximum Antenna Gain: Spurious Limit:5.9 dBiAdjustment for 2 chains: 	imultaneously le chains. nit (RB=1MHz, VB=10Hz)	lots were obtained for
Note 1: Note 2: Note 3:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted consideration the maximum antenna gain (limit = -27dBm - antenna gain). more than 50MHz from the bands and that are close to the limit are made to known at these frequencies. All spurious signals below 1GHz are measured during digital device radiate Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit	Radiated field strength me o determine compliance a d emissions test. t of -17dBm EIRP	easurements for signals
Note 4: Note 5:	If the device is for outdoor use then the -27dBm eirp limit also applies in the Signals that fall in the restricted bands of 15.205 are subject to the limit of 1		
	Plots Showing Out-Of-Band Emissions (RBW= el, 5150 - 5250 MHz Band with the radiated limits for the restricted band immediately below 5150MHz		he radiated emissions
802.11n	20 CDD, Channel 36 @ 5180 MHz, Chain 1		
10. 0. -10. (wgp) -20. 90,110 -30. -30. -50. -60. -70.	0- 0- 0- 0- 0- 0- 0-		40000.



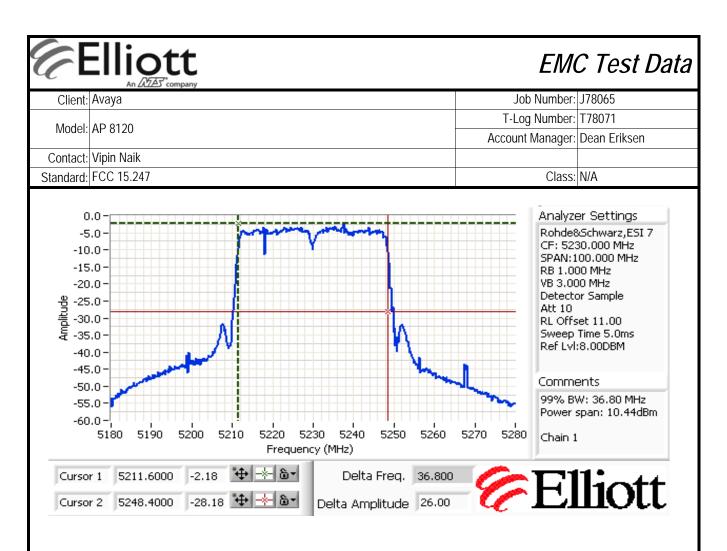






<b>Elli</b>	ott			EM	C Test Dat		
Client: Avaya	CCACCOMpany			Job Number:	J78065		
			T-I	_og Number:	T78071		
Model: AP 8120					Dean Eriksen		
Contact: Vipin Naik							
Standard: FCC 15.24	47			Class	N/A		
Pov Test Specific Deta	ver, PSD, Peak Excursion,	ort Measurem	nents		sions		
Objective	The objective of this test session is to	perform final qualificatic	on testing of th	e EUT with i	respect to the		
Date of Test:2/11/2010 1:45Config. Used:1Test Engineer:Rafael VarelasConfig Change:NoneTest Location:Fremont Chamber #5EUT Voltage:POE							
analyzer or power meter	Rel. Humidity:						
			-				
Run #	Test Performed	Limit	Pass / Fail		/ Margin		
1	Power, 5150 - 5250MHz	15.407(a) (1), (2)	Pass		n(22.4mW)		
	PSD, 5150 - 5250MHz	15.407(a) (1), (2)	Pass		Bm/MHz		
1	26dB Bandwidth 99% Bandwidth	15.407 RSS 210	-		6 MHz MHz		
2	Peak Excursion Envelope	15.407(a) (6)	- Pass		10112 28 dB		
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emission	ns below the MHz limit		
Deviations From <sup>-</sup>	made to the EUT during testing	I.					

51011	Avaya							Job Number:	J78065	
Model:	AP 8120							Log Number:		
							Αссοι	unt Manager:	Dean Erikse	n
	Vipin Naik							Class	N1/A	
	FCC 15.247		and Dowor (	anastral Dor				Class:	N/A	
MIMO Devid		Itput Power a	and Power a	spectral Den	Sity					
			Chain 1	Chain 2	Chain 3	Coherent	Effective <sup>5</sup>	1		
I	Antenna	a Gain (dBi):	5.91	5.91		Yes	8.9	]		
Fraguanau	Software	26dB BW	Maggurg				otal	1	Max Power	[
Frequency	Software	260B BVV (MHz)	Measure Chain 1	ed Output Pov				Limit (dBm)	(W)	Pass or Fail
(MHz) 5190	50.0	39.5	9.9	Chain 2 10.0	Chain 3	mW 19.8	dBm 13.0	14.1	. ,	PASS
5230	53.0	41.2	10.4	10.6		22.4	13.5	14.1	0.022	PASS
Frequency	99% <sup>4</sup>	Total		SD <sup>2</sup> dBm/MH			I PSD		mit	Pass or Fail
(MHz)	BW	Power	Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 <sup>3</sup>	
5190 5230	36.6 37.0	13.0 13.5	-3.0 -2.2	-3.6 -2.3		0.9	-0.2 0.8	1.1 1.1	1.1 1.1	PASS PASS
Note 1:	RBW=1MHz was configur	er measured u z, VB=3 MHz, red with a ga	, sample dete	ector, power	averaging on	n (transmitte	•			5
Note 2:	integration o	over 50 MHz sing the same	o analyzor s	ottinge usod	for output po	wor				
Note 3:	For RSS-210 10dBm/MHz PSD (calcula the measure	0 the limit for z. The limits a ated from the ed value exce	the 5150 - 5 are also corre measured p eeds the aver	5250 MHz bar ected for insta power divided rage by more	nd accounts ances where d by the meas e than 3dB.	for the anten the highest r sured 99% ba	measured va andwidth) by	lue of the PS more than 3	D exceeds th	ne average
Note 4:		idth measure ystems the to							f the individu	al chains (in
	linear terms) mode of the	). The antenr MIMO device the highest ga	na gain used e. If the sign ain of the ind	to determine hals on the no dividual chain	e the EIRP ar on-coherent b	nd limits for F between the t RP is the sur	PSD/Output µ transmit chai m of the prod	ns then the guest of gain a	ds on the ope gain used to and power or	erating determine each
Note 5:	chain. If the	e signals are c the product o			otal power.					



#### Run #2: Peak Excursion Measurement

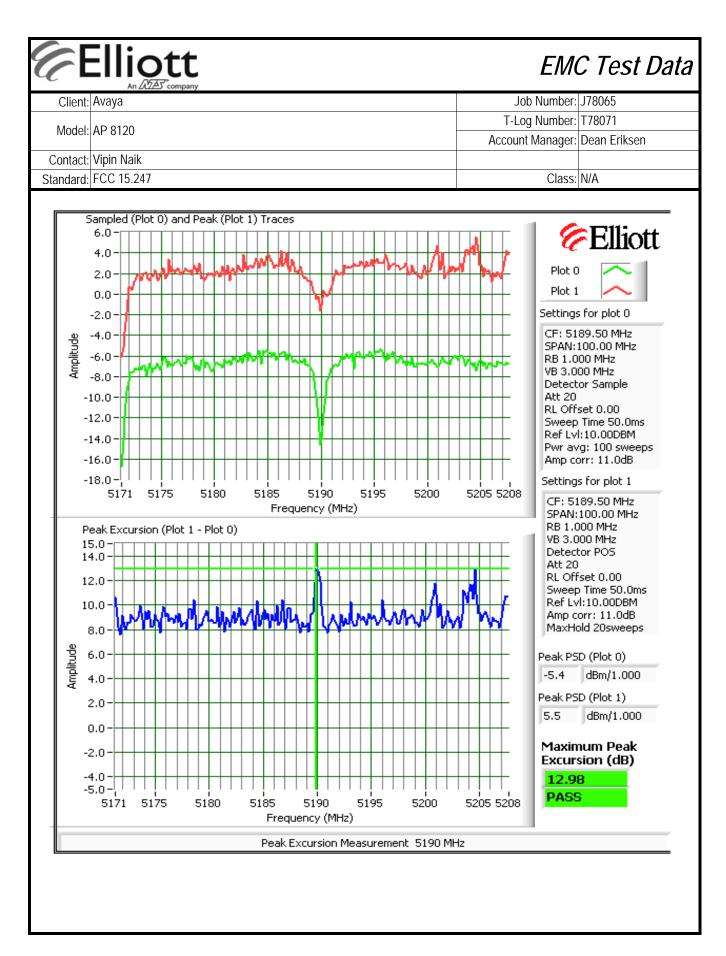
#### Device meets the requirement for the peak excursion

Freq	Peak Exc	ursion(dB)	Freq	Peak Exc	ursion(dB)	Freq	Peak Exc	ursion(dB)
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
5190	12.98	13.0	5260		13.0	5500		13.0
			5300		13.0	5580		13.0
5230	12.9	13.0	5320		13.0	5700		13.0

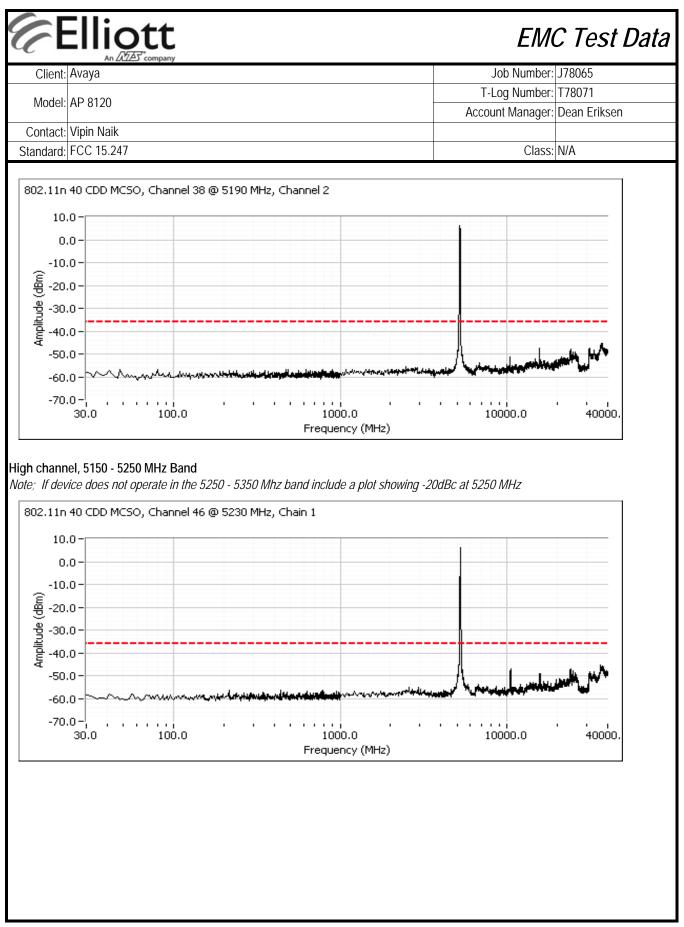
### Plots Showing Peak Excursion

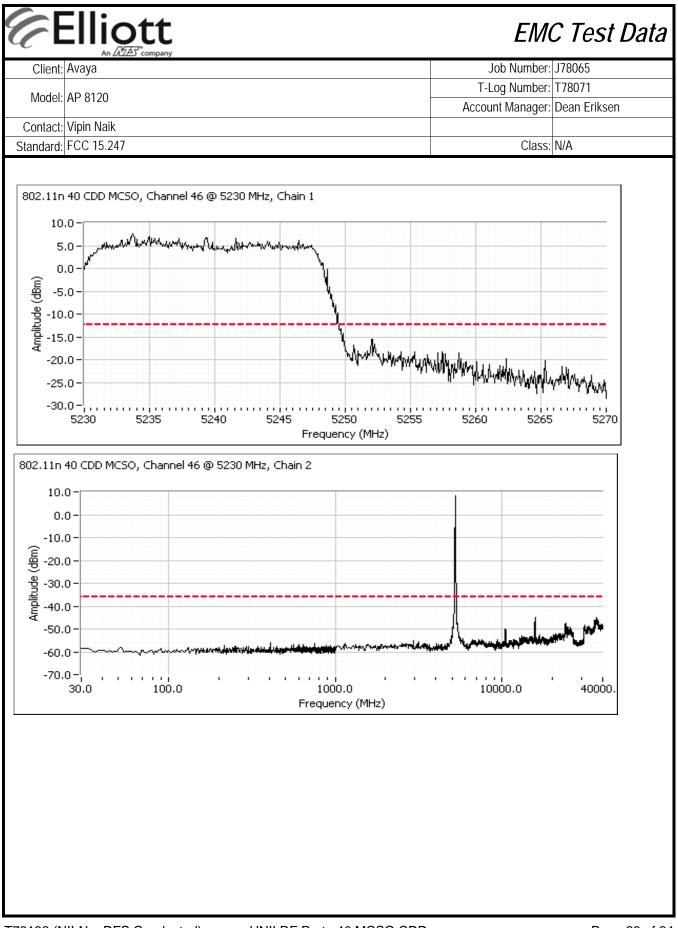
Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

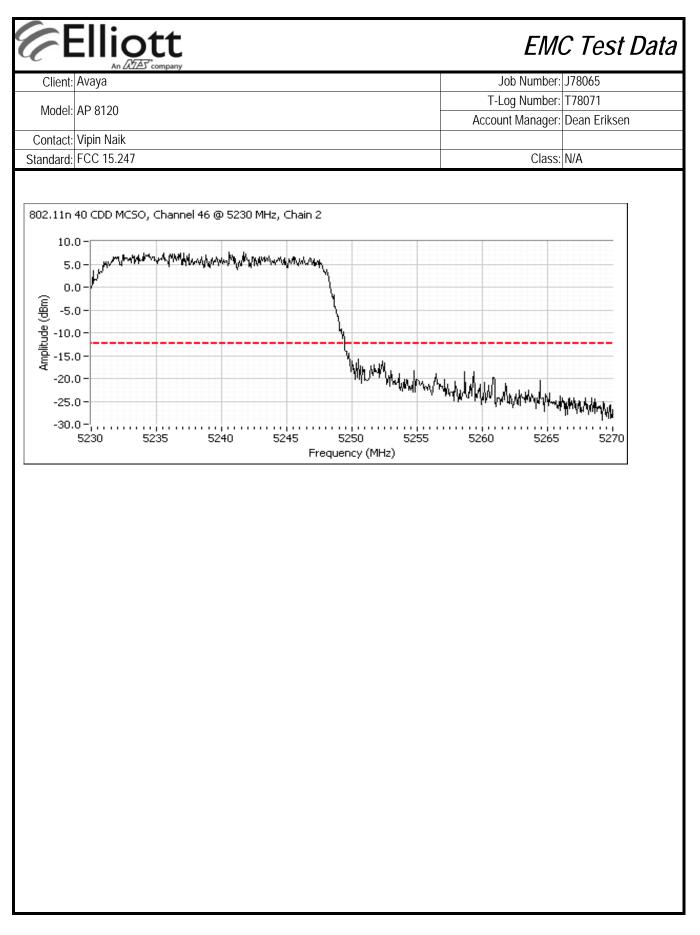
Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client	Avaya		Job Number	: J78065
			T-Log Number	r: T78071
Model	: AP 8120		Account Manager	
Contact	: Vipin Naik			
Standard:	FCC 15.247		Class	s: N/A
un #3: O	ut Of Band Spurious Emissions - Anten	na Conducted		
	ces: Antenna gain used is the effective ga individually and the limit was adjusted to a Number of transmit chains: Maximum Antenna Gain: Spurious Limit: Adjustment for 2 chains: Limit Used On Plots <sup>Note 1</sup> :	ccount for all chains transm 2 5.9 dBi -27.0 dBm/MHz eirp -3.0 dB adjustment for	tting simultaneously multiple chains. ge Limit (RB=1MHz, VB=10Hz	
ote 1: ote 2:	The -27dBm/MHz limit is an eirp limit. Th consideration the maximum antenna gain more than 50MHz from the bands and tha known at these frequencies. All spurious signals below 1GHz are mea	(limit = -27dBm - antenna g at are close to the limit are n sured during digital device r	ain). Radiated field strength m nade to determine compliance adiated emissions test.	neasurements for
ote 3:	Signals within 10MHz of the 5.725 or 5.82			
ote 4:	If the device is for outdoor use then the -2	27dBm eirp limit also applies	in the 5150 - 5250 MHz band.	
	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of	27dBm eirp limit also applies 15.205 are subject to the lir	in the 5150 - 5250 MHz band. hit of 15.209.	
ote 4: ote 5: ow chann	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts.	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> rel, 5150 - 5250 MHz Band	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> rel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> eel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10 0	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> eel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10 0 -10	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> eel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10 0 -10	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> eel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10 0 -10	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> eel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4:         ote 5:         ow chann         ompliance         sts.         802.11n         10         0         -10         0         -10         0         -20	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> eel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 - .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10 0 -10	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> nel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b e with the radiated limits for the restricted b e 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 - .0 - .0 - .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi
ote 4: ote 5: ow chann ompliance sts. 802.11n 10 0 -10 ( wep) -20 -30 -30 were -40	If the device is for outdoor use then the -2 Signals that fall in the restricted bands of <u>Plots Showing</u> rel, 5150 - 5250 MHz Band e with the radiated limits for the restricted b 40 CDD MCSO, Channel 38 @ 5190 MHz .0 - .0 - .0 - .0 - .0 - .0 -	27dBm eirp limit also applies 15.205 are subject to the lir Out-Of-Band Emissions (I and immediately below 515	in the 5150 - 5250 MHz band. hit of 15.209. RBW=VBW=1MHz)	the radiated emi









AN DALL	5 company		
Client:	Avaya	Job Number:	J78065
Model:	AP 8120	T-Log Number:	T78249
		Account Manager:	Dean Eriksen
Contact:	Vipin Naik		-
Emissions Standard(s):	FCC 15.247	Class:	В
Immunity Standard(s):	EN301 489-17	Environment:	-

# **EMC** Test Data

For The

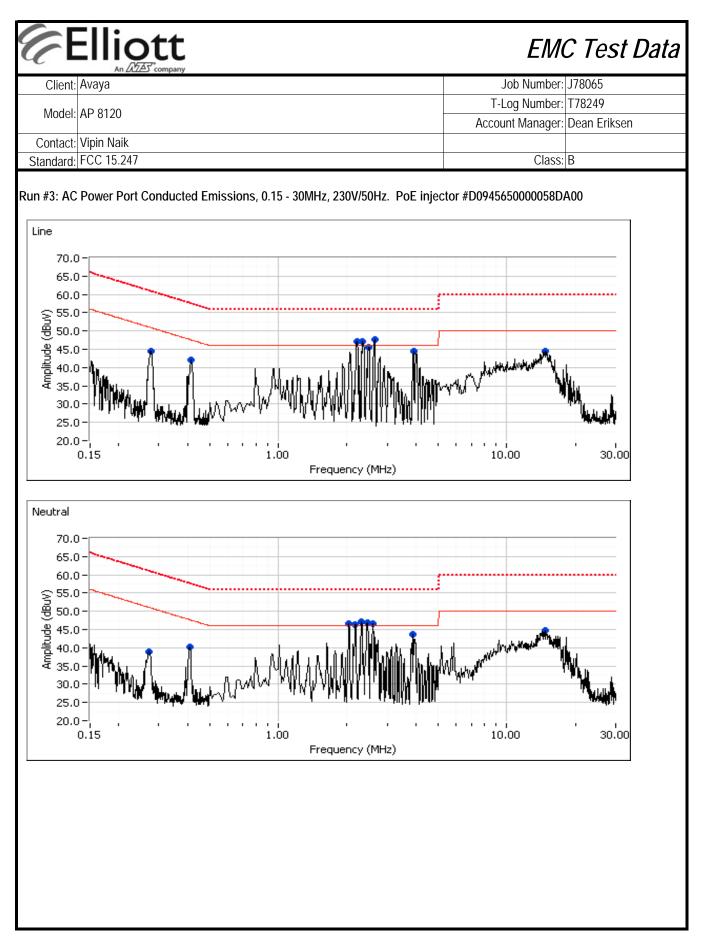
# Avaya

Model

AP 8120

Date of Last Test: 3/2/2010

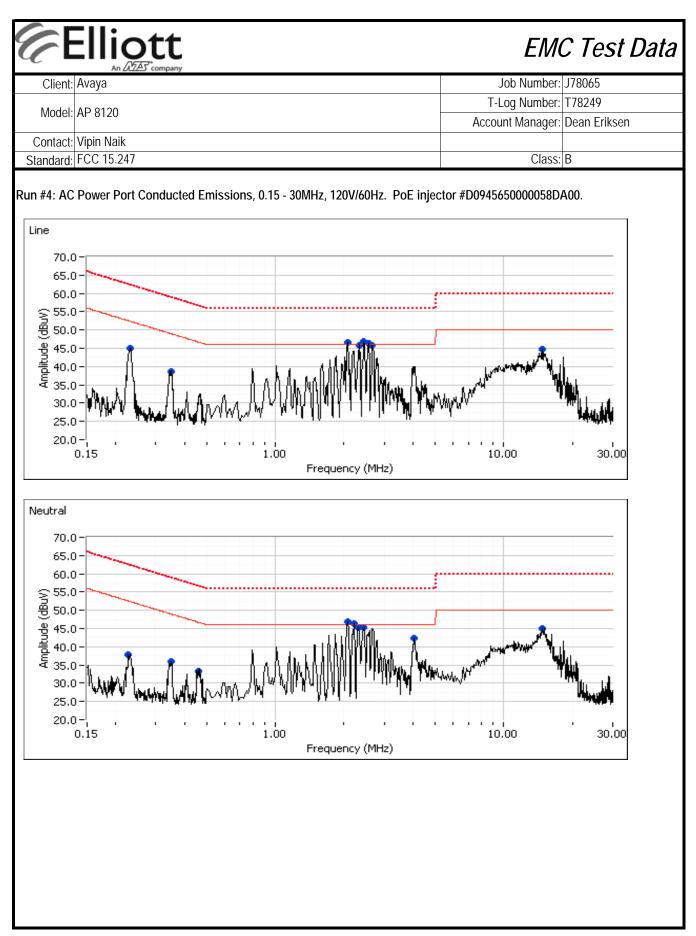
Client       Avaya       Job Number:       J78065         Model:       AP 8120       T-Log Number:       T78249         Contact:       Vipin Naik       Dean Erike         Standard:       FCC 15.247       Class:       B         Conducted Emissions - Power Ports         Test Specific Details         Objective:       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:       2/10/2010 12:37       Config. Used: 1         Test Engineer:       John Caizzi       Config Change: none         Test Location:       SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         General Test Configuration         The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN wa ocal support equipment.         Ambient Conditions:       Temperature: 20 °C         Rel. Humidity:       39 %         Summary of Results         Margin         3       CE, AC Power, 230V/50Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.442MH (.7.8dB)         4       CE, AC Power, 120V/60Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	Ellic	د مستعمل المستعمل الم مستعمل المستعمل المستع				C Test
Mode:       AP 8120       Account Manager:       Dean Erik:         Contact:       Vipin Naik       Class:       B         Standard: FCC 15.247       Class:       B         Conducted Emissions - Power Ports         Conducted Emissions - Power Ports         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:       2/10/2010 12:37       Config. Used: 1         Test Engineer:       John Caizzi       Config Change: none         Test Location:       SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         Semeral Test Configuration         Temperature:       20 °C         Rel. Humidity:       39 %         Summary of Results         Margin         Acc Power, 230V/50Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.457MH         A CE AC Power, 120V/60Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	Client: Avaya					
Contact:       Vipin Naik       Class:       B         Standard:       FCC 15.247       Class:       B         Conducted Emissions - Power Ports         Conducted Emissions - Power Ports         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:       2/10/2010 12:37       Config. Used: 1         Test Engineer:       John Caizzi       Config Change: none         Test Location:       SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         Semeral Test Configuration         The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN.       A second LISN was call support equipment.         Ambient Conditions:       Temperature:       20 °C         Rel. Humidity:       39 %         Summary of Results         Margin         Test Ac Power, 230V/50Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.457MH         A CE AC Power, 120V/60Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	Model: AP 8120					
Conducted Emissions - Power Ports         Fest 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: 2/10/2010 12:37       Config. Used: 1         Test Engineer: John Caizzi       Config Change: none         Test Location: SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         General Test Configuration         The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was locat support equipment.         Ambient Conditions:         Test Performed       Limit       Result         Margin       3       CE, AC Power, 230V/50Hz       EN 55022 Class B       Pass       38.2dBµV @ 2.442MH (.7.8dB)         4       CE AC Power, 120V/60Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	Contact: Vipin Naik			71000	unt manager.	Dean Enits
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: 2/10/2010 12:37       Config. Used: 1         Test Engineer: John Caizzi       Config Change: none         Test Location: SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         General Test Configuration       He EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was cal support equipment.         Ambient Conditions:       Temperature:       20 °C         Rel. Humidity:       39 %         Summary of Results       Imit       Result       Margin         4       CE, AC Power, 230V/50Hz       EN 55022 Class B       Pass       38.2dBµV @ 2.4657MH	Standard: FCC 15.247				Class:	В
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: 2/10/2010 12:37       Config. Used: 1         Test Engineer: John Caizzi       Config Change: none         Test Location: SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         General Test Configuration       EUT voltage: 230V / 50Hz & 120V / 60Hz         Meteral Test Configuration       Femeral requipment.         Imbient Conditions:       Temperature:       20 °C         Rel. Humidity:       39 %         Immary of Results       EN 55022 Class B       Pass         4       CE AC Power, 120V/60Hz       EN 55022 Class B       Pass         42.9dBµV @ 2.657MH       FN 55022 Class B       Pass       42.9dBµV @ 2.657MH		Conducted Em	issions - Pow	er Por	ts	
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: 2/10/2010 12:37       Config. Used: 1         Test Engineer: John Caizzi       Config Change: none         Test Location: SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         General Test Configuration       he EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was located support equipment.         Ambient Conditions:       Temperature:       20 °C         Rel. Humidity:       39 %         Summary of Results       EN 55022 Class B       Pass         4       CE AC Power, 120V/60Hz       EN 55022 Class B       Pass         4       CE AC Power 120V/60Hz       EN 55022 Class B       Pass	est Specific Detail	S				
Test Engineer: John Caizzi       Config Change: none         Test Location: SVOATS #2       EUT Voltage: 230V / 50Hz & 120V / 60Hz         General Test Configuration       EUT vas located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was local support equipment.         Ambient Conditions:       Temperature:       20 °C         Rel. Humidity:       39 %         Summary of Results         Ambient Conditions:       CE, AC Power, 230V/50Hz       EN 55022 Class B       Pass       38.2dBµV @ 2.442MH (-7.8dB)         4       CE AC Power 120V/60Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	Objective:	The objective of this test session is to	perform final qualification	n testing of t	he EUT with r	respect to the
The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was ocal support equipment.  Ambient Conditions: Temperature: 20 °C Rel. Humidity: 39 %  Summary of Results           Run #       Test Performed       Limit       Result       Margin         3       CE, AC Power, 230V/50Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	Test Engineer:	John Caizzi	Config Change:	none	lz & 120V / 60	)Hz
ocal support equipment.         Ambient Conditions:       Temperature:       20 °C         Rel. Humidity:       39 %         Summary of Results         Run #       Test Performed       Limit         3       CE, AC Power, 230V/50Hz       EN 55022 Class B       Pass         4       CE AC Power, 120V/60Hz       EN 55022 Class B       Pass       42.9dBµV @ 2.657MH	General Test Config	juration				
Run #         Test Performed         Limit         Result         Margin           3         CE, AC Power, 230V/50Hz         EN 55022 Class B         Pass         38.2dBµV @ 2.442MH (-7.8dB)           4         CE AC Power 120V/60Hz         EN 55022 Class B         Pass         42.9dBµV @ 2.657MH	ocal support equipment.	: Temperature:	20 °C	n nom me L	ISN. A SECU	niu Lisin wa
3         CE, AC Power, 230V/50Hz         EN 55022 Class B         Pass         38.2dBμV @ 2.442MH (-7.8dB)           4         CE AC Power, 120V/60Hz         EN 55022 Class B         Pass         42.9dBμV @ 2.657MH	Summary of Result	\$				
3         CE, AC Power, 230V/50Hz         EN 55022 Class B         Pass         (-7.8dB)           4         CE AC Power 120V/60Hz         EN 55022 Class B         Pass         42.9dBμV @ 2.657MH		Test Performed	Limit	Result		
42.9dBμV @ 2.657MH	Run #	CE, AC Power, 230V/50Hz	EN 55022 Class B	Pass		
(-13.1dB)			EN EE022 Class P	Pass	42.9dBµV @	@ 2.657MHz



E	Ellig	D <b>tt</b>					EM	C Test
Client:		CAS company					Job Number:	J78065
							T-Log Number:	T78249
Model:	AP 8120						Account Manager:	
Contact.	Vipin Naik						g	
	FCC 15.247	1					Class:	В
equency	Level	AC		022 B		Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
2.616	47.7	Line	46.0	1.7	Peak			
2.206	47.0	Line	46.0	1.0	Peak			
2.343	47.0	Line	46.0	1.0	Peak			
2.467 3.949	45.5 44.6	Line Line	46.0 46.0	-0.5 -1.4	Peak Peak			
3.949 14.675	44.6	Line	<u>46.0</u> 50.0	-1.4 -5.4	Peak			
0.410	44.0	Line	47.5	-5.4 -5.4	Peak			
0.410	42.1	Line	50.9	-5.4	Peak			
2.308	44.5	Neutral	46.0	-0.4	Peak			
2.300	47.1	Neutral	46.0	0.9	Peak			
2.582	40.9	Neutral	46.0	0.9	Peak			
2.039	46.5	Neutral	46.0	0.5	Peak			
2.037	46.4	Neutral	46.0	0.4	Peak			
3.932	43.6	Neutral	46.0	-2.4	Peak			
4.765	44.7	Neutral	50.0	-5.3	Peak			
0.407	40.3	Neutral	47.6	-7.3	Peak			
0.272	39.0	Neutral	51.0	-12.0	Peak			
0.272	07.0	Hourd	0110	12.0	1 out			
0.410	38.5	Line	47.7	-9.2	AVG			
2.457	36.1	Line	46.0	-9.9	AVG			
3.953	36.1	Line	46.0	-9.9	AVG			
2.321	35.9	Line	46.0	-10.1	AVG			
2.189	35.3	Line	46.0	-10.7	AVG			
2.600	34.6	Line	46.0	-11.4	AVG			
2.600	44.1	Line	56.0	-11.9	QP			
2.457	44.0	Line	56.0	-12.0	QP			
2.189	43.9	Line	56.0	-12.1	QP			
2.321	43.9	Line	56.0	-12.1	QP			
8.953	43.3	Line	56.0	-12.7	QP			
0.274	38.2	Line	51.0	-12.8	AVG			
0.410	41.4	Line	57.7	-16.3	QP			
4.675	33.5	Line	50.0	-16.5	AVG			
0.274	42.9	Line	61.0	-18.1	QP			
4.675	40.0	Line	60.0	-20.0	QP			
2.442	38.2	Neutral	46.0	-7.8	AVG			
2.308	36.5	Neutral	46.0	-9.5	AVG			
2.582	35.6	Neutral	46.0	-10.4	AVG			
2.174	35.5	Neutral	46.0	-10.5	AVG			
2.442	45.3	Neutral	56.0	-10.7	QP			
2.308	44.6	Neutral	56.0	-11.4	QP			
3.932	34.4	Neutral	46.0	-11.6	AVG			
0.407	35.9	Neutral	47.7	-11.8	AVG			
.174	43.9	Neutral	56.0	-12.1	QP	1		

E	liott
	An AZAS company

Client	Avaya					Job Number: J	78065
Madal	AD 0100					T-Log Number: T	78249
woden	AP 8120					Account Manager: D	)ean Eriksen
Contact	Vipin Naik						
Standard:	FCC 15.247	1				Class: E	3
	·					· · · · ·	
2.038	33.5	Neutral	46.0	-12.5	AVG		
2.582	42.9	Neutral	56.0	-13.1	QP		
2.038	41.9	Neutral	56.0	-14.1	QP		
3.932	41.2	Neutral	56.0	-14.8	QP		
0.272	36.3	Neutral	51.1	-14.8	AVG		
14.765	34.2	Neutral	50.0	-15.8	AVG		
0.407	39.2	Neutral	57.7	-18.5	QP		
0.407		Neutral	60.0	-19.4	QP		
14.765	40.6	Neuliai	00.0	17.1	ų.		



6	Ellig	ott					EM	C Test
Client:	An Ala Avaya	Company					Job Number:	J78065
							T-Log Number:	T78249
Model:	AP 8120						Account Manager:	
Contact:	Vipin Naik						5	
	FCC 15.247	1					Class:	В
	Laural	10		000 D	Datastas	0		
equency	Level	AC		022 B		Comments		
MHz	dBµV	Line	Limit	Margin	QP/Ave			
2.425	46.9	Line	46.0	0.9	Peak			
2.073	46.6	Line	46.0	0.6	Peak			
2.554	46.2	Line	46.0	0.2	Peak			
2.322	45.9	Line	46.0	-0.1	Peak			
2.657	45.7	Line Line	46.0 50.0	-0.3 -5.2	Peak Peak			
14.696	44.8				Peak			
0.231	44.9 38.5	Line	52.4	-7.5 10.5	Peak			
<i>0.349</i>		Line	49.0	-10.5				
2.078 2.196	46.8	Neutral	46.0	0.8	Peak			
	46.2	Neutral	46.0	0.2	Peak			
2.428 2.313	45.3 45.3	Neutral Neutral	46.0 46.0	-0.7 -0.7	Peak Peak			
4.036	42.3	Neutral	46.0	-3.7	Peak			
4.659	45.0	Neutral	50.0	-5.0	Peak			
0.346	36.0	Neutral	49.0	-13.0	Peak			
0.462	33.4	Neutral	46.6	-13.2	Peak			
0.228	37.8	Neutral	52.5	-14.7	Peak			
2.657	42.9	Line	56.0	-13.1	QP			
2.539	42.7	Line	56.0	-13.9	QP			
2.425	31.9	Line	46.0	-14.1	AVG			
2.425	41.9	Line	56.0	-14.1	QP			
2.310	31.8	Line	46.0	-14.1	AVG			
0.231	38.1	Line	52.4	-14.3	AVG			
2.073	41.4	Line	56.0	-14.5	QP			
2.539	31.4	Line	46.0	-14.0	AVG			
2.073	31.2	Line	46.0	-14.8	AVG			
2.310	41.1	Line	56.0	-14.9	QP			
2.657	30.8	Line	46.0	-15.2	AVG			
4.696	33.7	Line	50.0	-16.3	AVG			
).231	44.3	Line	62.4	-18.1	QP			
4.696	40.0	Line	60.0	-20.0	QP			
2.196	32.8	Neutral	46.0	-13.2	AVG			
2.313	32.8	Neutral	46.0	-13.2	AVG			
2.428	32.4	Neutral	46.0	-13.6	AVG			
2.078	41.6	Neutral	56.0	-14.4	QP			
2.196	41.4	Neutral	56.0	-14.6	QP			
2.313	41.3	Neutral	56.0	-14.7	QP			
2.078	31.2	Neutral	46.0	-14.8	AVG			
2.428	40.9	Neutral	56.0	-15.1	QP			
4.036	29.2	Neutral	46.0	-16.8	AVG			
14.659	32.9	Neutral	50.0	-17.1	AVG			
4.037	37.4	Neutral	56.0	-18.6	QP			

<b>E</b>	liott
	An ATAS company

	An ZZZZ company		
Client:	Avaya	Job Number:	J78065
Model	AP 8120	T-Log Number:	T78249
wouer.	AF 0120	Account Manager:	Dean Eriksen
Contact:	Vipin Naik		
Standard:	FCC 15.247	Class:	В

0.346	28.9	Neutral	49.1	-20.2	AVG	
14.659	39.4	Neutral	60.0	-20.6	QP	
0.346	32.9	Neutral	59.1	-26.2	QP	