

EMC Test Report

Application for Class 2 Permissive Change/Re-assessment

Industry Canada RSS-Gen Issue 3 / RSS 210 Issue 8 FCC Part 15, Subpart E

Model: WS-AP3710i

FCC ID: QQD10I
IC CERTIFICATION #: 5248S-10I

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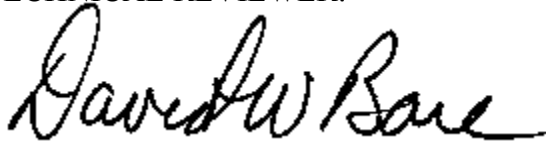
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REVISION HISTORY

Rev#	Date	Comments	Modified By
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SCOPE

An electromagnetic emissions test has been performed on the Flextronics model WS-AP3710i, pursuant to the following rules:

- Industry Canada RSS-Gen Issue 3

- RSS 210 Issue 8 “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment”

- FCC Part 15, Subpart E requirements for UNII Devices (using FCC KDB 789033 and KDB 662911)

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 NTS Silicon Valley test procedures:

- ANSI C63.4:2003

- FCC UNII test procedure, KDB 789033

- FCC Multiple Transmitter Output Test Procedure, KDB 662911

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 Flextronics model WS-AP3710i complied with the requirements of the following regulations:

RSS 210 Issue 8 "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 Flextronics model WS-AP3710i and therefore apply only to the tested sample. The sample was selected and prepared by Georges Fares of Flextronics.

DEVIATIONS FROM THE STANDARDS

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

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

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407(a)(2)		Min 26dB Bandwidth	a: 24.3 MHz n20: 37.8 MHz n40: 46.1 MHz	N/A – limits output power if < 20MHz	N/A
15.407 (a)(2)		Output Power	802.11a: 19.9 dBm n20: 22.4 dBm n40: 18.9 dBm (Max eirp: 0.460 W) ¹	a:23.2dBm ² n20: 24.0 n40: 24.0	Complies
	A9.2(2)			a: 22.5dBm ³ n20: 23.6 ³ n40: 24.0	Complies
15.407 (a)(2)	-	Power Spectral Density	a: 7.9 dBm/MHz n20: 10.0 dBm/MHz n40: 4.2 dBm/MHz	10.2 ⁴ dBm/MHz	Complies
-	A9.2 (2) A9.4(2)				Complies
Note 1: EIRP calculated using antenna gain of 6.8 dBi (three 2 dBi antennas) for the highest EIRP system in legacy mode.					
Note 2: Limit reduced to 23.2 dBm from 24 dBm as effective antenna gain exceeded 6 dBi by 0.8 dBi for legacy mode.					
Note 3: Limit reduced to 22.5/23.6 dBm from 24 dBm as effective antenna gain exceeded 6 dBi by 0.8 dBi for legacy mode and the minimum 99% BW is 17.1/18.1 MHz for 20 MHz modes.					
Note 4: Limit reduced to 10.2 dBm from 11 dBm as effective antenna gain exceeded 6 dBi by 0.8 dBi.					

Operation in the 5.47 - 5.6 MHz and 5.65 – 5.725 GHz Bands

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407(a)(2)		Min 26dB Bandwidth	a: 22.7 MHz n20: 26.8 MHz n40: 45.5 MHz	N/A – limits output power if < 20MHz	N/A
15.407 (a)(2)		Output Power	802.11a: 20.0 dBm n20: 22.6 dBm n40: 20.7 dBm (Max eirp: 0.471 W) ¹	a:23.2dBm ² n20: 24.0 n40: 24.0	Complies
	A9.2(3)			a: 22.5dBm ³ n20: 23.5 ³ n40: 24.0	Complies
15.407 (a)(2)	-	Power Spectral Density	a: 8.1 dBm/MHz n20: 10.1 dBm/MHz n40: 5.8 dBm/MHz	10.2 ⁴ dBm/MHz	Complies
-	A9.2 (3) A9.4(2)				Complies
Note 1: EIRP calculated using antenna gain of 6.8 dBi (three 2 dBi antennas) for the highest EIRP system in legacy mode.					
Note 2: Limit reduced to 23.2 dBm from 24 dBm as effective antenna gain exceeded 6 dBi by 0.8 dBi for legacy mode.					
Note 3: Limit reduced to 22.5/23.5 dBm from 24 dBm as effective antenna gain exceeded 6 dBi by 0.8 dBi for legacy mode and the minimum 99% BW is 16.9/18.0 MHz for 20 MHz modes.					
Note 4: Limit reduced to 10.2 dBm from 4 dBm as effective antenna gain exceeded 6 dBi by 0.8 dBi.					

Requirements for all U-NII/LELAN bands

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	A9.4(1)	Modulation	System uses 802.11a/n techniques	Digital modulation is required	Complies
15.407(b)(6) / 15.209	A9.2(2) (3) / RSS-GEN	Spurious Emissions below 1GHz	No change from original filing		
15.407(b)(5) / 15.209	A9.2(2) (3) / RSS-GEN	Spurious Emissions above 1GHz	53.9 dBμV/m @ 5726.1 MHz (-0.1 dB)	Refer to page 22	Complies
15.407(a)(6)	-	Peak Excursion Ratio	a: 9.0 dB n20: 7.7 dB n40: 7.4 dB	< 13dB	Complies
	A9.4(3)	Channel Selection	Spurious emissions tested at outermost channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15			Measurements on three channels in each band		
15.407 (c)	A9.4(4)	Operation in the absence of information to transmit	No change from original filing		
15.407 (g)		Frequency Stability	No change from original filing		
15.407 (h) (1)		Transmit Power Control	Device does not exceed 500 mW EIRP	If power > 500 mW EIRP, TPC is required	Complies
15.407 (h) (2)	A9.3	Dynamic frequency Selection	Refer to separate report R90941		N/A
	A9.4(6) & (7)	User Manual information	No change from original filing		

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Integral antenna	Unique or integral antenna required	Complies
15.407 (b) (6) / 15.207	RSS GEN Table 2	AC Conducted Emissions	No change from original filing		
15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.3	User Manual	No change from original filing		
-	RSP 100 RSS GEN 7.1.2	User Manual	No change from original filing		
-	RSP 100 RSS GEN 4.4.1 RSS-210 A9.2(2) (3)	99% Bandwidth	5250-5350 MHz a: 17.1 MHz n20: 24.0 MHz n40: 36.6 MHz 5470-5725 MHz a: 16.9 MHz n20: 19.1 MHz n40: 36.6 MHz	Information only	N/A

MEASUREMENT UNCERTAINTIES

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

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

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

The Flextronics model WS-AP3710i is a multiple radio access point, each radio operating in 3x3 MIMO and 3 chain legacy modes. It incorporates both a 2.4 GHz band 802.11b/g/n and a 5 GHz band 802.11a/n radio in a single enclosure. Since the EUT could be placed in any position during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 48 Volts DC, 0.8 Amps.

The sample was received on November 29, 2012 and tested on December 31, 2012 and January 2, 3, 4, 7, 9, 10 and 17, 2013. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Flextronics	WS-AP3710i	Access Point	None	QQD10I

ANTENNA SYSTEM

The antenna system consists of three integral antennas for both radios.

ENCLOSURE

The EUT enclosure measures approximately 20 by 18.5 by 3 centimeters. It is constructed of uncoated plastic and cast metal.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

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

Company	Model	Description	Serial Number	FCC ID
PowerDsine	9001G-40/SP	POE adapter	N114565190018 46A01	-
Dell	Latitude D610	Laptop Computer	26895386773	-

EUT INTERFACE PORTS

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

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
Ethernet/POE	Remote POE adapter or switch	Cat 5	Unshielded	10
Remote POE Data or switch	Laptop	Cat 5	Unshielded	2

The console port was not connected during testing as this is used only during configuration of the radio.

EUT OPERATION

During testing, the EUT was configured to transmit a continuous modulated signal at the selected frequency and power level on all three chains of both radios.

TEST SITE**GENERAL INFORMATION**

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

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 7	A2LA accreditation	2845B-7	41039 Boyce Road Fremont, 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. 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 non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

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

INSTRUMENT CALIBRATION

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

TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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

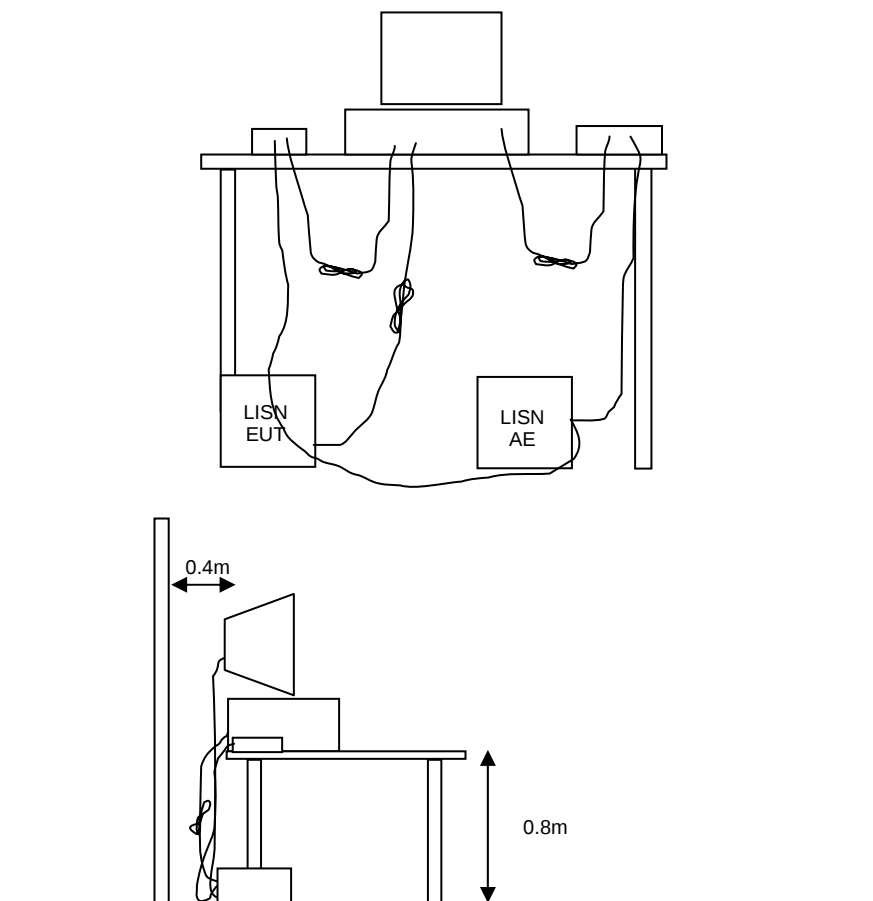


Figure 1 Typical Conducted Emissions Test Configuration

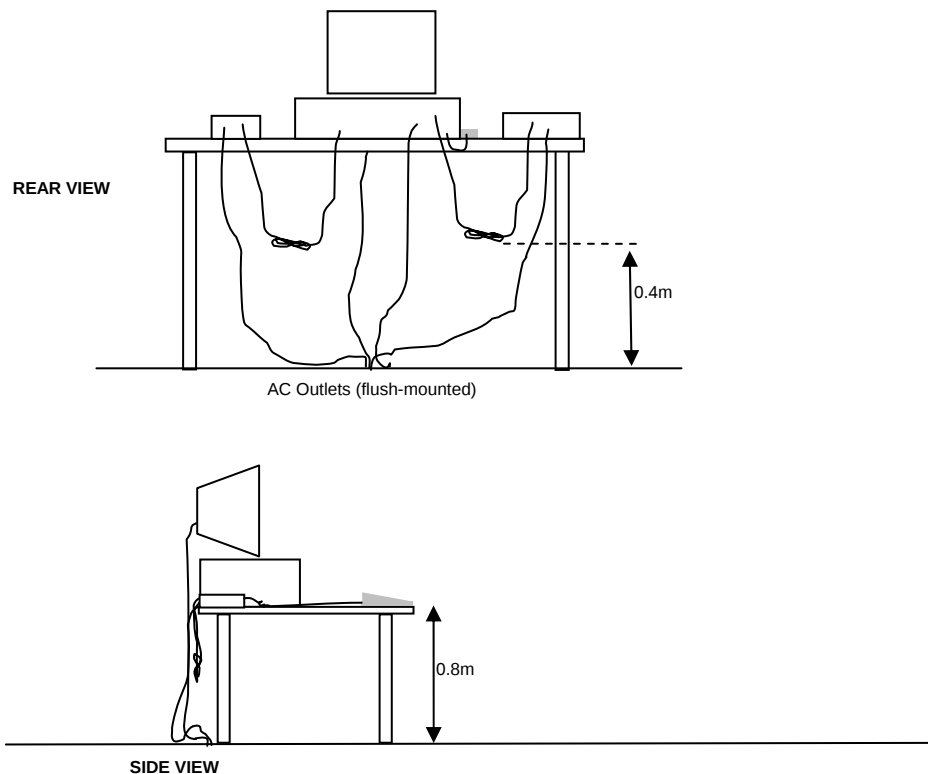
RADIATED EMISSIONS

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

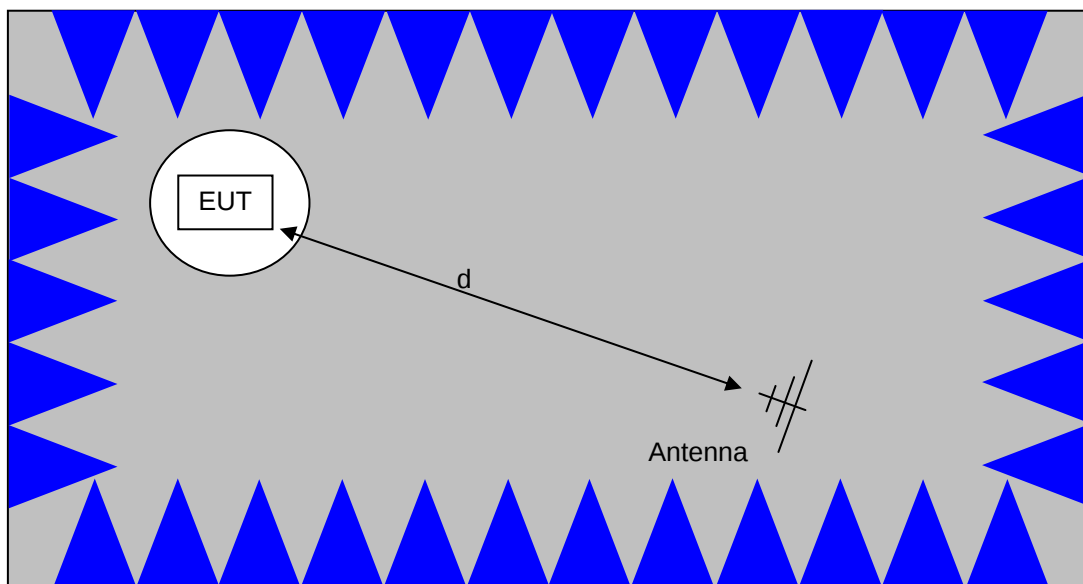
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

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

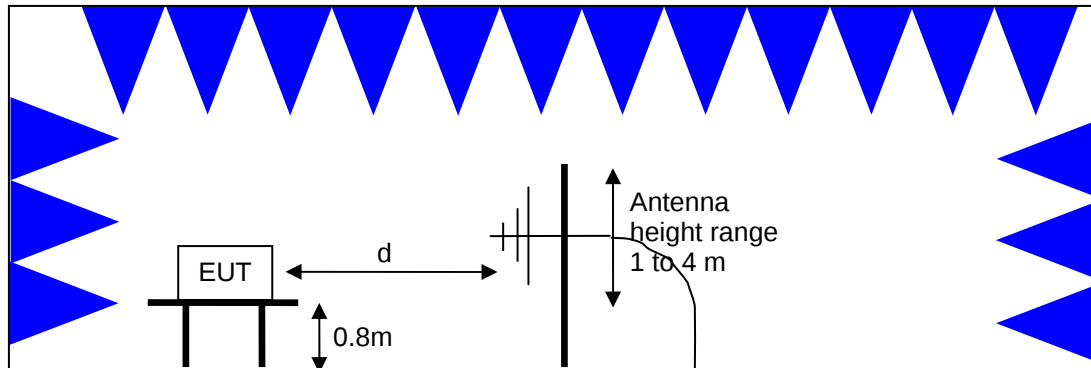


Typical Test Configuration for Radiated Field Strength Measurements



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

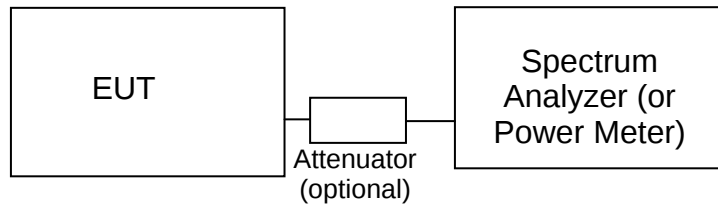
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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

CONDUCTED EMISSIONS FROM ANTENNA PORT

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

**Test Configuration for Antenna Port Measurements**

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and NTS Silicon Valley's test procedures for the type of radio being tested. When power measurements are made using a resolution bandwidth less than the signal bandwidth the power is calculated by summing the power across the signal bandwidth using either the analyzer channel power function or by capturing the trace data and calculating the power using software. In both cases the summed power is corrected to account for the equivalent noise bandwidth (ENBW) of the resolution bandwidth used.

If power averaging is used (typically for certain digital modulation techniques), the EUT is configured to transmit continuously. Power averaging is performed using either the built-in function of the analyzer or, if the analyzer does not feature power averaging, using external software. In both cases the average power is calculated over a number of sweeps (typically 100). When the EUT cannot be configured to continuously transmit then either the analyzer is configured to perform a gated sweep to ensure that the power is averaged over periods that the device is transmitting or power averaging is disabled and a max-hold feature is used.

If a power meter is used to make output power measurements the sensor head type (peak or average) is stated in the test data table.

BANDWIDTH MEASUREMENTS

The 6dB, 20dB 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 bands¹ (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 _{KHz} @ 300m	67.6-20*log ₁₀ (F _{KHz}) @ 300m
0.490-1.705	24000/F _{KHz} @ 30m	87.6-20*log ₁₀ (F _{KHz}) @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

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.

OUTPUT POWER LIMITS –LELAN DEVICES

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

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 – 5350	250 mW (24 dBm) ² 1W (30dBm) eirp	11 dBm/MHz
5470 – 5725	250 mW (24 dBm) ³ 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm) 4W eirp	17 dBm/MHz

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

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

² If EIRP exceeds 500mW the device must employ TPC

³ If EIRP exceeds 500mW the device must employ TPC

SPURIOUS EMISSIONS LIMITS –UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of –27dBm/MHz, which is 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 (88.3dBuV/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.

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

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

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

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

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

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

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

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

where P is the eirp (Watts)

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

Appendix A Test Equipment Calibration Data**Radiated Band Edge, 31-Dec-12**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	7/12/2014
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	5/21/2013

Radiated Emissions, 1,000 - 40,000 MHz, 02-Jan-13

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	4/18/2013
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	8/2/2013
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/1/2013
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	7/12/2014
Hewlett Packard	Head (Inc flex cable, (1742,1743) Blue)	84125C	1620	5/17/2013
A.H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	5/8/2013
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	10/4/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2013
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	10/11/2013

Radio Antenna Port (Power and Spurious Emissions), 02-Jan-13

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	4/18/2013
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	5/21/2013

Radiated Emissions, 1,000 - 40,000 MHz, 03-Jan-13, 04-Jan-13 and 07-Jan-13

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	4/18/2013
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/29/2013
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	8/2/2013
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	5/1/2013
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	7/12/2014
Hewlett Packard	Head (Inc flex cable, (1742,1743) Blue)	84125C	1620	5/17/2013
A.H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	5/8/2013
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	10/4/2013
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	10/11/2013
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	10/11/2013

Radio Antenna Port (Power and Spurious Emissions), 09-Jan-13 to 11-Jan-13

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Agilent	50GHz PSA Spectrum Analyzer	E4448A-M27	199979	11/15/2013

Radio Antenna Port (Power and Spurious Emissions), 17-Jan-13

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Agilent	50GHz PSA Spectrum Analyzer	E4448A-M27	199979	11/15/2013

Appendix B Test Data

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EMC Test Data

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
		Account Manager:	Christine Krebill
Contact:	Georges Fares		
Emissions Standard(s):	15.407, RSS-210	Class:	
Immunity Standard(s):		Environment:	Radio

EMC Test Data

For The

Flextronics

Model

WS-AP3710i

Date of Last Test: 1/17/2013

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII) Antenna Port Measurements Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

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

Date of Test: 1/9/2013 and 1/10/2013

Config. Used: 1

Test Engineer: Jack Liu / R. Varelas

Config Change: None

Test Location: FT Lab 4A

EUT Voltage: 120V/60Hz

General Test Configuration

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

Ambient Conditions:

Temperature: 23 °C

Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Peak Excursion Envelope	15.407(a) (6) 13dB	Pass	a: 9 dB n20: 7.7 dB n40: 7.4 dB
2	20dB Signal Bandwidth	15.215	Pass	Signal remains within allocated band.

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:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #1: Peak Excursion Measurement
a 20MHz: Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
			5260	7.0	13.0	5500	9.0	13.0
			5300	7.5	13.0	5580	7.6	13.0
			5320	7.8	13.0	5700	7.4	13.0

n 20MHz: Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
			5260	7.5	13.0	5500	7.4	13.0
			5300	7.1	13.0	5580	7.2	13.0
			5320	7.7	13.0	5700	7.4	13.0

n 40MHz: Device meets the requirement for the peak excursion

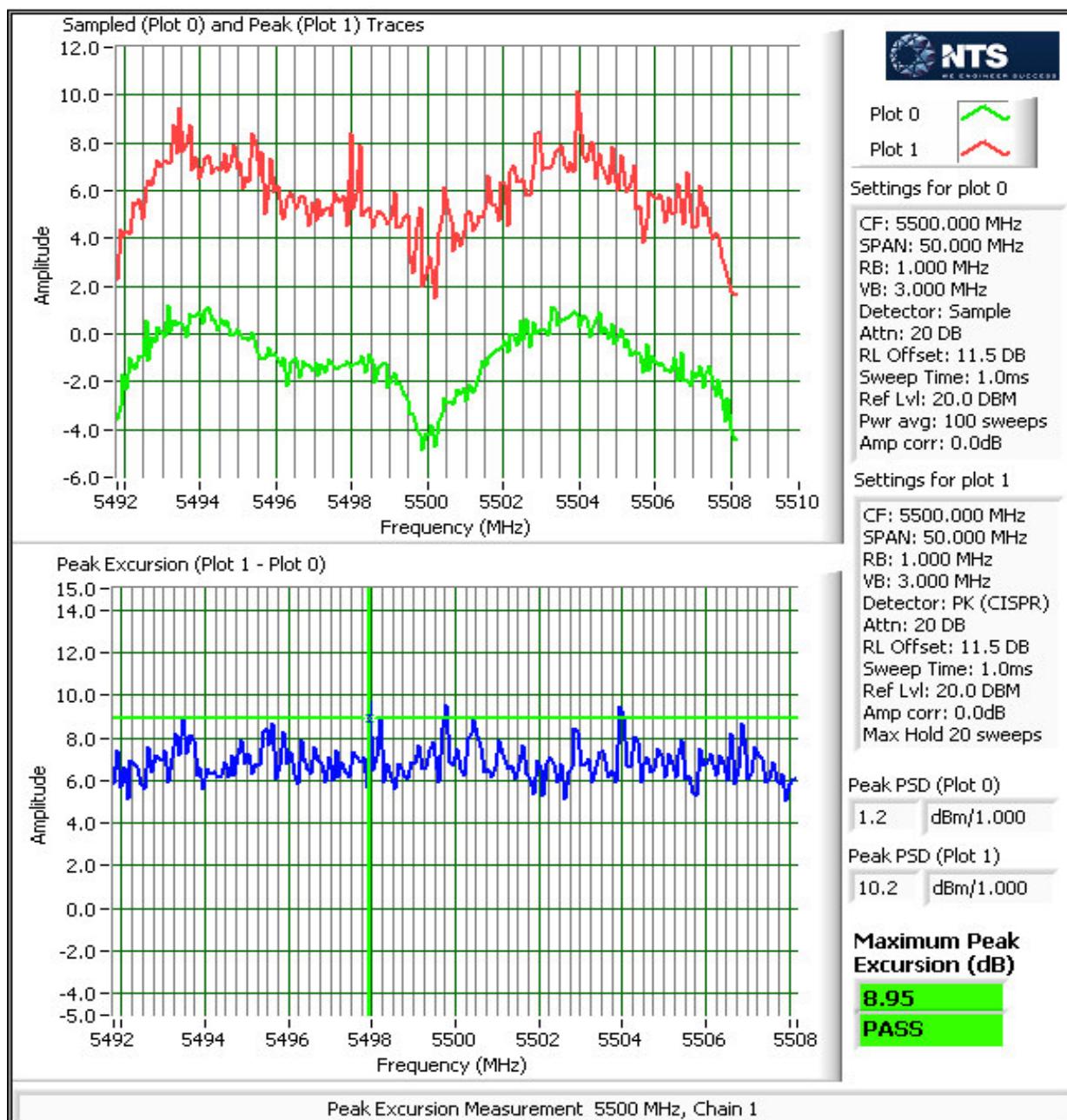
Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
			5270	7.4	13.0	5510	7.5	13.0
			5310	7.2	13.0	5550	7.3	13.0
						5670	7.5	13.0

Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A

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:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

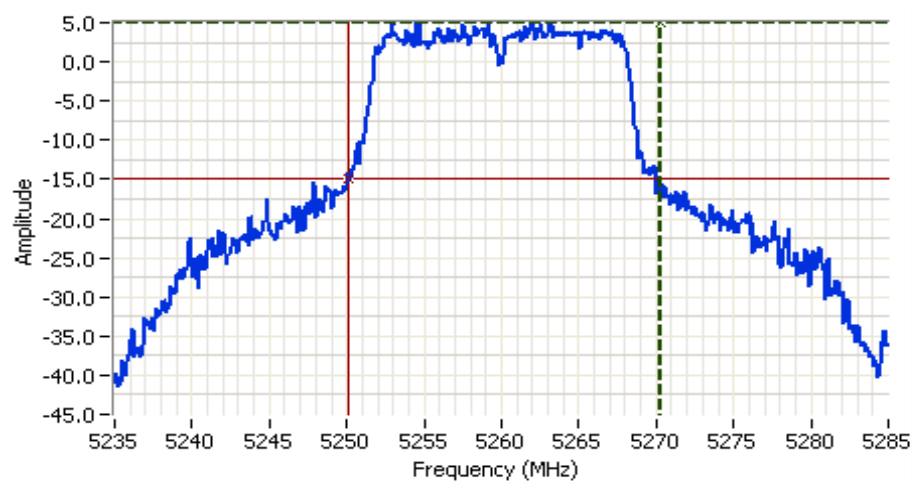
Run #2: 20dB Signal Bandwidth

Shall remain in band and also not in 5600-5650 MHz band.

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 20dB	F _L or F _H Value (MHz)
802.11a				
13.5	5260	300kHz	20.2	5250.083
20	5580	300kHz	25.8	5567.833
16	5660	300kHz	20.3	5650.167
802.11n20				
13.5	5260	300kHz	19.8	5250.083
20	5580	300kHz	30.6	5595.500
14	5660	300kHz	19.8	5650.167
802.11n40				
12	5270	500KHz	39.6	5250.267
17	5550	500KHz	41.5	5570.000
11	5670	500KHz	40.1	5650.133

Note 1: Measured on a single chain

Note 2: 20dB bandwidth measured with the instrument bandwidth > 1% of the 20dB Bandwidth



Analyzer Settings

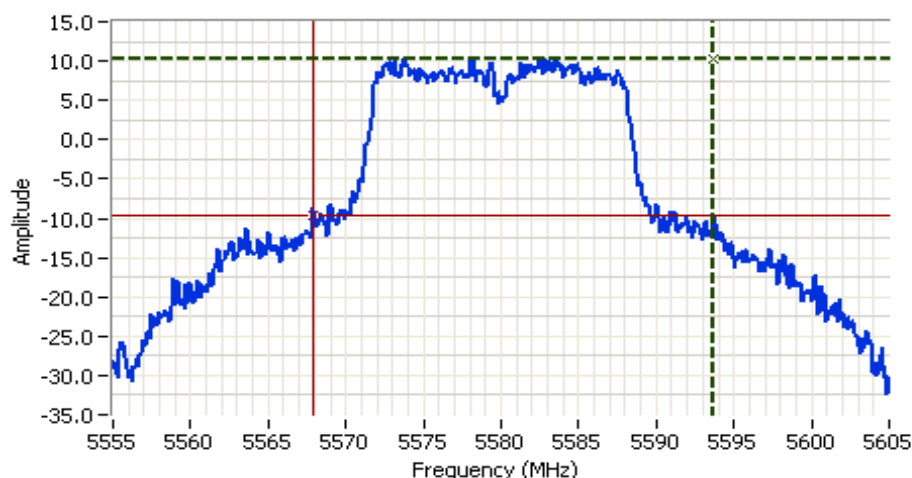
Agilent Technologies, E4448A
 CF: 5260.000 MHz
 SPAN: 50.000 MHz
 RB: 300 kHz
 VB: 1.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

Comments

20dB BW: 20.167 MHz
 802.11 a mode
 Chain 2



Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A



Analyzer Settings

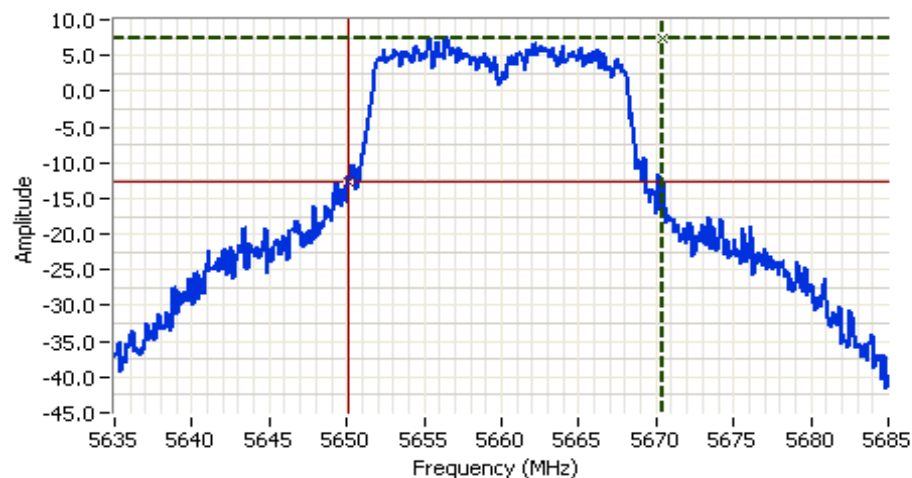
Agilent Technologies, E4448A
 CF: 5580.000 MHz
 SPAN: 50.000 MHz
 RB: 300 kHz
 VB: 1.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

Comments

20dB BW: 25.833 MHz
 802.11 a mode
 Chain 1

Cursor 1 5593.6667 10.38
 Cursor 2 5567.8333 -9.62

Delta Freq. 25.833
 Delta Amplitude 20.00



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5660.000 MHz
 SPAN: 50.000 MHz
 RB: 300 kHz
 VB: 1.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

Comments

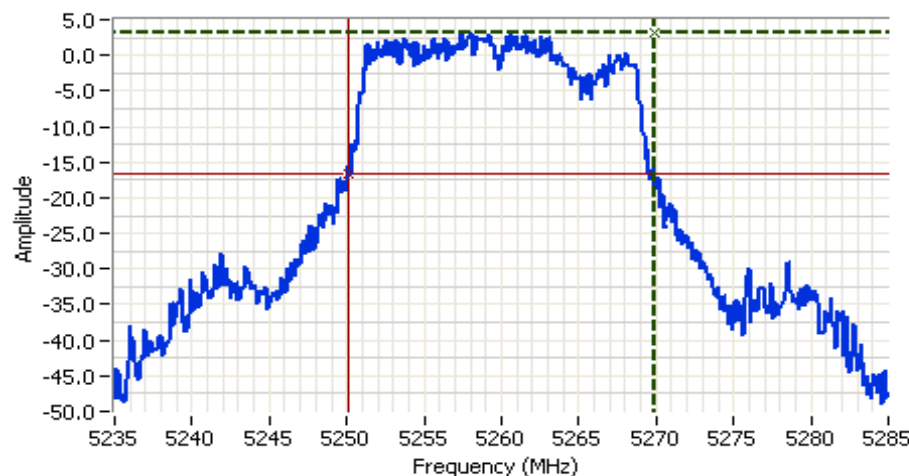
20dB BW: 20.250 MHz
 802.11 a mode
 Chain 2

Cursor 1 5670.4167 7.34
 Cursor 2 5650.1667 -12.66

Delta Freq. 20.250
 Delta Amplitude 20.00



Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A

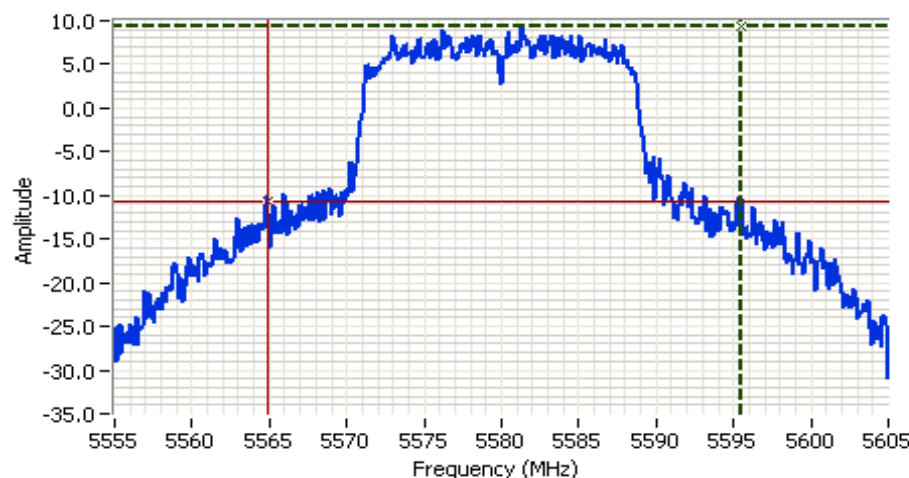


Analyzer Settings

Agilent Technologies, E4448A
CF: 5260.000 MHz
SPAN: 50.000 MHz
RB: 300 kHz
VB: 1.000 MHz
Detector: POS
Attn: 20 DB
RL Offset: 11.5 DB
Sweep Time: 1.0ms
Ref Lvl: 20.0 DBM

Comments

20dB BW: 19.750 MHz
802.11 n20 mode
Chain 1



Analyzer Settings

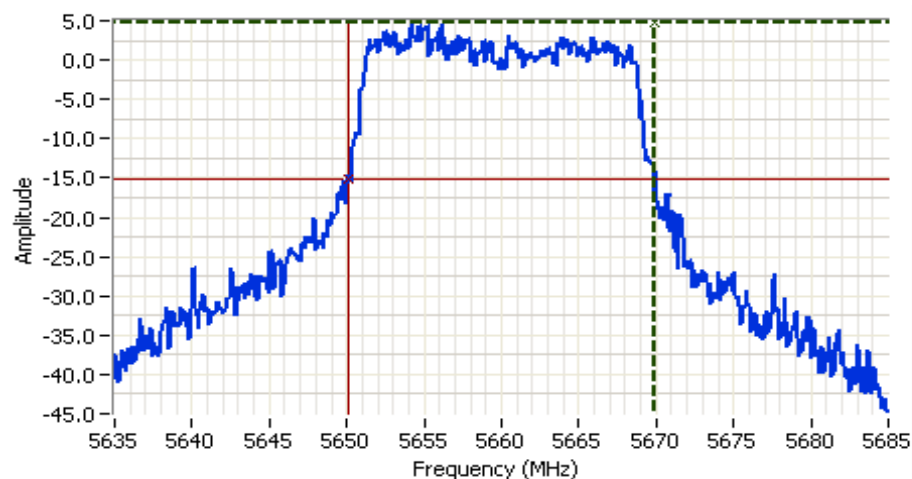
Agilent Technologies, E4448A
CF: 5580.000 MHz
SPAN: 50.000 MHz
RB: 300 kHz
VB: 1.000 MHz
Detector: POS
Attn: 20 DB
RL Offset: 11.5 DB
Sweep Time: 1.0ms
Ref Lvl: 20.0 DBM

Comments

20dB BW: 30.667 MHz
802.11 n20 mode
Chain 3



Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5660.000 MHz
 SPAN: 50.000 MHz
 RB: 300 kHz
 VB: 1.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

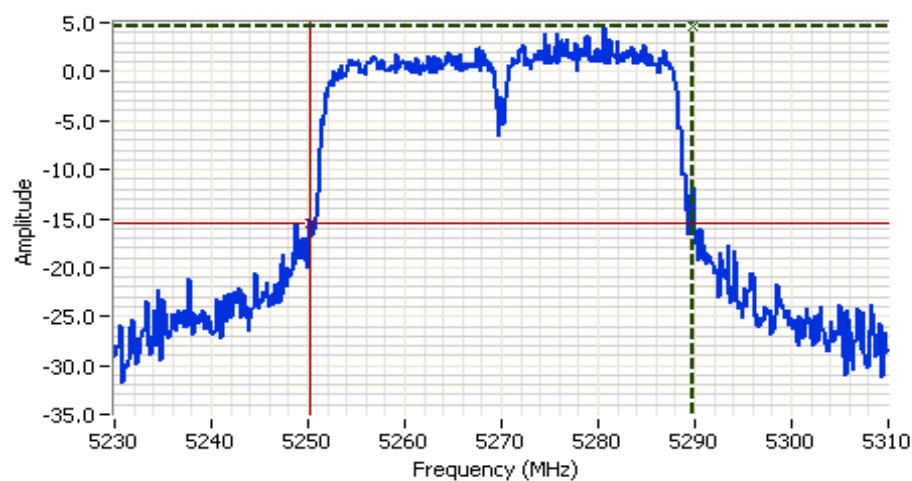
Comments

20dB BW: 19.750 MHz
 802.11 n20 mode
 Chain 3

Cursor 1 5669.9167 4.85
 Cursor 2 5650.1667 -15.15

Delta Freq. 19.750

Delta Amplitude 20.00



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5270.000 MHz
 SPAN: 80.000 MHz
 RB: 510 kHz
 VB: 2.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

Comments

20dB BW: 39.600 MHz
 802.11 n40 mode
 Chain 2

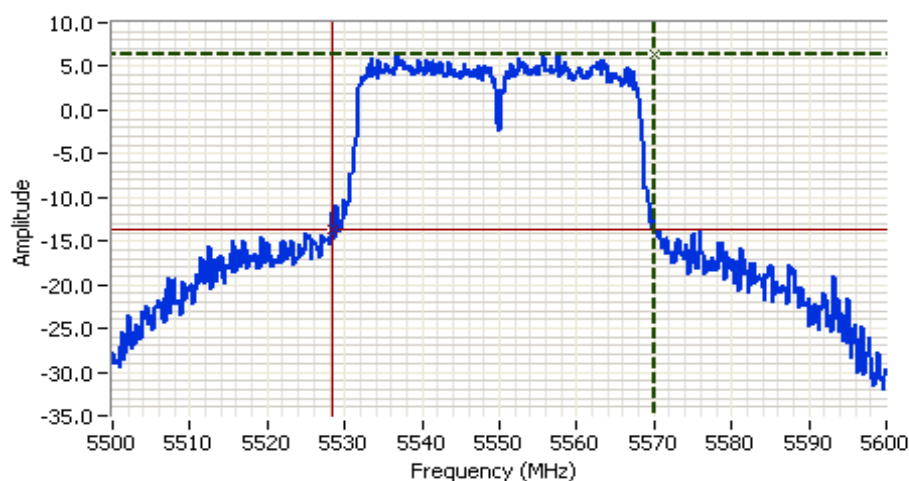
Cursor 1 5289.8667 4.62
 Cursor 2 5250.2667 -15.38

Delta Freq. 39.600

Delta Amplitude 20.00



Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5550.000 MHz
 SPAN: 100.000 MHz
 RB: 510 kHz
 VB: 2.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

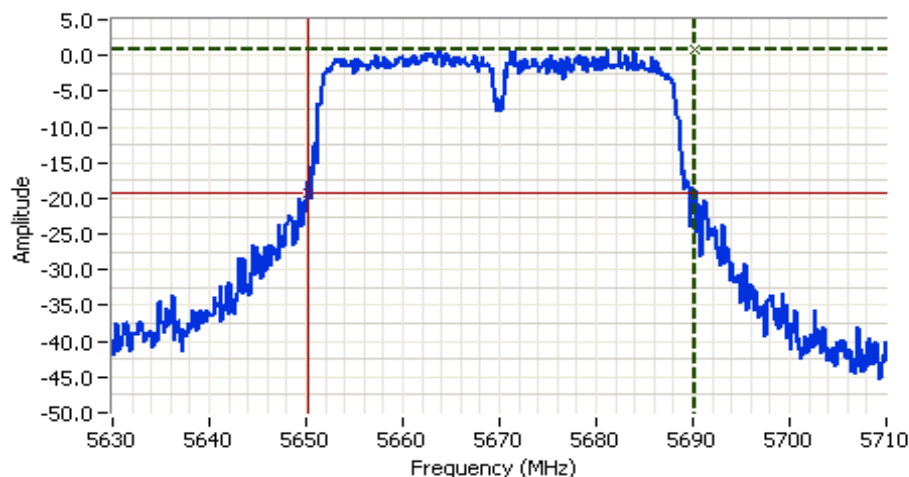
Comments

20dB BW: 41.500 MHz
 802.11 n40 mode
 Chain 3

Cursor 1 5570.0000 6.40
 Cursor 2 5528.5000 -13.60

Delta Freq. 41.500

Delta Amplitude 20.00



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5670.000 MHz
 SPAN: 80.000 MHz
 RB: 510 kHz
 VB: 2.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

Comments

20dB BW: 40.133 MHz
 802.11 n40 mode
 Chain 2

Cursor 1 5690.2667 0.80
 Cursor 2 5650.1333 -19.20

Delta Freq. 40.133

Delta Amplitude 20.00



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII) Antenna Port Measurements Power, PSD and Bandwidth

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: 1/9/2013 & 1/10/2013 & 1/17/2013
 Test Engineer: Jack Liu / R. Varelas
 Test Location: FT Lab 4A

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

General Test Configuration

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

Ambient Conditions:

Temperature: 23 °C
 Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	802.11a: 96.8 mW 802.11n 20MHz: 172.8 mW 802.11n n40MHz: 165.1 mW
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	802.11a: 7.9dBm/MHz 802.11n 20MHz: 10.4 dBm/MHz 802.11n n40MHz: 7.4 dBm/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	-	Refer to the description of TPC in the operational description document.
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	802.11a: 99.1 mW 802.11n 20MHz: 182.3 mW 802.11n n40MHz: 118.1 mW
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	802.11a: 8.1 dBm/MHz 802.11n 20MHz: 10.3 dBm/MHz 802.11n n40MHz: 5.8 dBm/MHz

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	-	Refer to the description of TPC in the operational description document.
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS 210 (Information only)	N/A	802.11a: 24.0 MHz 802.11n 20MHz: 26.6 MHz 802.11n n40MHz: 52.2 MHz

Antenna:

#	Model	Type	Freq. Band (GHz)	Gain (dBi)	Ind/Out	Xpol?	Pt to Pt?
1	(Antenna B & C)	IFA	5.2 & 5.6	2	Indoor	No	No

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:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

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

MIMO Device - 5250-5350 MHz Band

	Chain 1	Chain 2	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Legacy Antenna Gain (dBi):	2	2	2	Yes	6.8	460.4	26.6
MIMO Antenna Gain (dBi):	2	2	2	No	2.0	273.9	24.4

Power

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			

20MHz a Mode

5260	13.5	24.3	13.3	14.3	14.7	77.5	18.9	23.2	0.097	PASS
5300	14.5	37.3	14.6	15.3	15.1	94.2	19.7	23.2		PASS
5320	14.5	34.9	14.8	15.1	15.3	96.8	19.9	23.2		PASS

20MHz n Mode

5260	13.5	37.8	13.5	14.1	13.9	72.6	18.6	24.0	0.173	PASS
5300	18.0	38.7	17.7	17.0	17.8	169.3	22.3	24.0		PASS
5320	18.0	46.6	17.8	17.3	17.7	172.8	22.4	24.0		PASS

40MHz Mode

5270	12.0	46.9	12.0	13.2	12.4	53.9	17.3	24.0	0.078	PASS
5310	13.0	46.1	13.7	13.8	14.8	77.6	18.9	24.0		PASS

PSD

Frequency (MHz)	99% ⁴ BW	Total Power	PSD ² dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 ³	

20MHz a Mode

5260	17.1	18.9	3.0	1.9	3.3	5.7	7.6	10.2	11.0	PASS
5300	17.1	19.7	3.1	3.0	2.9	6.0	7.8	10.2	11.0	PASS
5320	17.1	19.9	3.4	2.5	3.5	6.1	7.9	10.2	11.0	PASS

20MHz n Mode

5260	18.1	18.6	3.0	1.6	1.7	4.9	6.9	11.0	11.0	PASS
5300	21.9	22.3	6.7	4.4	5.4	10.9	10.4	11.0	11.0	PASS
5320	24.0	22.4	6.7	4.7	5.2	10.9	10.4	11.0	11.0	PASS

40MHz Mode

5270	35.9	17.3	1.4	-2.2	-2.0	2.6	4.2	11.0	11.0	PASS
5310	36.6	18.9	0.0	-1.5	-0.8	2.5	4.0	11.0	11.0	PASS

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

For Industry Canada, B in the power limit calculation is based on 99% BW instead of 26dB BW

Power

Frequency (MHz)	Software Setting	99% BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
20MHz a Mode										
5260	13.5	17.1	13.3	14.3	14.7	77.5	18.9	22.6	0.097	PASS
5300	14.5	17.1	14.6	15.3	15.1	94.2	19.7	22.5		PASS
5320	14.5	17.1	14.8	15.1	15.3	96.8	19.9	22.5		PASS
20MHz n Mode										
5260	13.5	18.1	13.5	14.1	13.9	72.6	18.6	23.6	0.173	PASS
5300	18.0	21.9	17.7	17.0	17.8	169.3	22.3	24.0		PASS
5320	18.0	24.0	17.8	17.3	17.7	172.8	22.4	24.0		PASS
40MHz Mode										
5270	12.0	35.9	12.0	13.2	12.4	53.9	17.3	24.0	0.078	PASS
5310	13.0	36.6	13.7	13.8	14.8	77.6	18.9	24.0		PASS

EIRP does not exceed 500mW, therefore TPC is not required.

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

MIMO Device - 5470-5725 MHz Band

	Chain 1	Chain 2	Chain 3	Coherent	Effective ⁵	EIRP (mW)	EIRP (dBm)
Legacy Antenna Gain (dBi):	2	2	2	Yes	6.8	471.4	26.7
MIMO Antenna Gain (dBi):	2	2	2	No	2.0	288.9	24.6

Power

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			

20MHz a Mode

5500	12.0	22.7	12.7	11.6	12.8	52.1	17.2	23.2	0.099	PASS
5580	16.0	23.2	15.3	15.2	15.0	98.2	19.9	23.2		PASS
5660	15.5	25.3	14.6	15.1	14.9	91.6	19.6	23.2		PASS
5700	15.5	26.3	15.2	15.3	15.1	99.1	20.0	23.2		PASS

20MHz n Mode

5500	13.0	29.7	13.2	12.6	12.5	57.1	17.6	24.0	0.182	PASS
5580	20.0	41.1	18.2	18.2	17.0	182.3	22.6	24.0		PASS
5660	14.0	26.8	13.7	14.2	13.6	72.7	18.6	24.0		PASS
5700	15.5	28.2	15.2	15.2	14.3	93.8	19.7	24.0		PASS

40MHz Mode

5510	9.5	45.5	9.7	9.0	9.5	26.2	14.2	24.0	0.118	PASS
5550	17.0	61.9	16.4	16.0	15.4	118.1	20.7	24.0		PASS
5670	11.0	47.1	10.8	11.5	10.2	36.6	15.6	24.0		PASS

PSD

Frequency (MHz)	99% ⁴ BW	Total Power	PSD ² dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 ³	

20MHz a Mode

5500	16.9	17.2	1.2	-0.1	0.8	3.5	5.4	10.2	11.0	PASS
5580	16.9	19.9	3.6	2.9	3.0	6.2	8.0	10.2	11.0	PASS
5660	16.9	19.6	2.5	2.7	2.7	5.5	7.4	10.2	11.0	PASS
5700	16.9	20.0	3.8	3.3	2.9	6.5	8.1	10.2	11.0	PASS

20MHz Mode

5500	18.0	17.6	1.4	0.8	0.4	3.7	5.6	11.0	11.0	PASS
5580	19.1	22.6	5.8	5.8	4.9	10.7	10.3	11.0	11.0	PASS
5660	18.0	18.6	1.6	1.4	1.4	4.2	6.2	11.0	11.0	PASS
5700	18.1	19.7	3.4	2.7	1.8	5.5	7.4	11.0	11.0	PASS

40MHz Mode

5510	36.5	14.2	-5.2	-6.4	-5.7	0.8	-1.0	11.0	11.0	PASS
5550	36.6	20.7	1.7	0.8	0.4	3.8	5.8	11.0	11.0	PASS
5670	36.5	15.6	-4.5	-3.9	-4.8	1.1	0.4	11.0	11.0	PASS

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

For Industry Canada, B in the power limit calculation is based on 99% BW instead of 26dB BW

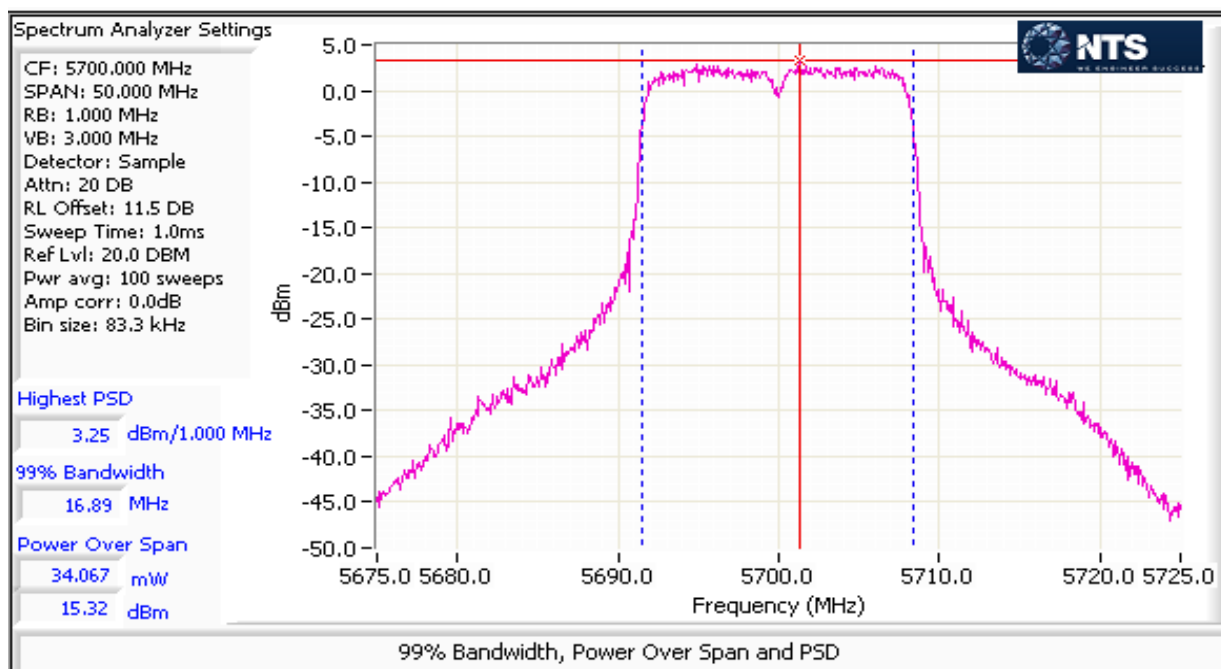
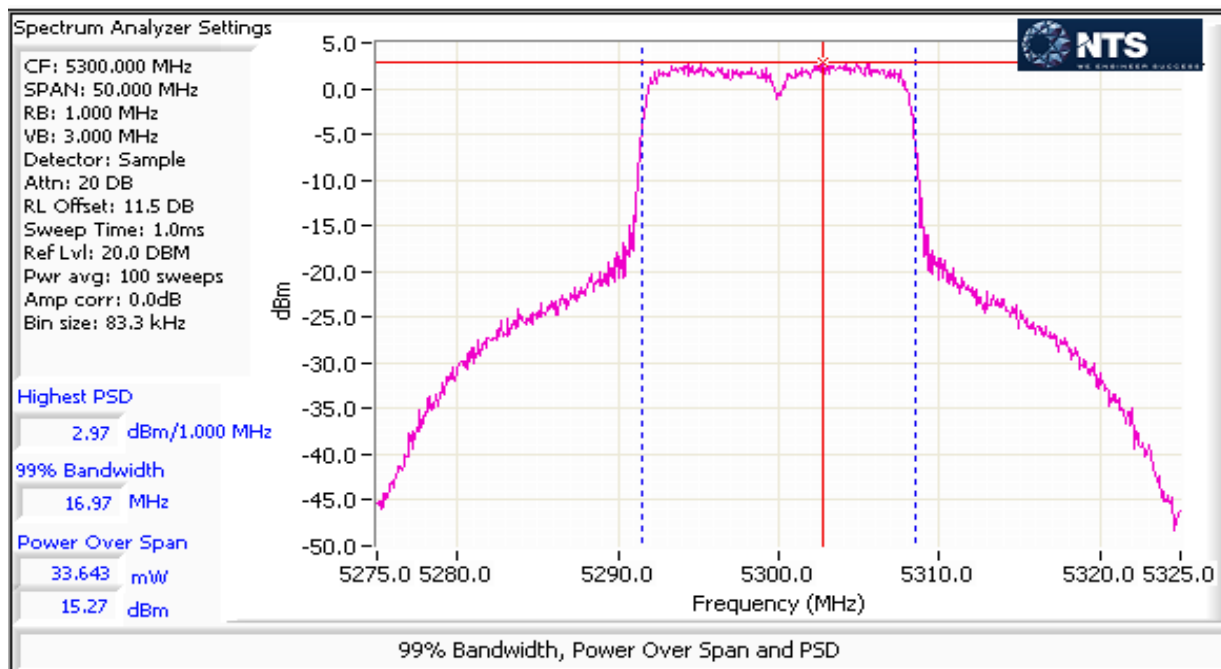
Power

Frequency (MHz)	Software Setting	99% BW (MHz)	Measured Output Power ¹ dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
20MHz a Mode										
5500	12.0	16.9	12.7	11.6	12.8	52.1	17.2	22.5	0.099	PASS
5580	16.0	16.9	15.3	15.2	15.0	98.2	19.9	22.5		PASS
5660	15.5	16.9	14.6	15.1	14.9	91.6	19.6	22.5		PASS
5700	15.5	16.9	15.2	15.3	15.1	99.1	20.0	22.5		PASS
20MHz n Mode										
5500	13.0	18.0	13.2	12.6	12.5	57.1	17.6	23.5	0.182	PASS
5580	20.0	19.1	18.2	18.2	17.0	182.3	22.6	23.8		PASS
5660	14.0	18.0	13.7	14.2	13.6	72.7	18.6	23.5		PASS
5700	15.5	18.1	15.2	15.2	14.3	93.8	19.7	23.6		PASS
40MHz Mode										
5510	9.5	36.5	9.7	9.0	9.5	26.2	14.2	24.0	0.118	PASS
5550	17.0	36.6	16.4	16.0	15.4	118.1	20.7	24.0		PASS
5670	11.0	36.5	10.8	11.5	10.2	36.6	15.6	24.0		PASS

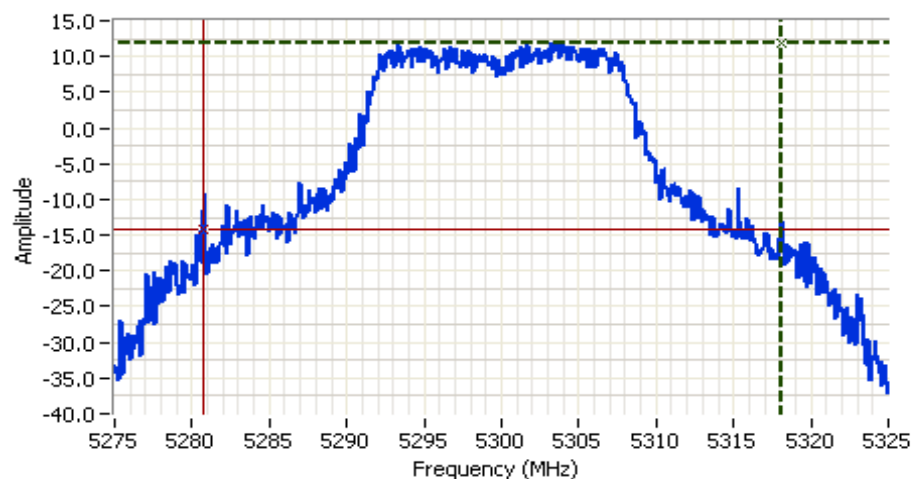
EIRP does not exceed 500mW, therefore TPC is not required.

Note 1:	Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span} / \text{RBW}$, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz (method SA-1 of KDB 789033).
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB $\geq 3 \times \text{RB}$
Note 5:	For MIMO systems, the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power. 802.11n modes are treated as not coherent for Power.

Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A



Client: Flextronics	Job Number: J89632
Model: WS-AP3710i	T-Log Number: T89871
Contact: Georges Fares	Account Manager: Christine Krebill
Standard: 15.407, RSS-210	Class: N/A



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5300.000 MHz
 SPAN: 50.000 MHz
 RB: 1.000 MHz
 VB: 3.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

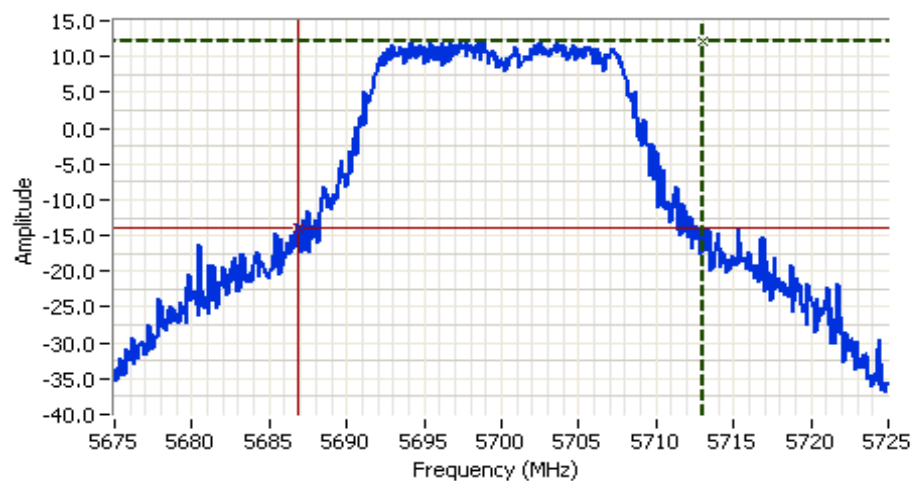
Comments

26dB BW: 37.333 MHz
 802.11 a mode
 Chain 2

Cursor 1	5318.0833	11.79	
Cursor 2	5280.7500	-14.21	

Delta Freq. 37.333

Delta Amplitude 26.00



Analyzer Settings

Agilent Technologies, E4448A
 CF: 5700.000 MHz
 SPAN: 50.000 MHz
 RB: 1.000 MHz
 VB: 3.000 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.0ms
 Ref Lvl: 20.0 DBM

Comments

26dB BW: 26.250 MHz
 802.11 a mode
 Chain 2

Cursor 1	5713.0833	12.16	
Cursor 2	5686.8333	-13.84	

Delta Freq. 26.250

Delta Amplitude 26.00



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

RSS 210 and FCC 15.407 (NII) 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. 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: 15-30 °C
Rel. Humidity: 35-50 %

Summary of Results - Device Operating in the 5250-5350 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Run # 1	802.11a Chain A+B+C	#64 5320MHz	17.5	-	Restricted Band Edge at 5350 MHz	15.209	53.1 dBµV/m @ 5350.1 MHz (-0.9 dB)
Run # 2	802.11n20 Chain A+B+C	#64 5320MHz	18.0	-	Restricted Band Edge at 5350 MHz	15.209	73.7 dBµV/m @ 5351.8 MHz (-0.3 dB)
Run # 3	802.11n40 Chain A+B+C	#62 5310MHz	13.0	-	Restricted Band Edge at 5350 MHz	15.209	53.8 dBµV/m @ 5350.5 MHz (-0.2 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Summary of Results - Device Operating in the 5470-5725 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Run # 4	802.11a Chain A+B+C	#100 5500MHz	12.0	-	Restricted Band Edge at 5460 MHz	15.209	53.6 dBµV/m @ 5435.6 MHz (-0.4 dB)
		#100 5500MHz	12.0	-	Restricted Band Edge at 5470 MHz	15.407	66.9 dBµV/m @ 5697.3 MHz (-1.4 dB)
		#140 5700MHz	16.0	-	Restricted Band Edge at 5725 MHz	15.407	53.9 dBµV/m @ 5726.1 MHz (-0.1 dB)
Run # 5	802.11n20 Chain A+B+C	#100 5500MHz	13.0	-	Restricted Band Edge at 5460 MHz	15.209	53.3 dBµV/m @ 5428.7 MHz (-0.7 dB)
		#100 5500MHz	13.0	-	Restricted Band Edge at 5470 MHz	15.407	67.5 dBµV/m @ 5697.1 MHz (-0.8 dB)
		#140 5700MHz	15.5	-	Restricted Band Edge at 5725 MHz	15.407	52.3 dBµV/m @ 5725.0 MHz (-1.7 dB)
Run # 6	802.11n40 Chain A+B+C	#102 5510MHz	9.5	-	Restricted Band Edge at 5460 MHz	15.209	47.6 dBµV/m @ 5452.9 MHz (-6.4 dB)
		#102 5510MHz	9.5	-	Restricted Band Edge at 5470 MHz	15.407	67.0 dBµV/m @ 5469.9 MHz (-1.3 dB)
		#134 5670MHz	17.0	-	Restricted Band Edge at 5725 MHz	15.407	66.2 dBµV/m @ 5730.9 MHz (-2.1 dB)

Antenna:

#	Model	Type	Freq. Band (GHz)	Gain (dBi)	Ind/Out	Xpol?	Pt to Pt?
1	(Antenna B & C)	IFA	5.2 & 5.6	2	Indoor	No	No

Notes

Antenna: antenna(s) connected
Duty Cycle: 99.0%

ART GUI (Singleradio test) Or Command Line Script (multiple radio test)

ART GUI Used: No
ART GUI Boot File: -
ART GUI Calibration file: -
Command Line Script: 3710i Pilot_935942 boot and initialize all 3 radios to NART Command Line Interface - High Power

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 1, Band Edge Field Strength - 802.11a, Chain A+B+C

Date of Test: 12/31/2012

Test Location: FT Chamber #7

Test Engineer: David Bare

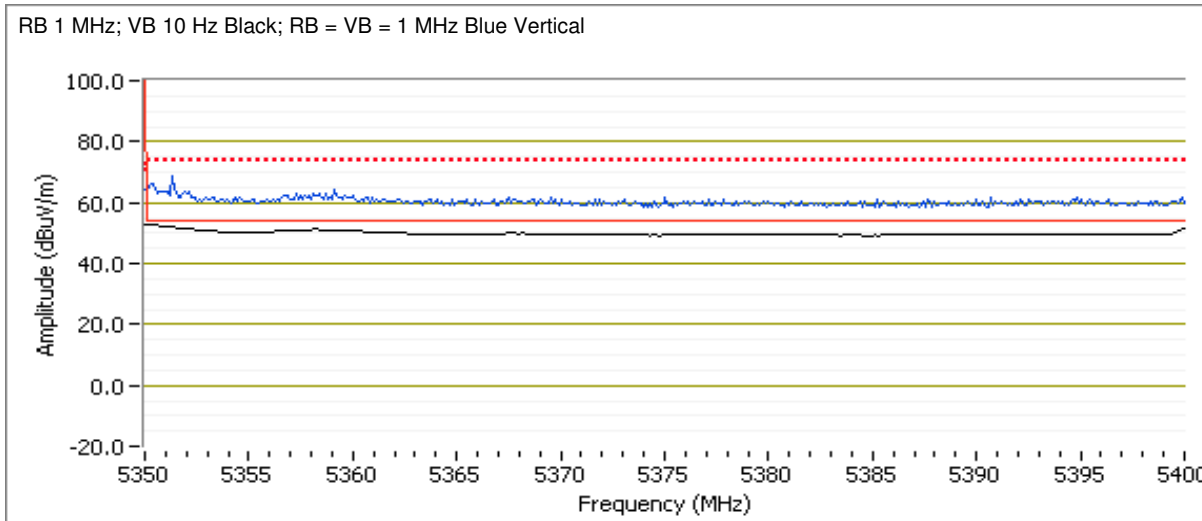
Config Change: none

Run # 1a, EUT on Channel #64 5320MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5320 MHz	17.5
2	2437 MHz	21.0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.100	53.1	V	54.0	-0.9	AVG	9	1.5	POS; RB 1 MHz; VB: 10 Hz
5350.400	65.2	V	74.0	-8.8	PK	9	1.5	POS; RB 1 MHz; VB: 3 MHz
5350.000	50.6	H	54.0	-3.4	AVG	154	1.4	POS; RB 1 MHz; VB: 10 Hz
5351.000	63.1	H	74.0	-10.9	PK	154	1.4	POS; RB 1 MHz; VB: 3 MHz



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 2, Band Edge Field Strength - 802.11n20, Chain A+B+C

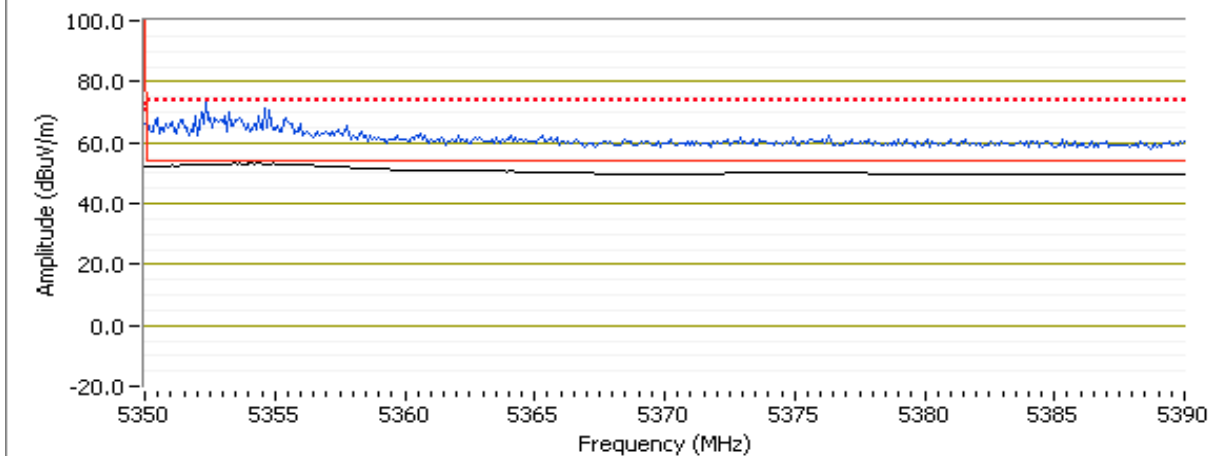
Run # 2a, EUT on Channel #64 5320MHz - 802.11n20, Chain A+B+C

Radio	Freq	Power Setting
1	5320 MHz	18.0
2	2437 MHz	21.0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5351.800	73.7	V	74.0	-0.3	PK	9	1.5	POS; RB 1 MHz; VB: 3 MHz
5353.930	53.1	V	54.0	-0.9	AVG	9	1.5	POS; RB 1 MHz; VB: 10 Hz
5350.000	49.4	H	54.0	-4.6	AVG	172	1.2	POS; RB 1 MHz; VB: 10 Hz
5350.320	70.4	H	74.0	-3.6	PK	172	1.2	POS; RB 1 MHz; VB: 3 MHz

RB 1 MHz; VB 10 Hz Black; RB = VB = 1 MHz Blue Vertical



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

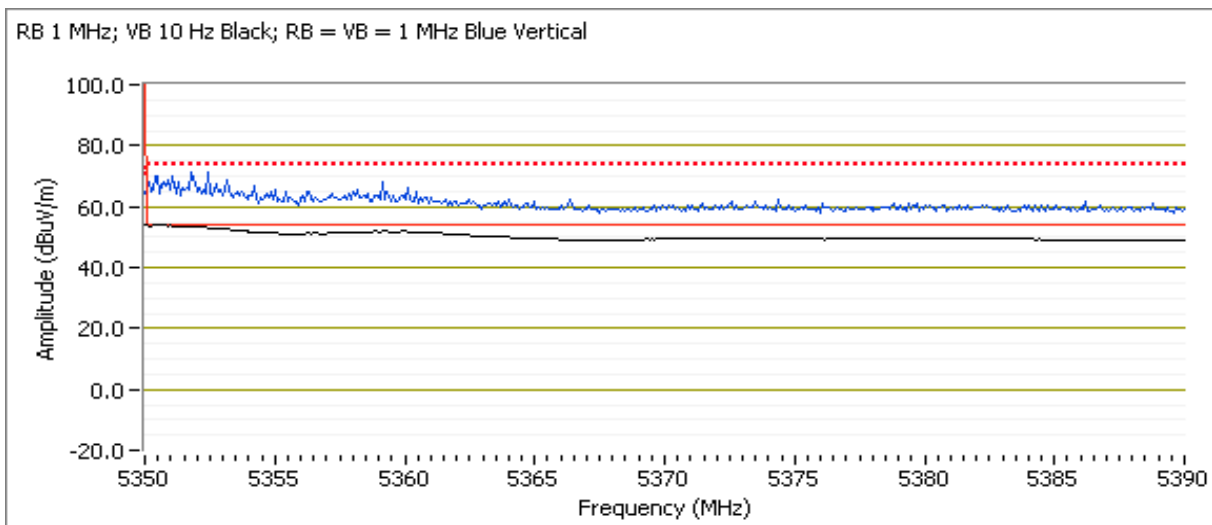
Run # 3, Band Edge Field Strength - 802.11n40, Chain A+B+C

Run # 3a, EUT on Channel #62 5310MHz - 802.11n40, Chain A+B+C

Radio	Freq	Power Setting
1	5310 MHz	13.0
2	2437 MHz	21.0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.480	53.8	V	54.0	-0.2	AVG	9	1.5	POS; RB 1 MHz; VB: 10 Hz
5350.880	71.1	V	74.0	-2.9	PK	9	1.5	POS; RB 1 MHz; VB: 3 MHz
5356.250	47.2	H	54.0	-6.8	AVG	172	1.2	POS; RB 1 MHz; VB: 10 Hz
5357.620	62.4	H	74.0	-11.6	PK	172	1.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 4, Band Edge Field Strength - 802.11a, Chain A+B+C

Run # 4a, EUT on Channel #100 5500MHz - 802.11a, Chain A+B+C

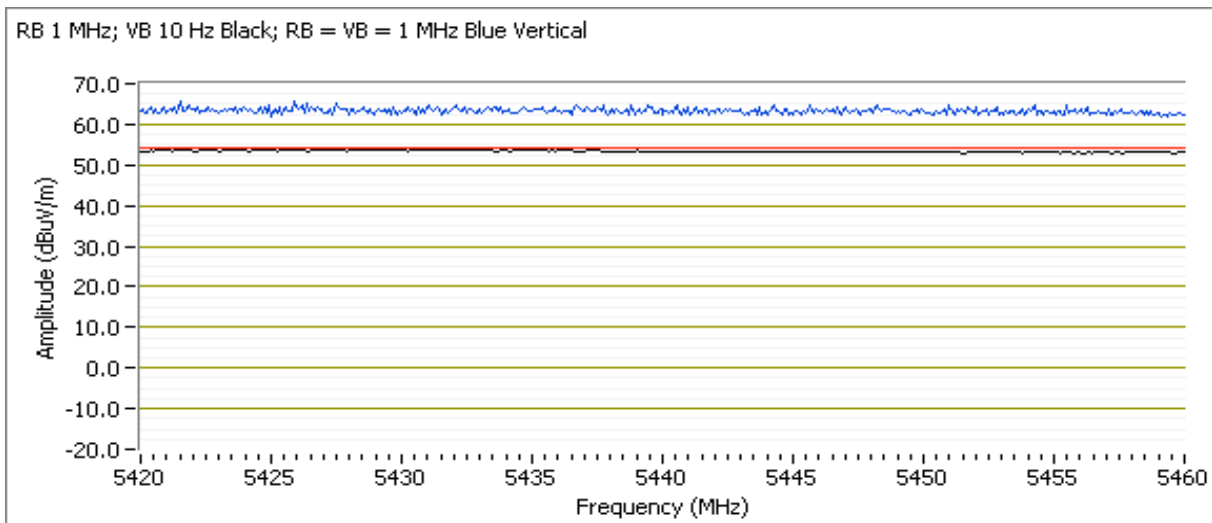
Radio	Freq	Power Setting
1	5500 MHz	12.0
2	2437 MHz	21.0

5460 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5435.550	53.6	V	54.0	-0.4	AVG	90	1.4	POS; RB 1 MHz; VB: 10 Hz
5442.040	65.2	V	74.0	-8.8	PK	90	1.4	POS; RB 1 MHz; VB: 3 MHz
5439.880	46.0	H	54.0	-8.0	AVG	160	1.2	POS; RB 1 MHz; VB: 10 Hz
5423.450	57.7	H	74.0	-16.3	PK	160	1.2	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5697.310	66.9	V	68.3	-1.4	PK	90	1.4	POS; RB 1 MHz; VB: 3 MHz
5466.570	58.7	H	69.3	-10.6	PK	160	1.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 4b, EUT on Channel #140 5700MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5700 MHz	16.0
2	2437 MHz	21.0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5726.070	53.9	V	54.0	-0.1	AVG	188	1.3	POS; RB 1 MHz; VB: 10 Hz
5725.930	68.4	V	74.0	-5.6	PK	188	1.3	POS; RB 1 MHz; VB: 3 MHz
5725.520	61.2	H	68.3	-7.1	PK	343	1.0	POS; RB 1 MHz; VB: 3 MHz

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 5, Band Edge Field Strength - 802.11n20, Chain A+B+C

Run # 5a, EUT on Channel #100 5500MHz - 802.11n20, Chain A+B+C

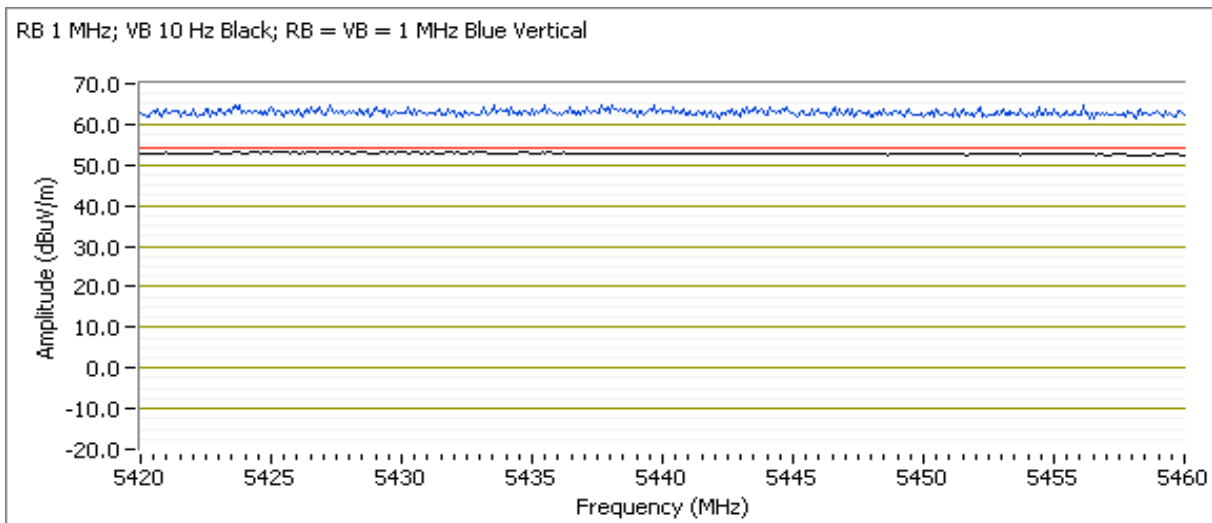
Radio	Freq	Power Setting
1	5500 MHz	13.0
2	2437 MHz	21.0

5460 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5428.660	53.3	V	54.0	-0.7	AVG	90	1.4	POS; RB 1 MHz; VB: 10 Hz
5424.330	65.4	V	74.0	-8.6	PK	90	1.4	POS; RB 1 MHz; VB: 3 MHz
5459.930	45.9	H	54.0	-8.1	AVG	160	1.2	POS; RB 1 MHz; VB: 10 Hz
5457.520	58.1	H	74.0	-15.9	PK	160	1.2	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5697.050	67.5	V	68.3	-0.8	PK	90	1.5	POS; RB 1 MHz; VB: 3 MHz
5697.360	59.5	H	68.3	-8.8	PK	160	1.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 5b, EUT on Channel #140 5725MHz - 802.11n20, Chain A+B+C

Radio	Freq	Power Setting
1	5700 MHz	15.5
2	2437 MHz	21.0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5725.010	52.3	V	54.0	-1.7	AVG	188	1.3	POS; RB 1 MHz; VB: 10 Hz
5726.350	68.4	V	74.0	-5.6	PK	188	1.3	POS; RB 1 MHz; VB: 3 MHz
5730.210	61.4	H	68.3	-6.9	PK	343	1.0	POS; RB 1 MHz; VB: 3 MHz

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 6a, EUT on Channel #102 5510MHz - 802.11n40, Chain A+B+C

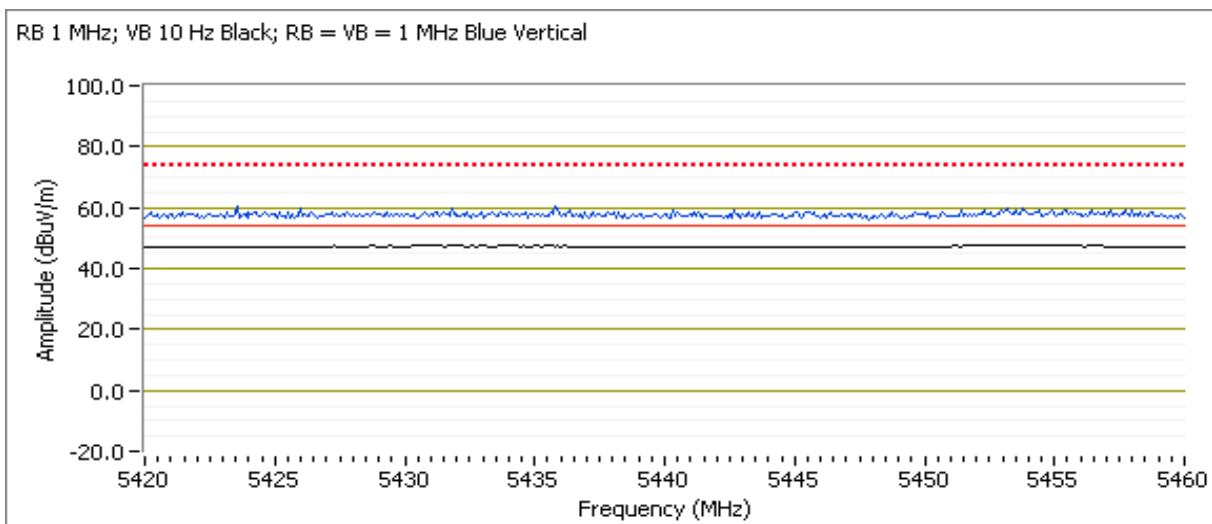
Radio	Freq	Power Setting
1	5510 MHz	9.5
2	2437 MHz	21.0

5460 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5452.870	47.6	V	54.0	-6.4	AVG	90	1.4	POS; RB 1 MHz; VB: 10 Hz
5446.770	60.7	V	74.0	-13.3	PK	90	1.4	POS; RB 1 MHz; VB: 3 MHz
5460.000	43.4	H	54.0	-10.6	AVG	160	1.2	POS; RB 1 MHz; VB: 10 Hz
5452.790	55.2	H	74.0	-18.8	PK	160	1.2	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.900	67.0	V	68.3	-1.3	PK	90	1.4	POS; RB 1 MHz; VB: 3 MHz
5468.040	66.2	H	68.3	-2.1	PK	160	1.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run # 6b, EUT on Channel #134 5670MHz - 802.11n40, Chain A+B+C

Radio	Freq	Power Setting
1	5670 MHz	17.0
2	2437 MHz	21.0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5730.850	66.2	V	68.3	-2.1	PK	188	1.3	POS; RB 1 MHz; VB: 3 MHz
5725.640	64.2	H	68.3	-4.1	PK	343	1.0	POS; RB 1 MHz; VB: 3 MHz

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

RSS 210 and FCC 15.407 (NII) 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. 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: 23 °C
Rel. Humidity: 40 %

Summary of Results - Device Operating in the 5250-5350 MHz and 5470-5725 MHz Bands

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Run #1	802.11b	2412 MHz	16.5		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.407	48.9 dBµV/m @ 5440.0 MHz (-5.1 dB)
		5260 MHz	17.5				53.0 dBµV/m @ 5440.0 MHz (-1.0 dB)
		2437 MHz	21				49.8 dBµV/m @ 5439.9 MHz (-4.2 dB)
		5300 MHz	18				41.4 dBµV/m @ 1666.6 MHz (-12.6 dB)
	802.11a	2462 MHz	16.5				50.8 dBµV/m @ 5360.1 MHz (-3.2 dB)
		5320 MHz	17.5				44.5 dBµV/m @ 11397.6 MHz (-9.5 dB)
		2412 MHz	16.5				
		5500 MHz	12				
	Chain A+B+C	2437 MHz	21				
		5580 MHz	20				
		2462 MHz	16.5				
		5700 MHz	16				

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Run #2	802.11g	2412 MHz	12.5		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.407	52.7 dBµV/m @ 5440.1 MHz (-1.3 dB)
		5260 MHz	17.5				47.7 dBµV/m @ 1624.7 MHz (-6.3 dB)
		2437 MHz	19.0				49.9 dBµV/m @ 5439.9 MHz (-4.1 dB)
		5300 MHz	18.0				45.9 dBµV/m @ 5365.5 MHz (-8.1 dB)
	802.11a	2462 MHz	13.5				46.9 dBµV/m @ 1624.5 MHz (-7.1 dB)
		5320 MHz	17.5				53.3 dBµV/m @ 11397.8 MHz (-0.7 dB)
		2412 MHz	12.5				
		5500 MHz	20.0				
	Chain A+B+C	2437 MHz	19.0				
		5580 MHz	20.0				
Run #3	802.11n20	2412 MHz	12		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.407	51.4 dBµV/m @ 5440.1 MHz (-2.6 dB)
		5260 MHz	18				50.5 dBµV/m @ 5440.0 MHz (-3.5 dB)
		2437 MHz	18				50.2 dBµV/m @ 5399.9 MHz (-3.8 dB)
		5300 MHz	18				44.3 dBµV/m @ 5360.2 MHz (-9.7 dB)
	802.11n20	2462 MHz	12.5				48.7 dBµV/m @ 1624.7 MHz (-5.3 dB)
		5320 MHz	18				50.5 dBµV/m @ 11396.1 MHz (-3.5 dB)
		2412 MHz	12				
		5500 MHz	20				
	Chain A+B+C	2437 MHz	18				
		5580 MHz	20				
Run #4	802.11n40	2422 MHz	10		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.247	51.4 dBµV/m @ 5439.9 MHz (-2.6 dB)
		5270 MHz	18				49.4 dBµV/m @ 5400.2 MHz (-4.6 dB)
		2452 MHz	10.5				43.6 dBµV/m @ 1666.7 MHz (-10.4 dB)
	802.11n40	5310 MHz	13				43.7 dBµV/m @ 5371.8 MHz (-10.3 dB)
		2422 MHz	10				44.7 dBµV/m @ 1624.7 MHz (-9.3 dB)
		5510 MHz	15				
	Chain A+B+C	2452 MHz	10.5				
		5670 MHz	17				
		2437 MHz	13				
		5550 MHz	17				

Antenna:

#	Model	Type	Freq. Band (GHz)	Gain (dBi)	Ind/Out	Xpol?	Pt to Pt?
1	(Antenna B & C)	IFA	5.2 & 5.6	2	Indoor	No	No

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Notes

Antenna: antenna(s) connected
Duty Cycle: 99.0%

ART GUI (Singleradio test) Or Command Line Script (multiple radio test)

ART GUI Used: No
 ART GUI Boot File: -
 -
 ART GUI Calibration file: -
 -
 Command Line Script: 3710i Pilot_935942 boot and initialize all 3 radios to NART Command Line Interface - High Power

Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-40GHz, 802.11b/802.11a, Chain A+B+C

Run #1a, EUT on Channel #1 2412MHz - 802.11b and Channel #52 5260MHz - 802.11a - Chain A+B+C

Date of Test: 1/2/2013
Test Engineer: Jack Liu

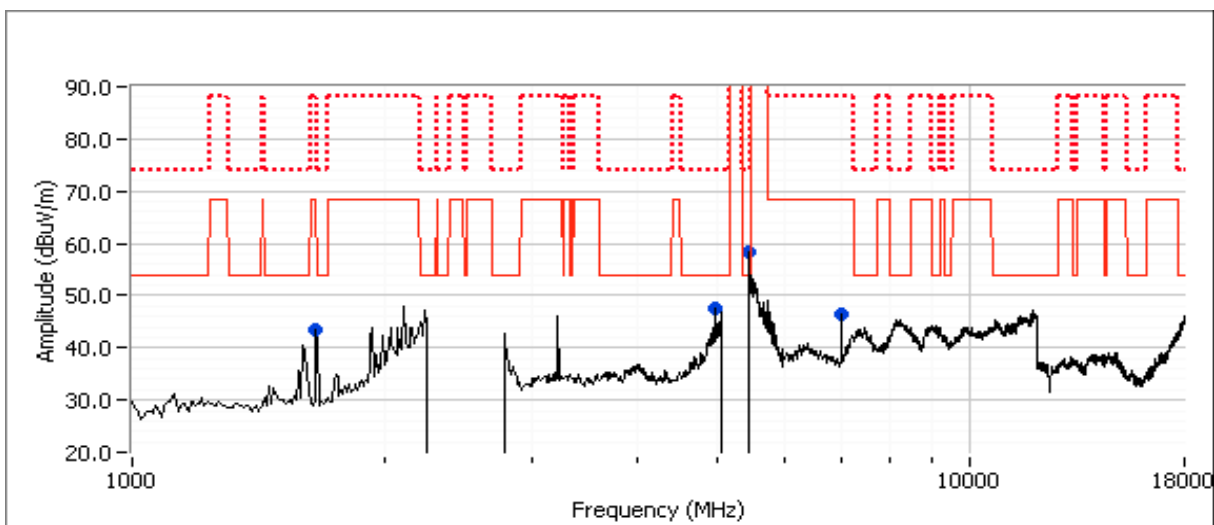
Test Location: FT 7
Config Change: None

Radio	Freq	Power Setting
1	5260 MHz	17.5
2	2412 MHz	16.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5440.030	48.9	V	54.0	-5.1	AVG	164	1.4	RB 1 MHz;VB 10 Hz;Peak
5444.530	56.9	V	74.0	-17.1	PK	164	1.4	RB 1 MHz;VB 3 MHz;Peak
4960.030	38.3	V	54.0	-15.7	AVG	184	1.6	RB 1 MHz;VB 10 Hz;Peak
4960.060	47.2	V	74.0	-26.8	PK	184	1.6	RB 1 MHz;VB 3 MHz;Peak
1666.700	40.7	V	54.0	-13.3	AVG	282	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.750	43.3	V	74.0	-30.7	PK	282	1.0	RB 1 MHz;VB 3 MHz;Peak
7013.300	50.3	V	68.3	-18.0	PK	52	1.3	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

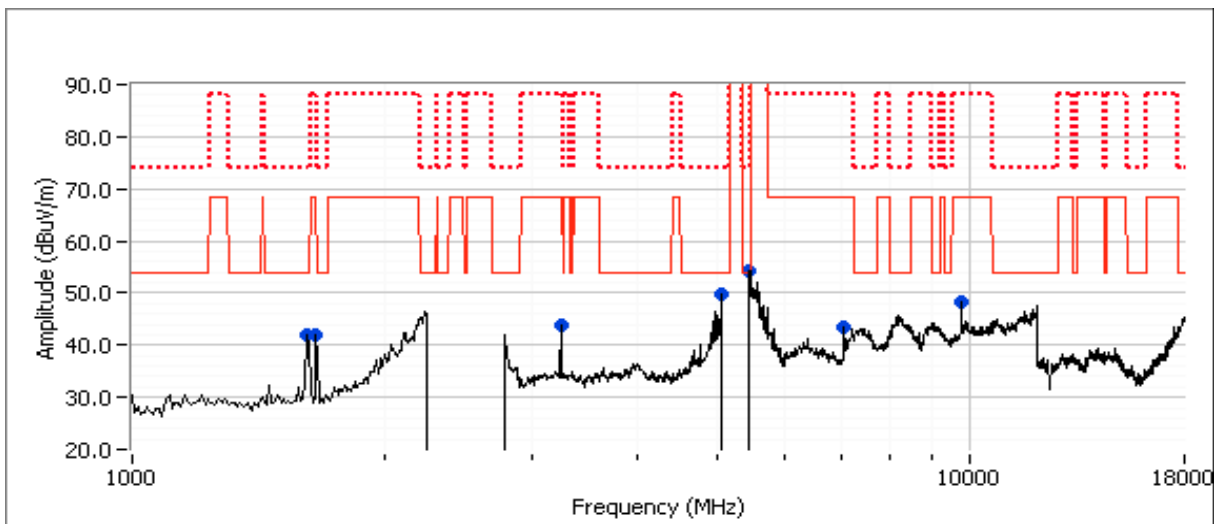
Run #1b: , EUT on Channel #6 2437MHz - 802.11b and Channel #60 5300MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5300 MHz	18.0
2	2437 MHz	21.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5439.980	53.0	V	54.0	-1.0	AVG	353	1.3	RB 1 MHz;VB 10 Hz;Peak
5440.110	59.5	V	74.0	-14.5	PK	353	1.3	RB 1 MHz;VB 3 MHz;Peak
1624.770	41.8	V	54.0	-12.2	AVG	204	1.8	RB 1 MHz;VB 10 Hz;Peak
1624.670	44.2	V	74.0	-29.8	PK	204	1.8	RB 1 MHz;VB 3 MHz;Peak
1666.660	40.9	V	54.0	-13.1	AVG	280	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.550	43.4	V	74.0	-30.6	PK	280	1.0	RB 1 MHz;VB 3 MHz;Peak
5000.020	44.1	V	54.0	-9.9	AVG	358	1.6	RB 1 MHz;VB 10 Hz;Peak
4999.800	51.2	V	74.0	-22.8	PK	358	1.6	RB 1 MHz;VB 3 MHz;Peak
9747.780	54.3	V	68.3	-14.0	PK	24	1.3	RB 1 MHz;VB 3 MHz;Peak
3249.570	46.4	V	68.3	-21.9	PK	137	1.3	RB 1 MHz;VB 3 MHz;Peak
7066.620	50.3	V	68.3	-18.0	PK	53	1.3	RB 1 MHz;VB 3 MHz;Peak

- Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
- Note 2: Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

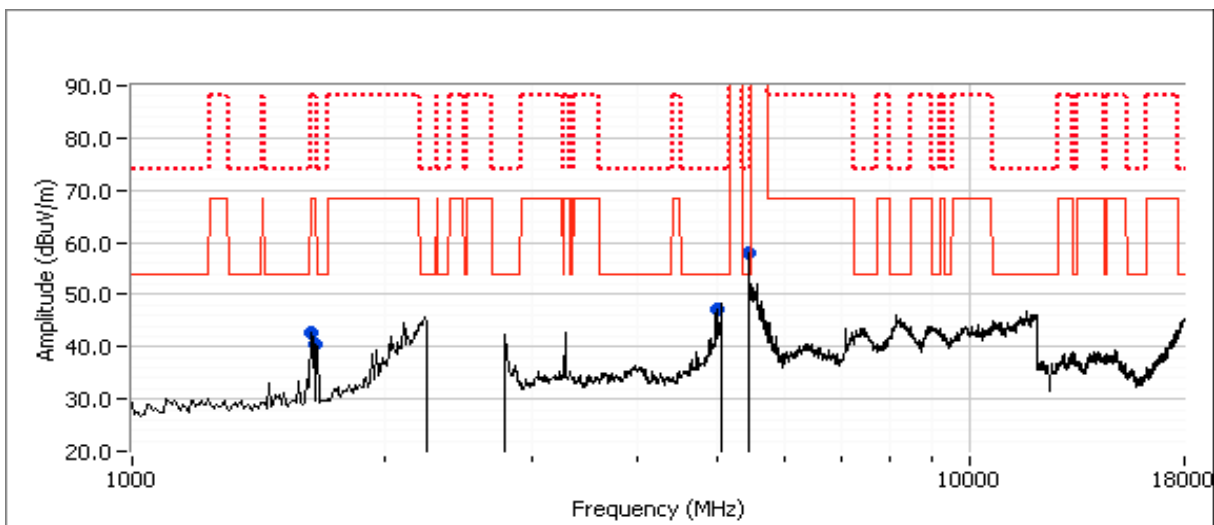
Run #1c: , EUT on Channel #11 2462MHz - 802.11b and Channel #64 5320MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5320 MHz	17.5
2	2462 MHz	16.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5439.930	49.8	V	54.0	-4.2	AVG	166	1.4	RB 1 MHz;VB 10 Hz;Peak
5439.930	58.2	V	74.0	-15.8	PK	166	1.4	RB 1 MHz;VB 3 MHz;Peak
1641.400	44.9	V	68.3	-23.4	PK	211	1.0	RB 1 MHz;VB 3 MHz;Peak
1666.660	40.6	V	54.0	-13.4	AVG	279	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.780	43.5	V	74.0	-30.5	PK	279	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.870	41.3	V	54.0	-12.7	AVG	242	1.1	RB 1 MHz;VB 10 Hz;Peak
4999.870	48.3	V	74.0	-25.7	PK	242	1.1	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #1d, EUT on Channel #1 2412MHz - 802.11b and Channel #100 5500MHz - 802.11a - Chain A+B+C

Date of Test: 1/2/2013
Test Engineer: Jack Liu

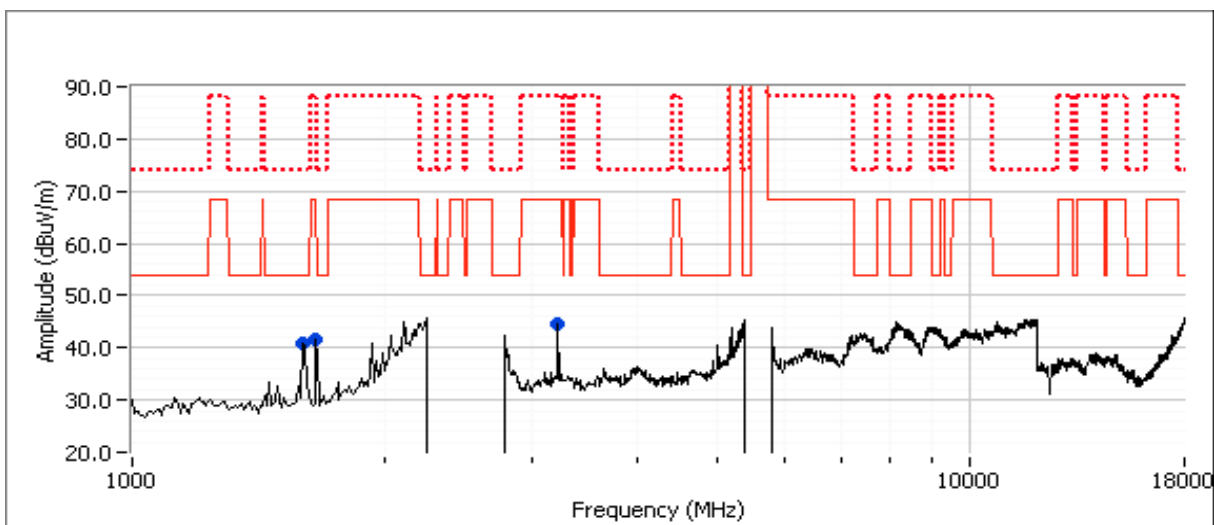
Test Location: FT 7
Config Change: None

Radio	Freq	Power Setting
1	5500 MHz	12.0
2	2412 MHz	16.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1666.610	41.4	V	54.0	-12.6	AVG	281	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.700	44.1	V	74.0	-29.9	PK	281	1.0	RB 1 MHz;VB 3 MHz;Peak
3215.970	47.4	V	68.3	-20.9	PK	131	1.1	RB 1 MHz;VB 3 MHz;Peak
1608.050	40.8	V	54.0	-13.2	AVG	209	1.4	RB 1 MHz;VB 10 Hz;Peak
1608.080	43.7	V	74.0	-30.3	PK	209	1.4	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

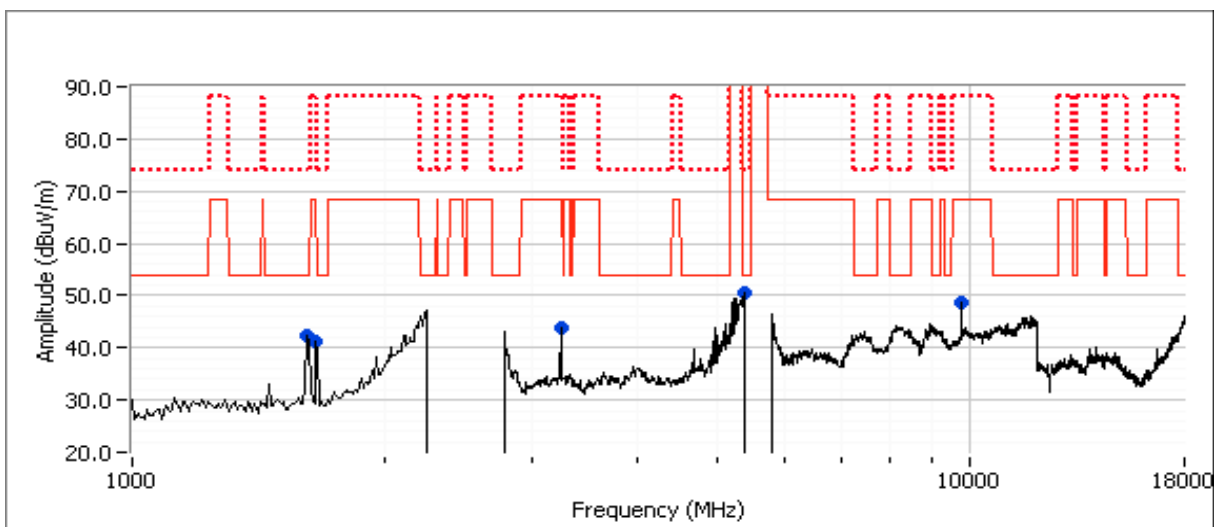
Run #1e: , EUT on Channel #6 2437MHz - 802.11b and Channel #116 5580MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5580 MHz	20.0
2	2437 MHz	21.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5360.120	50.8	V	54.0	-3.2	AVG	186	1.5	RB 1 MHz;VB 10 Hz;Peak
5356.820	59.5	V	74.0	-14.5	PK	186	1.5	RB 1 MHz;VB 3 MHz;Peak
9747.780	53.7	V	68.3	-14.6	PK	24	1.3	RB 1 MHz;VB 3 MHz;Peak
3249.330	45.5	V	68.3	-22.8	PK	130	1.3	RB 1 MHz;VB 3 MHz;Peak
1624.700	41.6	V	54.0	-12.4	AVG	205	1.8	RB 1 MHz;VB 10 Hz;Peak
1624.770	43.9	V	74.0	-30.1	PK	205	1.8	RB 1 MHz;VB 3 MHz;Peak
1666.730	40.9	V	54.0	-13.1	AVG	282	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.550	44.1	V	74.0	-29.9	PK	282	1.0	RB 1 MHz;VB 3 MHz;Peak

- Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
- Note 2: Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

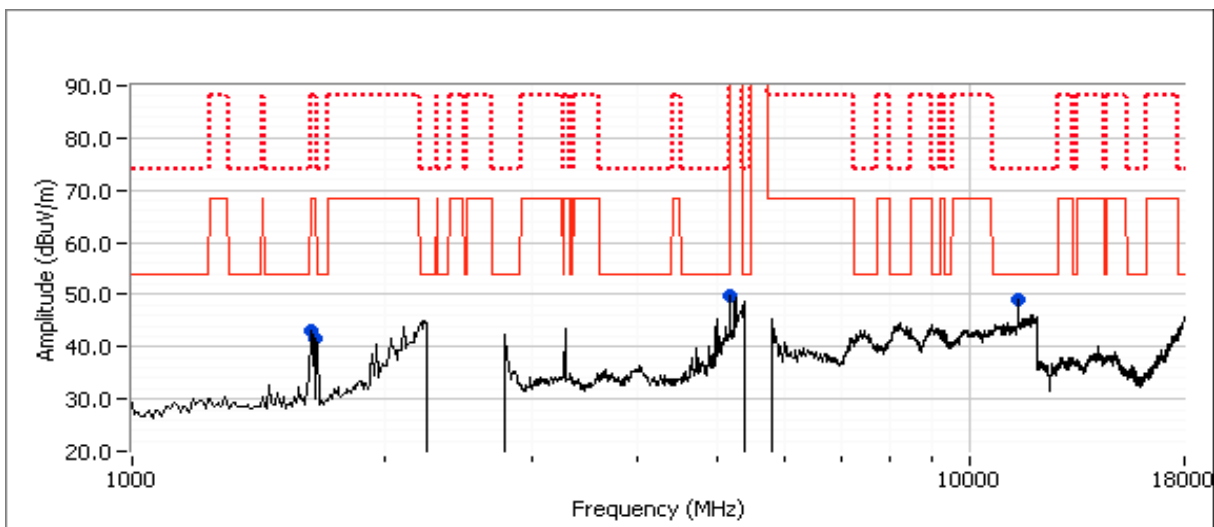
Run #1f: , EUT on Channel #11 2462MHz - 802.11b and Channel #140 5700MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5700 MHz	16.0
2	2462 MHz	16.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11397.600	44.5	V	54.0	-9.5	AVG	202	1.0	RB 1 MHz;VB 10 Hz;Peak
11397.730	54.7	V	74.0	-19.3	PK	202	1.0	RB 1 MHz;VB 3 MHz;Peak
1666.730	41.0	V	54.0	-13.0	AVG	280	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.600	44.4	V	74.0	-29.6	PK	280	1.0	RB 1 MHz;VB 3 MHz;Peak
5150.000	42.0	V	54.0	-12.0	AVG	341	1.6	RB 1 MHz;VB 10 Hz;Peak
5150.000	49.3	V	74.0	-24.7	PK	341	1.6	RB 1 MHz;VB 3 MHz;Peak
1641.410	44.3	H	68.3	-24.0	PK	332	1.3	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #2, Radiated Spurious Emissions, 1-40GHz, 802.11g/802.11a, Chain A+B+C

Run #2a, EUT on Channel #1 2412MHz - 802.11g and Channel #52 5260MHz - 802.11a - Chain A+B+C

Date of Test: 1/3/2013
Test Engineer: Jack Liu

Test Location: FT 7
Config Change: None

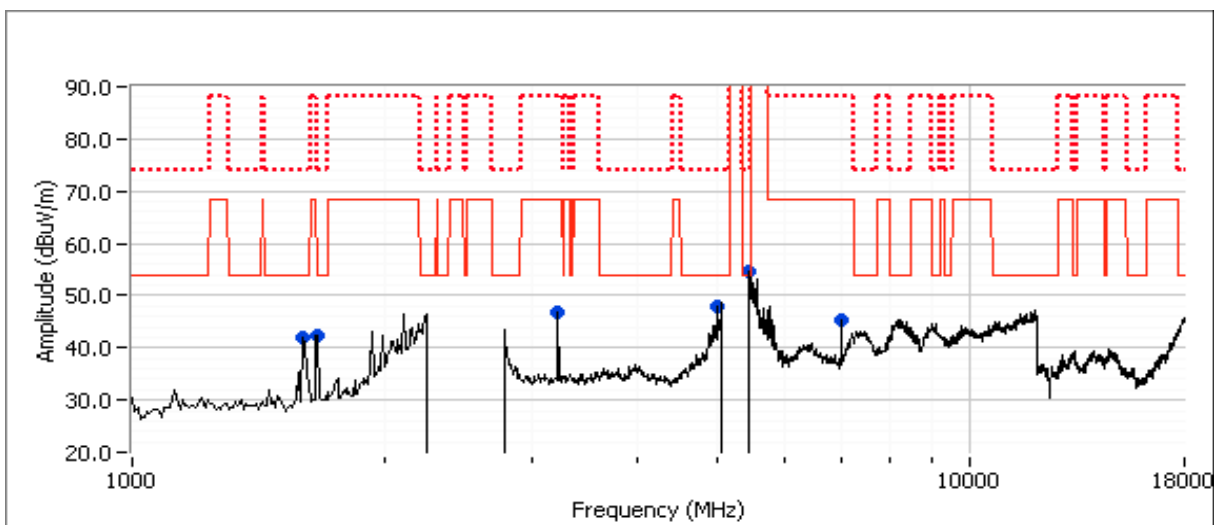
Radio	Freq	Power Setting
1	5260 MHz	17.5
2	2412 MHz	12.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5440.050	52.7	V	54.0	-1.3	AVG	189	1.3	RB 1 MHz;VB 10 Hz;Peak
5439.960	59.2	V	74.0	-14.8	PK	189	1.3	RB 1 MHz;VB 3 MHz;Peak
7013.420	50.1	V	68.3	-18.2	PK	60	1.3	RB 1 MHz;VB 3 MHz;Peak
3216.020	49.1	V	68.3	-19.2	PK	140	1.3	RB 1 MHz;VB 3 MHz;Peak
5000.020	43.2	V	54.0	-10.8	AVG	190	2.0	RB 1 MHz;VB 10 Hz;Peak
4999.870	51.4	V	74.0	-22.6	PK	190	2.0	RB 1 MHz;VB 3 MHz;Peak
1666.640	43.0	V	54.0	-11.0	AVG	224	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.670	45.1	V	74.0	-28.9	PK	224	1.0	RB 1 MHz;VB 3 MHz;Peak
1608.000	42.9	H	54.0	-11.1	AVG	86	1.4	RB 1 MHz;VB 10 Hz;Peak
1608.100	44.9	H	74.0	-29.1	PK	86	1.4	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

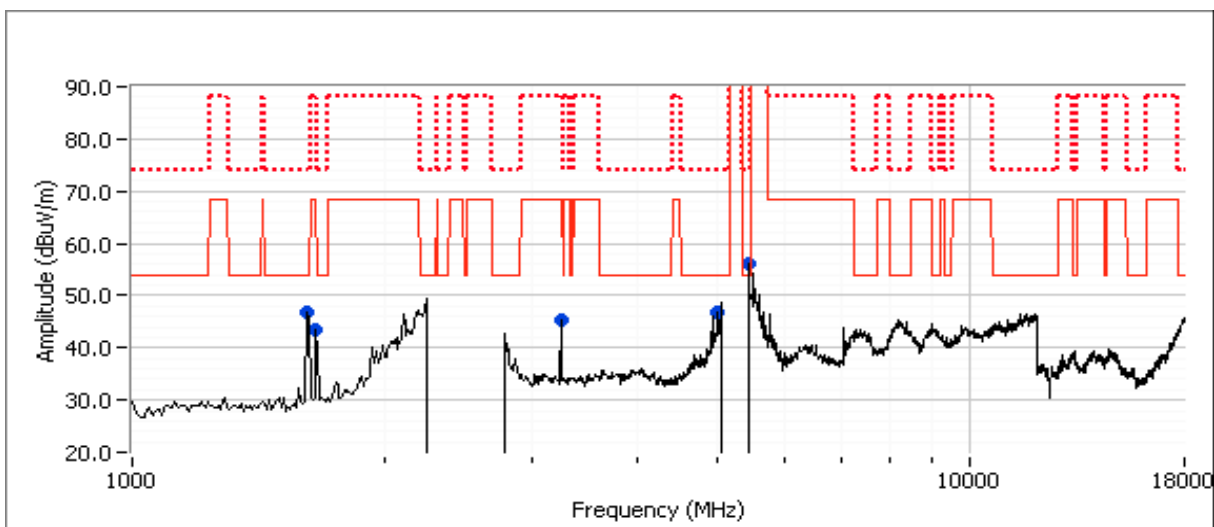
Run #2b: , EUT on Channel #6 2437MHz - 802.11g and Channel #60 5300MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5300 MHz	18.0
2	2437 MHz	19.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1624.690	47.7	H	54.0	-6.3	AVG	242	1.3	RB 1 MHz;VB 10 Hz;Peak
1624.590	49.4	H	74.0	-24.6	PK	242	1.3	RB 1 MHz;VB 3 MHz;Peak
3249.380	47.4	V	68.3	-20.9	PK	143	1.3	RB 1 MHz;VB 3 MHz;Peak
5439.950	45.0	V	54.0	-9.0	AVG	14	1.1	RB 1 MHz;VB 10 Hz;Peak
5442.930	55.7	V	74.0	-18.3	PK	14	1.1	RB 1 MHz;VB 3 MHz;Peak
1666.680	42.4	V	54.0	-11.6	AVG	228	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.600	44.7	V	74.0	-29.3	PK	228	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.870	42.0	V	54.0	-12.0	AVG	242	1.3	RB 1 MHz;VB 10 Hz;Peak
5000.000	51.2	V	74.0	-22.8	PK	242	1.3	RB 1 MHz;VB 3 MHz;Peak

- Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
- Note 2: Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #2c: , EUT on Channel #11 2462MHz - 802.11g and Channel #64 5320MHz - 802.11a, Chain A+B+C

Date of Test: 1/3/2013
Test Engineer: Rafael Varelas

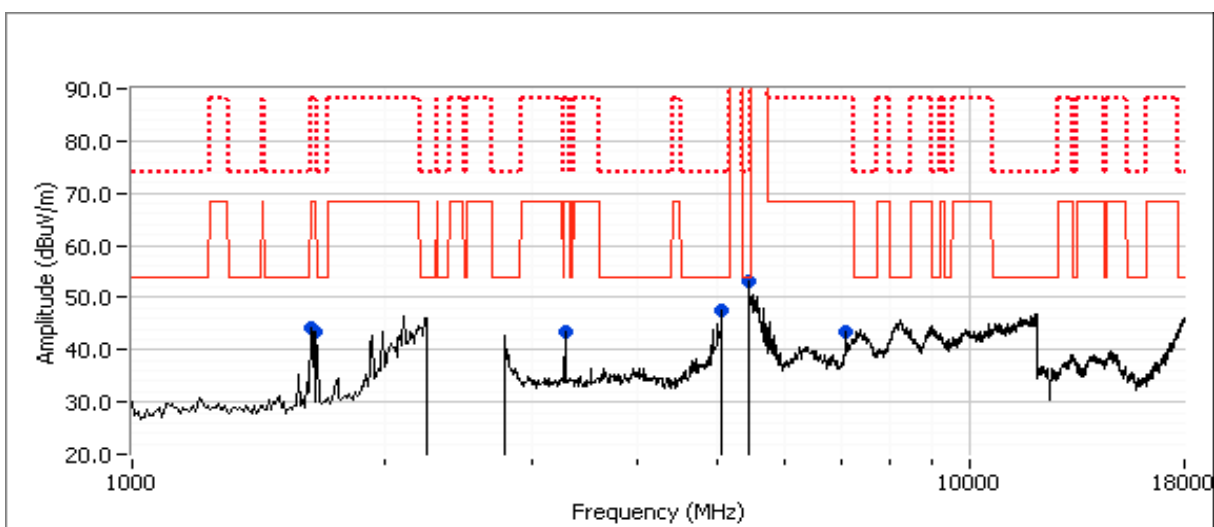
Test Location: FT 7
Config Change: None

Radio	Freq	Power Setting
1	5320 MHz	17.5
2	2462 MHz	13.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5439.930	49.9	V	54.0	-4.1	AVG	190	1.6	RB 1 MHz;VB 10 Hz;Peak
5439.900	58.3	V	74.0	-15.7	PK	190	1.6	RB 1 MHz;VB 3 MHz;Peak
1641.390	47.5	H	68.3	-20.8	PK	245	1.4	RB 1 MHz;VB 3 MHz;Peak
5039.960	40.7	V	54.0	-13.3	AVG	232	1.2	RB 1 MHz;VB 10 Hz;Peak
5039.040	52.4	V	74.0	-21.6	PK	232	1.2	RB 1 MHz;VB 3 MHz;Peak
1666.640	42.6	V	54.0	-11.4	AVG	228	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.610	45.0	V	74.0	-29.0	PK	228	1.0	RB 1 MHz;VB 3 MHz;Peak
3282.710	47.0	V	68.3	-21.3	PK	140	1.5	RB 1 MHz;VB 3 MHz;Peak
7092.950	49.6	V	68.3	-18.7	PK	53	1.0	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #2d, EUT on Channel #1 2412MHz - 802.11g and Channel #100 5500MHz - 802.11a - Chain A+B+C

Date of Test: 1/3/2013
Test Engineer: Rafael Varelas

Test Location: FT 7
Config Change: None

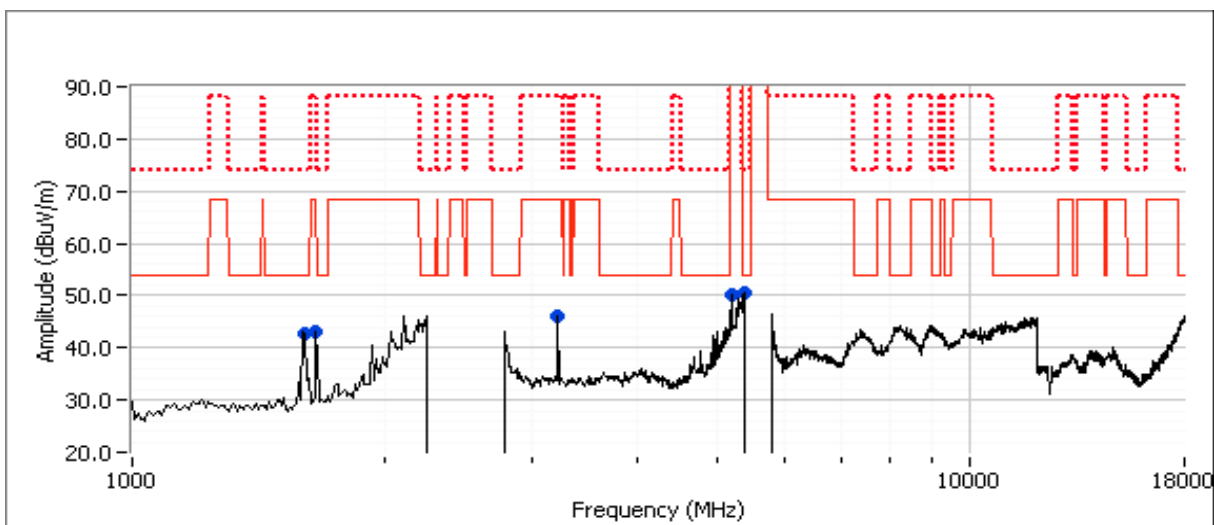
Radio	Freq	Power Setting
1	5500 MHz	20.0
2	2412 MHz	12.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5365.470	45.9	V	54.0	-8.1	AVG	11	1.4	RB 1 MHz;VB 10 Hz;Peak
5367.030	55.5	V	74.0	-18.5	PK	11	1.4	RB 1 MHz;VB 3 MHz;Peak
1608.040	42.7	H	54.0	-11.3	AVG	80	1.3	RB 1 MHz;VB 10 Hz;Peak
1607.930	45.2	H	74.0	-28.8	PK	80	1.3	RB 1 MHz;VB 3 MHz;Peak
3215.970	48.0	V	68.3	-20.3	PK	133	1.1	RB 1 MHz;VB 3 MHz;Peak
1666.640	42.6	V	54.0	-11.4	AVG	228	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.700	45.4	V	74.0	-28.6	PK	228	1.0	RB 1 MHz;VB 3 MHz;Peak
5199.750	51.1	V	68.3	-17.2	PK	303	1.3	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

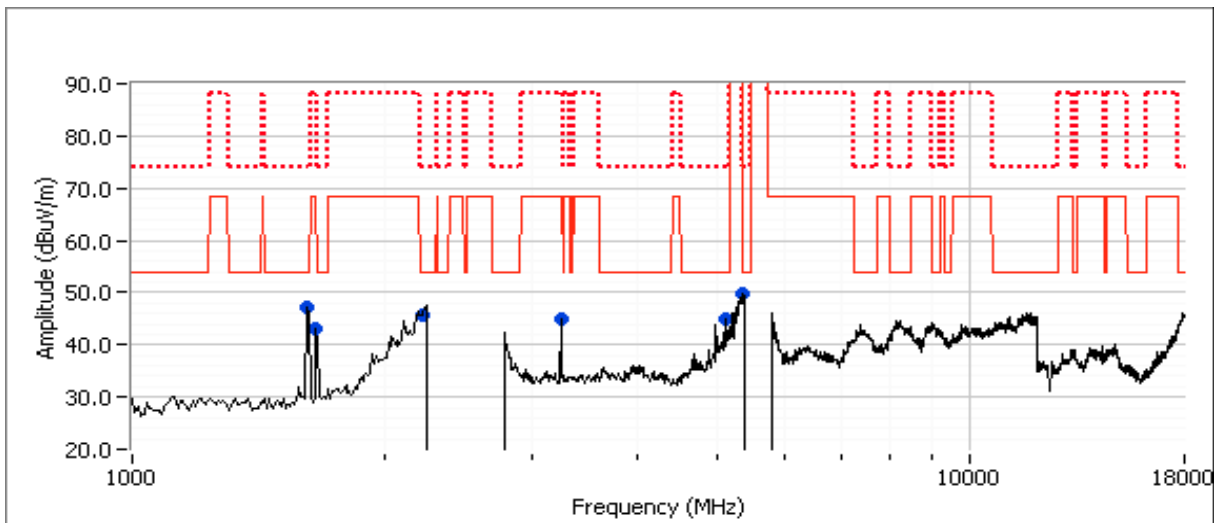
Run #2e: , EUT on Channel #6 2437MHz - 802.11g and Channel #116 5580MHz - 802.11a, Chain A+B+C

Radio	Freq	Power Setting
1	5580 MHz	20.0
2	2437 MHz	19.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1624.490	46.9	H	54.0	-7.1	AVG	235	1.3	RB 1 MHz;VB 10 Hz;Peak
1624.700	49.1	H	74.0	-24.9	PK	235	1.3	RB 1 MHz;VB 3 MHz;Peak
2239.990	45.2	V	54.0	-8.8	AVG	332	1.0	RB 1 MHz;VB 10 Hz;Peak
2240.300	57.0	V	74.0	-17.0	PK	332	1.0	RB 1 MHz;VB 3 MHz;Peak
1666.650	43.1	V	54.0	-10.9	AVG	226	1.1	RB 1 MHz;VB 10 Hz;Peak
1666.640	45.5	V	74.0	-28.5	PK	226	1.1	RB 1 MHz;VB 3 MHz;Peak
5119.810	41.2	V	54.0	-12.8	AVG	188	1.9	RB 1 MHz;VB 10 Hz;Peak
5120.060	48.5	V	74.0	-25.5	PK	188	1.9	RB 1 MHz;VB 3 MHz;Peak
5365.060	45.8	V	54.0	-8.2	AVG	185	1.4	RB 1 MHz;VB 10 Hz;Peak
5365.170	55.3	V	74.0	-18.7	PK	185	1.4	RB 1 MHz;VB 3 MHz;Peak
3249.420	47.5	V	68.3	-20.8	PK	136	1.2	RB 1 MHz;VB 3 MHz;Peak

- Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
- Note 2: Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #2f: , EUT on Channel #11 2462MHz - 802.11g and Channel #140 5700MHz - 802.11a, Chain A+B+C

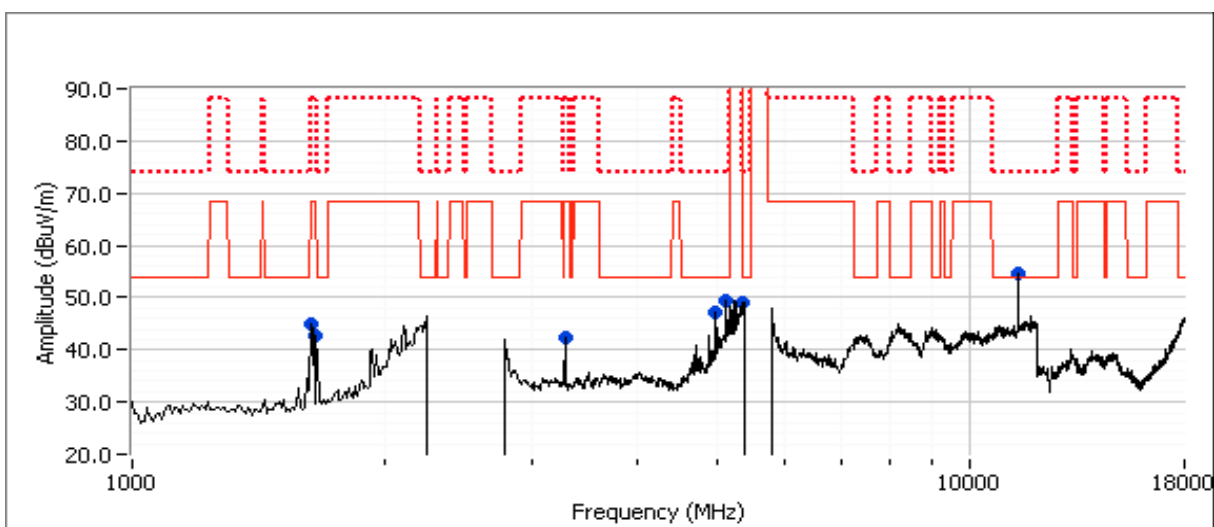
Radio	Freq	Power Setting
1	5700 MHz	20.0
2	2462 MHz	13.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11397.770	53.3	V	54.0	-0.7	AVG	41	1.1	RB 1 MHz;VB 10 Hz;Peak
11407.040	64.2	V	74.0	-9.8	PK	41	1.1	RB 1 MHz;VB 3 MHz;Peak
5359.930	46.9	V	54.0	-7.1	AVG	5	1.0	RB 1 MHz;VB 10 Hz;Peak
5359.650	55.2	V	74.0	-18.8	PK	5	1.0	RB 1 MHz;VB 3 MHz;Peak
3282.620	46.2	V	68.3	-22.1	PK	138	1.3	RB 1 MHz;VB 3 MHz;Peak
4959.920	43.8	V	54.0	-10.2	AVG	188	1.8	RB 1 MHz;VB 10 Hz;Peak
4959.950	48.4	V	74.0	-25.6	PK	188	1.8	RB 1 MHz;VB 3 MHz;Peak
1641.420	46.2	V	68.3	-22.1	PK	215	1.0	RB 1 MHz;VB 3 MHz;Peak
5119.850	44.9	V	54.0	-9.1	AVG	341	1.0	RB 1 MHz;VB 10 Hz;Peak
5120.000	51.6	V	74.0	-22.4	PK	341	1.0	RB 1 MHz;VB 3 MHz;Peak
1625.000	29.4	H	54.0	-24.6	AVG	148	1.0	RB 1 MHz;VB 10 Hz;Peak
1625.000	37.8	H	74.0	-36.2	PK	148	1.0	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #3, Radiated Spurious Emissions, 1-40GHz, 802.11n20/802.11n20, Chain A+B+C

Run #3a, EUT on Channel #1 2412MHz - 802.11n20 and Channel #52 5260MHz - 802.11n20 - Chain A+B+C

Date of Test: 1/4/2013
Test Engineer: Jack Liu

Test Location: FT 7
Config Change: None

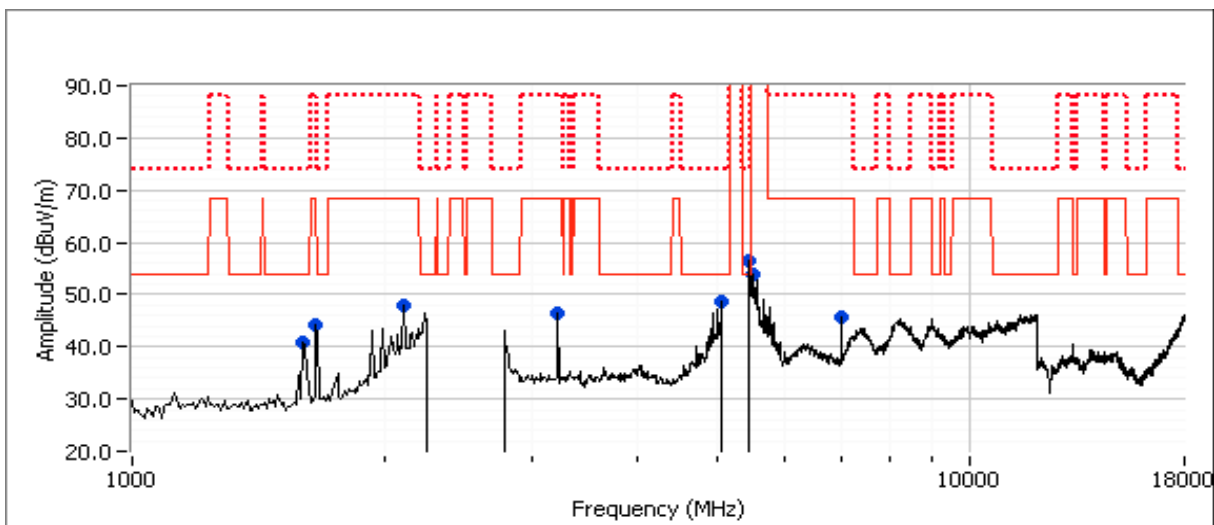
Radio	Freq	Power Setting
1	5260 MHz	18.0
2	2412 MHz	12.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5440.100	51.4	V	54.0	-2.6	AVG	192	1.3	RB 1 MHz;VB 10 Hz;Peak
5443.560	58.3	V	74.0	-15.7	PK	192	1.3	RB 1 MHz;VB 3 MHz;Peak
5040.000	44.0	V	54.0	-10.0	AVG	188	1.3	RB 1 MHz;VB 10 Hz;Peak
5037.870	52.7	V	74.0	-21.3	PK	188	1.3	RB 1 MHz;VB 3 MHz;Peak
1666.660	43.1	V	54.0	-10.9	AVG	228	1.1	RB 1 MHz;VB 10 Hz;Peak
1666.530	45.4	V	74.0	-28.6	PK	228	1.1	RB 1 MHz;VB 3 MHz;Peak
1608.030	43.0	H	54.0	-11.0	AVG	84	1.3	RB 1 MHz;VB 10 Hz;Peak
1608.030	45.6	H	74.0	-28.4	PK	84	1.3	RB 1 MHz;VB 3 MHz;Peak
7013.480	50.1	V	68.3	-18.2	PK	179	1.3	RB 1 MHz;VB 3 MHz;Peak
3216.070	48.8	V	68.3	-19.5	PK	139	1.2	RB 1 MHz;VB 3 MHz;Peak
2112.060	50.2	V	68.3	-18.1	PK	218	1.6	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

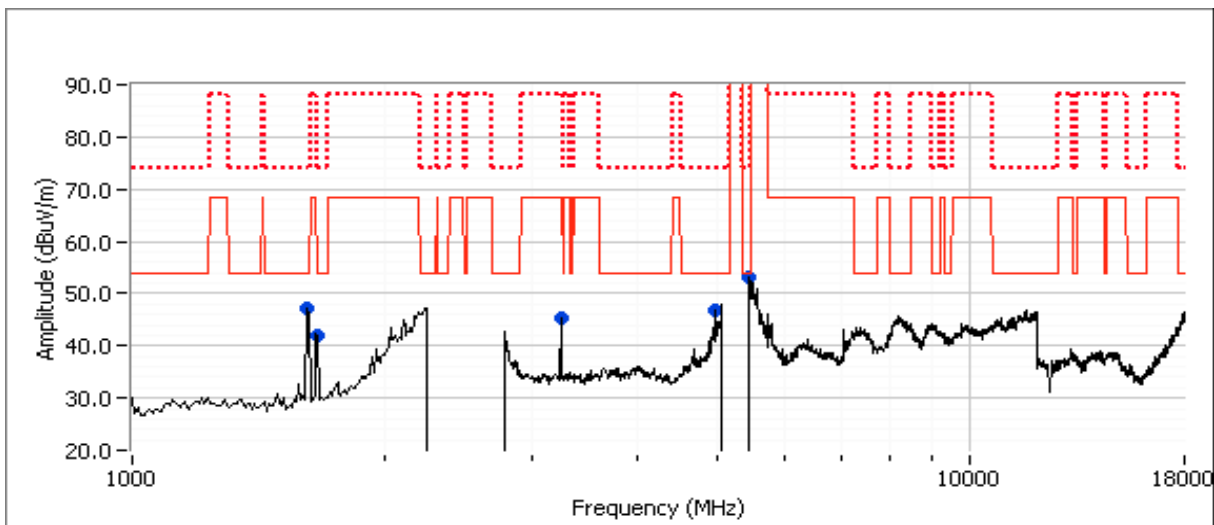
Run #3b: , EUT on Channel #6 2437MHz - 802.11n20 and Channel #60 5300MHz - 802.11n20, Chain A+B+C

Radio	Freq	Power Setting
1	5300 MHz	18.0
2	2437 MHz	18.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5440.030	50.5	V	54.0	-3.5	AVG	188	1.4	RB 1 MHz;VB 10 Hz;Peak
5439.950	58.9	V	74.0	-15.1	PK	188	1.4	RB 1 MHz;VB 3 MHz;Peak
1624.690	48.1	H	54.0	-5.9	AVG	244	1.4	RB 1 MHz;VB 10 Hz;Peak
1624.700	50.1	H	74.0	-23.9	PK	244	1.4	RB 1 MHz;VB 3 MHz;Peak
4959.960	45.6	V	54.0	-8.4	AVG	0	1.1	RB 1 MHz;VB 10 Hz;Peak
4959.900	51.2	V	74.0	-22.8	PK	0	1.1	RB 1 MHz;VB 3 MHz;Peak
1666.650	43.2	V	54.0	-10.8	AVG	226	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.650	45.3	V	74.0	-28.7	PK	226	1.0	RB 1 MHz;VB 3 MHz;Peak
3249.280	46.9	V	68.3	-21.4	PK	202	1.6	RB 1 MHz;VB 3 MHz;Peak

- Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
- Note 2: Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

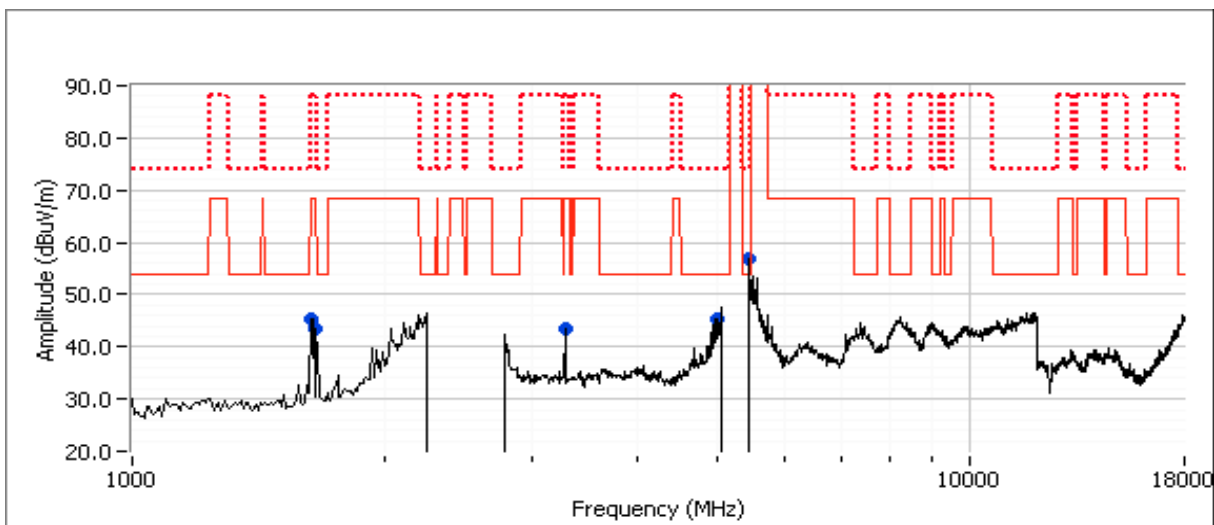
Run #3c: , EUT on Channel #11 2462MHz - 802.11n20 and Channel #64 5320MHz - 802.11n20, Chain A+B+C

Radio	Freq	Power Setting
1	5320 MHz	18.0
2	2462 MHz	12.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5399.910	50.2	V	54.0	-3.8	AVG	9	1.5	POS; RB 1 MHz; VB: 10 Hz
5400.060	63.2	V	74.0	-10.8	PK	9	1.5	POS; RB 1 MHz; VB: 3 MHz
1666.700	43.3	V	54.0	-10.7	AVG	229	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.580	45.1	V	74.0	-28.9	PK	229	1.0	RB 1 MHz;VB 3 MHz;Peak
5000.050	40.6	V	54.0	-13.4	AVG	244	1.0	RB 1 MHz;VB 10 Hz;Peak
4998.820	49.6	V	74.0	-24.4	PK	244	1.0	RB 1 MHz;VB 3 MHz;Peak
1641.310	47.1	V	68.3	-21.2	PK	211	1.0	RB 1 MHz;VB 3 MHz;Peak
3282.700	47.1	V	68.3	-21.2	PK	140	1.5	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #3d, EUT on Channel #1 2412MHz - 802.11n20 and Channel #100 5500MHz - 802.11n20 - Chain A+B+C

Date of Test: 1/4/2012
Test Engineer: Rafael Varelas

Test Location: FT7
Config Change: None

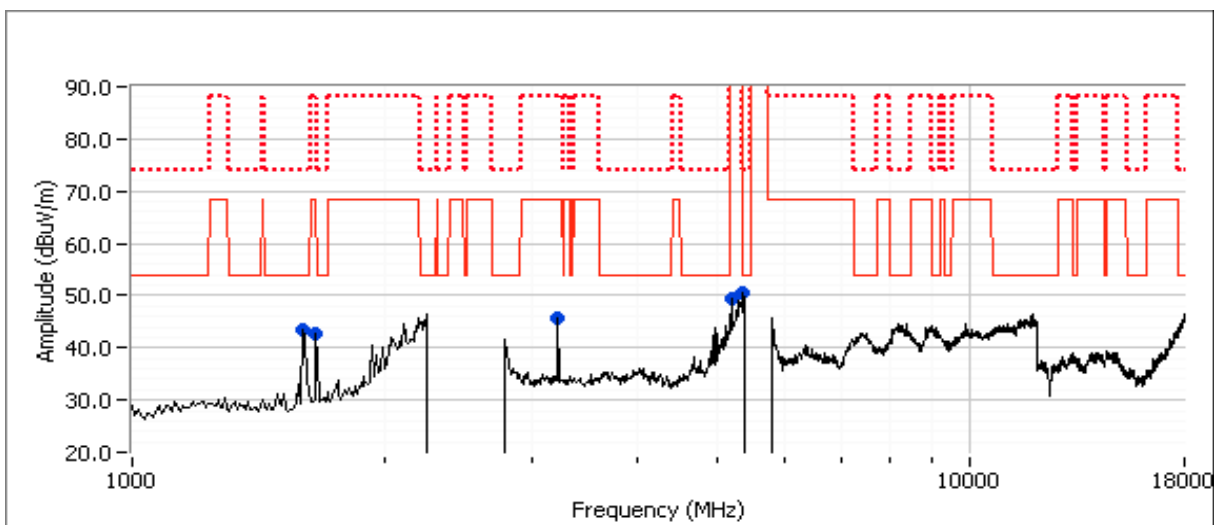
Radio	Freq	Power Setting
1	5500 MHz	20.0
2	2412 MHz	12.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5360.210	44.3	V	54.0	-9.7	AVG	189	1.2	RB 1 MHz;VB 10 Hz;Peak
5358.920	54.6	V	74.0	-19.4	PK	189	1.2	RB 1 MHz;VB 3 MHz;Peak
1608.010	43.4	H	54.0	-10.6	AVG	84	1.3	RB 1 MHz;VB 10 Hz;Peak
1608.020	45.5	H	74.0	-28.5	PK	84	1.3	RB 1 MHz;VB 3 MHz;Peak
1666.650	42.4	V	54.0	-11.6	AVG	232	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.670	45.3	V	74.0	-28.7	PK	232	1.0	RB 1 MHz;VB 3 MHz;Peak
5200.050	52.0	V	68.3	-16.3	PK	343	1.2	RB 1 MHz;VB 3 MHz;Peak
3216.020	48.8	V	68.3	-19.5	PK	136	1.2	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

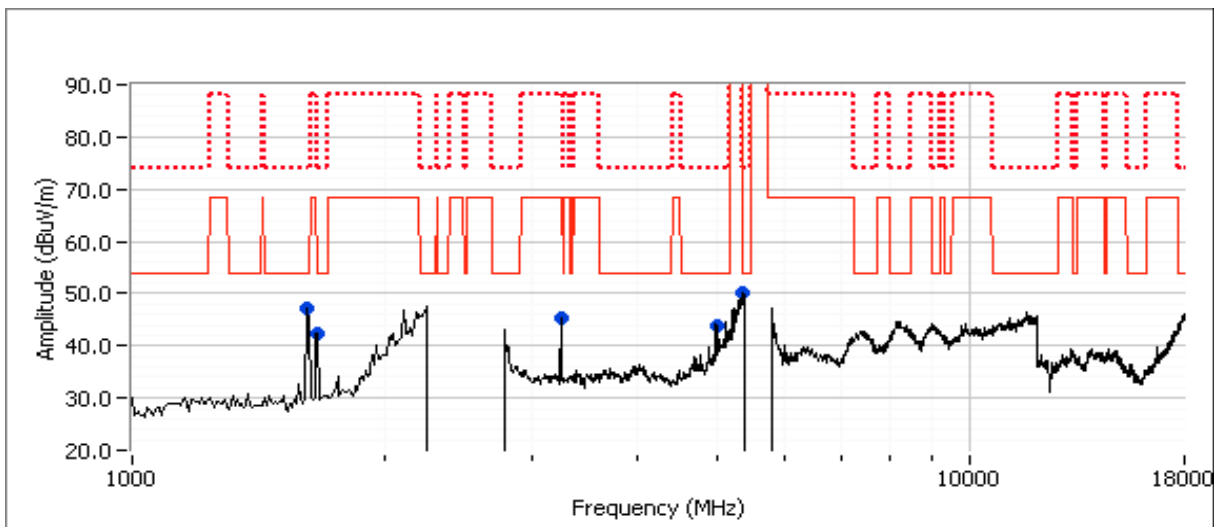
Run #3e: , EUT on Channel #6 2437MHz - 802.11n20 and Channel #116 5580MHz - 802.11n20, Chain A+B+C

Radio	Freq	Power Setting
1	5580 MHz	20.0
2	2437 MHz	18.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1624.660	48.7	H	54.0	-5.3	AVG	246	1.3	RB 1 MHz;VB 10 Hz;Peak
1624.790	50.1	H	74.0	-23.9	PK	246	1.3	RB 1 MHz;VB 3 MHz;Peak
1666.670	41.3	H	54.0	-12.7	AVG	216	1.2	RB 1 MHz;VB 10 Hz;Peak
1666.650	44.4	H	74.0	-29.6	PK	216	1.2	RB 1 MHz;VB 3 MHz;Peak
5000.000	39.3	V	54.0	-14.7	AVG	89	1.4	RB 1 MHz;VB 10 Hz;Peak
5000.030	47.5	V	74.0	-26.5	PK	89	1.4	RB 1 MHz;VB 3 MHz;Peak
5369.410	44.4	V	54.0	-9.6	AVG	12	1.0	RB 1 MHz;VB 10 Hz;Peak
5372.080	55.1	V	74.0	-18.9	PK	12	1.0	RB 1 MHz;VB 3 MHz;Peak
3249.290	47.4	V	68.3	-20.9	PK	198	1.5	RB 1 MHz;VB 3 MHz;Peak

- Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
- Note 2: Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #3f: , EUT on Channel #11 2462MHz - 802.11n20 and Channel #140 5700MHz - 802.11n20, Chain A+B+C

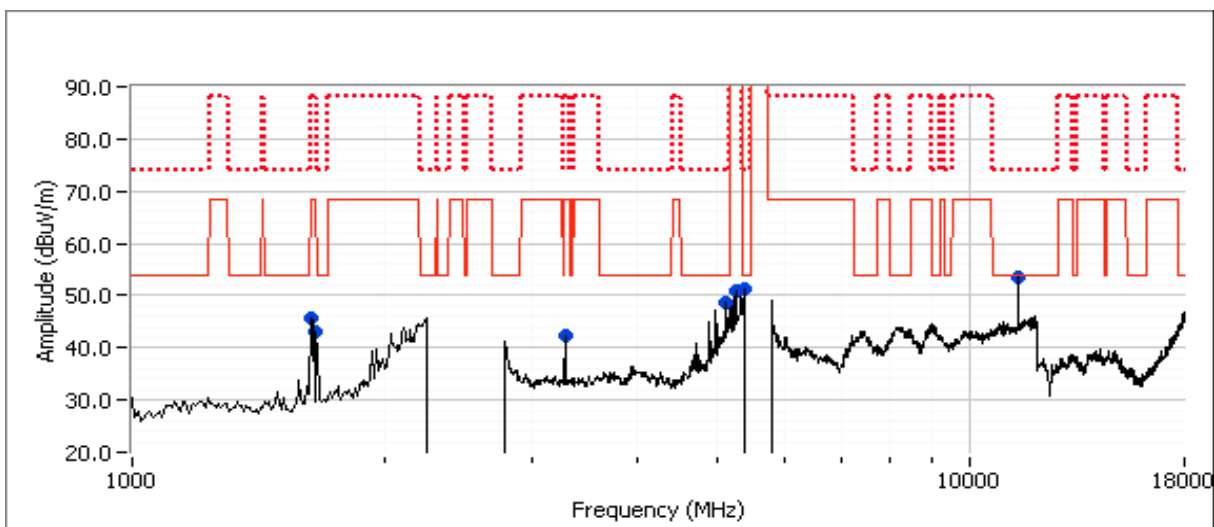
Radio	Freq	Power Setting
1	5700 MHz	20.0
2	2462 MHz	12.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11396.120	50.5	V	54.0	-3.5	AVG	341	1.0	RB 1 MHz;VB 10 Hz;Peak
11395.790	62.2	V	74.0	-11.8	PK	341	1.0	RB 1 MHz;VB 3 MHz;Peak
5359.970	46.9	V	54.0	-7.1	AVG	196	1.5	RB 1 MHz;VB 10 Hz;Peak
5360.040	54.8	V	74.0	-19.2	PK	196	1.5	RB 1 MHz;VB 3 MHz;Peak
1666.670	42.9	V	54.0	-11.1	AVG	230	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.570	45.3	V	74.0	-28.7	PK	230	1.0	RB 1 MHz;VB 3 MHz;Peak
5120.130	47.3	V	54.0	-6.7	AVG	343	1.2	RB 1 MHz;VB 10 Hz;Peak
5119.970	52.6	V	74.0	-21.4	PK	343	1.2	RB 1 MHz;VB 3 MHz;Peak
5239.900	53.1	V	68.3	-15.2	PK	190	1.8	RB 1 MHz;VB 3 MHz;Peak
1641.260	47.0	V	68.3	-21.3	PK	216	1.0	RB 1 MHz;VB 3 MHz;Peak
3282.560	46.8	V	68.3	-21.5	PK	140	1.5	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #4, Radiated Spurious Emissions, 1-40GHz, 802.11n40/802.11n40, Chain A+B+C

Run #4a, EUT on Channel #3 2422MHz - 802.11n40 and Channel #54 5270MHz - 802.11n40 - Chain A+B+C

Date of Test: 1/4/2013 and 1/7/2013
Test Engineer: Jack Liu/ Rafael Varelas

Test Location: FT 7
Config Change: None

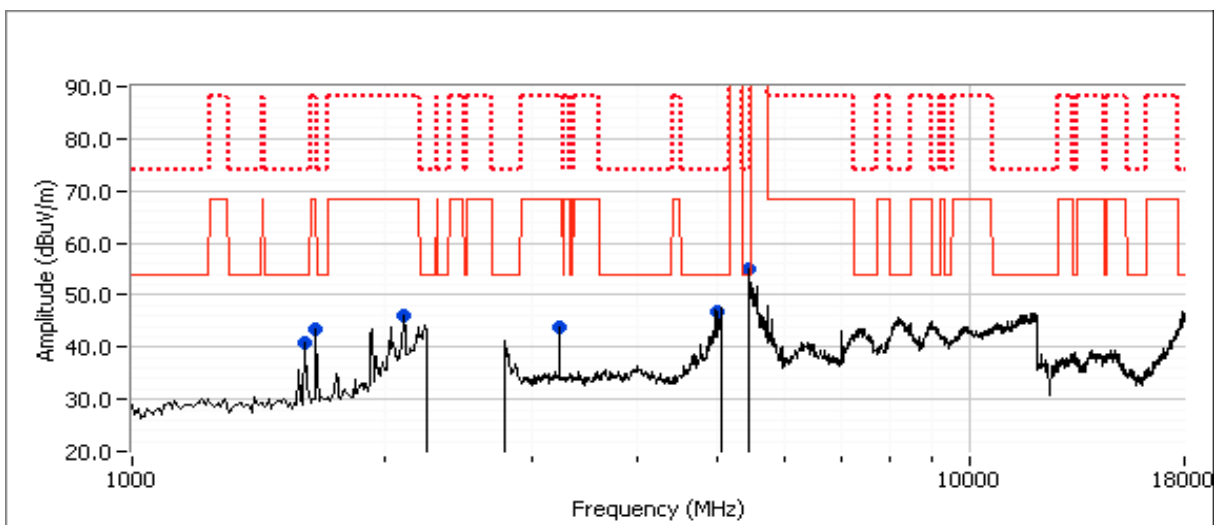
Radio	Freq	Power Setting
1	5270 MHz	18.0
2	2422 MHz	10.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5439.930	51.4	V	54.0	-2.6	AVG	360	1.5	RB 1 MHz;VB 10 Hz;Peak
5440.060	58.7	V	74.0	-15.3	PK	360	1.5	RB 1 MHz;VB 3 MHz;Peak
1614.630	41.2	H	54.0	-12.8	AVG	90	1.3	RB 1 MHz;VB 10 Hz;Peak
1614.680	43.3	H	74.0	-30.7	PK	90	1.3	RB 1 MHz;VB 3 MHz;Peak
4999.600	42.6	V	54.0	-11.4	AVG	100	1.3	RB 1 MHz;VB 10 Hz;Peak
4999.600	52.3	V	74.0	-21.7	PK	100	1.3	RB 1 MHz;VB 3 MHz;Peak
1666.660	43.4	V	54.0	-10.6	AVG	228	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.730	45.5	V	74.0	-28.5	PK	228	1.0	RB 1 MHz;VB 3 MHz;Peak
3229.550	48.0	V	68.3	-20.3	PK	140	1.3	RB 1 MHz;VB 3 MHz;Peak
2111.910	49.9	V	68.3	-18.4	PK	301	1.0	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

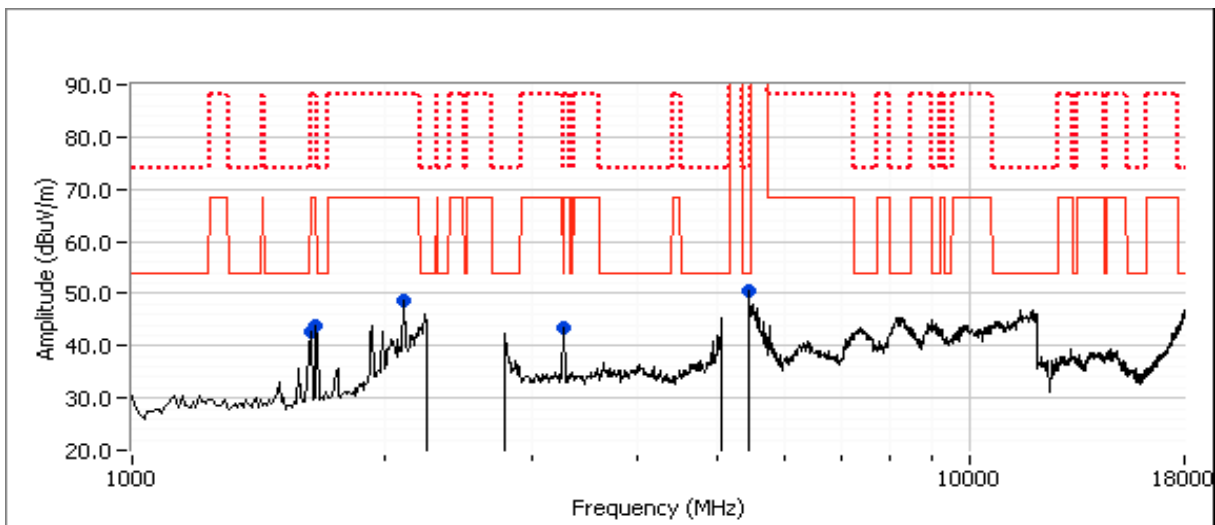
Run #4b: , EUT on Channel #9 2452MHz - 802.11n40 and Channel #62 5310MHz - 802.11n40, Chain A+B+C

Radio	Freq	Power Setting
1	5310 MHz	13.0
2	2452 MHz	10.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5400.160	49.4	V	54.0	-4.6	AVG	9	1.5	POS; RB 1 MHz; VB: 10 Hz
5400.710	61.5	V	74.0	-12.5	PK	9	1.5	POS; RB 1 MHz; VB: 3 MHz
5439.960	42.0	V	54.0	-12.0	AVG	268	1.2	RB 1 MHz;VB 10 Hz;Peak
5439.840	51.3	V	74.0	-22.7	PK	268	1.2	RB 1 MHz;VB 3 MHz;Peak
1666.680	43.6	V	54.0	-10.4	AVG	230	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.630	45.8	V	74.0	-28.2	PK	230	1.0	RB 1 MHz;VB 3 MHz;Peak
1634.600	45.4	H	68.3	-22.9	PK	246	1.3	RB 1 MHz;VB 3 MHz;Peak
2111.790	52.2	V	68.3	-16.1	PK	221	1.6	RB 1 MHz;VB 3 MHz;Peak
3269.350	47.2	V	68.3	-21.1	PK	139	1.3	RB 1 MHz;VB 3 MHz;Peak

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.
Note 2:	Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

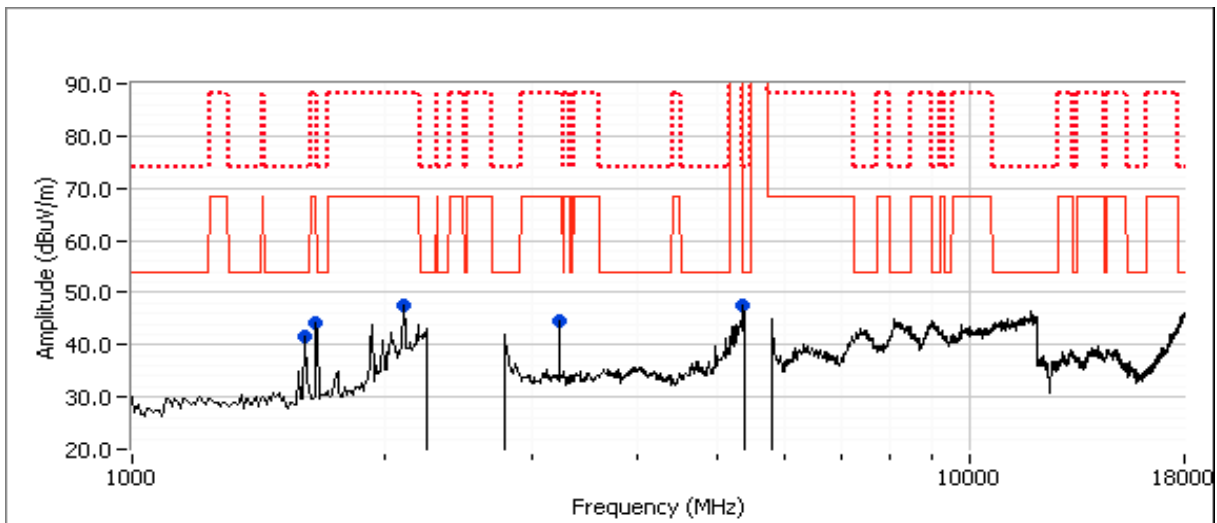
Run #4c: , EUT on Channel #3 2422MHz - 802.11n40 and Channel #102 5510MHz - 802.11n40, Chain A+B+C

Radio	Freq	Power Setting
1	5510 MHz	15.0
2	2422 MHz	10.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1666.650	43.6	V	54.0	-10.4	AVG	229	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.690	45.6	V	74.0	-28.4	PK	229	1.0	RB 1 MHz;VB 3 MHz;Peak
5372.720	42.2	V	54.0	-11.8	AVG	190	1.4	RB 1 MHz;VB 10 Hz;Peak
5373.100	53.9	V	74.0	-20.1	PK	190	1.4	RB 1 MHz;VB 3 MHz;Peak
1614.670	40.8	H	54.0	-13.2	AVG	242	1.3	RB 1 MHz;VB 10 Hz;Peak
1614.720	43.8	H	74.0	-30.2	PK	242	1.3	RB 1 MHz;VB 3 MHz;Peak
2111.900	50.1	V	68.3	-18.2	PK	299	1.0	RB 1 MHz;VB 3 MHz;Peak
3229.250	46.6	V	68.3	-21.7	PK	136	1.2	RB 1 MHz;VB 3 MHz;Peak

Note 1: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #4d: , EUT on Channel #9 2452MHz - 802.11n40 and Channel #134 5670MHz - 802.11n40, Chain A+B+C

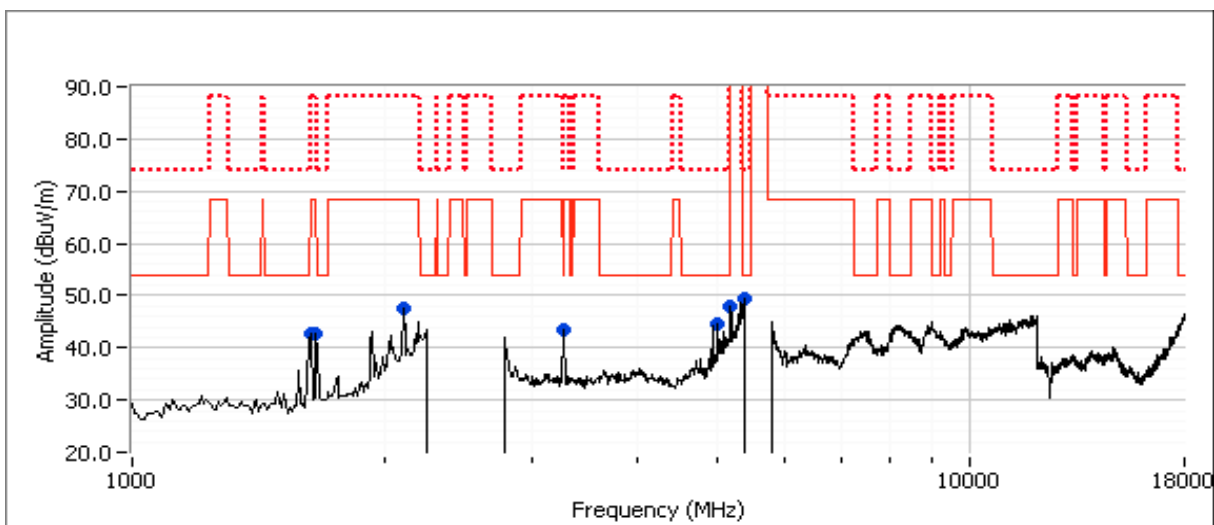
Radio	Freq	Power Setting
1	5670 MHz	17.0
2	2452 MHz	10.5

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5371.780	43.7	V	54.0	-10.3	AVG	334	1.3	RB 1 MHz;VB 10 Hz;Peak
5371.420	54.3	V	74.0	-19.7	PK	334	1.3	RB 1 MHz;VB 3 MHz;Peak
1666.670	42.5	V	54.0	-11.5	AVG	254	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.680	45.2	V	74.0	-28.8	PK	254	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.840	39.8	V	54.0	-14.2	AVG	246	1.2	RB 1 MHz;VB 10 Hz;Peak
4999.130	49.0	V	74.0	-25.0	PK	246	1.2	RB 1 MHz;VB 3 MHz;Peak
5159.830	51.1	V	68.3	-17.2	PK	341	1.7	RB 1 MHz;VB 3 MHz;Peak
1634.730	46.5	H	68.3	-21.8	PK	244	1.4	RB 1 MHz;VB 3 MHz;Peak
2112.090	50.6	V	68.3	-17.7	PK	220	1.6	RB 1 MHz;VB 3 MHz;Peak
3269.300	46.4	V	68.3	-21.9	PK	139	1.5	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



Client:	Flextronics	Job Number:	J89632
Model:	WS-AP3710i	T-Log Number:	T89871
Contact:	Georges Fares	Account Manager:	Christine Krebill
Standard:	15.407, RSS-210	Class:	N/A

Run #4e: , EUT on Channel #6 2437MHz - 802.11n40 and Channel #110 5550MHz - 802.11n40, Chain A+B+C

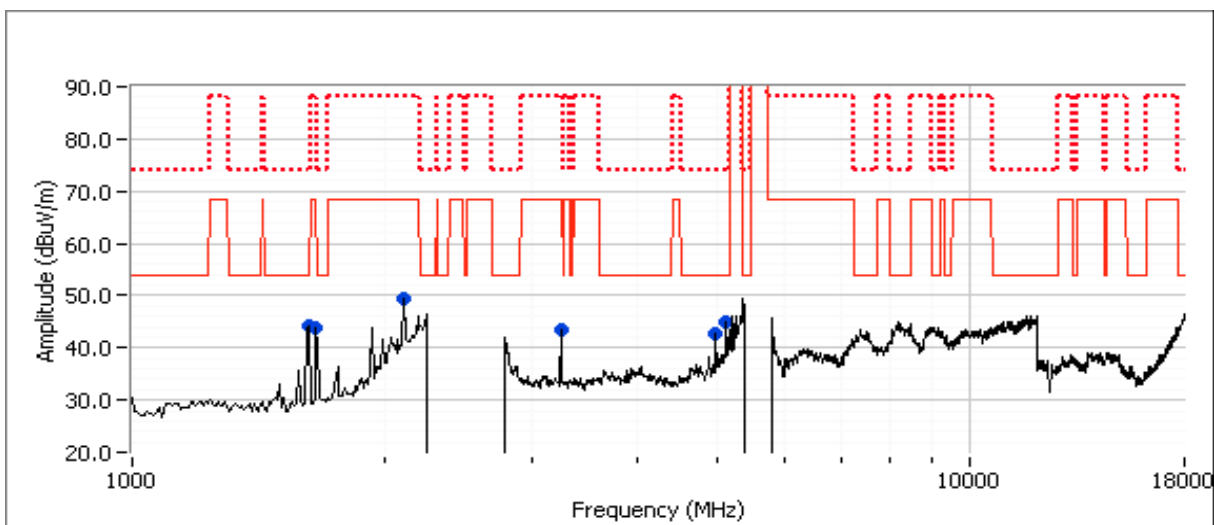
Radio	Freq	Power Setting
1	5550 MHz	17.0
2	2437 MHz	13.0

Spurious Radiated Emissions:

Frequency	Level	Pol	15.209/15.407		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1624.700	44.7	H	54.0	-9.3	AVG	252	1.3	RB 1 MHz;VB 10 Hz;Peak
1624.750	46.9	H	74.0	-27.1	PK	252	1.3	RB 1 MHz;VB 3 MHz;Peak
5040.030	37.6	V	54.0	-16.4	AVG	197	1.2	RB 1 MHz;VB 10 Hz;Peak
5042.100	47.6	V	74.0	-26.4	PK	197	1.2	RB 1 MHz;VB 3 MHz;Peak
4959.980	36.7	V	54.0	-17.3	AVG	196	1.6	RB 1 MHz;VB 10 Hz;Peak
4959.900	44.8	V	74.0	-29.2	PK	196	1.6	RB 1 MHz;VB 3 MHz;Peak
1666.650	43.5	V	54.0	-10.5	AVG	236	1.0	RB 1 MHz;VB 10 Hz;Peak
1666.780	45.5	V	74.0	-28.5	PK	236	1.0	RB 1 MHz;VB 3 MHz;Peak
3249.400	46.5	V	68.3	-21.8	PK	148	1.3	RB 1 MHz;VB 3 MHz;Peak
2112.050	52.5	H	68.3	-15.8	PK	150	1.0	RB 1 MHz;VB 3 MHz;Peak

Note 1:

For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Alternatively, the 15.209 limits may be used.



End of Report

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