

EMC Test Report

Application for Grant of Equipment Authorization Class II Permissive Change/Reassessment

Industry Canada RSS-Gen Issue 4 / RSS 247 Issue 1 FCC Part 15, Subpart E

Model: XI-AC3470

IC CERTIFICATION #: 5428A-XIAC3470
FCC ID: SK6-XIAC3470

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IC SITE REGISTRATION #: 2845B-3; 2845B-4, 2845B-5, 2845B-7

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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	June 22, 2016	First release	
1.0	August 3, 2016	Clarified start of UNII2c/3 straddle results. Fixed reported 99% BW for UNII2c/3 straddle channels. Removed reference to IC PSD limits for pk-to-avg >3dB	MEH

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SCOPE

An electromagnetic emissions test has been performed on the Xirrus, Inc. model XI-AC3470, pursuant to the following rules:

Industry Canada RSS-Gen Issue 4
RSS 247 Issue 1 “Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices”
FCC Part 15, Subpart E requirements for UNII Devices

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

ANSI C63.10-2013
FCC General UNII Test Procedures KDB789033

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

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

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

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 Xirrus, Inc. model XI-AC3470 complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 4
RSS 247 Issue 1 “Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices”
FCC Part 15, Subpart E requirements for UNII Devices

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

The test results recorded herein are based on a single type test of Xirrus, Inc. model XI-AC3470 and therefore apply only to the tested sample. The sample was selected and prepared by Paul Zahra of Xirrus, Inc..

DEVIATIONS FROM THE STANDARDS

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

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

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)	-	26dB Bandwidth	a: 21.6 MHz n20: 21.8 MHz n40: 40.2 MHz ac80: 82.1 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a) (2)	RSS-247 6.2.2 (1)	Output Power	Worse case from beamforming/non-beamforming modes a: 17.4 dBm (55.3 mW) HT20: 17.6 dBm (58.1 mW) HT40: 19.4 dBm (87.3 mW) AC80: 17.3 dBm (53.8 mW) (Max eirp: 29.5dBm (896.3 mW))	24dBm (250mW)	Complies
15.407(a) (2)	-	Power Spectral Density	a: 4.9 dBm/MHz HT20: 4.8 dBm/MHz HT40: 3.8 dBm/MHz AC80: -1.0 dBm/MHz	11 dBm/MHz	Complies
-	RSS-247 6.2.2 (1)			11 dBm / MHz	Complies

Operation in the 5.470 – 5.725 GHz Band

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)	-	26dB Bandwidth	a: 21.2 MHz n20: 21.5 MHz n40: 40.1 MHz ac80: 81.9 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a) (2)	RSS-247 6.2.3 (1)	Output Power	Worse case from beamforming/non-beamforming modes a: 17.6 dBm (57.3 mW) HT20: 18.5 dBm (70.8 mW) HT40: 21.0 dBm (125.7 mW) AC80: 20.8 dBm (119.6 mW) (Max eirp: 29.5 dBm (891.3 mW))	24dBm (250mW)	Complies
15.407(a) (2)	-	Power Spectral Density	a: 5.3 dBm/MHz HT20: 5.9 dBm/MHz HT40: 5.3 dBm/MHz AC80: 2.3 dBm/MHz	11 dBm/MHz	Complies
-	RSS-247 6.2.2 (1)			11 dBm / MHz	Complies

Requirements for all U-NII/LELAN bands

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	RSS 247 6.1	Modulation	Unchanged from original filing		
15.407(b) / 15.209	RSS 247 6.0	Spurious Emissions	53.5 dB μ V/m @ 5725.0 MHz (-0.5 dB)	Refer to page 23	Complies
	RSS 247 6.4 (1)	Channel Selection	Spurious emissions tested at outermost channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15			Measurements on three channels in each band		Complies
15.407 (c)	RSS 247 6.4 (2)	Operation in the absence of information to transmit	Unchanged from original filing		
15.407 (g)		Frequency Stability	Frequency stability is better than 20ppm	Signal shall remain within the allocated band	Complies
15.407 (h1)	RSS-247 6.2.2 (1) and 6.2.3 (1)	Transmit Power Control	TCP mechanism is discussed in the Operational Description	The U-NII device shall have the capability to operate with a mean EIRP value lower than 24dBm (250mW)	Complies
15.407 (h2)	RSS-247 6.3	Dynamic frequency Selection (device with radar detection)	Refer to separate test report	Threshold -62dBm (-64dBm if eirp > 200mW) Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes	Complies
	RSS-247 6.4	User manual information	Refer to manual for details	Warning regarding interference from Satellite Systems	Complies

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Unchanged from original filing		
15.207	RSS GEN Table 3	AC Conducted Emissions	Unchanged from original filing		
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Original MPE measurements represent worse case. The power levels in this application are less.		
-	RSP 100 RSS GEN 6.6	Occupied Bandwidth 4Tx	a: 17.0 MHz n20: 18.1 MHz n40: 36.5 MHz ac80: 76.1 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 Xirrus, Inc. model XI-AC3470 is a 4x4 802.11abgn/ac module that is designed to be used in the Xirrus XR2000, XR4000 and XR6000 host systems. Since the host would be placed on a wall or ceiling mounted during operation, the EUT was treated as tabletop equipment. The host devices are powered from 802.3 PoE + Compliant power sources.

The sample was received on September 25, 2015 and tested on October 19, 20, 21, 22, 23 and 29, 2015. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Xirrus	XI-AC3470	4x4 802.11abgn/ac module	Refer to data	SK6-XIAC3470

OTHER EUT DETAILS

The following EUT details should be noted:

2.4GHz - supports 11b, 11g, HT20, HT40

5GHz - supports 11a, HT20, HT40, AC80 (does not support 80+80 or 160MHz at this time)

2.4/5GHz - supports 4Tx and 4TxBF

ANTENNA SYSTEM

The antenna system consists of four internal pcb trace antennas.

ENCLOSURE

The EUT has no enclosure. It is designed to be installed within the enclosure of a host system.

MODIFICATIONS

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

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Xirrus	XR4000	XR4000 motherboard/test fixture	-	-

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

Company	Model	Description	Serial Number	FCC ID
Xirrus	XP1-MSI-75	POE Injector	-	-
-	-	Laptop Computer	-	-

Note, the POE injector was placed locally for the AC conducted emission test.

EUT INTERFACE PORTS

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

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
EUT	test fixture	PCIe bus connector	-	-
Test Fixture – POE In	Remote POE Injector	CAT5	Unshielded	10
POE Injector	Laptop Computer	CAT5	Unshielded	2
POE Injector AC Input	AC Mains	3wire	Unshielded	1.5

EUT OPERATION

During testing, the EUT was configured to continuously transmit at maximum output power and noted data rate on the channel indicated. A preliminary evaluation was performed to determine the worse case data rate for each mode.

TEST SITE**GENERAL INFORMATION**

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

Site	Designation / Registration Numbers		Location
	FCC	Canada	
Chamber 3	US0027	2845B-3	41039 Boyce Road Fremont, CA 94538-2435
Chamber 4	US0027	2845B-4	
Chamber 5	US0027	2845B-5	
Chamber 7	US0027	2845B-7	

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

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.10. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

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

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

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

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

INSTRUMENT CONTROL COMPUTER

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 software used for radiated and conducted emissions measurements is NTS EMI Test Software (rev 2.10)

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

ANSI C63.10 specifies that the test height above ground for table mounted devices shall be 80 centimeters for measurements below 1GHz and 1.5m for measurements above 1GHz. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor as specified in ANSI C63.4. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

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

TEST PROCEDURES**EUT AND CABLE PLACEMENT**

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.10, and the worst-case orientation is used for final measurements.

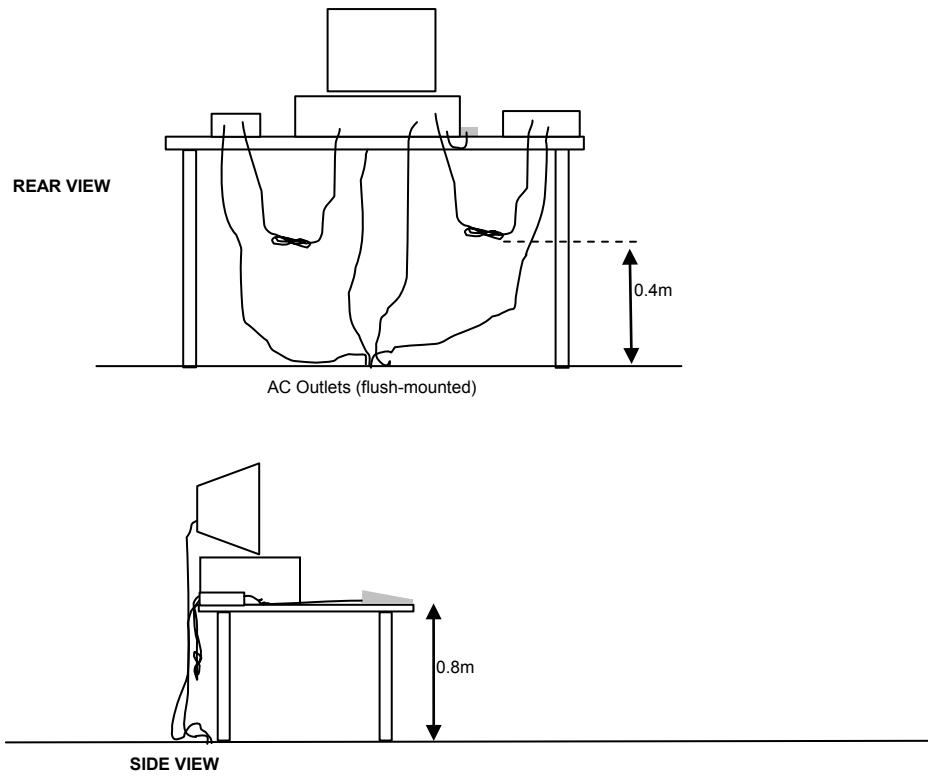
RADIATED EMISSIONS

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.

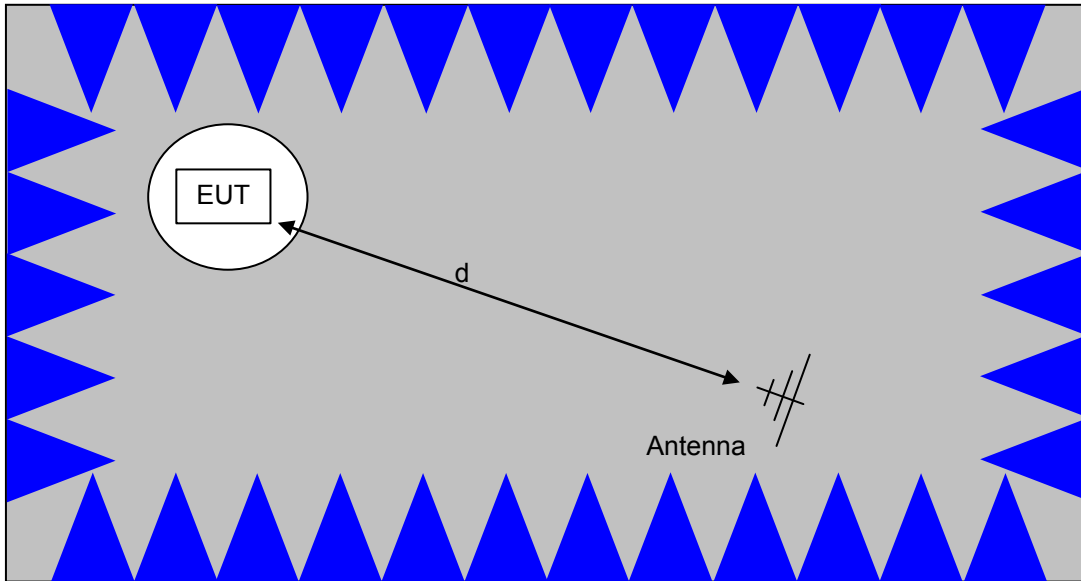
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

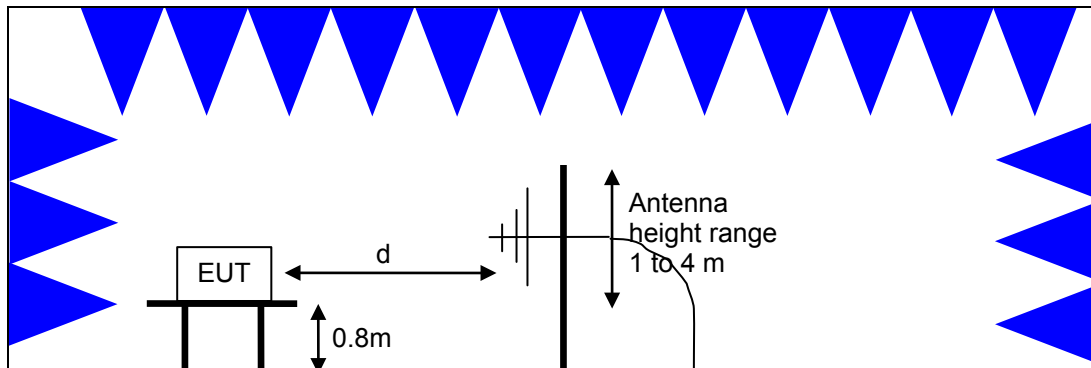


Typical Test Configuration for Radiated Field Strength Measurements



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.

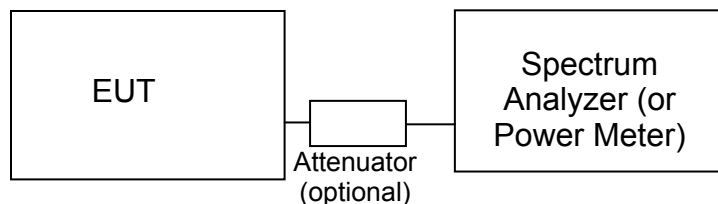
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹.

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

FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. In the 5250-5350MHz and 5470-5725MHz bands, where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	1000 mW (30 dBm)	17 dBm/MHz
5250 – 5350	250 mW (24 dBm)	11 dBm/MHz
5745 – 5725	250 mW (24 dBm)	11 dBm/MHz
5725 – 5850	1 Watts (30 dBm)	30 dBm/500kHz

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi.

¹ The restricted bands are detailed in FCC 15.205, RSS-GEN Table 3

OUTPUT POWER LIMITS –LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 247. In the 5150-5250MHz, 5250-5350MHz and 5470-5725MHz bands, where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	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 – 5850	1 Watts (30 dBm) 4W eirp	30 dBm/ 500KHz

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. 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 .

² If EIRP exceeds 500mW the device must employ TPC

³ If EIRP exceeds 500mW the device must employ TPC

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

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:

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

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

where P is the eirp (Watts)

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

Appendix A Test Equipment Calibration Data

Radiated Spurious Emissions, 1000 - 6,500 MHz, Bandedges, 19-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/20/2013	12/20/2015
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	1/23/2015	1/23/2016

Radiated Emissions, 1000 - 12,000 MHz, 19-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/20/2013	12/20/2015
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	7/8/2015	7/8/2016
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	7/10/2015	7/10/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	10/9/2015	10/9/2016
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	3/7/2015	3/7/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	1/23/2015	1/23/2016

Radiated Emissions, 1000 - 12,000 MHz, 20-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/20/2013	12/20/2015
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	7/10/2015	7/10/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	10/9/2015	10/9/2016
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	3/7/2015	3/7/2016

Radiated Spurious Emissions, 1000 - 40,000 MHz, 21-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	SA40 Head (Red)	84125C	1145	7/1/2015	7/17/2016
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1152	7/10/2015	7/10/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017

Radio Antenna Port (Power and Spurious Emissions), 21-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYG,	E4446A	2139	6/22/2015	6/22/2016

Radio Antenna Port (Power and Spurious Emissions), 22-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYG,	E4446A	2139	6/22/2015	6/22/2016



Radio Antenna Port (Power and Spurious Emissions), 23-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016

Radiated Spurious Emissions, 1000 - 40,000 MHz, 29-Oct-15

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/20/2013	12/20/2015
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1152	7/10/2015	7/10/2016
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	7/10/2015	7/10/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	10/9/2015	10/9/2016
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	3/7/2015	3/7/2016

Appendix B Test Data

T99796 Pages 29 - 140



EMC Test Data

Client:	Xirrus	Job Number:	JD99498
Product:	XI-AC3470	T-Log Number:	T99796
System Configuration:	-	Project Manager:	Christine Krebill
Contact:	Paul Zahra	Project Coordinator:	-
Emissions Standard(s):	FCC 15.247/15.407, RSS-247	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Xirrus

Product

XI-AC3470

Date of Last Test: 10/29/2015

Client:	Xirrus	Job Number:	JD99498
Model:	XI-AC3470	T-Log Number:	T99796
Contact:	Paul Zahra	Project Manager:	Christine Krebill
Standard:	FCC 15.247/15.407, RSS-247	Project Coordinator:	-
		Class:	N/A

RSS 247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 24 °C
Rel. Humidity: 33 %

Summary of Results

Run #	Mode	Channel	Target Power Setting	Passing Power Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2	a	64 - 5320MHz	-	15	Restricted Band Edge at 5350 MHz	15.209	51.2 dBµV/m @ 5353.5 MHz (-2.8 dB)
3		100 - 5500MHz	-	16	Restricted Band Edge at 5460 MHz	15.209	50.7 dBµV/m @ 5460.0 MHz (-3.3 dB)
				15	Band Edge 5460 - 5470 MHz	15E	66.6 dBµV/m @ 5468.1 MHz (-1.7 dB)
		140 - 5700MHz	-	12	Band Edge 5725 MHz	15E	53.5 dBµV/m @ 5725.0 MHz (-0.5 dB)
6	HT20	64 - 5320MHz	-	15	Restricted Band Edge at 5350 MHz	15.209	52.3 dBµV/m @ 5352.0 MHz (-1.7 dB)
7		100 - 5500MHz	-	15	Restricted Band Edge at 5460 MHz	15.209	49.1 dBµV/m @ 5422.4 MHz (-4.9 dB)
					Band Edge 5460 - 5470 MHz	15E	65.8 dBµV/m @ 5469.3 MHz (-2.5 dB)
	140 - 5700MHz	-	12	Band Edge 5725MHz	15E	65.2 dBµV/m @ 5725.1 MHz (-3.1 dB)	



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

Summary of Results (continued)

Run #	Mode	Channel	Target Power Setting	Passing Power Setting	Test Performed	Limit	Result / Margin
40MHz Bandwith Modes							
10	HT40	62 - 5310MHz	-	10	Restricted Band Edge at 5350 MHz	15.209	52.0 dBµV/m @ 5352.2 MHz (-2.0 dB)
11		102 - 5510MHz	-	10	Restricted Band Edge at 5460 MHz	15.209	46.6 dBµV/m @ 5457.9 MHz (-7.4 dB)
					Band Edge 5460 - 5470 MHz	15E	66.3 dBµV/m @ 5467.6 MHz (-2.0 dB)
		134 - 5670MHz	-	14	Band Edge 5725MHz	15E	62.3 dBµV/m @ 5729.7 MHz (-6.0 dB)
80MHz Bandwith Modes							
14	ac80	58 - 5290MHz	-	10	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @ 5357.1 MHz (-0.5 dB)
15	ac80	106 - 5530MHz	-	10	Restricted Band Edge at 5460 MHz	15.209	53.5 dBµV/m @ 5457.4 MHz (-0.5 dB)
	ac80	106 - 5530MHz	-	10	Band Edge 5460 - 5470 MHz	15E	66.7 dBµV/m @ 5467.0 MHz (-1.6 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

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

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11g/a	6Mb/s	98.3%	Yes	2.086	0	0	10
HT20	MCS0	98.6%	Yes	1.906	0.00	0.00	10
HT40	MCS0	98.0%	Yes	0.942	0.00	0.00	10
ac80	VHT0	96.0%	Yes	0.46	0.18	0.35	2174



EMC Test Data

Client:	Xirrus	Job Number:	JD99498
Model:	XI-AC3470	T-Log Number:	T99796
		Project Manager:	Christine Krebill
Contact:	Paul Zahra	Project Coordinator:	-
Standard:	FCC 15.247/15.407, RSS-247	Class:	N/A

Sample Notes

Sample S/N: BET3715XRU20027
 Driver: 10.10 RC69.10
 Antenna: Internal

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033, compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, max hold 50*1/DC traces (method VB of KDB 789033)
Note 6:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabluar results for final measurements.



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

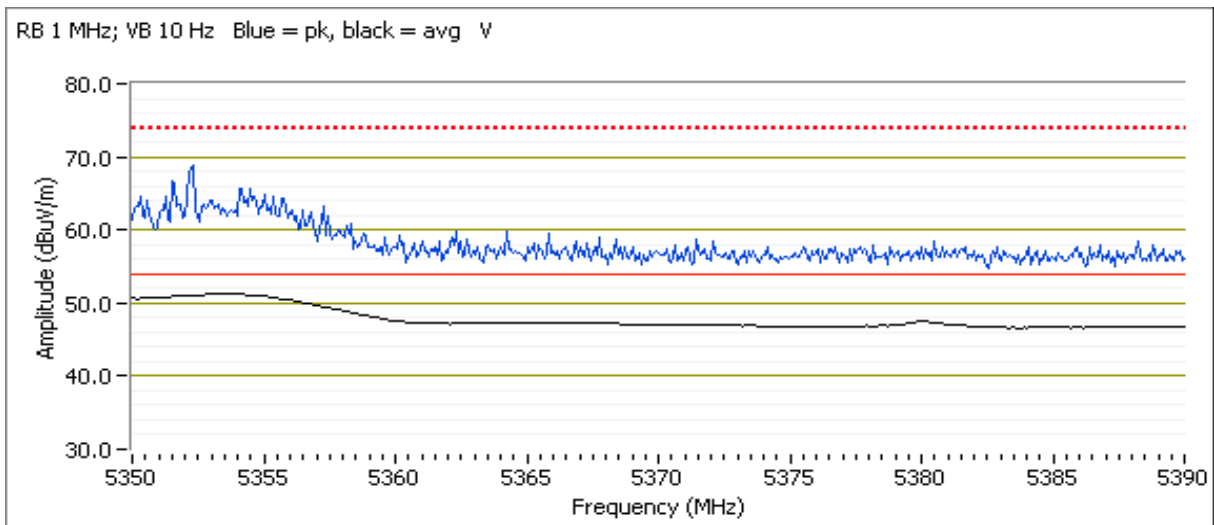
Date of Test: 10/19/2015 0:00
 Test Engineer: John Caizzi
 Test Location: Chamber 5

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

Channel: 64 - 5320MHz
 Tx Chain: 4Tx
 Mode: a
 Data Rate: 6Mb/s

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5353.450	51.2	V	54.0	-2.8	AVG	356	1.99	Setting = 15
5354.090	68.0	V	74.0	-6.0	PK	356	1.99	Setting = 15
5350.400	46.3	H	54.0	-7.7	AVG	65	1.38	Setting = 15
5350.160	59.0	H	74.0	-15.0	PK	65	1.38	Setting = 15



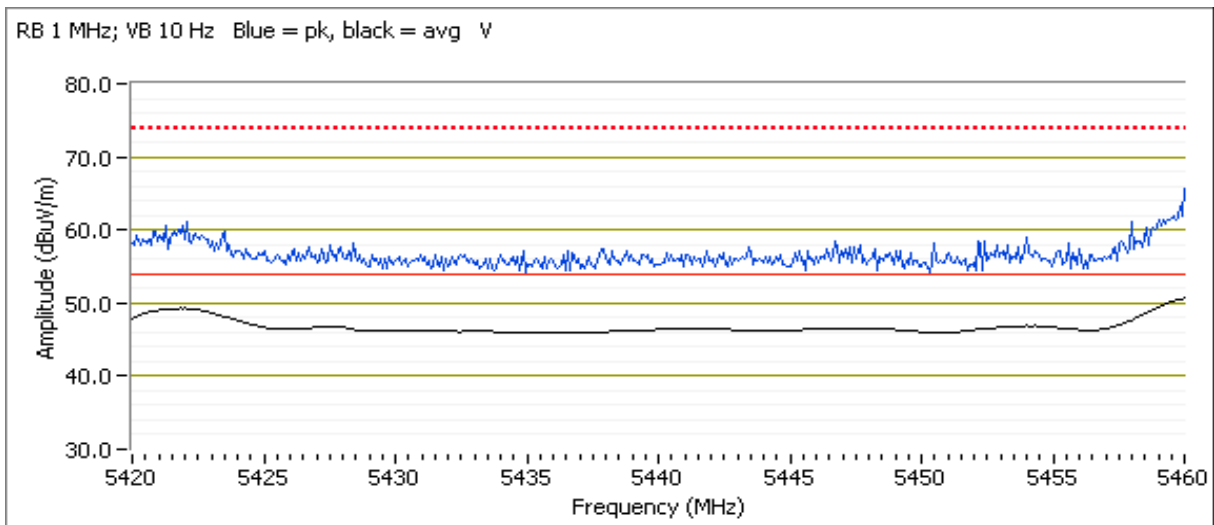
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

Channel: 100 - 5500MHz
 Tx Chain: 4Tx
 Mode: a
 Data Rate: 6Mb/s

5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5460.000	50.7	V	54.0	-3.3	AVG	318	1.83	Setting = 16
5459.760	63.2	V	74.0	-10.8	PK	318	1.83	Setting = 16



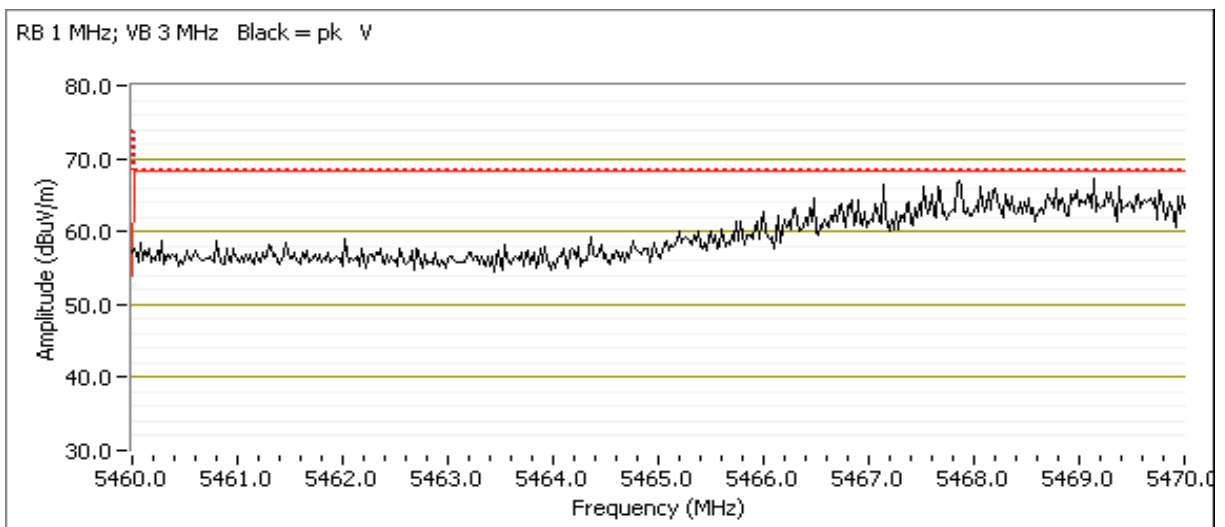


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5468.140	66.6	V	68.3	-1.7	PK	32	2.02	Setting = 15





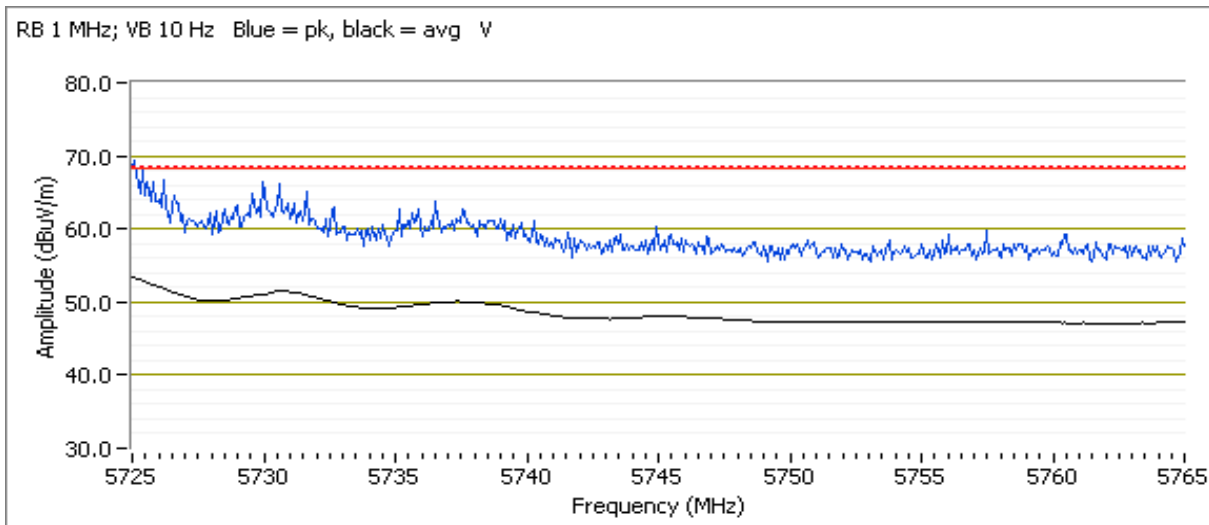
EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

Channel: 140 - 5700MHz
 Tx Chain: 4Tx
 Mode: a
 Data Rate: 6Mb/s

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5725.000	53.5	V	54.0	-0.5	AVG	343	1.74	Setting = 15
5725.240	69.0	V	74.0	-5.0	PK	343	1.74	Setting = 15



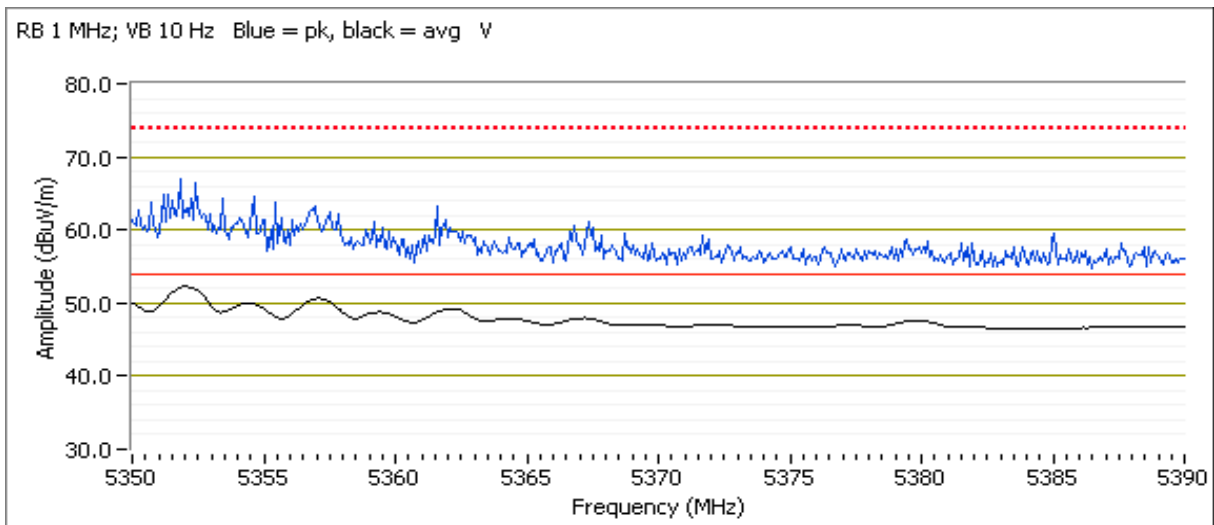
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

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

Channel: 64 - 5320MHz
 Tx Chain: 4Tx
 Mode: HT20
 Data Rate: MCS0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5352.000	52.3	V	54.0	-1.7	AVG	350	1.92	Setting = 15
5351.680	66.6	V	74.0	-7.4	PK	350	1.92	Setting = 15





EMC Test Data

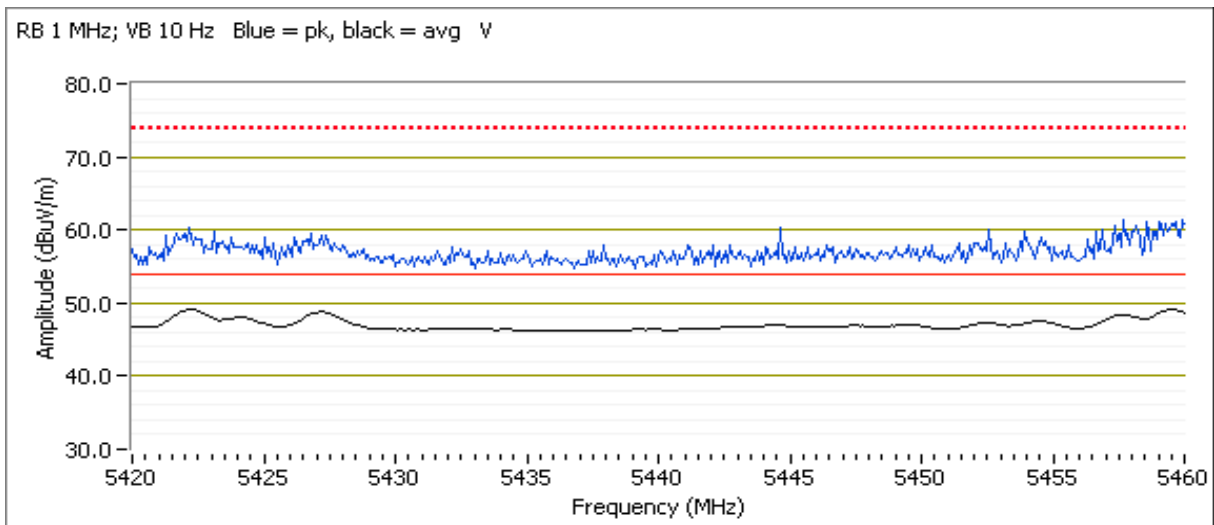
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

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

Channel: 100 - 5500MHz
 Tx Chain: 4Tx
 Mode: HT20
 Data Rate: MCS0

5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5422.400	49.1	V	54.0	-4.9	AVG	356	1.76	Setting = 15
5458.720	63.0	V	74.0	-11.0	PK	356	1.76	Setting = 15



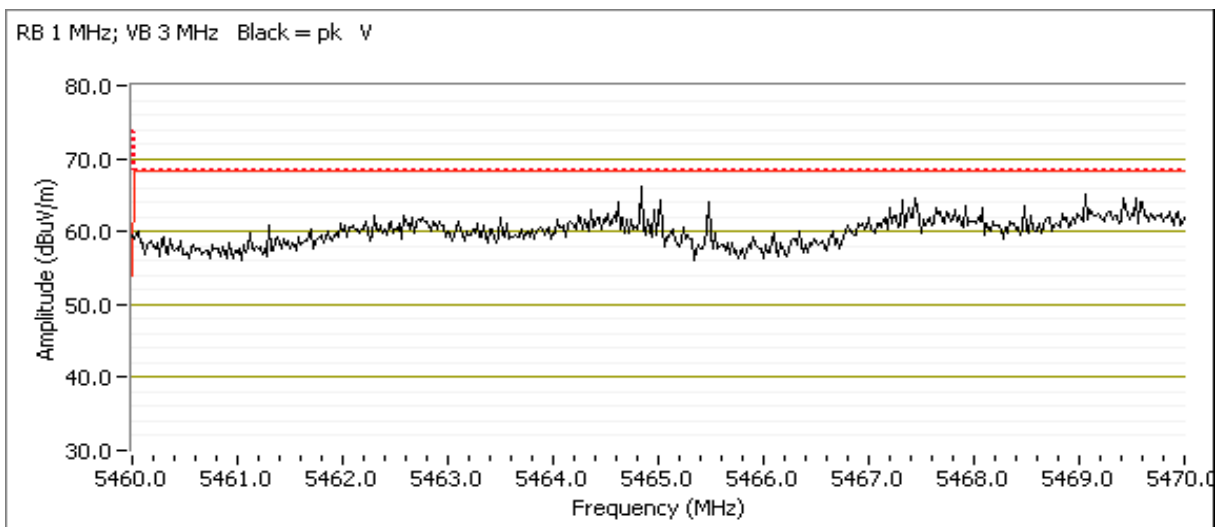


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.280	65.8	V	68.3	-2.5	PK	342	1.86	Setting = 15





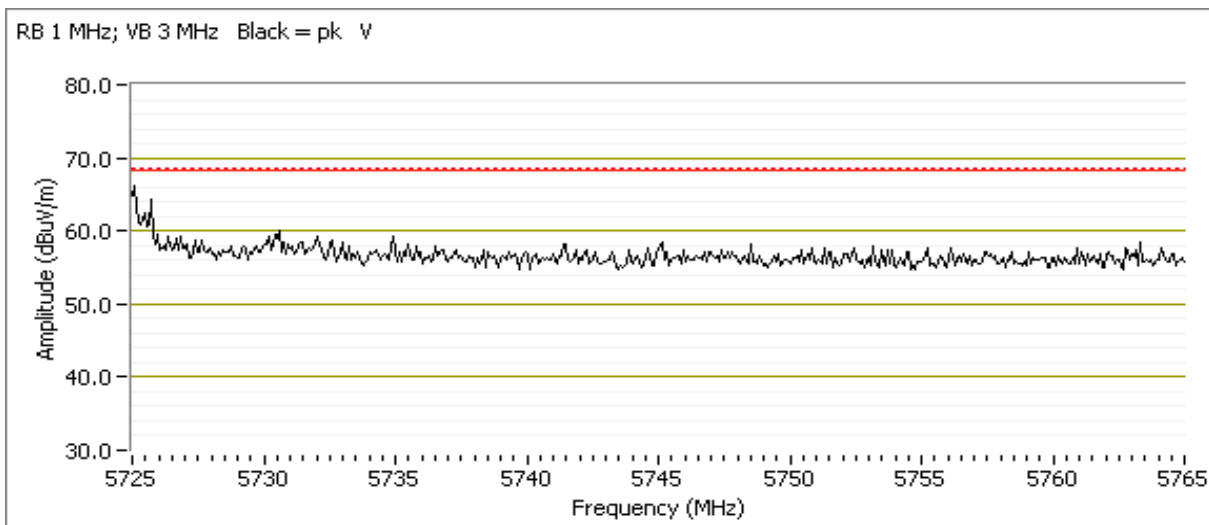
EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

Channel: 140 - 5700MHz
 Tx Chain: 4Tx
 Mode: HT20
 Data Rate: MCS0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5725.080	65.2	V	68.3	-3.1	PK	351	1.33	Setting = 12



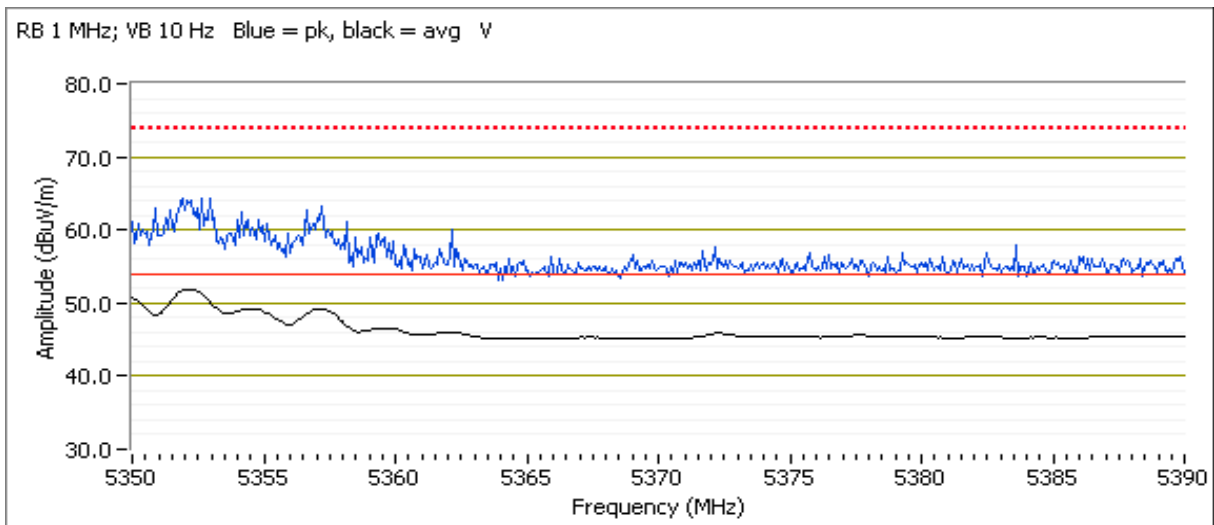
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

Channel: 62 - 5310MHz
 Tx Chain: 4Tx
 Mode: HT40
 Data Rate: MCS0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5352.240	52.0	V	54.0	-2.0	AVG	349	2.06	Setting = 10
5351.760	66.2	V	74.0	-7.8	PK	349	2.06	Setting = 10





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

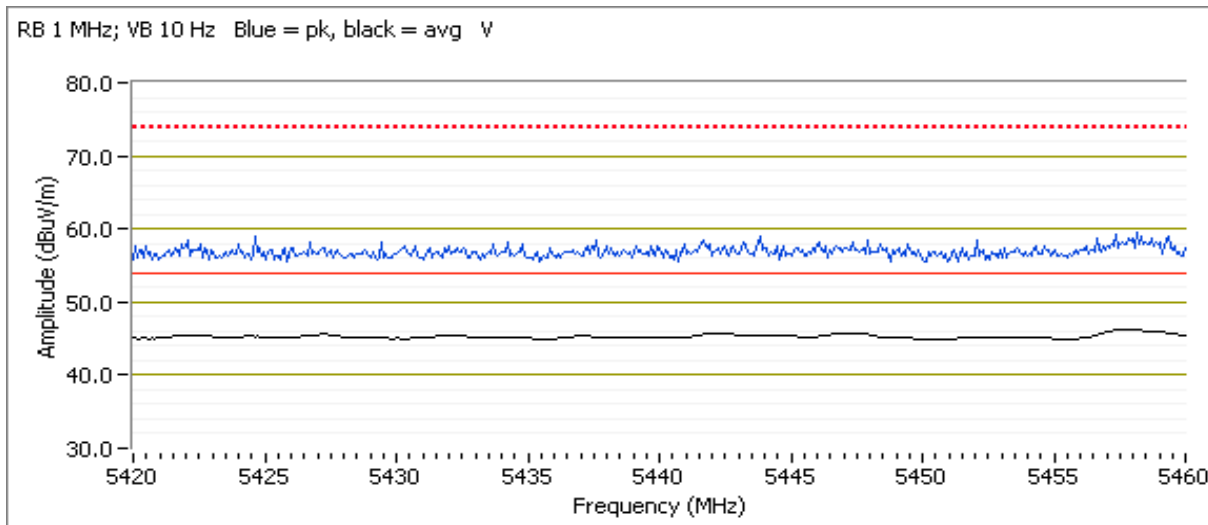
Date of Test: 10/19/2015 0:00
 Test Engineer: Rafael Varelas
 Test Location: Chamber 5

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

Channel: 102 - 5510MHz
 Tx Chain: 4Tx
 Mode: HT40
 Data Rate: MCS0

5460 MHz Band Edge Signal Radiated Field Strength

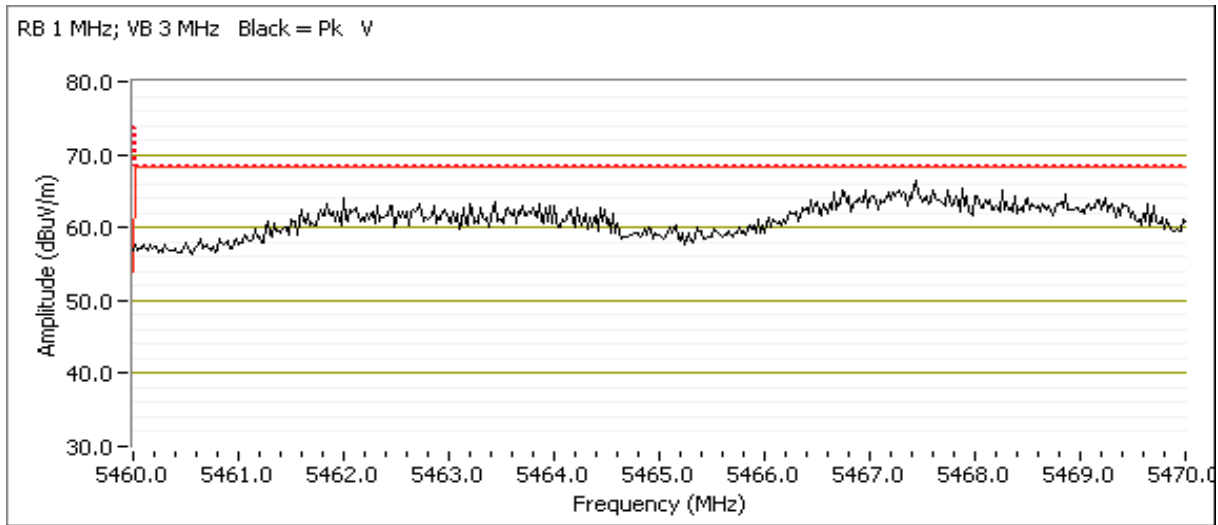
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5457.920	46.6	V	54.0	-7.4	AVG	355	2.0	Setting = 10
5457.190	59.5	V	74.0	-14.5	PK	355	2.0	Setting = 10



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5467.600	66.3	V	68.3	-2.0	PK	355	2.0	Setting = 10





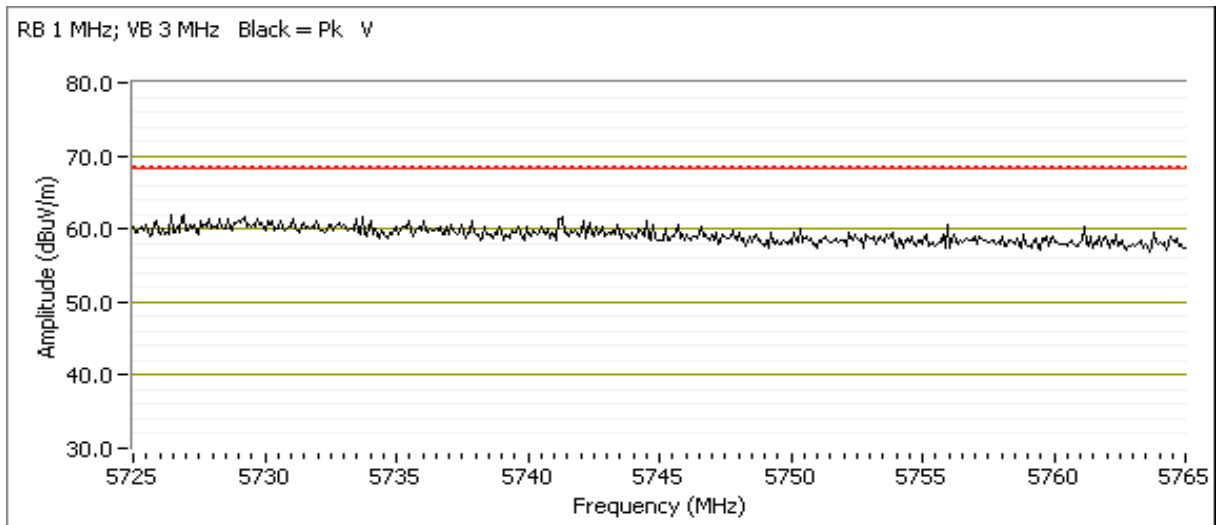
EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

Channel: 134 - 5670MHz
 Tx Chain: 4Tx
 Mode: HT40
 Data Rate: MCS0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5729.650	62.3	V	68.3	-6.0	PK	356	1.7	Setting = 14





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

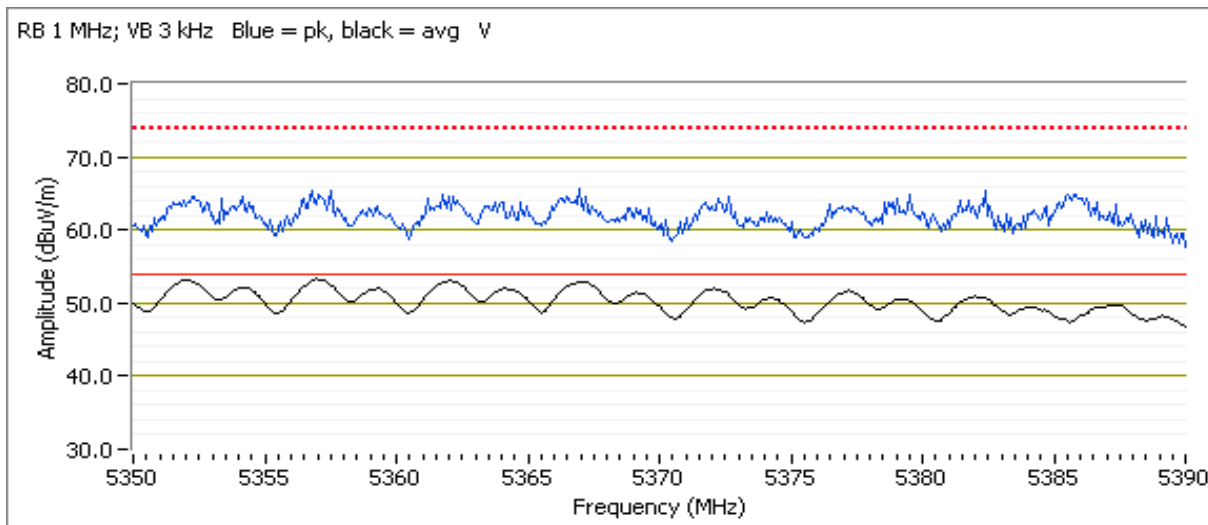
Date of Test: 10/19/2015 0:00
 Test Engineer: Rafael Varelas
 Test Location: Chamber 5

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

Channel: 58 - 5290MHz
 Tx Chain: 4Tx
 Mode: ac80
 Data Rate: VHT0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5357.050	53.5	V	54.0	-0.5	Avg	346	1.7	Setting = 10, RB 1 MHz; VB: 3 kHz
5357.290	65.4	V	74.0	-8.6	PK	346	1.7	Setting = 10, RB 1 MHz; VB: 3 MHz





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

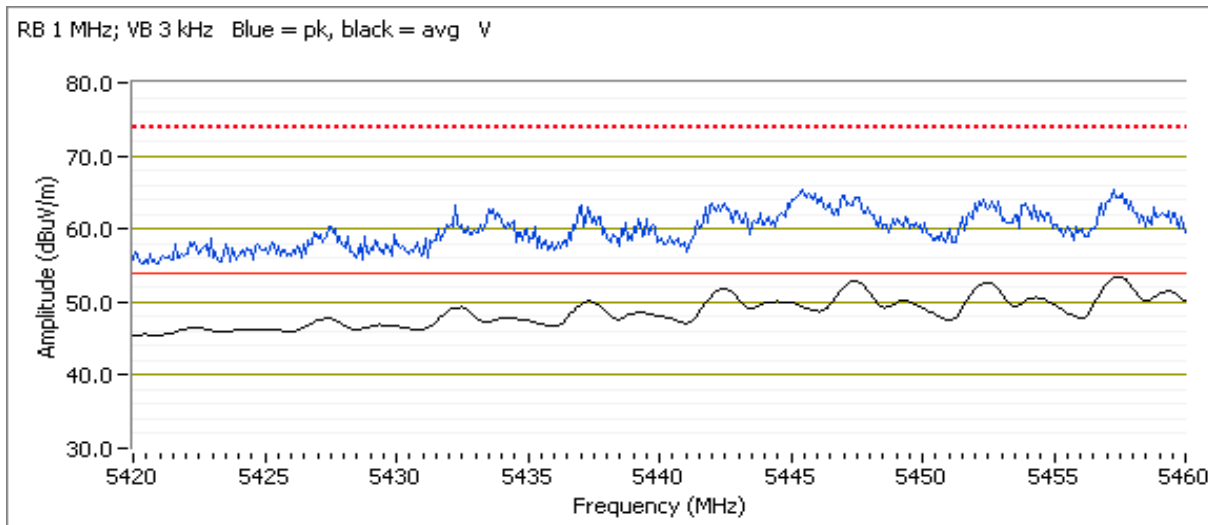
Date of Test: 10/19/2015 0:00
 Test Engineer: Rafael Varelas
 Test Location: Chamber 5

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

Channel: 106 - 5530MHz
 Tx Chain: 4Tx
 Mode: ac80
 Data Rate: VHT0

5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5457.440	53.5	V	54.0	-0.5	Avg	334	1.9	Setting = 10, RB 1 MHz; VB: 3 kHz
5446.290	65.6	V	74.0	-8.4	PK	334	1.9	Setting = 10, RB 1 MHz; VB: 3 kHz



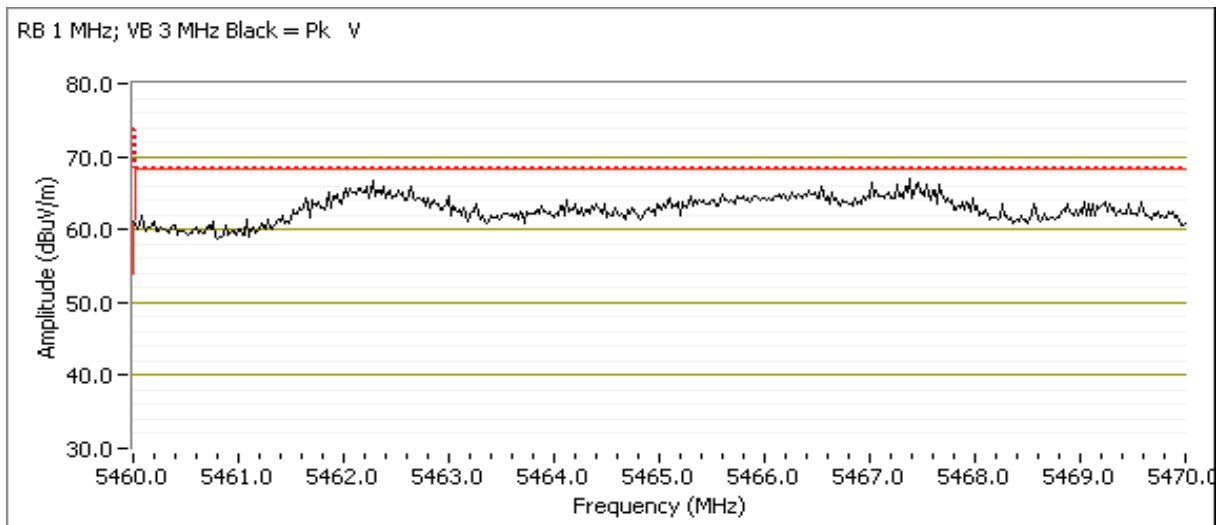


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5467.030	66.7	V	68.3	-1.6	PK	334	1.9	Setting = 10





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

RSS 247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 24 °C
Rel. Humidity: 33 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Scans on "center" channel in all OFDM modes to determine the worst case mode.							
3	a	60 - 5300MHz	-	16	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.5 dBµV/m @ 2800.0 MHz (-1.5 dB)
	HT20	60 - 5300MHz	-	15			52.8 dBµV/m @ 4999.9 MHz (-1.2 dB)
	HT40	54 - 5270MHz	-	15			53.0 dBµV/m @ 2800.0 MHz (-1.0 dB)
	ac80	58 - 5290MHz	-	13			52.9 dBµV/m @ 2800.0 MHz (-1.1 dB)
Measurements on low and high channels in worst-case OFDM mode. If worst case is HT40, use high channel only.							
4	HT40	62 - 5310MHz	-	15	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.5 dBµV/m @ 2800.0 MHz (-1.5 dB)
Scans on "center" channel in all OFDM modes to determine the worst case mode.							
5	a	116 - 5580MHz	-	16	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.1 dBµV/m @ 2800.0 MHz (-1.9 dB)
	HT20	116 - 5580MHz	-	15			52.4 dBµV/m @ 2800.0 MHz (-1.6 dB)
	HT40	110 - 5550MHz	-	14			53.3 dBµV/m @ 5000.0 MHz (-0.7 dB)
	ac80	106 - 5530MHz	-	13			52.4 dBµV/m @ 4999.9 MHz (-1.6 dB)
Measurements on low and high channels in worst-case OFDM mode. If worst case is HT40, use high channel only.							
6	HT40	102 - 5710MHz	-	14	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.3 dBµV/m @ 4999.9 MHz (-0.7 dB)



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

6	HT40	142 - 5710MHz	-	14	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.8 dBµV/m @ 4999.9 MHz (-1.2 dB)
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Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

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

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

EUT operated at the maximum 1Tx power setting

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11g/a	6Mb/s	98.3%	Yes	2.086	0	0	10
HT20	MCS0	98.6%	Yes	1.906	0.00	0.00	10
HT40	MCS0	98.0%	Yes	0.942	0.00	0.00	10
ac80	VHT0	96.0%	Yes	0.46	0.18	0.35	2174

Sample Notes

Sample S/N: BET3715XRU20027

Driver: 10.10 RC69.10

Antenna: internal

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033, compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, max hold 50*1/DC traces (method VB of KDB 789033)
Note 6:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

Run #3, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250-5350 MHz Band

Date of Test: 10/19/2015 & 10/21/15
 Test Engineer: Rafael Varelas & John Caizzi
 Test Location: Chamber #5

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

Run #3a: Center Channel

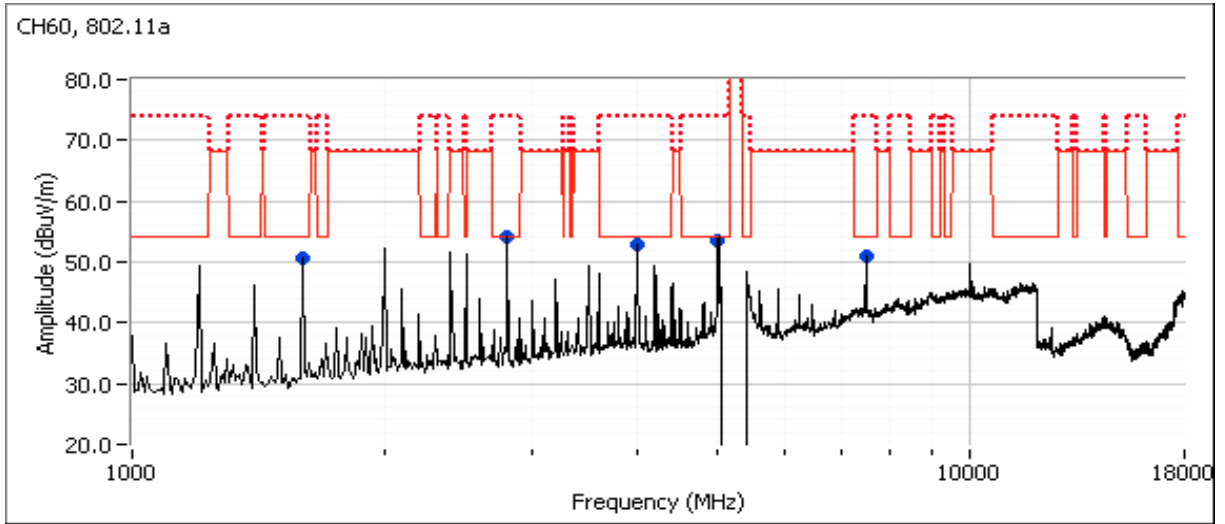
Channel: 60 Mode: a
 Tx Chain: 4Tx (txchain 0xf) Data Rate: 6Mb/s

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3999.970	50.0	V	54.0	-4.0	AVG	282	1.7	RB 1 MHz;VB 10 Hz;Peak
3999.940	53.9	V	74.0	-20.1	PK	282	1.7	RB 1 MHz;VB 3 MHz;Peak
2799.970	52.5	V	54.0	-1.5	AVG	259	1.3	RB 1 MHz;VB 10 Hz;Peak
2800.050	55.7	V	74.0	-18.3	PK	259	1.3	RB 1 MHz;VB 3 MHz;Peak
4999.940	49.0	V	54.0	-5.0	AVG	211	1.6	RB 1 MHz;VB 10 Hz;Peak
4999.900	53.1	V	74.0	-20.9	PK	211	1.6	RB 1 MHz;VB 3 MHz;Peak
1599.990	50.9	V	54.0	-3.1	AVG	85	1.0	RB 1 MHz;VB 10 Hz;Peak
1599.980	52.7	V	74.0	-21.3	PK	85	1.0	RB 1 MHz;VB 3 MHz;Peak
7499.890	50.4	V	54.0	-3.6	AVG	38	1.0	RB 1 MHz;VB 10 Hz;Peak
7499.810	55.2	V	74.0	-18.8	PK	38	1.0	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

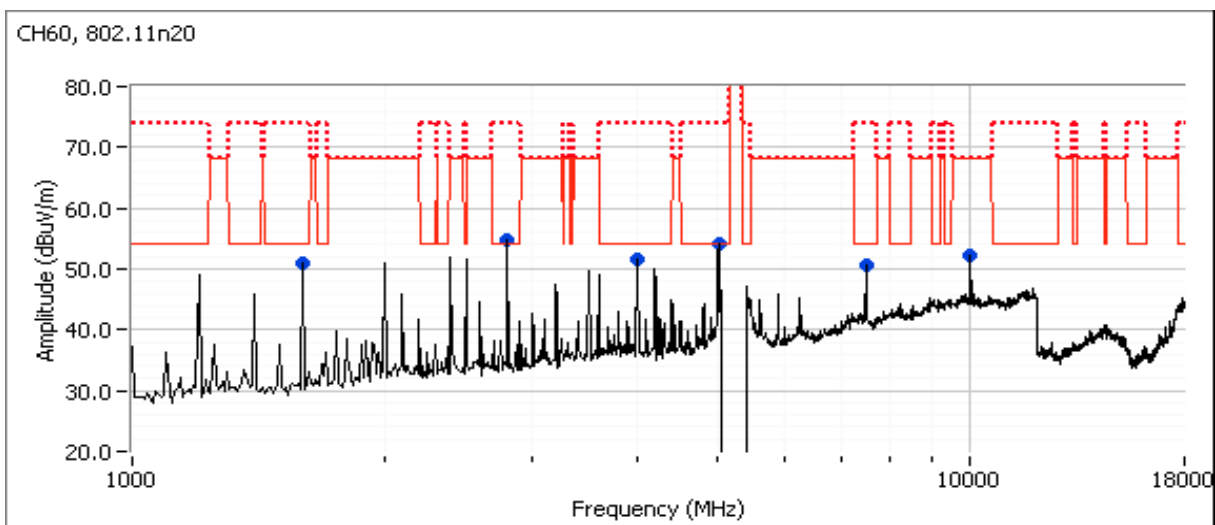
Run #3b: Center Channel

Channel: 60 Mode: HT20
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
7499.880	50.5	V	54.0	-3.5	AVG	43	1.0	RB 1 MHz;VB 10 Hz;Peak
7499.690	55.6	V	74.0	-18.4	PK	43	1.0	RB 1 MHz;VB 3 MHz;Peak
9999.930	55.9	V	68.3	-12.4	PK	66	1.0	RB 1 MHz;VB 3 MHz; Peak
1600.000	50.9	V	54.0	-3.1	AVG	84	1.0	RB 1 MHz;VB 10 Hz;Peak
1599.960	52.9	V	74.0	-21.1	PK	84	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.920	52.8	V	54.0	-1.2	AVG	105	1.7	RB 1 MHz;VB 10 Hz;Peak
4999.860	56.4	V	74.0	-17.6	PK	105	1.7	RB 1 MHz;VB 3 MHz;Peak
2799.980	52.4	V	54.0	-1.6	AVG	254	1.3	RB 1 MHz;VB 10 Hz;Peak
2799.930	55.7	V	74.0	-18.3	PK	254	1.3	RB 1 MHz;VB 3 MHz;Peak
3999.970	51.4	V	54.0	-2.6	AVG	273	1.6	RB 1 MHz;VB 10 Hz;Peak
3999.980	54.4	V	74.0	-19.6	PK	273	1.6	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.



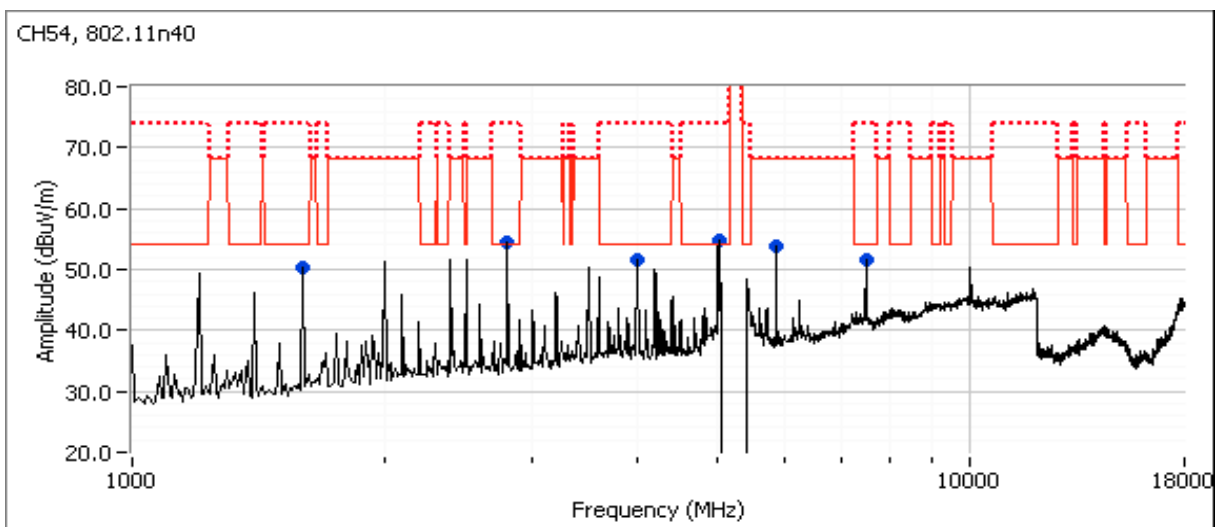
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #3c: Center Channel

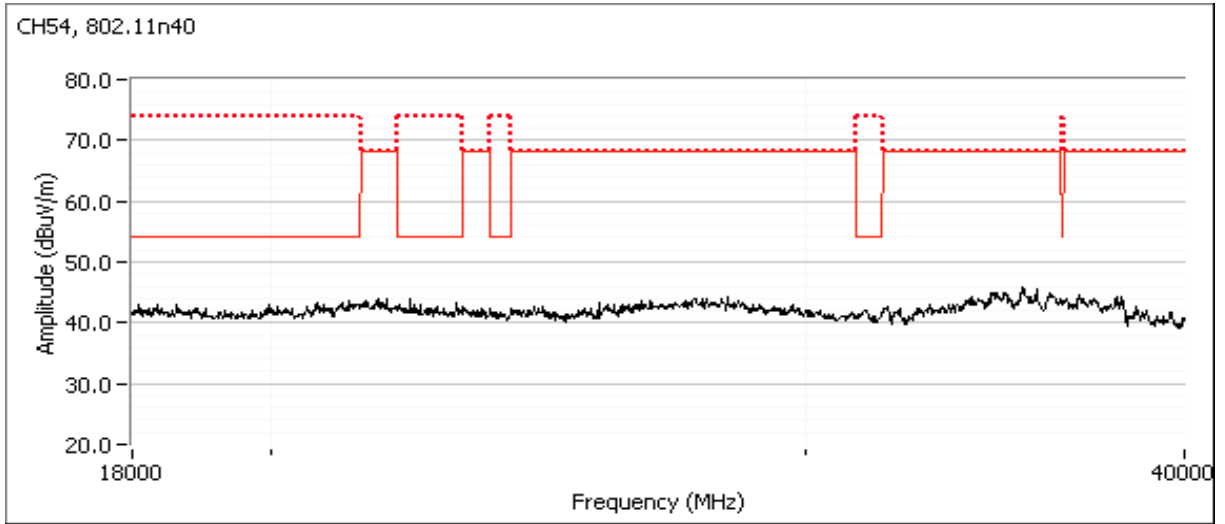
Channel: 54 Mode: HT40
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
7499.870	50.4	V	54.0	-3.6	AVG	37	1.0	RB 1 MHz;VB 10 Hz;Peak
7499.970	56.1	V	74.0	-17.9	PK	37	1.0	RB 1 MHz;VB 3 MHz;Peak
1600.010	51.0	V	54.0	-3.0	AVG	82	1.0	RB 1 MHz;VB 10 Hz;Peak
1600.020	52.9	V	74.0	-21.1	PK	82	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.970	49.4	V	54.0	-4.6	AVG	207	1.6	RB 1 MHz;VB 10 Hz;Peak
4999.780	52.3	V	74.0	-21.7	PK	207	1.6	RB 1 MHz;VB 3 MHz;Peak
2800.010	53.0	V	54.0	-1.0	AVG	247	1.3	RB 1 MHz;VB 10 Hz;Peak
2800.050	56.0	V	74.0	-18.0	PK	247	1.3	RB 1 MHz;VB 3 MHz;Peak
3999.960	51.6	V	54.0	-2.4	AVG	271	1.6	RB 1 MHz;VB 10 Hz;Peak
3999.930	55.1	V	74.0	-18.9	PK	271	1.6	RB 1 MHz;VB 3 MHz;Peak
5855.510	57.5	V	68.3	-10.8	PK	345	1.9	RB 1 MHz;VB 3 MHz; Peak

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

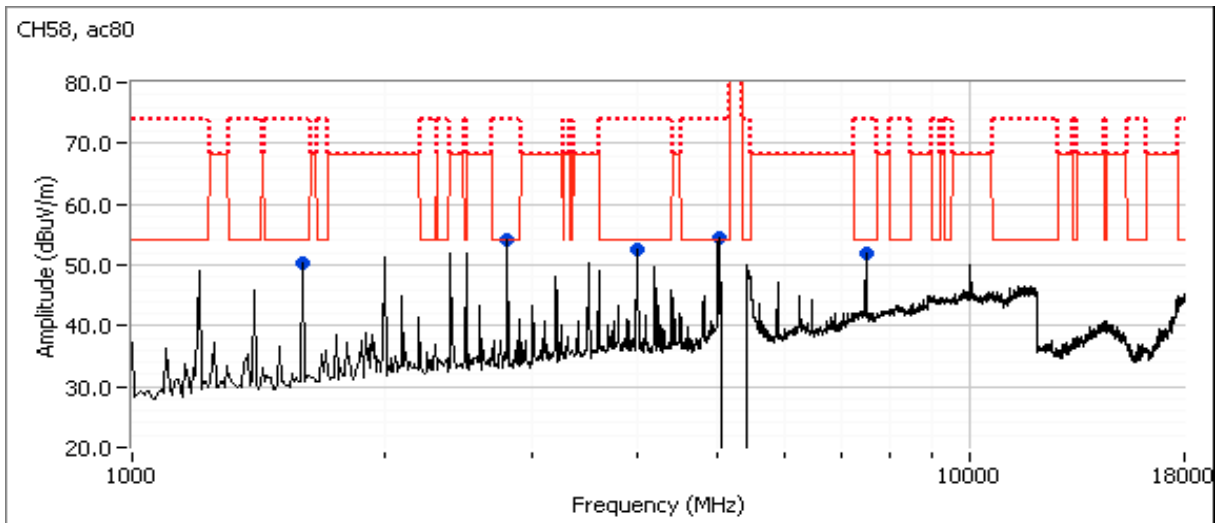
Run #3d: Center Channel

Channel: 58 Mode: ac80
 Tx Chain: 4Tx (txchain 0xf) Data Rate: VHT0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
7499.930	50.7	V	54.0	-3.3	AVG	37	1.0	RB 1 MHz;VB 3 kHz;Peak
7499.710	55.8	V	74.0	-18.2	PK	37	1.0	RB 1 MHz;VB 3 MHz;Peak
1600.020	51.1	V	54.0	-2.9	AVG	87	1.0	RB 1 MHz;VB 3 kHz;Peak
1600.000	53.0	V	74.0	-21.0	PK	87	1.0	RB 1 MHz;VB 3 MHz;Peak
2800.000	52.9	V	54.0	-1.1	AVG	152	1.1	RB 1 MHz;VB 3 kHz;Peak
2800.020	55.7	V	74.0	-18.3	PK	152	1.1	RB 1 MHz;VB 3 MHz;Peak
4999.950	46.9	V	54.0	-7.1	AVG	272	1.0	RB 1 MHz;VB 3 kHz;Peak
4999.890	51.7	V	74.0	-22.3	PK	272	1.0	RB 1 MHz;VB 3 MHz;Peak
3999.990	51.3	V	54.0	-2.7	AVG	274	1.3	RB 1 MHz;VB 3 kHz;Peak
3999.980	54.6	V	74.0	-19.4	PK	274	1.3	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #4: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: worst case from Run #3

Date of Test: 10/19/2015 & 10/21/15
 Test Engineer: Rafael Varelas & John Caizzi
 Test Location: Chamber #5

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

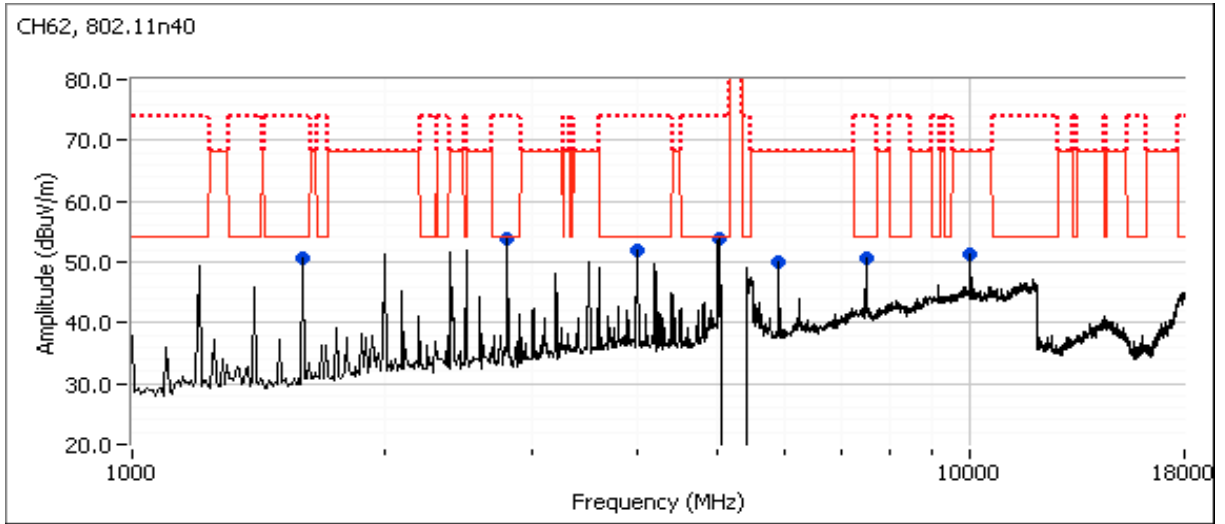
Run #4b: High Channel

Channel: 62 Mode: 11HT40
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
7499.930	49.9	V	54.0	-4.1	AVG	34	1.0	RB 1 MHz;VB 10 Hz;Peak
7499.940	55.1	V	74.0	-18.9	PK	34	1.0	RB 1 MHz;VB 3 MHz;Peak
9999.940	56.2	V	68.3	-12.1	PK	65	1.0	RB 1 MHz;VB 3 MHz; Peak
1600.010	50.4	V	54.0	-3.6	AVG	86	1.0	RB 1 MHz;VB 10 Hz;Peak
1599.970	52.7	V	74.0	-21.3	PK	86	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.920	51.6	V	54.0	-2.4	AVG	103	1.6	RB 1 MHz;VB 10 Hz;Peak
4999.880	54.5	V	74.0	-19.5	PK	103	1.6	RB 1 MHz;VB 3 MHz;Peak
2800.000	52.5	V	54.0	-1.5	AVG	248	1.2	RB 1 MHz;VB 10 Hz;Peak
2800.090	55.5	V	74.0	-18.5	PK	248	1.2	RB 1 MHz;VB 3 MHz;Peak
3999.990	51.4	V	54.0	-2.6	AVG	272	1.7	RB 1 MHz;VB 10 Hz;Peak
4000.070	54.5	V	74.0	-19.5	PK	272	1.7	RB 1 MHz;VB 3 MHz;Peak
5900.090	53.6	V	68.3	-14.7	PK	330	1.6	RB 1 MHz;VB 3 MHz; Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #5, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

Date of Test: 10/19/15, 10/20/15, & 10/21/15
 Test Engineer: Rafael Varelas & John Caizzi
 Test Location: Chamber #5

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

Run #5a: Center Channel

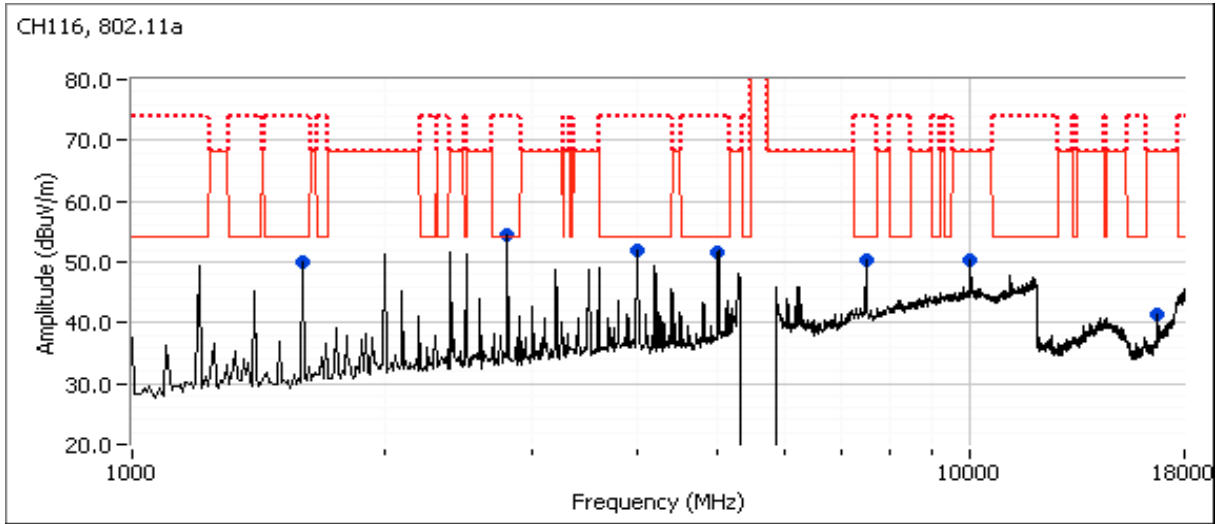
Channel: 116 Mode: a
 Tx Chain: 4Tx (txchain 0xf) Data Rate: 6Mb/s

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3999.980	49.3	V	54.0	-4.7	AVG	278	1.2	RB 1 MHz;VB 10 Hz;Peak
3999.920	53.1	V	74.0	-20.9	PK	278	1.2	RB 1 MHz;VB 3 MHz;Peak
2799.980	52.1	V	54.0	-1.9	AVG	260	1.4	RB 1 MHz;VB 10 Hz;Peak
2799.870	55.3	V	74.0	-18.7	PK	260	1.4	RB 1 MHz;VB 3 MHz;Peak
4999.960	51.9	V	54.0	-2.1	AVG	115	1.7	RB 1 MHz;VB 10 Hz;Peak
4999.930	54.2	V	74.0	-19.8	PK	115	1.7	RB 1 MHz;VB 3 MHz;Peak
1600.020	50.6	V	54.0	-3.4	AVG	91	1.0	RB 1 MHz;VB 10 Hz;Peak
1600.030	52.4	V	74.0	-21.6	PK	91	1.0	RB 1 MHz;VB 3 MHz;Peak
9999.870	56.6	V	68.3	-11.7	PK	71	1.2	RB 1 MHz;VB 3 MHz; Peak
7499.920	48.9	V	54.0	-5.1	AVG	37	1.0	RB 1 MHz;VB 10 Hz;Peak
7499.830	54.1	V	74.0	-19.9	PK	37	1.0	RB 1 MHz;VB 3 MHz;Peak
16743.650	55.4	V	68.3	-12.9	PK	342	1.0	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A





EMC Test Data

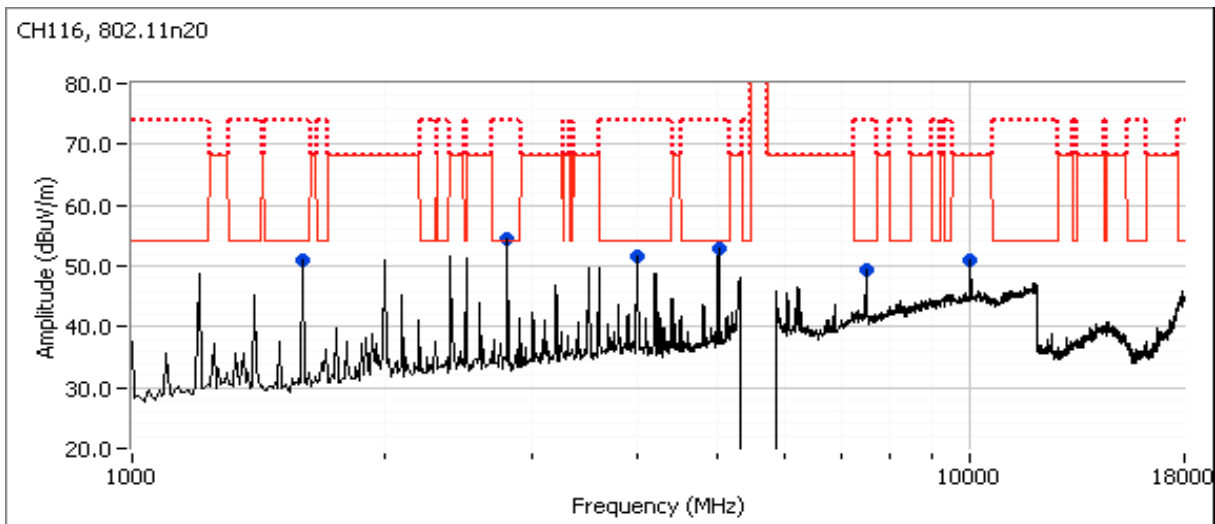
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #5b: Center Channel

Channel: 116 Mode: HT20
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
7499.860	49.2	V	54.0	-4.8	AVG	30	1.0	RB 1 MHz;VB 10 Hz;Peak
7499.850	55.0	V	74.0	-19.0	PK	30	1.0	RB 1 MHz;VB 3 MHz;Peak
10000.030	56.8	V	68.3	-11.5	PK	66	1.0	RB 1 MHz;VB 3 MHz; Peak
1600.010	50.6	V	54.0	-3.4	AVG	81	1.0	RB 1 MHz;VB 10 Hz;Peak
1600.090	52.7	V	74.0	-21.3	PK	81	1.0	RB 1 MHz;VB 3 MHz;Peak
4999.930	47.8	V	54.0	-6.2	AVG	267	2.2	RB 1 MHz;VB 10 Hz;Peak
4999.880	51.2	V	74.0	-22.8	PK	267	2.2	RB 1 MHz;VB 3 MHz;Peak
2800.010	52.4	V	54.0	-1.6	AVG	259	1.3	RB 1 MHz;VB 10 Hz;Peak
2799.980	55.7	V	74.0	-18.3	PK	259	1.3	RB 1 MHz;VB 3 MHz;Peak
3999.960	49.6	V	54.0	-4.4	AVG	278	1.2	RB 1 MHz;VB 10 Hz;Peak
3999.810	53.4	V	74.0	-20.6	PK	278	1.2	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range.
 Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.





EMC Test Data

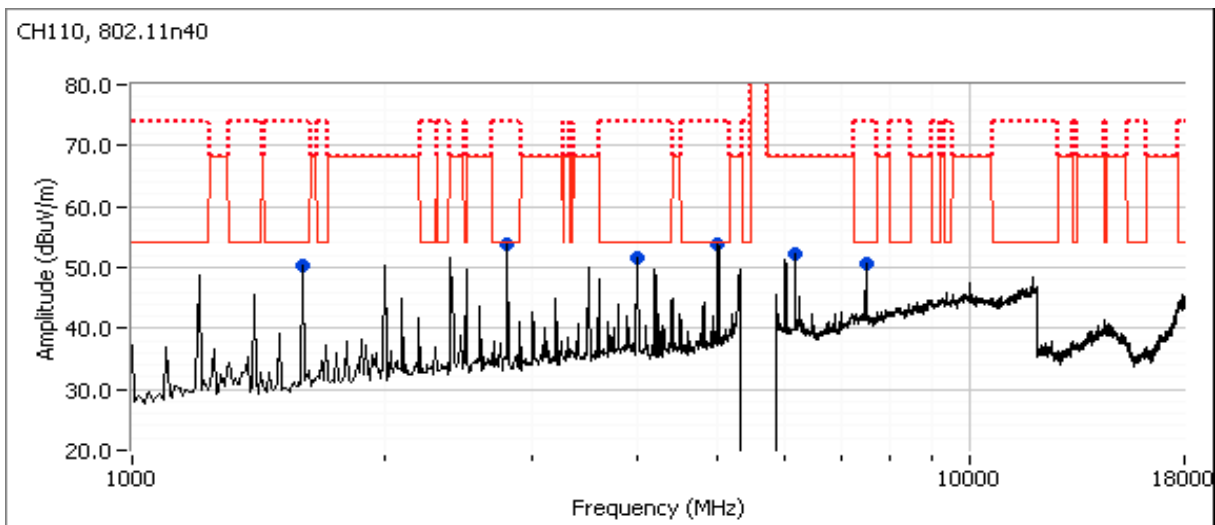
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #5c: Center Channel

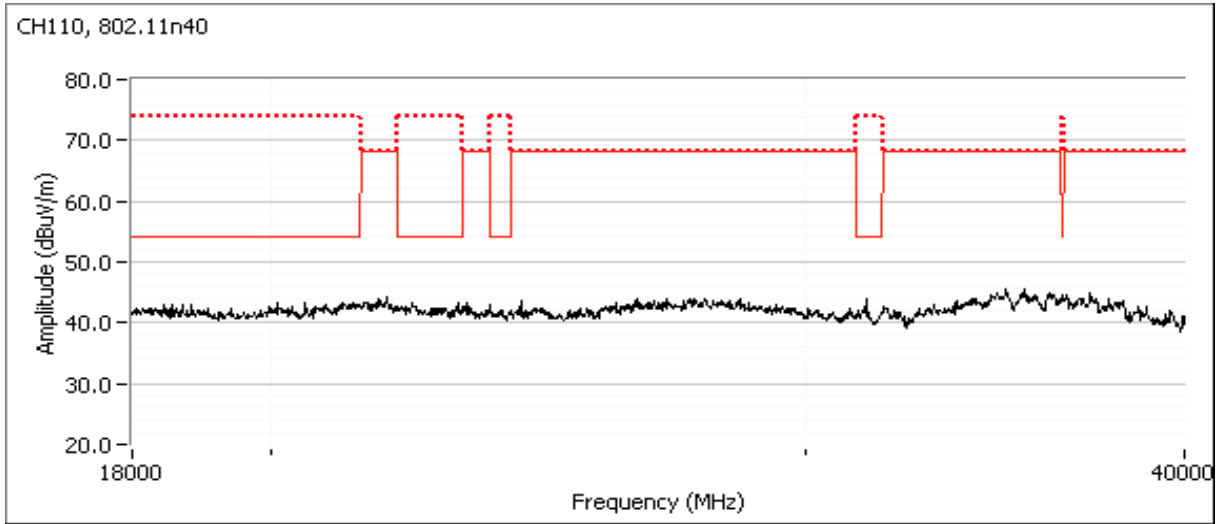
Channel: 110 Mode: 11HT40
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
3999.970	51.1	V	54.0	-2.9	AVG	288	1.6	RB 1 MHz;VB 10 Hz;Peak
3999.990	54.1	V	74.0	-19.9	PK	288	1.6	RB 1 MHz;VB 3 MHz;Peak
2799.990	52.3	V	54.0	-1.7	AVG	265	1.4	RB 1 MHz;VB 10 Hz;Peak
2800.040	55.4	V	74.0	-18.6	PK	265	1.4	RB 1 MHz;VB 3 MHz;Peak
4999.960	53.3	V	54.0	-0.7	AVG	234	2.1	RB 1 MHz;VB 10 Hz;Peak
4999.920	55.2	V	74.0	-18.8	PK	234	2.1	RB 1 MHz;VB 3 MHz;Peak
7499.920	49.6	V	54.0	-4.4	AVG	96	1.7	RB 1 MHz;VB 10 Hz;Peak
7499.940	54.8	V	74.0	-19.2	PK	96	1.7	RB 1 MHz;VB 3 MHz;Peak
1600.000	50.7	V	54.0	-3.3	AVG	94	1.5	RB 1 MHz;VB 10 Hz;Peak
1600.090	52.5	V	74.0	-21.5	PK	94	1.5	RB 1 MHz;VB 3 MHz;Peak
6166.620	54.7	V	68.3	-13.6	PK	35	1.6	RB 1 MHz;VB 3 MHz; Peak

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

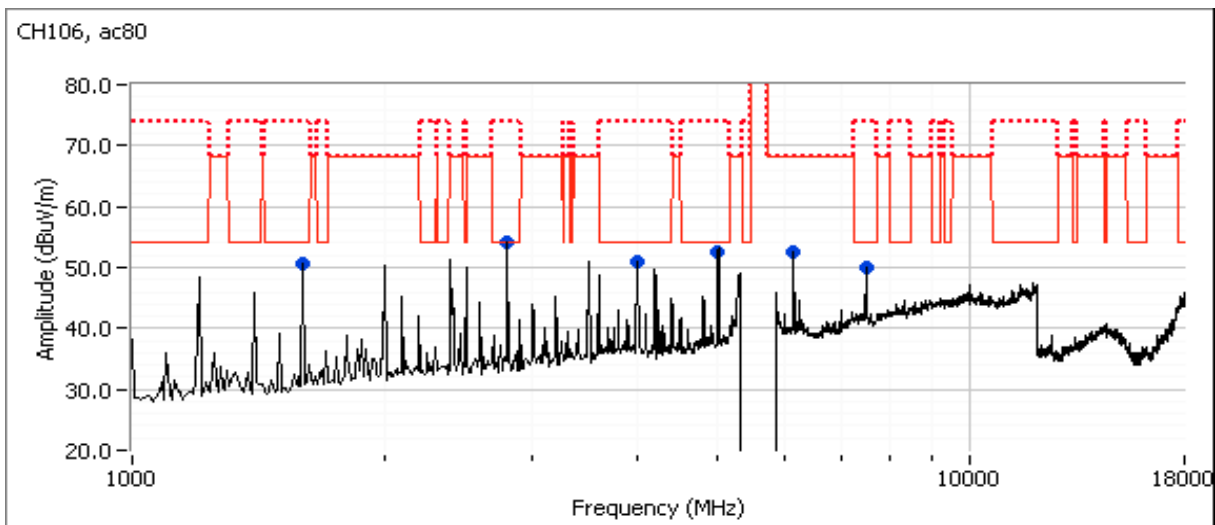
Run #5d: Center Channel

Channel: 106 Mode: ac80
 Tx Chain: 4Tx (txchain 0xf) Data Rate: VHT0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
6144.590	54.5	V	68.3	-13.8	PK	357	1.6	RB 1 MHz;VB 3 MHz; Peak
2800.010	52.3	V	54.0	-1.7	AVG	258	1.4	RB 1 MHz;VB 3 kHz;Peak
2799.920	55.8	V	74.0	-18.2	PK	258	1.4	RB 1 MHz;VB 3 MHz;Peak
4999.940	52.4	V	54.0	-1.6	AVG	231	1.9	RB 1 MHz;VB 3 kHz;Peak
4999.940	54.4	V	74.0	-19.6	PK	231	1.9	RB 1 MHz;VB 3 MHz;Peak
7499.960	47.8	V	54.0	-6.2	AVG	161	1.2	RB 1 MHz;VB 3 kHz;Peak
7499.930	53.8	V	74.0	-20.2	PK	161	1.2	RB 1 MHz;VB 3 MHz;Peak
1600.010	48.8	V	54.0	-5.2	AVG	60	1.0	RB 1 MHz;VB 3 kHz;Peak
1600.020	50.8	V	74.0	-23.2	PK	60	1.0	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range.

Note 2: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #6: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: worst case from Run #5

Run #6a: Low Channel

Date of Test: 10/29/2015 0:00
 Test Engineer: John Caizzi
 Test Location: Chamber #5

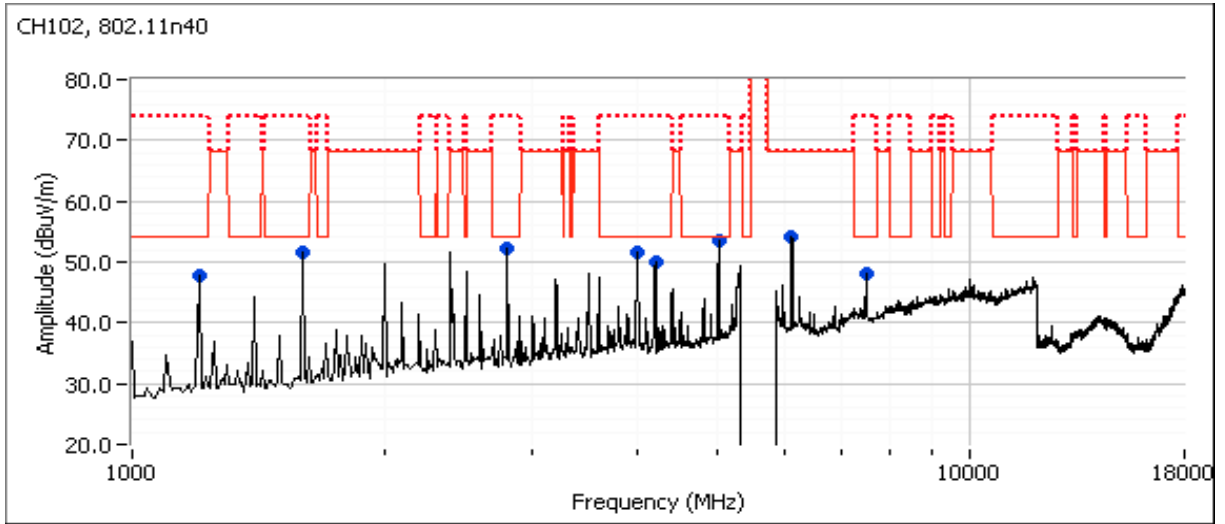
Config. Used: 1
 Config Change: none
 EUT Voltage: PoE

Channel: 102 Mode: HT40
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
6122.270	57.0	V	68.3	-11.3	PK	10	1.71	RB 1 MHz;VB 3 MHz;Peak
4199.980	49.4	V	54.0	-4.6	AVG	123	1.33	RB 1 MHz;VB 10 Hz;Peak
4199.930	51.8	V	74.0	-22.2	PK	123	1.33	RB 1 MHz;VB 3 MHz;Peak
1200.020	47.9	V	54.0	-6.1	AVG	127	1.02	RB 1 MHz;VB 10 Hz;Peak
1200.080	50.0	V	74.0	-24.0	PK	127	1.02	RB 1 MHz;VB 3 MHz;Peak
4999.910	53.3	V	54.0	-0.7	AVG	235	2.49	RB 1 MHz;VB 10 Hz;Peak
5000.050	55.4	V	74.0	-18.6	PK	235	2.49	RB 1 MHz;VB 3 MHz;Peak
1600.020	51.6	V	54.0	-2.4	AVG	253	1.14	RB 1 MHz;VB 10 Hz;Peak
1600.080	53.5	V	74.0	-20.5	PK	253	1.14	RB 1 MHz;VB 3 MHz;Peak
2800.030	50.4	V	54.0	-3.6	AVG	259	1.44	RB 1 MHz;VB 10 Hz;Peak
2800.100	53.2	V	74.0	-20.8	PK	259	1.44	RB 1 MHz;VB 3 MHz;Peak
3999.970	50.9	V	54.0	-3.1	AVG	283	1.63	RB 1 MHz;VB 10 Hz;Peak
3999.920	53.7	V	74.0	-20.3	PK	283	1.63	RB 1 MHz;VB 3 MHz;Peak
7499.870	48.0	V	54.0	-6.0	AVG	347	2.26	RB 1 MHz;VB 10 Hz;Peak
7499.980	52.9	V	74.0	-21.1	PK	347	2.26	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range.

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Date of Test: 10/20/2015 & 10/21/15
 Test Engineer: Rafael Varelas & John Caizzi
 Test Location: Chamber #5

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

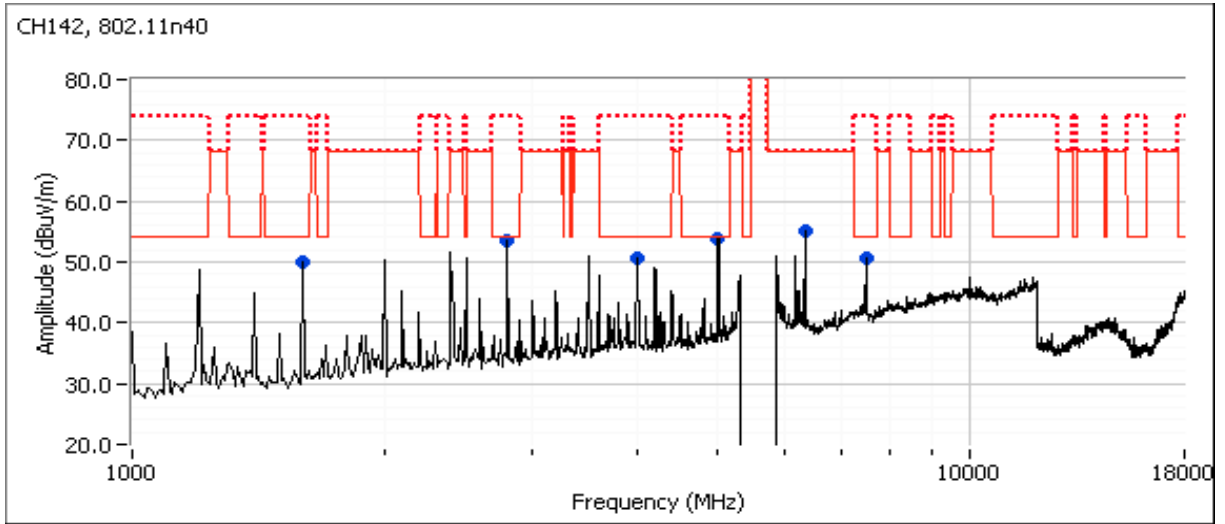
Run #6b: High Channel

Channel: 142 Mode: HT40
 Tx Chain: 4Tx (txchain 0xf) Data Rate: MCS0

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
6344.440	56.6	V	68.3	-11.7	PK	13	2.0	RB 1 MHz;VB 3 MHz;Peak
1599.990	50.5	V	54.0	-3.5	AVG	90	1.6	RB 1 MHz;VB 10 Hz;Peak
1599.990	52.3	V	74.0	-21.7	PK	90	1.6	RB 1 MHz;VB 3 MHz;Peak
7499.910	50.4	V	54.0	-3.6	AVG	92	1.6	RB 1 MHz;VB 10 Hz;Peak
7499.980	55.5	V	74.0	-18.5	PK	92	1.6	RB 1 MHz;VB 3 MHz;Peak
4999.850	52.8	V	54.0	-1.2	AVG	223	2.3	RB 1 MHz;VB 10 Hz;Peak
4999.880	55.1	V	74.0	-18.9	PK	223	2.3	RB 1 MHz;VB 3 MHz;Peak
2799.990	52.2	V	54.0	-1.8	AVG	252	1.4	RB 1 MHz;VB 10 Hz;Peak
2800.080	55.5	V	74.0	-18.5	PK	252	1.4	RB 1 MHz;VB 3 MHz;Peak
3999.950	49.5	V	54.0	-4.5	AVG	277	2.0	RB 1 MHz;VB 10 Hz;Peak
3999.980	52.7	V	74.0	-21.3	PK	277	2.0	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range.

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

Test Specific Details

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

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
FCC/IC - 4Tx				
1	Power, 5250 - 5350MHz	15.407(a)(2)	Pass	a: 16.7 dBm (46.6 mW) HT20: 17.4 dBm (55.3 mW) HT40: 19.4 dBm (87.3 mW) AC80: 17.3 dBm (53.8 mW)
1	PSD, 5250 - 5350MHz	15.407(a)(2)	Pass	a: 4.9 dBm/MHz HT20: 4.8 dBm/MHz HT40: 3.8 dBm/MHz AC80: -1.0 dBm/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	N/A	EIRP = 25.41 dBm (347.5 mW)
1	26dB Bandwidth	Information only - limits maximum power	N/A	a: 21.6 MHz n20: 21.8 MHz n40: 40.2 MHz ac80: 82.1 MHz
1	99% Bandwidth	RSS 247 (Information only)	N/A	a: 17.0 MHz n20: 18.1 MHz n40: 36.5 MHz ac80: 76.1 MHz



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

FCC/IC - 4TxBF				
1	Power, 5250 - 5350MHz	15.407(a)(2)	Pass	a: 17.4 dBm (55.3 mW) HT20: 17.6 dBm (58.1 mW) HT40: 17.8 dBm (60.6 mW) AC80: 17.3 dBm (53.8 mW)
1	PSD, 5250 - 5350MHz	15.407(a)(2)	Pass	a: 3.3 dBm/MHz HT20: 4.9 dBm/MHz HT40: 2.0 dBm/MHz AC80: -1.0 dBm/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	N/A	EIRP = 29.5dBm (896.3 mW)
1	26dB Bandwidth	Information only - limits maximum power	N/A	a: 21.1 MHz n20: 21.8 MHz n40: 40.1 MHz ac80: 82.1 MHz
1	99% Bandwidth	RSS 247 (Information only)	N/A	a: 17.0 MHz n20: 18.1 MHz n40: 36.5 MHz ac80: 76.1 MHz

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: 21.5 °C
Rel. Humidity: 34.6 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01 v01r03, dated April 8, 2013

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11g/a	6Mb/s	98.3%	Yes	2.086	0	0	10
HT20	MCS0	98.6%	Yes	1.906	0.00	0.00	10
HT40	MCS0	98.0%	Yes	0.942	0.00	0.00	10
ac80	VHT0	96.0%	Yes	0.46	0.18	0.35	2174

Sample Notes

Sample S/N: BET3715XRU20027

Driver: 10.10 RC69.10

Port Setting:

J400	Port 1	J500	Port 3
J401	Port 2	J501	Port 4



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems
 Date of Test: 10/21/2015 0:00 Config. Used: 1
 Test Engineer: Rafael Varelas Config Change: None
 Test Location: FT Lab #4A EUT Voltage: PoE

- Note 1: For the transmit duty cycle ≥ 98 percent, output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$, RMS detector, trace average 100 traces, power averaging on and power integration over 99% BW MHz (method SA-1 of KDB 789033).
- Note 2: For the transmit duty cycle ≤ 98 percent, output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$, RMS detector, trace average 100 traces, power averaging on and power integration over 99% bandwidth. The measurements adjusted by adding YY. This is based on $10\log(1/x)$, where x is the duty cycle. (method SA-2 of KDB 789033)
- 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.

Antenna Gain Information - 4Tx

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250	1.9	6.7	3.6	1.5	No	Yes	Yes	No	3.9	9.9
5250-5350	2.8	8.8	4.7	5.2	No	Yes	Yes	No	6.0	12.0
5470-5725	3.4	6.9	3.3	5.8	No	Yes	Yes	No	5.1	11.1
5725-5850	3.3	4.9	3.8	3.1	No	Yes	Yes	No	3.8	9.8



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Antenna Gain Information - 4TxBF

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250	1.9	6.7	3.6	1.5	Yes	Yes	Yes	No	9.7	9.7
5250-5350	2.8	8.8	4.7	5.2	Yes	Yes	Yes	No	11.7	11.7
5470-5725	3.4	6.9	3.3	5.8	Yes	Yes	Yes	No	11.0	11.0
5725-5850	3.3	4.9	3.8	3.1	Yes	Yes	Yes	No	9.8	9.8

For devices that support CDD modes

Min # of spatial streams: 1
 Max # of spatial streams: 4

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD value.
Notes:	Array gain for power/psd calculated per KDB 662911 D01.
Notes:	For systems with Beamforming and CDD, choose one of the following options: Option 1: Delays are optimized for beamforming, rather than being selected from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: 11a - 4Tx

Max EIRP (mW): 185.5

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5260	1	9	21.5	98.3	10.6	40.0	16.0	24.0	0.047	Pass
	3				9.4					
	4				9.6					
	2				10.3					
5300	1	9	21.1	98.3	11.0	44.1	16.4	24.0		Pass
	3				10.5					
	4				9.8					
	2				10.3					
5320	1	9	21.6	98.3	11.5	46.6	16.7	24.0		Pass
	3				10.8					
	4				10.0					
	2				10.2					

MIMO Device - 5250-5350 MHz Band - IC

Mode: 11a - 4Tx

Max EIRP (mW): 185.5

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5260	1	9	17.0	98.3	10.6	40.0	16.0	23.3	0.047	Pass
	3				9.4					
	4				9.6					
	2				10.3					
5300	1	9	16.9	98.3	11.0	44.1	16.4	23.3		Pass
	3				10.5					
	4				9.8					
	2				10.3					
5320	1	9	17.0	98.3	11.5	46.6	16.7	23.3		Pass
	3				10.8					
	4				10.0					
	2				10.2					

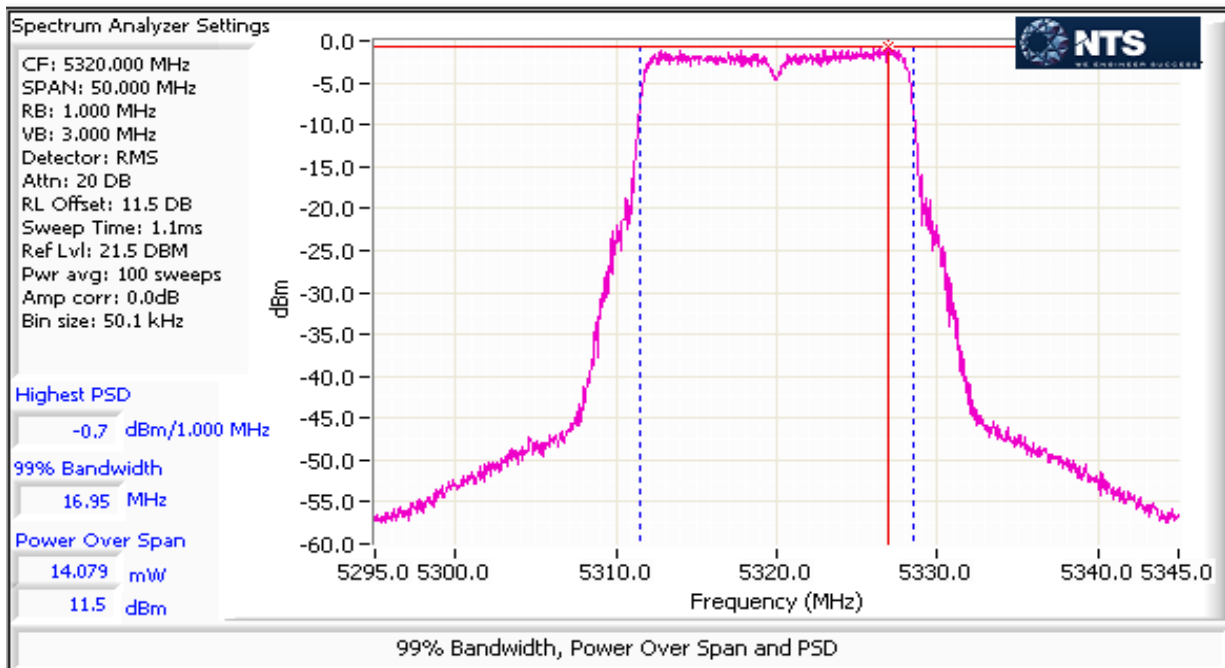


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5250-5350 PSD - FCC/IC Mode: 11a - 4Tx

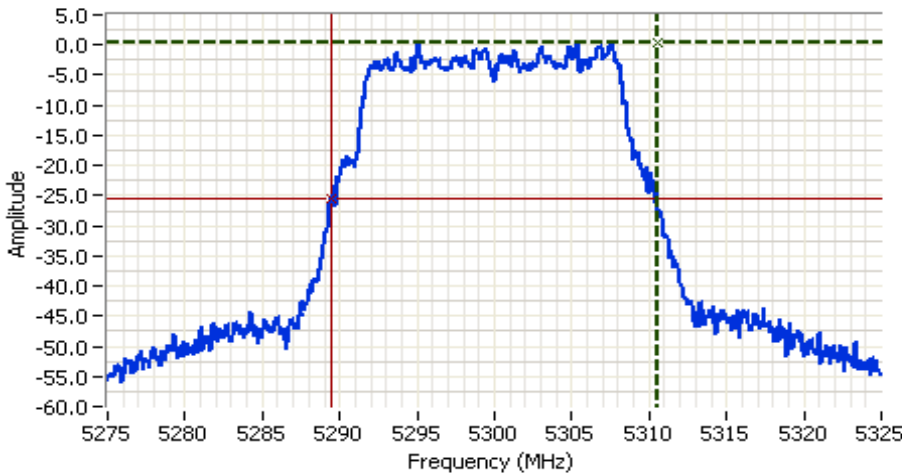
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5260	1	9	17.0	98.3	-1.8	2.3	3.6	5.0	11.0	Pass
	3				-2.6					
	4				-2.8					
	2				-2.2					
5300	1	9	16.9	98.3	-1.0	3.1	4.9	5.0	11.0	Pass
	3				-0.9					
	4				-1.6					
	2				-1.0					
5320	1	9	17.0	98.3	-0.7	2.7	4.3	5.0	11.0	Pass
	3				-1.7					
	4				-2.4					
	2				-2.4					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A



Analyzer Settings

Agilent Technologies, E4446A
 CF: 5300.000 MHz
 SPAN: 50.000 MHz
 RB: 300 kHz
 VB: 910 kHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.1ms
 Ref Lvl: 21.5 DBM

Comments

26dB BW: 21.071 MHz

Cursor 1	5310.5355	0.4	
Cursor 2	5289.4645	-25.6	

Delta Freq.	21.071
Delta Amplitude	26.0





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: HT20 - 4Tx

Max EIRP (mW): 220.2

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5260	1	10	21.6	98.6	10.9	49.5	16.9	24.0	0.055	Pass
	3				11.0					
	4				10.8					
	2				11.0					
5300	1	9	21.8	98.6	10.8	42.3	16.3	24.0		Pass
	3				10.8					
	4				9.5					
	2				9.7					
5320	1	10	21.6	98.6	11.7	55.3	17.4	24.0		Pass
	3				12.0					
	4				11.0					
	2				10.8					

MIMO Device - 5250-5350 MHz Band - IC

Mode: HT20 - 4Tx

Max EIRP (mW): 220.2

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5260	1	10	18.1	98.6	10.9	49.5	16.9	23.6	0.055	Pass
	3				11.0					
	4				10.8					
	2				11.0					
5300	1	9	18.1	98.6	10.8	42.3	16.3	23.6		Pass
	3				10.8					
	4				9.5					
	2				9.7					
5320	1	10	18.1	98.6	11.7	55.3	17.4	23.6		Pass
	3				12.0					
	4				11.0					
	2				10.8					

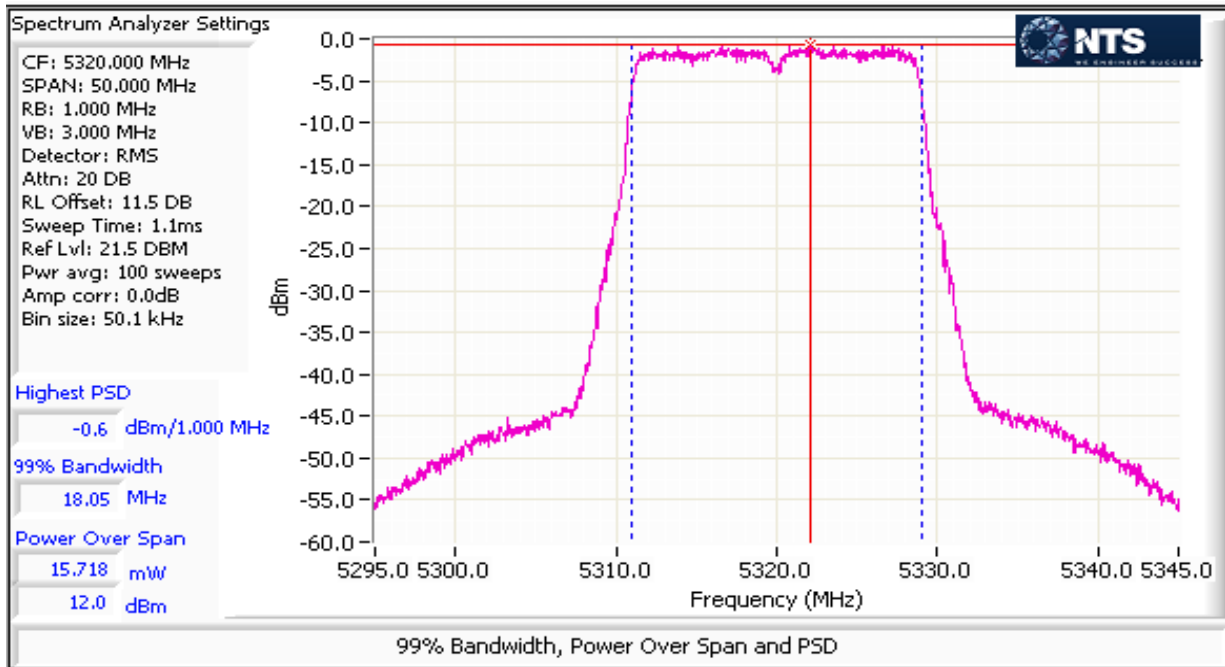


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5250-5350 PSD - FCC/IC Mode: HT20 - 4Tx

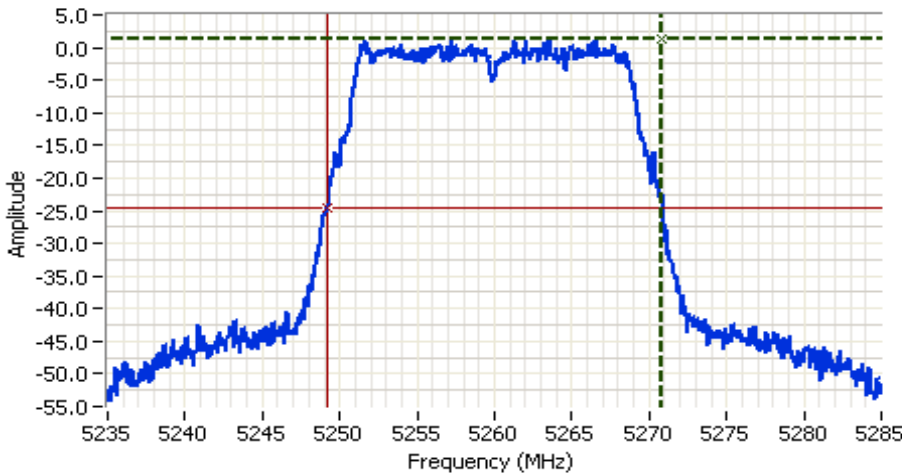
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5260	1	10	18.1	98.6	-1.8	2.7	4.3	5.0	11.0	Pass
	3				-1.6					
	4				-1.9					
	2				-1.6					
5300	1	9	18.1	98.6	-1.7	2.3	3.6	5.0	11.0	Pass
	3				-1.8					
	4				-3.4					
	2				-2.8					
5320	1	10	18.1	98.6	-1.0	3.0	4.8	5.0	11.0	Pass
	3				-0.6					
	4				-1.8					
	2				-1.8					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A



Analyzer Settings

Agilent Technologies, E4446A
 CF: 5260.000 MHz
 SPAN: 50.000 MHz
 RB: 300 kHz
 VB: 910 kHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 11.5 DB
 Sweep Time: 1.1ms
 Ref Lvl: 21.5 DBM

Comments

26dB BW: 21.622 MHz

Cursor 1	5270.8358	1.3	
Cursor 2	5249.2142	-24.7	

Delta Freq.	21.622
Delta Amplitude	26.0





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: HT40 - 4Tx

Max EIRP (mW): 347.5

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5270	1	12	40.2	98	13.9	87.3	19.4	24.0	0.087	Pass
	3				13.4					
	4				12.9					
	2				13.3					
5310	1	10	40.1	98	11.8	56.4	17.5	24.0		
	3				11.9					
	4				11.1					
	2				11.1					

MIMO Device - 5250-5350 MHz Band - IC

Mode: HT40 - 4Tx

Max EIRP (mW): 347.5

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5270	1	12	36.5	98.0	13.9	87.3	19.4	24.0	0.087	Pass
	3				13.4					
	4				12.9					
	2				13.3					
5310	1	10	36.4	98.0	11.8	56.4	17.5	24.0		
	3				11.9					
	4				11.1					
	2				11.1					

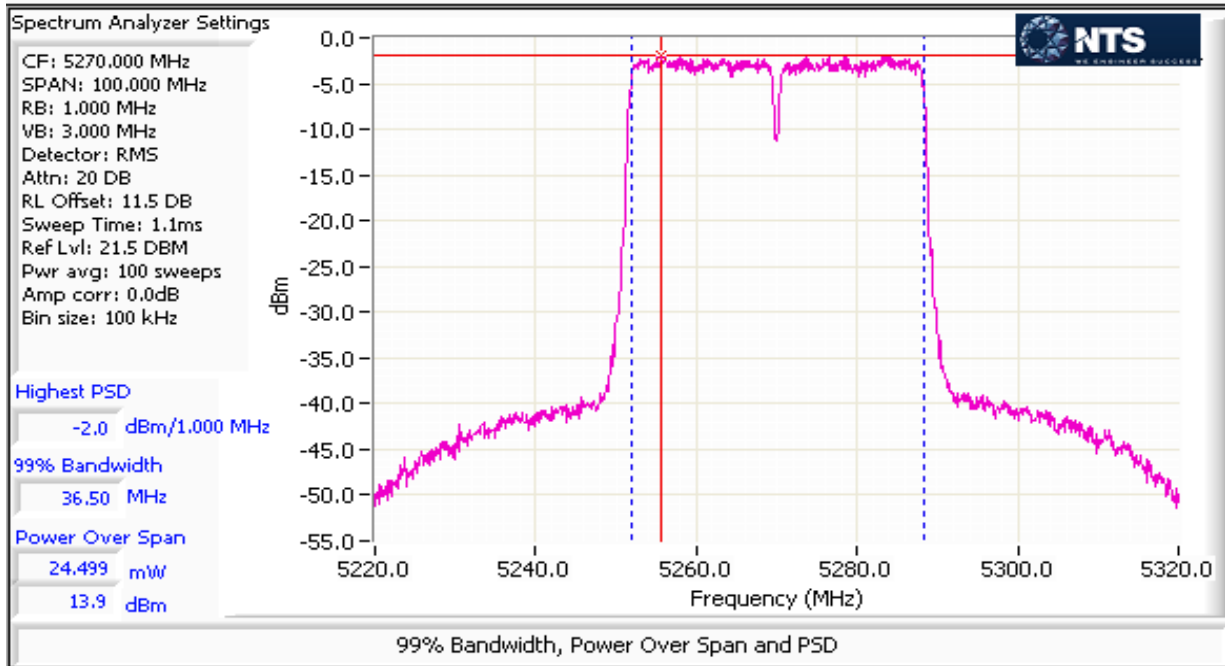


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5250-5350 PSD - FCC/IC Mode: HT40 - 4Tx

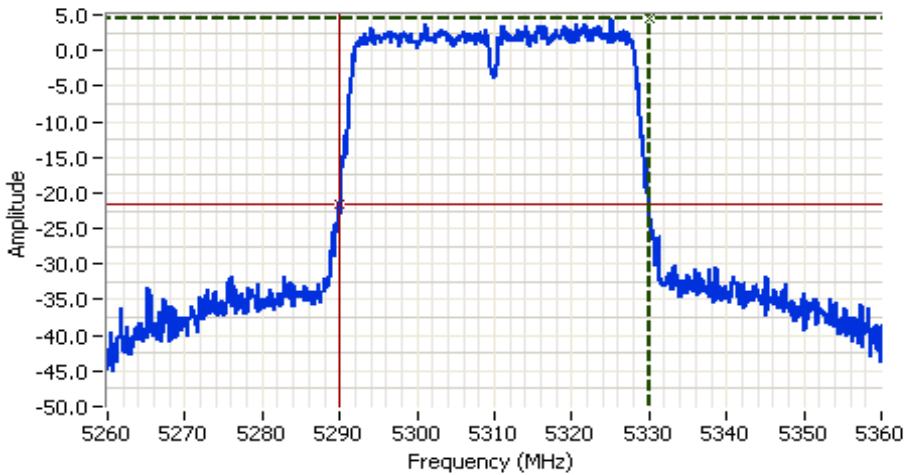
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5270	1	12	36.5	98	-2.0	2.4	3.8	5.0	11.0	Pass
	3				-2.3					
	4				-2.9					
	2				-1.7					
5310	1	10	36.5	98	-3.8	1.6	2.0	5.0	11.0	Pass
	3				-3.8					
	4				-4.6					
	2				-4.2					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A



Analyzer Settings
Agilent Technologies, E4446A
CF: 5310.000 MHz
SPAN: 100.000 MHz
RB: 510 kHz
VB: 1.500 MHz
Detector: POS
Attn: 20 DB
RL Offset: 11.5 DB
Sweep Time: 1.1ms
Ref Lvl: 21.5 DBM

Comments
26dB BW: 40.140 MHz

Cursor 1	5330.0701	4.4	
Cursor 2	5289.9299	-21.6	

Delta Freq.	40.140
Delta Amplitude	26.0





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: AC80 - 4Tx

Max EIRP (mW): 214.2

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
5290	1	10	82.1	96	11.8	53.8	17.3	24.0	0.054	Pass
	3				11.2					
	4				10.3					
	2				11.0					

MIMO Device - 5250-5350 MHz Band - IC

Mode: AC80 - 4Tx

Max EIRP (mW): 214.2

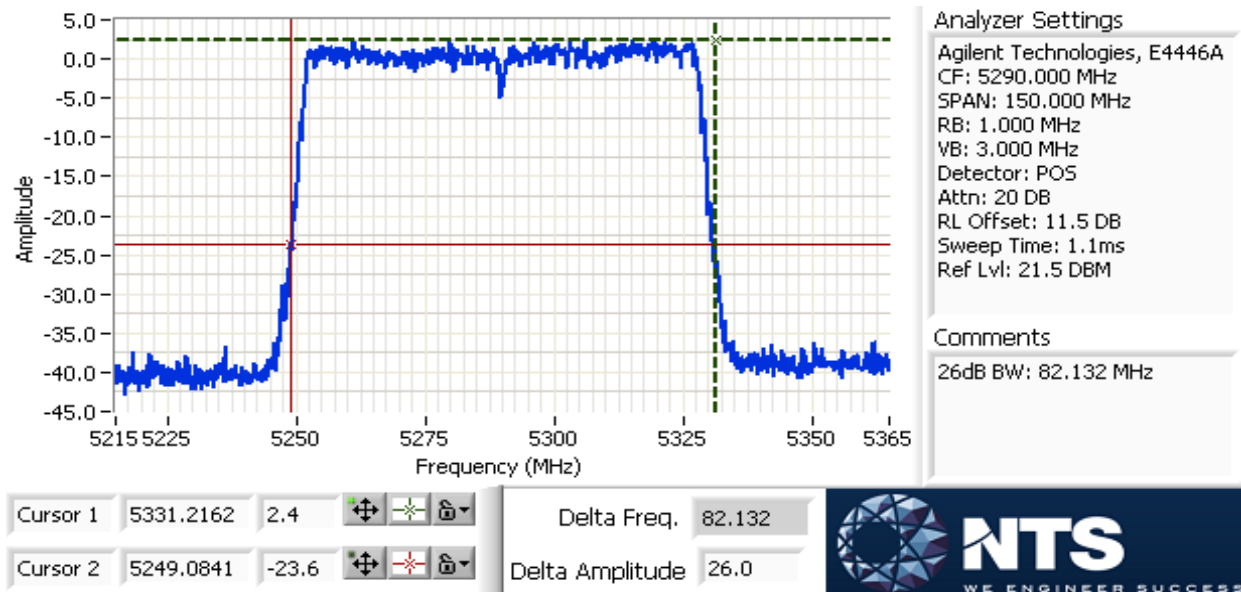
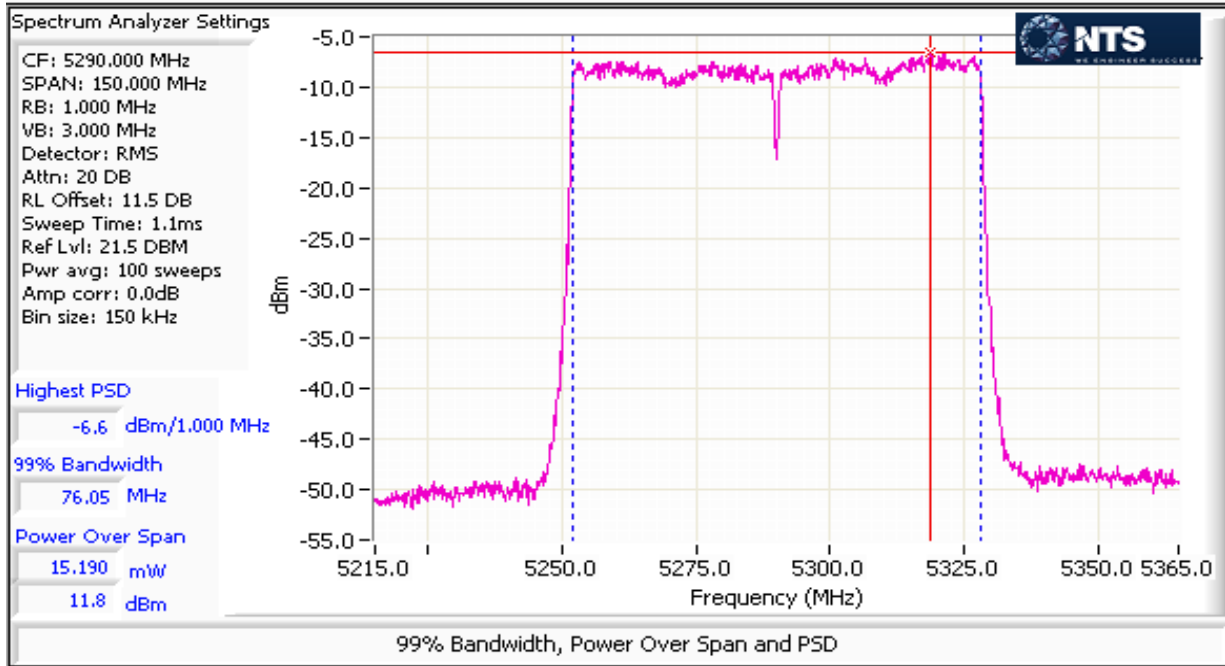
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
5290	1	10	75.9	96	11.8	53.8	17.3	24.0	0.054	Pass
	3				11.2					
	4				10.3					
	2				11.0					

5250-5350 PSD - FCC/IC

Mode: AC80 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5290	1	10	76.1	96	-6.6	0.8	-1.0	5.0	11.0	Pass
	3				-7.4					
	4				-8.2					
	2				-7.2					

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Sample Notes

Sample S/N: BET3715XRU20145 (antenna port jacks becoming worn)
 Driver: 10.10 RC69.10

MIMO Device - 5250-5350 MHz Band - FCC Mode: 11a - 4TxBF

Max EIRP (mW): 817.9

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power		FCC Limit dBm	Max Power (W)	Result
						mW	dBm			
5260	1	11	21.5	98.3	12.1	53.0	17.2	18.3	0.055	Pass
	3				11.0					
	4				10.3					
	2				11.3					
5300	1	10	21.1	98.3	11.7	52.5	17.2	18.3		
	3				12.2					
	4				8.8					
	2				11.3					
5320	1	10	21.6	98.3	11.7	55.3	17.4	18.3		
	3				11.9					
	4				10.6					
	2				11.3					

MIMO Device - 5250-5350 MHz Band - IC Mode: 11a - 4TxBF

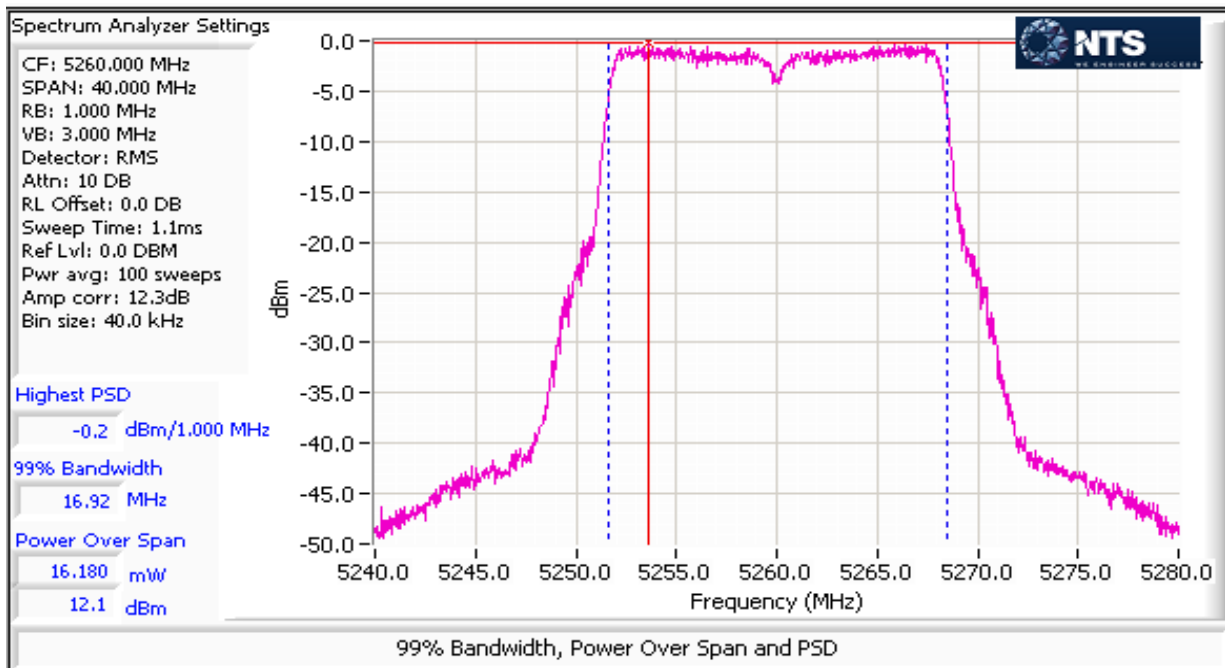
Max EIRP (mW): 817.9

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power		IC Limit dBm	Max Power (W)	Result
						mW	dBm			
5260	1	11	17.0	98.3	12.1	53.0	17.2	17.6	0.055	Pass
	3				11.0					
	4				10.3					
	2				11.3					
5300	1	10	16.9	98.3	11.7	52.5	17.2	17.6		
	3				12.2					
	4				8.8					
	2				11.3					
5320	1	10	16.9	98.3	11.7	55.3	17.4	17.6		
	3				11.9					
	4				10.6					
	2				11.3					

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5250-5350 PSD - FCC/IC
Mode: 11a - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5260	1	11	[Greyed Out]	98.3	-0.2	3.2	5.1	5.3	11.0	Pass
	3				-1.0					
	4				-2.0					
	2				-1.1					
5300	1	10	[Greyed Out]	98.3	-0.7	3.0	4.8	5.3	11.0	Pass
	3				-0.2					
	4				-3.7					
	2				-1.1					
5320	1	10	[Greyed Out]	98.3	-0.5	3.3	5.2	5.3	11.0	Pass
	3				-0.5					
	4				-1.8					
	2				-0.9					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: HT20 - 4TxBF

Max EIRP (mW): 859.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result	
5260	1	11	21.6	98.6	12.5	57.5	17.6	18.3	0.058	Pass	
	3				10.4						
	4				11.1						
	2				12.0						
5300	1	10	21.8	98.6	11.6	49.4	16.9	18.3		0.058	Pass
	3				11.3						
	4				10.4						
	2				10.2						
5320	1	10	21.6	98.6	12.2	58.1	17.6	18.3		0.058	Pass
	3				12.0						
	4				10.6						
	2				11.5						

MIMO Device - 5250-5350 MHz Band - IC

Mode: HT20 - 4TxBF

Max EIRP (mW): 859.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result	
5260	1	11	18.1	98.6	12.5	57.5	17.6	17.9	0.058	Pass	
	3				10.4						
	4				11.1						
	2				12.0						
5300	1	10	18.1	98.6	11.6	49.4	16.9	17.9		0.058	Pass
	3				11.3						
	4				10.4						
	2				10.2						
5320	1	10	18.1	98.6	12.2	58.1	17.6	17.9		0.058	Pass
	3				12.0						
	4				10.6						
	2				11.5						

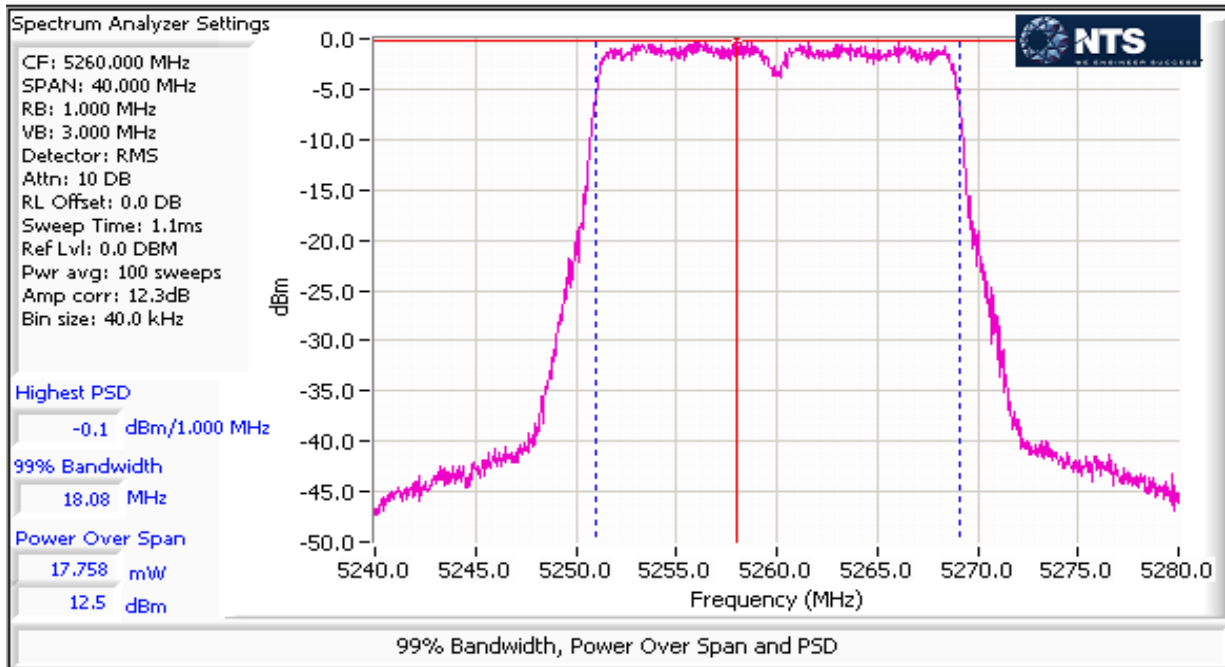


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5250-5350 PSD - FCC/IC Mode: HT20 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5260	1	11	18.08	98.6	-0.1	3.2	5.1	5.3	11.0	Pass
	3				-2.2					
	4				-1.4					
	2				-0.7					
5300	1	10	18.08	98.6	-0.7	2.7	4.3	5.3	11.0	Pass
	3				-1.3					
	4				-2.3					
	2				-2.6					
5320	1	10	18.08	98.6	-0.3	3.1	4.9	5.3	11.0	Pass
	3				-0.8					
	4				-2.2					
	2				-1.2					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC/IC

Mode: HT40 - 4TxBF

Max EIRP (mW): 896.3

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5270	1	11	40.2	98	13.0	60.6	17.8	18.3	0.061	Pass
	3				10.9					
	4				11.2					
	2				11.8					
5310	1	10	40.1	98	11.8	56.4	17.5	18.3		Pass
	3				11.9					
	4				11.1					
	2				11.1					

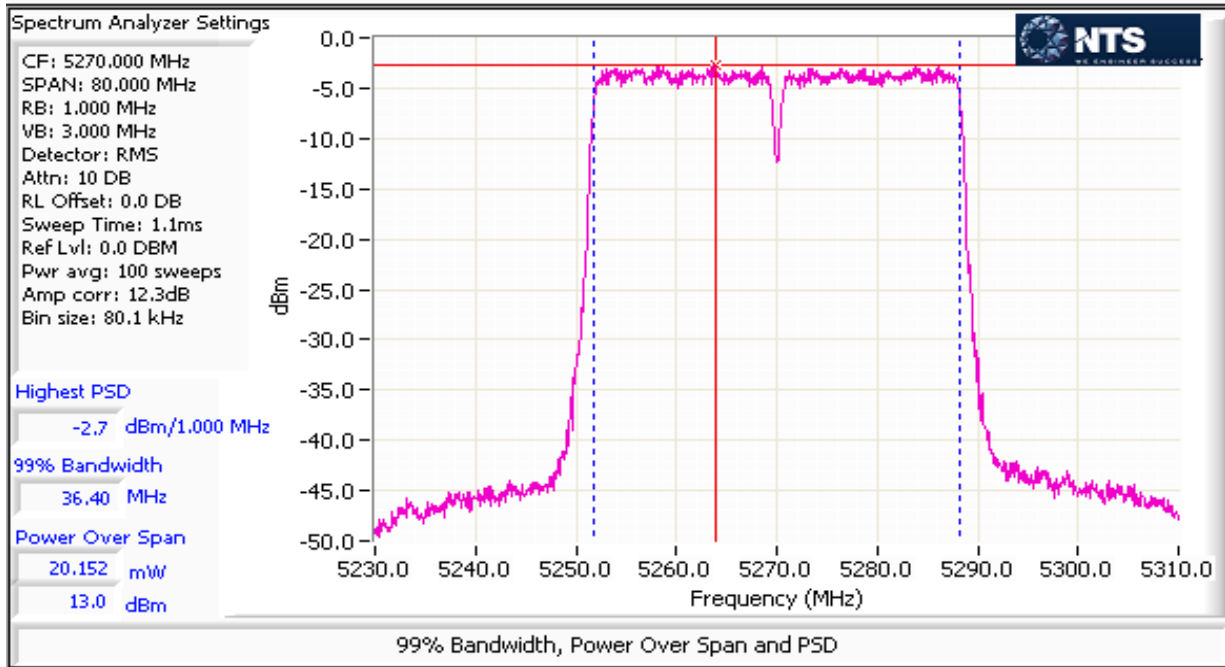


EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5250-5350 PSD - FCC/IC Mode: HT40 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5270	1	11	36.5	98	-2.7	1.6	2.0	5.3	11.0	Pass
	3				-4.6					
	4				-4.7					
	2				-3.8					
5310	1	10	36.5	98	-3.8	1.6	2.0	5.3	11.0	Pass
	3				-3.8					
	4				-4.6					
	2				-4.2					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5250-5350 MHz Band - FCC/IC

Mode: AC80 - 4TxBF

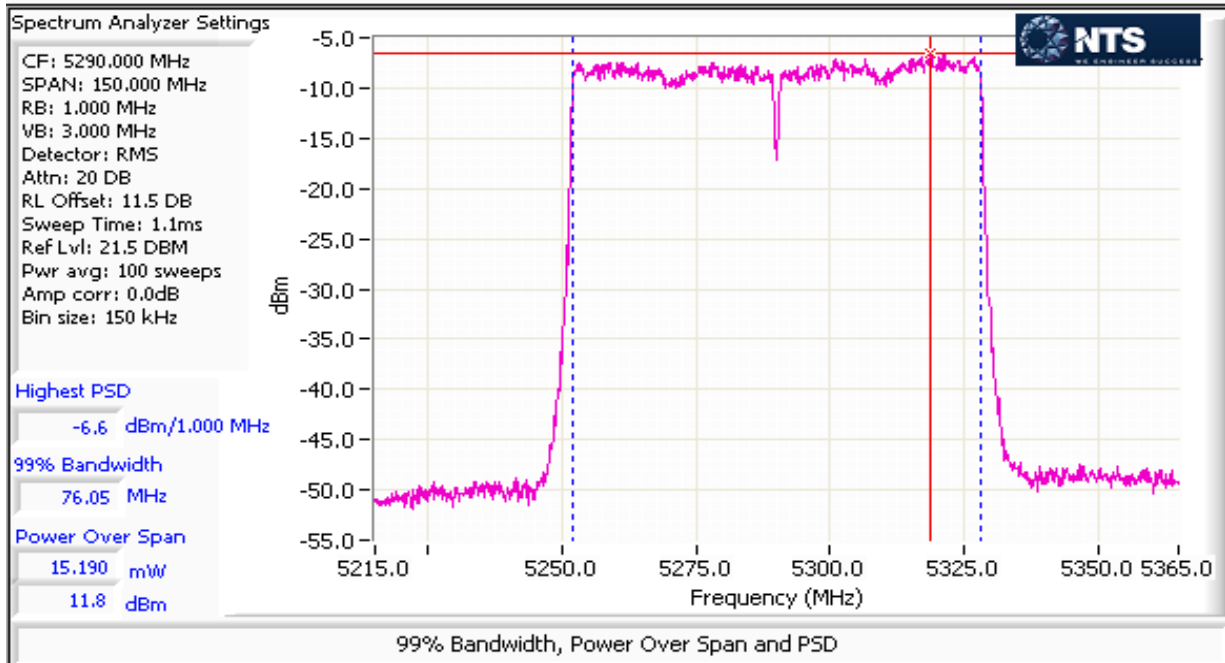
Max EIRP (mW): 795.8

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5290	1	10	82.1	96	11.8	53.8	17.3	18.3	0.054	Pass
	3				11.2					
	4				10.3					
	2				11.0					

5250-5350 PSD - FCC/IC

Mode: AC80 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5290	1	10	76.1	96	-6.6	0.8	-1.0	5.3	11.0	Pass
	3				-7.4					
	4				-8.2					
	2				-7.2					





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

Test Specific Details

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

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
FCC/IC - 4Tx				
1	Power, 5470-5725MHz	15.407(a)(2)	Pass	a: 17.6 dBm (57.3 mW) HT20: 18.5 dBm (70.8 mW) HT40: 21.0 dBm (125.7 mW) AC80: 20.8 dBm (119.6 mW)
1	PSD, 5470-5725MHz	15.407(a)(2)	Pass	a: 5.3 dBm/MHz HT20: 5.9 dBm/MHz HT40: 5.3 dBm/MHz AC80: 2.3 dBm/MHz
1	Max EIRP 5470- 5725MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	N/A	EIRP = 26.1 dBm (406.8 mW)
1	26dB Bandwidth	Information only - limits maximum power	N/A	a: 21.2 MHz n20: 21.5 MHz n40: 40.1 MHz ac80: 81.9 MHz
1	99% Bandwidth	RSS 247 (Information only)	N/A	a: 16.9 MHz n20: 18.1 MHz n40: 36.5 MHz ac80: 76.1 MHz



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

FCC/IC - 4TxBF

1	Power, 5470-5725MHz	15.407(a)(2)	Pass	a: 17.6 dBm (57.3 mW) HT20: 18.5 dBm (70.8 mW) HT40: 18.5 dBm (70.0 mW) AC80: 18.4 dBm (69.4 mW)
1	PSD, 5470-5725MHz	15.407(a)(2)	Pass	a: 5.3 dBm/MHz HT20: 5.9 dBm/MHz HT40: 2.8 dBm/MHz AC80: -0.5 dBm/MHz
1	Max EIRP 5470- 5725MHz	TPC required if EIRP \geq 500mW (27dBm). EIRP \geq 200mW (23dBm) DFS threshold = -64dBm.	N/A	EIRP = 29.5 dBm (891.3 mW)
1	26dB Bandwidth	Information only - limits maximum power	N/A	a: 21.2 MHz n20: 21.5 MHz n40: 40.1 MHz ac80: 81.9 MHz
1	99% Bandwidth	RSS 247 (Information only)	N/A	a: 16.9 MHz n20: 18.1 MHz n40: 36.5 MHz ac80: 76.1 MHz

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: 22.3 °C
Rel. Humidity: 35 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01 v01r03, dated April 8, 2013

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11g/a	6Mb/s	98.3%	Yes	2.086	0	0	10
HT20	MCS0	98.6%	Yes	1.906	0.00	0.00	10
HT40	MCS0	98.0%	Yes	0.942	0.00	0.00	10
ac80	VHT0	96.0%	Yes	0.46	0.18	0.35	2174

Sample Notes

Sample S/N: BET3715XRU20145

Driver: 10.10 RC69.10

Port Setting: J400 Port 1 J500 Port 3
 J401 Port 2 J501 Port 4



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

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

Date of Test: 10/21 & 10/22/2015 12:00:00 AM Config. Used: 1
 Test Engineer: Rafael Varelas Config Change: None
 Test Location: FT Lab #4A EUT Voltage: PoE

Note 1:	For the transmit duty cycle ≥ 98 percent, output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$, RMS detector, trace average 100 traces, power averaging on and power integration over 99% BW MHz (method SA-1 of KDB 789033).
Note 2:	For the transmit duty cycle ≤ 98 percent, output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$, RMS detector, trace average 100 traces, power averaging on and power integration over 99% bandwidth. The measurements adjusted by adding YY. This is based on $10\log(1/x)$, where x is the duty cycle. (method SA-2 of KDB 789033)
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 are non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

Antenna Gain Information - 4Tx

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250	1.9	6.7	3.6	1.5	No	Yes	Yes	No	3.9	9.9
5250-5350	2.8	8.8	4.7	5.2	No	Yes	Yes	No	6.0	12.0
5470-5725	3.4	6.9	3.3	5.8	No	Yes	Yes	No	5.1	11.1
5725-5850	3.3	4.9	3.8	3.1	No	Yes	Yes	No	3.8	9.8



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Antenna Gain Information - 4TxBF

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250	1.9	6.7	3.6	1.5	Yes	Yes	Yes	No	9.7	9.7
5250-5350	2.8	8.8	4.7	5.2	Yes	Yes	Yes	No	11.7	11.7
5470-5725	3.4	6.9	3.3	5.8	Yes	Yes	Yes	No	11.0	11.0
5725-5850	3.3	4.9	3.8	3.1	Yes	Yes	Yes	No	9.8	9.8

For devices that support CDD modes

Min # of spatial streams: 1
 Max # of spatial streams: 4

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD value.
Notes:	Array gain for power/psd calculated per KDB 662911 D01.
Notes:	For systems with Beamforming and CDD, choose one the following options: Option 1: Delays are optimized for beamforming, rather than being selected from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: 11a - 4Tx

Max EIRP (mW): 185.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result	
5500	1	10	21.7	98.3	11.8	57.3	17.6	24.0	0.057	Pass	
	3				11.9						
	4				11.0						
	2				11.5						
5580	1	10	21.2	98.3	11.3	55.2	17.4	24.0		0.057	Pass
	3				12.1						
	4				11.0						
	2				11.1						
5700	1	10	21.5	98.3	11.2	52.4	17.2	24.0		0.057	Pass
	3				11.9						
	4				10.7						
	2				10.8						

MIMO Device - 5470-5725 MHz Band - IC

Mode: 11a - 4Tx

Max EIRP (mW): 185.4

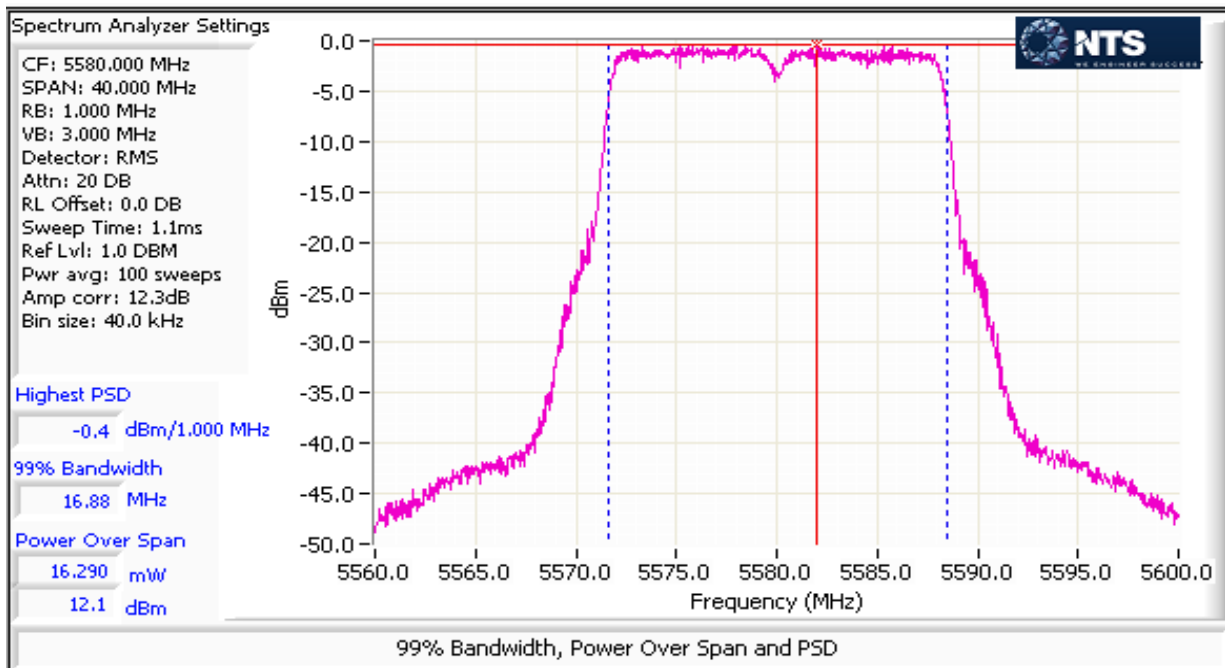
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result	
5500	1	10	16.9	98.3	11.8	57.3	17.6	23.3	0.057	Pass	
	3				11.9						
	4				11.0						
	2				11.5						
5580	1	10	16.9	98.3	11.3	55.2	17.4	23.3		0.057	Pass
	3				12.1						
	4				11.0						
	2				11.1						
5700	1	10	16.9	98.3	11.2	52.4	17.2	23.3		0.057	Pass
	3				11.9						
	4				10.7						
	2				10.8						

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

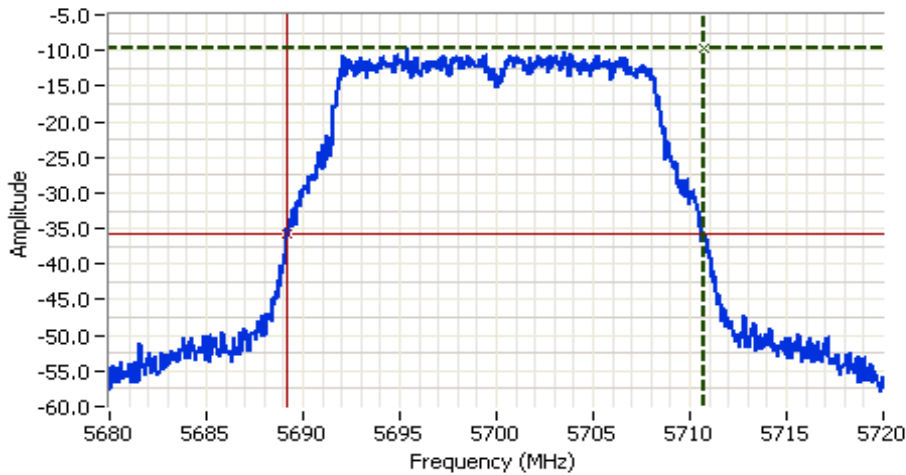
5470-5725 PSD - FCC/IC

Mode: 11a - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	1	10	16.88	98.3	-0.2	3.4	5.3	5.9	11.0	Pass
	3				-0.6					
	4				-1.4					
	2				-0.7					
5580	1	10	16.88	98.3	-0.8	3.3	5.2	5.9	11.0	Pass
	3				-0.4					
	4				-1.2					
	2				-1.1					
5700	1	10	16.88	98.3	-1.1	3.1	4.9	5.9	11.0	Pass
	3				-0.5					
	4				-1.7					
	2				-1.5					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A



Analyzer Settings

Agilent Technologies, E4446A
 CF: 5700.000 MHz
 SPAN: 40.000 MHz
 RB: 300 kHz
 VB: 910 kHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 0.0 DB
 Sweep Time: 1.1ms
 Ref Lvl: 1.0 DBM

Comments

26dB BW: 21.502 MHz

Cursor 1	5710.7107	-9.8	
Cursor 2	5689.2092	-35.8	

Delta Freq.	21.502
Delta Amplitude	26.0



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: HT20 - 4Tx

Max EIRP (mW): 229.1

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5500	1	10	21.5	98.6	11.9	57.8	17.6	24.0	0.071	Pass
	3				12.2					
	4				10.5					
	2				11.6					
5580	1	11	21.9	98.6	12.6	70.8	18.5	24.0		Pass
	3				13.2					
	4				11.9					
	2				12.1					
5700	1	11	21.9	98.6	12.2	65.1	18.1	24.0		Pass
	3				12.6					
	4				11.5					
	2				12.1					

MIMO Device - 5470-5725 MHz Band - IC

Mode: HT20 - 4Tx

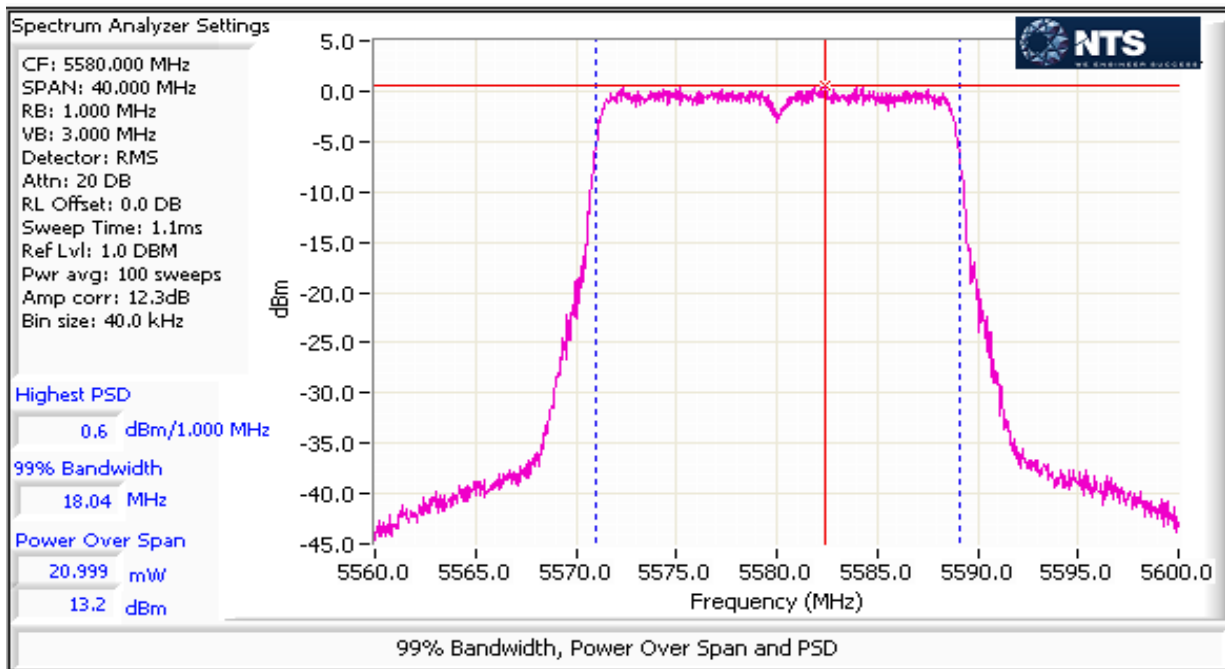
Max EIRP (mW): 229.1

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5500	1	10	18.0	98.6	11.9	57.8	17.6	23.6	0.071	Pass
	3				12.2					
	4				10.5					
	2				11.6					
5580	1	11	18.1	98.6	12.6	70.8	18.5	23.6		Pass
	3				13.2					
	4				11.9					
	2				12.1					
5700	1	11	18.0	98.6	12.2	65.1	18.1	23.6		Pass
	3				12.6					
	4				11.5					
	2				12.1					

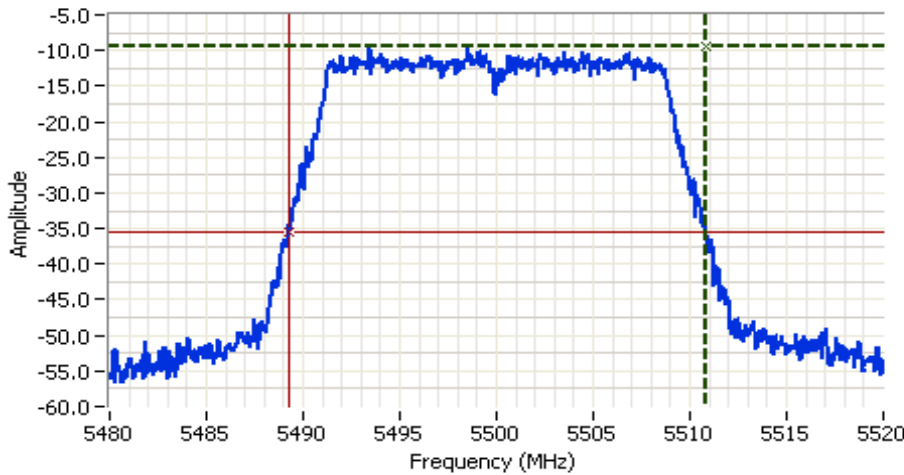
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: HT20 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	1	10	[Greyed Out]	98.6	-0.7	3.1	4.9	5.9	11.0	Pass
	3				-0.5					
	4				-2.2					
	2				-1.2					
5580	1	11	[Greyed Out]	98.6	0.1	3.9	5.9	5.9	11.0	Pass
	3				0.6					
	4				-0.9					
	2				-0.4					
5700	1	11	[Greyed Out]	98.6	-0.5	3.5	5.4	5.9	11.0	Pass
	3				0.1					
	4				-1.3					
	2				-0.5					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A



Analyzer Settings

Agilent Technologies, E4446A
 CF: 5500.000 MHz
 SPAN: 40.000 MHz
 RB: 300 kHz
 VB: 910 kHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 0.0 DB
 Sweep Time: 1.1ms
 Ref Lvl: 1.0 DBM

Comments

26dB BW: 21.542 MHz

Cursor 1	5510.7908	-9.5	
Cursor 2	5489.2492	-35.5	

Delta Freq.	21.542
Delta Amplitude	26.0



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC/IC

Mode: HT40 - 4Tx

Max EIRP (mW): 406.8

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5510	1	10	40.1	98.0	12.1	54.2	17.3	24.0	0.126	Pass
	3				10.9					
	4				10.5					
	2				11.6					
5550	1	13	41.6	98.0	14.7	115.4	20.6	24.0		Pass
	3				14.7					
	4				14.6					
	2				14.4					
5670	1	14	40.6	98.0	15.5	125.7	21.0	24.0		Pass
	3				15.2					
	4				14.3					
	2				14.8					

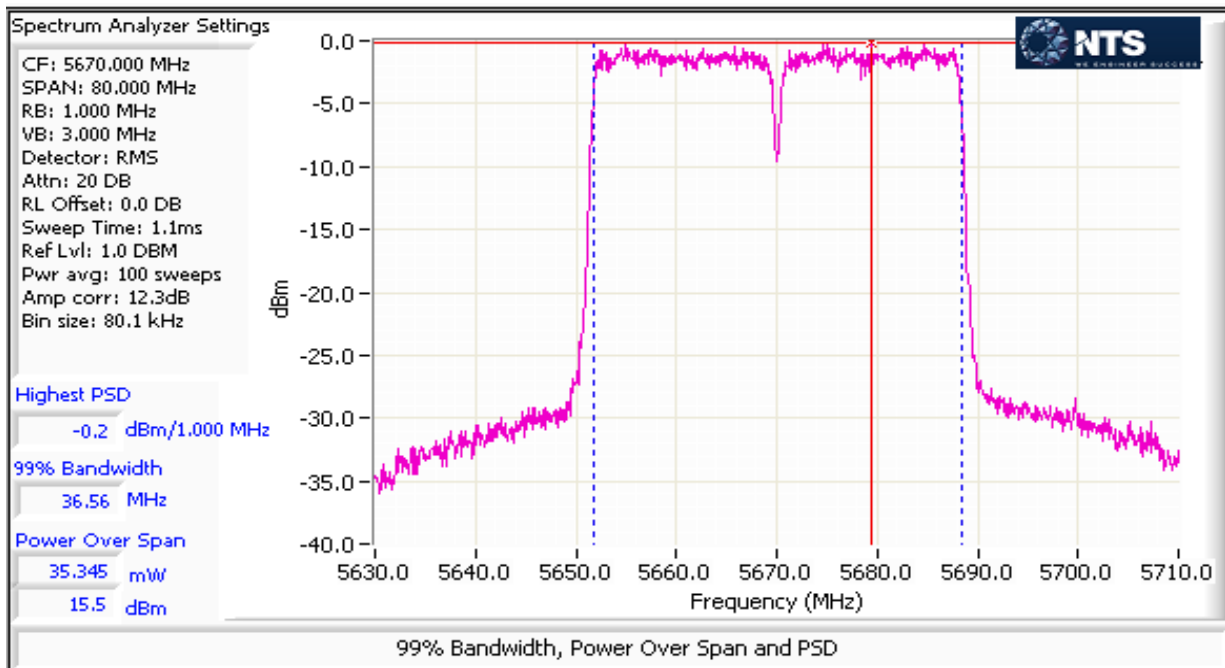


EMC Test Data

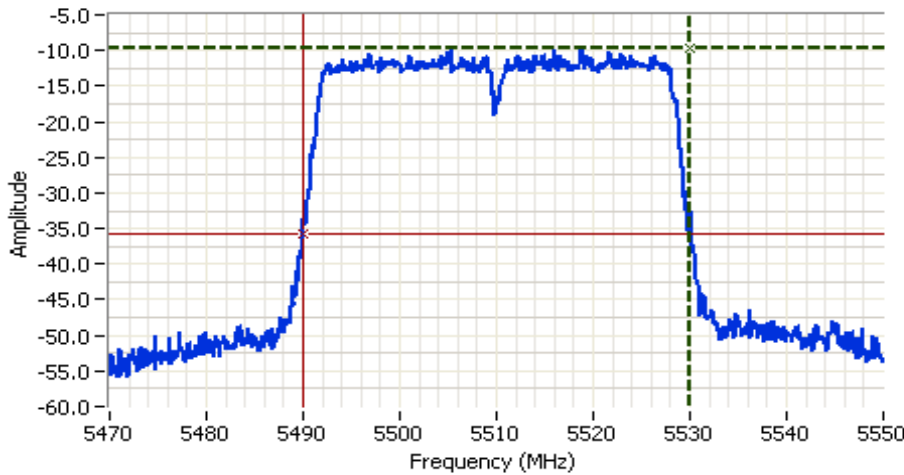
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC Mode: HT40 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5510	1	10	36.4	98.0	-3.6	1.5	1.8	5.9	11.0	Pass
	3				-4.8					
	4				-5.3					
	2				-3.9					
5550	1	13	36.5	98.0	-0.9	3.2	5.1	5.9	11.0	Pass
	3				-0.9					
	4				-1.1					
	2				-1.2					
5670	1	14	36.5	98.0	-0.2	3.4	5.3	5.9	11.0	Pass
	3				-0.7					
	4				-1.6					
	2				-0.6					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A



Analyzer Settings

Agilent Technologies, E4446A
 CF: 5510.000 MHz
 SPAN: 80.000 MHz
 RB: 510 kHz
 VB: 1.500 MHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 0.0 DB
 Sweep Time: 1.1ms
 Ref Lvl: 1.0 DBM

Comments

26dB BW: 40.120 MHz

Cursor 1	5530.0601	-9.8	
Cursor 2	5489.9399	-35.8	

Delta Freq.	40.120
Delta Amplitude	26.0



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: AC80 - 4Tx

Max EIRP (mW): 387

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
5530	1	10	81.9	96.0	11.9	59.7	17.8	24.0	0.120	Pass
	3				11.7					
	4				11.2					
	2				11.4					
5610	1	13	82.3	96.0	14.3	119.6	20.8	24.0		
	3				14.6					
	4				14.6					
	2				14.8					

MIMO Device - 5470-5725 MHz Band - IC

Mode: AC80 - 4Tx

Max EIRP (mW): 193.2

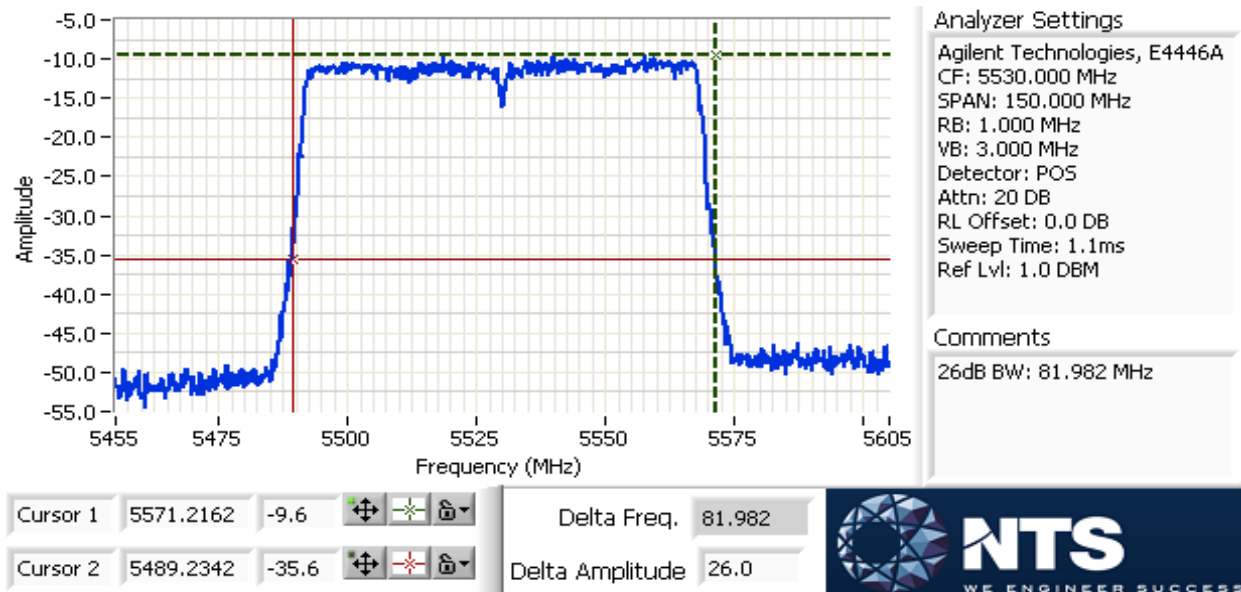
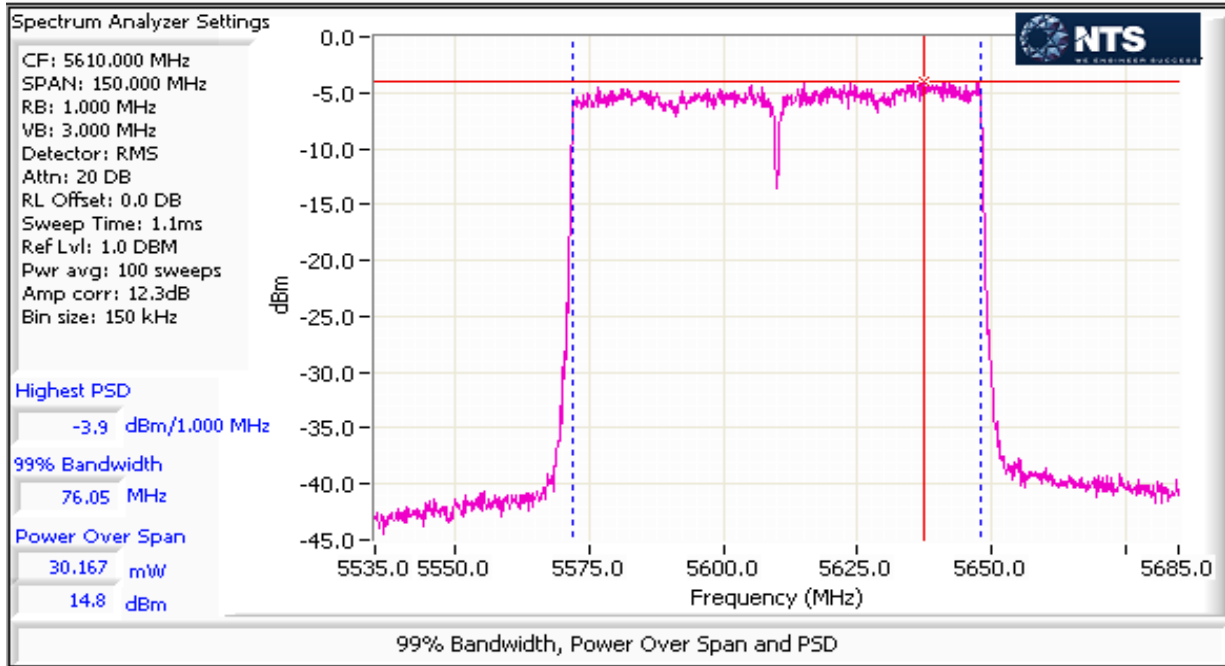
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
5530	1	10	81.9	96.0	11.9	59.7	17.8	24.0	0.060	Pass
	3				11.7					
	4				11.2					
	2				11.4					

5470-5725 PSD - FCC/IC

Mode: AC80 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5530	1	10	76.1	96.0	-6.6	0.8	-1.0	5.9	11.0	Pass
	3				-6.9					
	4				-7.4					
	2				-7.1					
5610	1	13	76.1	96.0	-4.1	1.7	2.3	5.9	-	Pass
	3				-3.7					
	4				-3.9					
	2				-3.9					

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: 11a - 4TxBF

Max EIRP (mW): 721.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5500	1	10	21.7	98.3	11.8	57.3	17.6	19.0	0.057	Pass
	3				11.9					
	4				11.0					
	2				11.5					
5580	1	10	21.2	98.3	11.3	55.2	17.4	19.0		Pass
	3				12.1					
	4				11.0					
	2				11.1					
5700	1	10	21.5	98.3	11.2	52.4	17.2	19.0		Pass
	3				11.9					
	4				10.7					
	2				10.8					

MIMO Device - 5470-5725 MHz Band - IC

Mode: 11a - 4TxBF

Max EIRP (mW): 721.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5500	1	10	16.9	98.3	11.8	57.3	17.6	18.3	0.057	Pass
	3				11.9					
	4				11.0					
	2				11.5					
5580	1	10	16.9	98.3	11.3	55.2	17.4	18.3		Pass
	3				12.1					
	4				11.0					
	2				11.1					
5700	1	10	16.9	98.3	11.2	52.4	17.2	18.3		Pass
	3				11.9					
	4				10.7					
	2				10.8					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: 11a - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹		FCC Limit dBm/MHz	IC limit dBm/MHz	Result
						mW/MHz	dBm/MHz			
5500	1	10		98.3	-0.2	3.4	5.3	6.0	11.0	Pass
	3				-0.6					
	4				-1.4					
	2				-0.7					
5580	1	10		98.3	-0.8	3.3	5.2	6.0	11.0	Pass
	3				-0.4					
	4				-1.2					
	2				-1.1					
5700	1	10		98.3	-1.1	3.1	4.9	6.0	11.0	Pass
	3				-0.5					
	4				-1.7					
	2				-1.5					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: HT20 - 4TxBF

Max EIRP (mW): 891.3

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
5500	1	10	21.5	98.6	11.9	57.8	17.6	19.0	0.071	Pass
	3				12.2					
	4				10.5					
	2				11.6					
5580	1	11	21.9	98.6	12.6	70.8	18.5	19.0		Pass
	3				13.2					
	4				11.9					
	2				12.1					
5700	1	11	21.9	98.6	12.2	65.1	18.1	19.0		Pass
	3				12.6					
	4				11.5					
	2				12.1					

MIMO Device - 5470-5725 MHz Band - IC

Mode: HT20 - 4TxBF

Max EIRP (mW): 891.3

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
5500	1	10	18.0	98.6	11.9	57.8	17.6	18.6	0.071	Pass
	3				12.2					
	4				10.5					
	2				11.6					
5580	1	11	18.1	98.6	12.6	70.8	18.5	18.6		Pass
	3				13.2					
	4				11.9					
	2				12.1					
5700	1	11	18.0	98.6	12.2	65.1	18.1	18.6		Pass
	3				12.6					
	4				11.5					
	2				12.1					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: HT20 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹		FCC Limit dBm/MHz	IC limit dBm/MHz	Result
						mW/MHz	dBm/MHz			
5500	1	10		98.6	-0.7	3.1	4.9	6.0	11.0	Pass
	3				-0.5					
	4				-2.2					
	2				-1.2					
5580	1	11		98.6	0.1	3.9	5.9	6.0	11.0	Pass
	3				0.6					
	4				-0.9					
	2				-0.4					
5700	1	11		98.6	-0.5	3.5	5.4	6.0	11.0	Pass
	3				0.1					
	4				-1.3					
	2				-0.5					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC/IC

Mode: HT40 - 4TxBF

Max EIRP (mW): 881.2

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5510	1	10	40.1	98.0	12.1	54.2	17.3	19.0	0.070	Pass
	3				10.9					
	4				10.5					
	2				11.6					
5550	1	11	41.6	98.0	12.6	70.0	18.5	19.0		Pass
	3				12.0					
	4				12.4					
	2				12.7					
5670	1	11	40.6	98.0	12.1	67.2	18.3	19.0		Pass
	3				12.5					
	4				12.3					
	2				12.1					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: HT40 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5510	1	10	36.4	98.0	-3.6	1.5	1.8	6.0	11.0	Pass
	3				-4.8					
	4				-5.3					
	2				-3.9					
5550	1	11	36.4	98.0	-3.0	1.9	2.8	6.0	11.0	Pass
	3				-3.8					
	4				-3.4					
	2				-2.8					
5670	1	11	36.5	98.0	-3.7	1.8	2.6	6.0	11.0	Pass
	3				-3.2					
	4				-3.7					
	2				-3.5					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - 5470-5725 MHz Band - FCC/IC

Mode: AC80 - 4TxBF

Max EIRP (mW): 873.7

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5530	1	10	81.9	96.0	11.9	59.7	17.8	19.0	0.069	Pass
	3				11.7					
	4				11.2					
	2				11.4					
5610	1	11	82.3	96.0	12.2	69.4	18.4	19.0		
	3				12.3					
	4				11.6					
	2				12.7					

MIMO Device - 5470-5725 MHz Band - FCC/IC

Mode: AC80 - 4TxBF

Max EIRP (mW): 751.6

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5530	1	10	81.9	96.0	11.9	59.7	17.8	19.0	0.060	Pass
	3				11.7					
	4				11.2					
	2				11.4					

5470-5725 PSD - FCC/IC

Mode: AC80 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5530	1	10	76.1	96.0	-6.6	0.8	-1.0	6.0	11.0	Pass
	3				-6.9					
	4				-7.4					
	2				-7.1					
5610	1	11	76.1	96.0	-6.4	0.9	-0.5	6.0	11.0	Pass
	3				-6.7					
	4				-7.3					
	2				-5.8					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

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

Results for channels that straddle the 5725MHz bandedge

Test Specific Details

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

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
FCC/IC - 4Tx				
1	Power, 5470-5725MHz	15.407(a)(2)		a: 17.3 dBm (53.8 mW) HT20: 18.1dBm (64.5 mW) HT40: 21.4dBm (137.6 mW) AC80: 19.9dBm (96.9 mW)
1	PSD, 5470-5725MHz	15.407(a)(2)		a: 5.1 dBm/MHz HT20: 5.4 dBm/MHz HT40: 5.6 dBm/MHz AC80: 1.5 dBm/MHz
1	26dB Bandwidth	Information only - limits maximum power	N/A	a: 15.6 MHz n20: 15.9 MHz n40: 33.5 MHz ac80: 73.1 MHz
1	99% Bandwidth	RSS 247 (Information only)	N/A	a: 14.0 MHz n20: 14.6 MHz n40: 33.5 MHz ac80: 73.1 MHz



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

FCC/IC - 4TxBF				
1	Power, 5470-5725MHz	15.407(a)(2)		a: 17.3 dBm (53.8 mW) HT20: 18.1dBm (64.5 mW) HT40: 19.1dBm (82.0 mW) AC80: 19.1dBm (81.0 mW)
1	PSD, 5470-5725MHz	15.407(a)(2)		a: 5.1 dBm/MHz HT20: 5.4 dBm/MHz HT40: 3.4 dBm/MHz AC80: 1.5 dBm/MHz
1	26dB Bandwidth	Information only - limits maximum power	N/A	a: 15.6 MHz n20: 15.9 MHz n40: 33.5 MHz ac80: 73.1 MHz
1	99% Bandwidth	RSS 247 (Information only)	N/A	a: 14.0 MHz n20: 14.6 MHz n40: 33.5 MHz ac80: 73.1 MHz

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: 22.1 °C
Rel. Humidity: 34 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01 v01r03, dated April 8, 2013

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11g/a	6Mb/s	98.3%	Yes	2.086	0	0	10
HT20	MCS0	98.6%	Yes	1.906	0.00	0.00	10
HT40	MCS0	98.0%	Yes	0.942	0.00	0.00	10
ac80	VHT0	96.0%	Yes	0.46	0.18	0.35	2174

Sample Notes

Sample S/N: BET3715XRU20145

Driver: 10.10 RC69.10

Port Setting: J400 Port 1 J500 Port 3
 J401 Port 2 J501 Port 4



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems
 Date of Test: 10/23/2015 0:00 Config. Used: 1
 Test Engineer: Rafael Varelas Config Change: None
 Test Location: FT Lab #4A EUT Voltage: PoE

- Note 1: For the transmit duty cycle ≥ 98 percent, output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$, RMS detector, trace average 100 traces, power averaging on and power integration over 99% BW MHz (method SA-1 of KDB 789033).
- Note 2: For the transmit duty cycle ≤ 98 percent, output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$, RMS detector, trace average 100 traces, power averaging on and power integration over 99% bandwidth. The measurements adjusted by adding YY. This is based on $10\log(1/x)$, where x is the duty cycle. (method SA-2 of KDB 789033)
- 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.

Antenna Gain Information - 4Tx

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250					No	Yes	Yes	No		
5250-5350					No	Yes	Yes	No		
5470-5725	3.4	6.9	3.3	5.8	No	Yes	Yes	No	5.1	11.1
5725-5850					No	Yes	Yes	No		



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Antenna Gain Information - 4TxBF

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250					Yes	Yes	Yes	No		
5250-5350					Yes	Yes	Yes	No		
5470-5725	3.4	6.9	3.3	5.8	Yes	Yes	Yes	No	11.0	11.0
5725-5850					Yes	Yes	Yes	No		

For devices that support CDD modes

Min # of spatial streams: 1
 Max # of spatial streams: 4

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD value.
Notes:	Array gain for power/psd calculated per KDB 662911 D01.
Notes:	For systems with Beamforming and CDD, choose one the following options: Option 1: Delays are optimized for beamforming, rather than being selected from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: 11a - 4Tx

Max EIRP (mW): 140.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	10	15.6	98.3	10.4	43.4	16.4	22.9	0.043	Pass
	3				10.6					
	4				9.5					
	2				10.8					
UNII-3										
5720	1	10	5.80	98.3	4.3	10.4	10.2	30.0	0.043	Pass
	3				4.5					
	4				3.7					
	2				4.1					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: 11a - 4Tx

Max EIRP (mW): 140.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	10	14.0	98.3	10.4	43.4	16.4	22.5	0.043	Pass
	3				10.6					
	4				9.5					
	2				10.8					
UNII-3										
5720	1	10	4.0	98.3	4.3	10.4	10.2	30.0	0.043	Pass
	3				4.5					
	4				3.7					
	2				4.1					



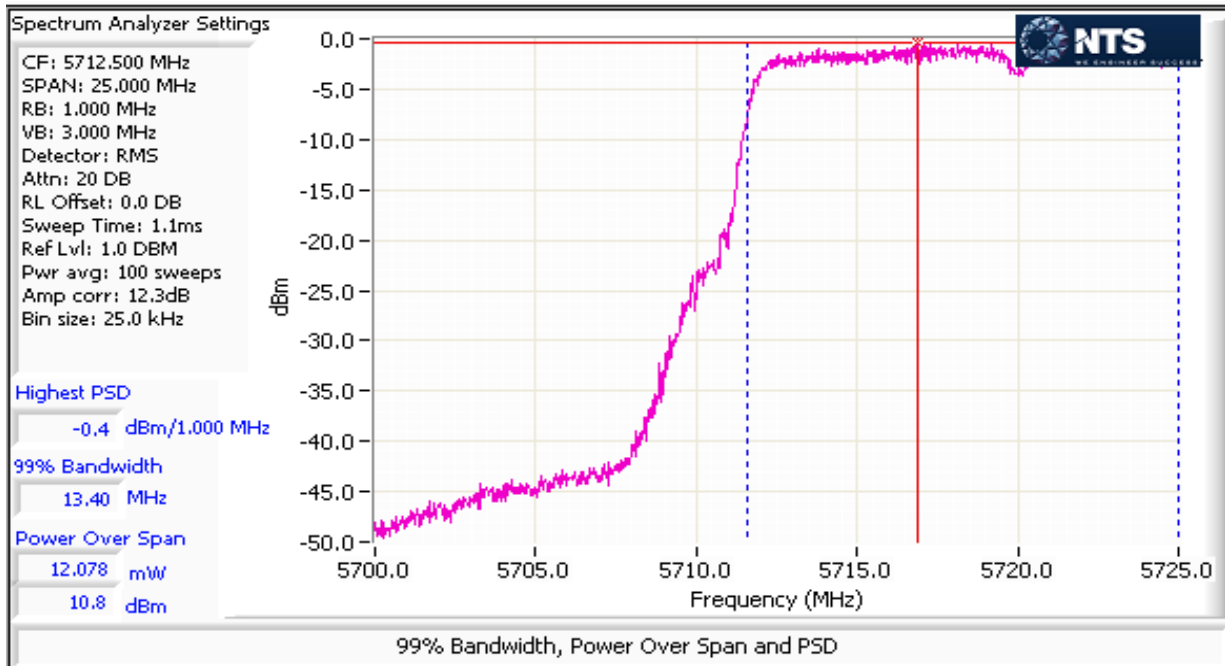
EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

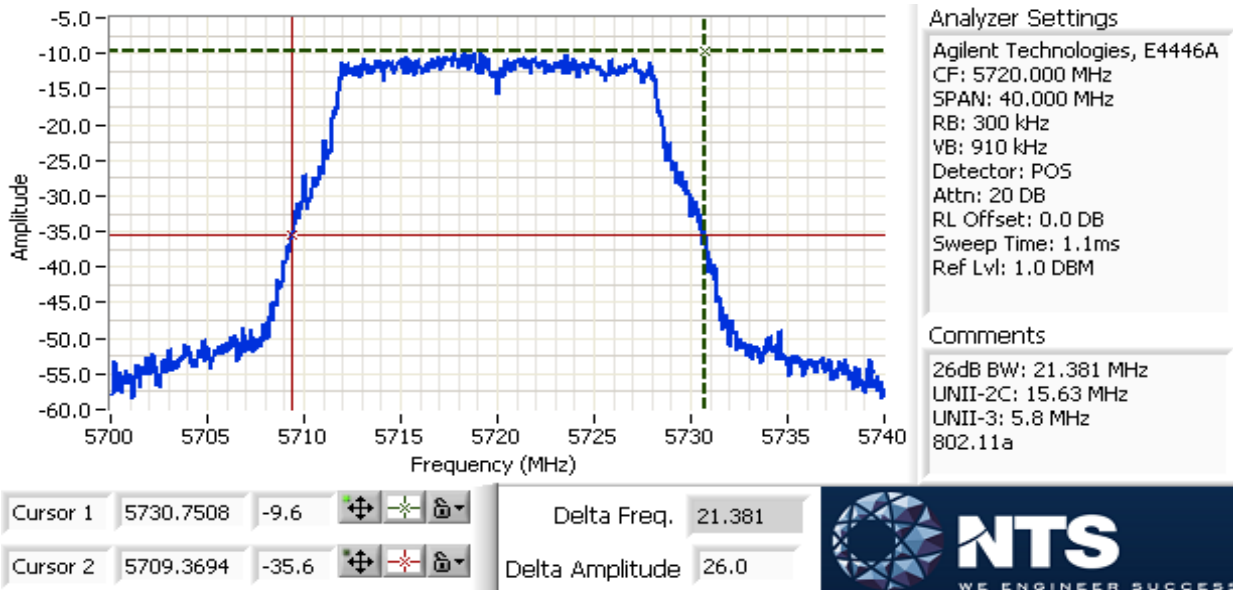
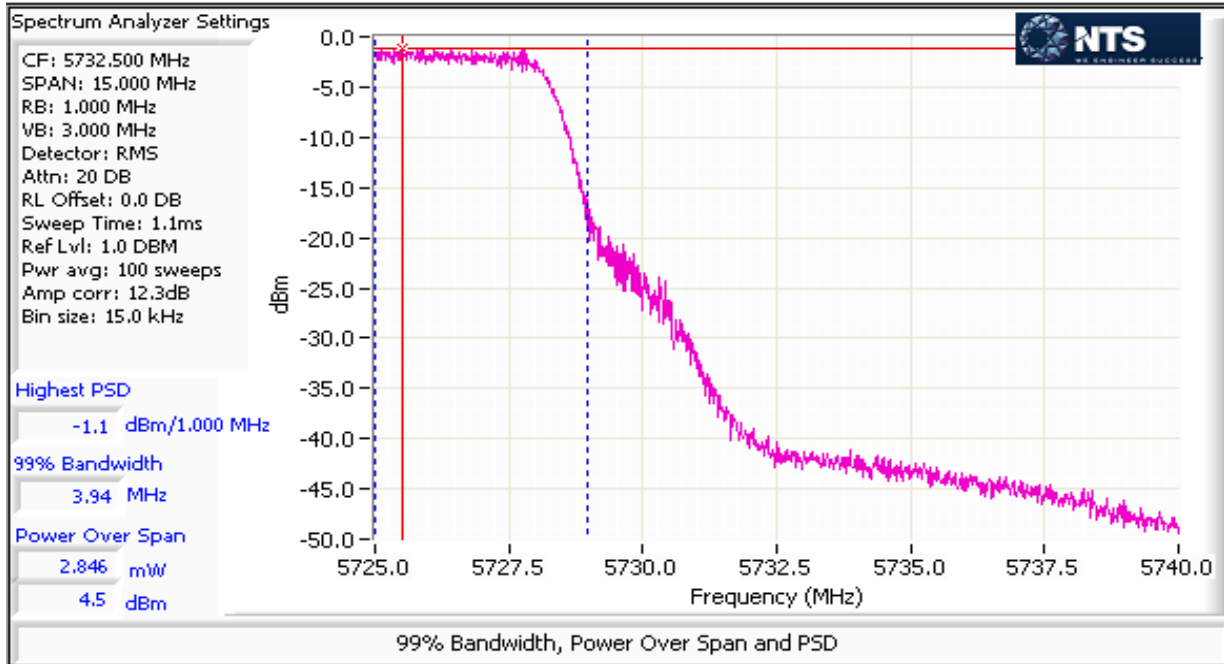
5470-5725 PSD - FCC/IC

Mode: 11a - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5720	1	10	[Greyed Out]	98.3	-0.8	3.2	5.1	5.9	11.0	Pass
	3				-0.9					
	4				-2.0					
	2				-0.4					
UNII-3										
5720	1	10	[Greyed Out]	98.3	-1.3	2.8	4.5	24.9	30.0	Pass
	3				-1.1					
	4				-2.0					
	2				-1.6					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: n20 - 4Tx

Max EIRP (mW): 163.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	11	15.87	98.6	11.3	50.5	17.0	23.0	0.051	Pass
	3				11.0					
	4				10.5					
	2				11.2					
UNII-3										
5720	1	11	6.03	98.6	5.8	14.0	11.5	30.0	0.051	Pass
	3				5.6					
	4				5.2					
	2				5.1					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: n20 - 4Tx

Max EIRP (mW): 163.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	11	14.56	98.6	11.3	50.5	17.0	22.6	0.051	Pass
	3				11.0					
	4				10.5					
	2				11.2					
UNII-3										
5720	1	11	4.6	98.6	5.8	14.0	11.5	30.0	0.051	Pass
	3				5.6					
	4				5.2					
	2				5.1					



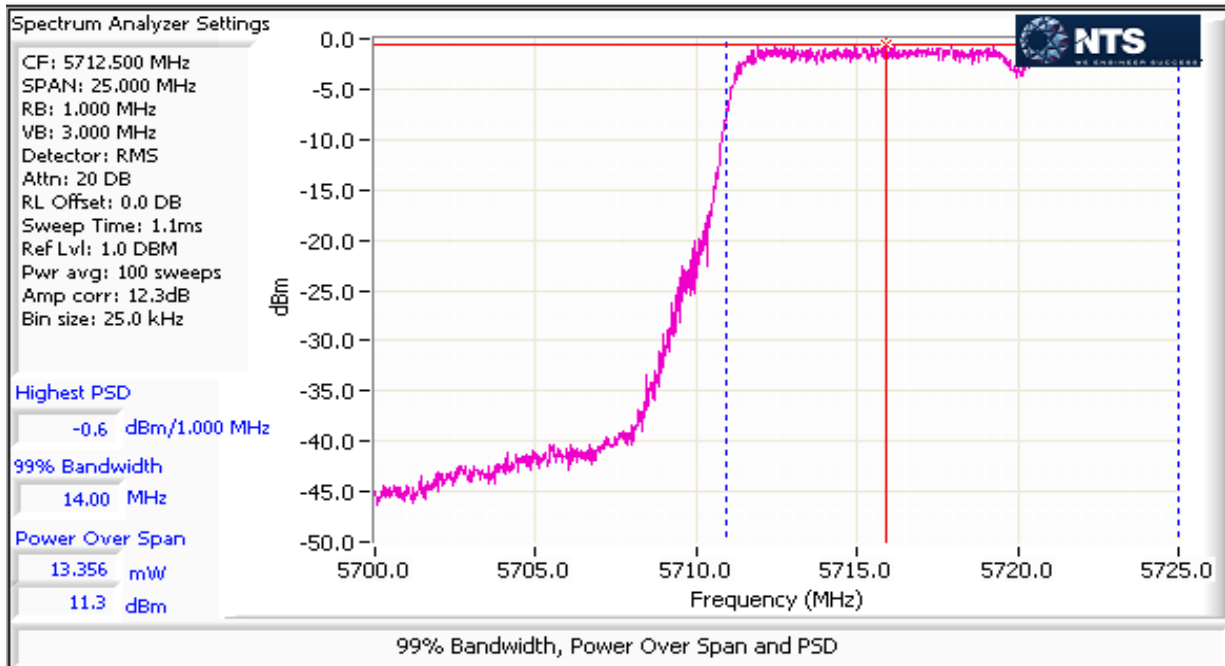
EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

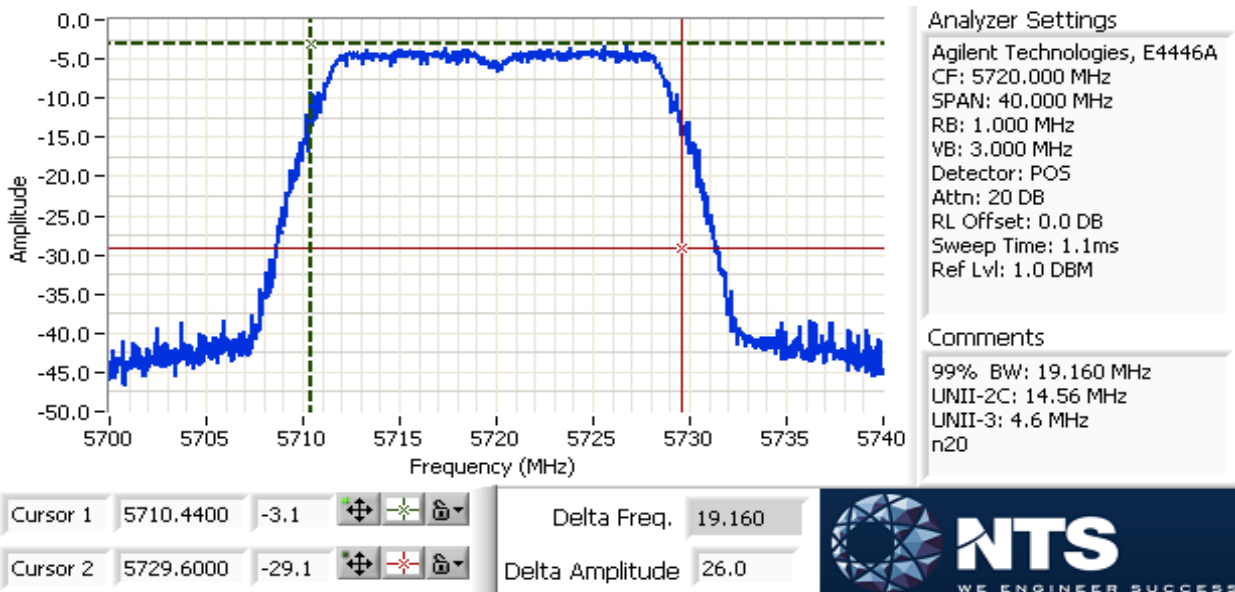
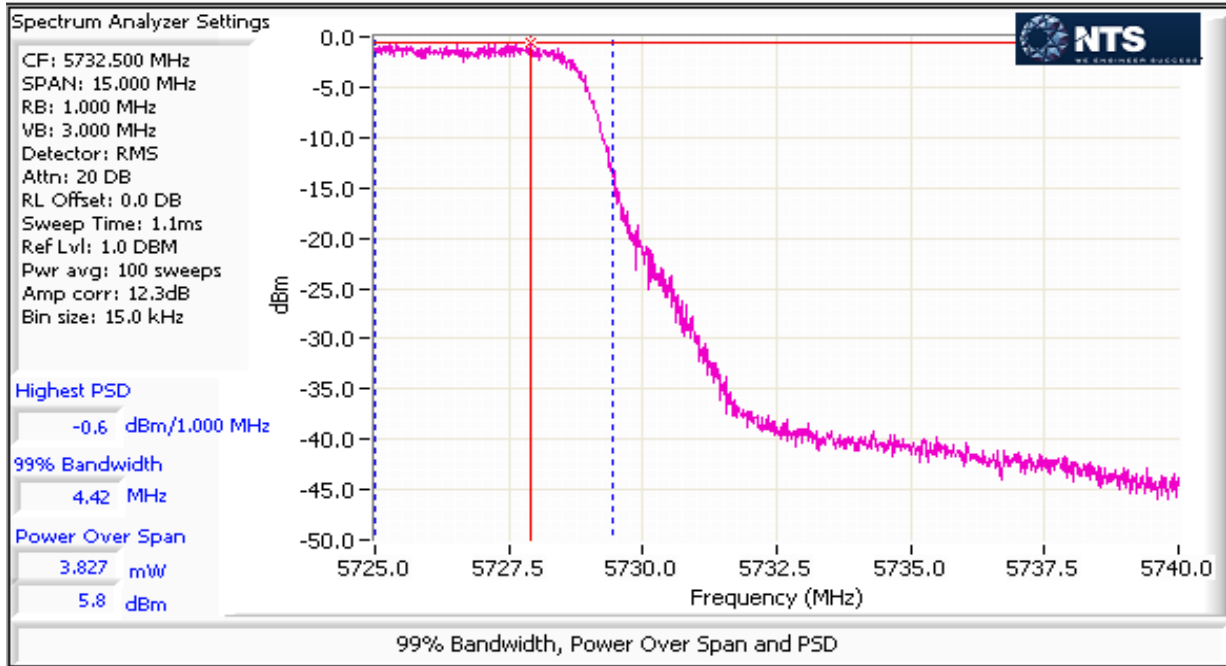
5470-5725 PSD - FCC/IC

Mode: n20 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5720	1	11	14.00	98.6	-0.6	3.5	5.4	5.9	11.0	Pass
	3				-0.6					
	4				-0.9					
	2				-0.4					
UNII-3										
5720	1	11	14.00	98.6	-0.6	3.2	5.1	24.9	-	Pass
	3				-0.9					
	4				-1.2					
	2				-1.2					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: n40 - 4Tx

Max EIRP (mW): 402.6

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5710	1	14	44.6	98.0	15.1	124.4	20.9	24.0	0.124	Pass
	3				14.7					
	4				14.9					
	2				15.0					
UNII-3										
5710	1	14	13.0	98.0	5.2	13.2	11.2	30.0	0.124	Pass
	3				5.1					
	4				5.1					
	2				5.3					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: n40 - 4Tx

Max EIRP (mW): 402.6

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5710	1	14	33.48	98.0	15.1	124.4	20.9	24.0	0.124	Pass
	3				14.7					
	4				14.9					
	2				15.0					
UNII-3										
5710	1	14	3.56	98.0	5.2	13.2	11.2	30.0	0.124	Pass
	3				5.1					
	4				5.1					
	2				5.3					



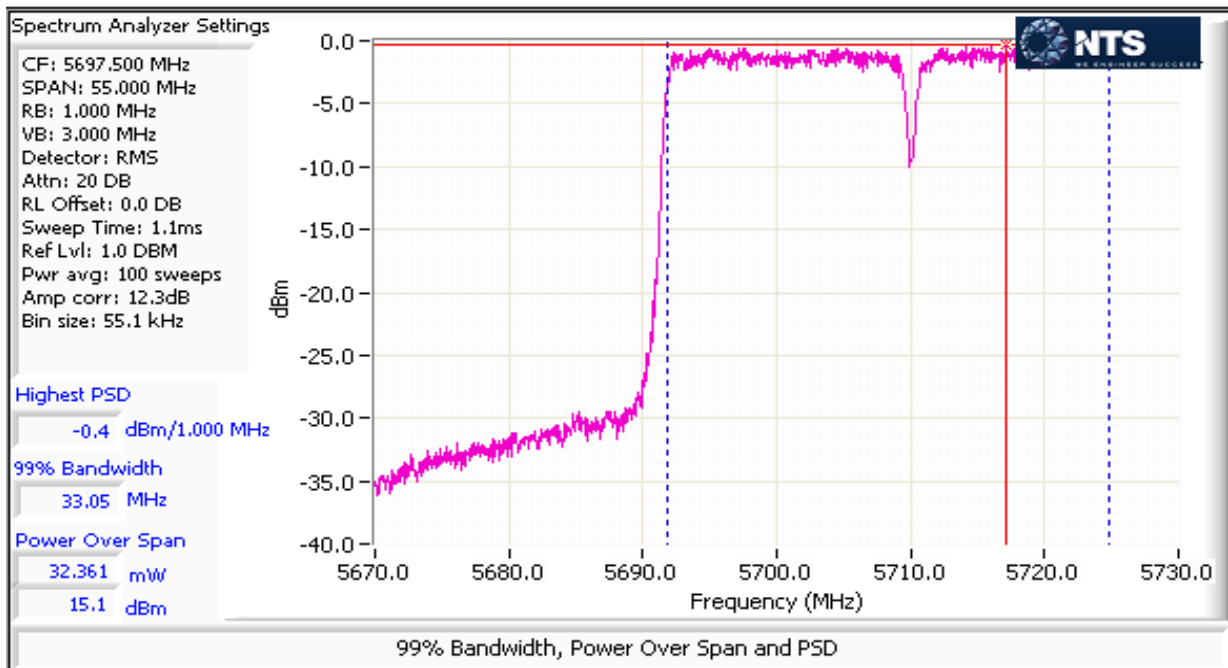
EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

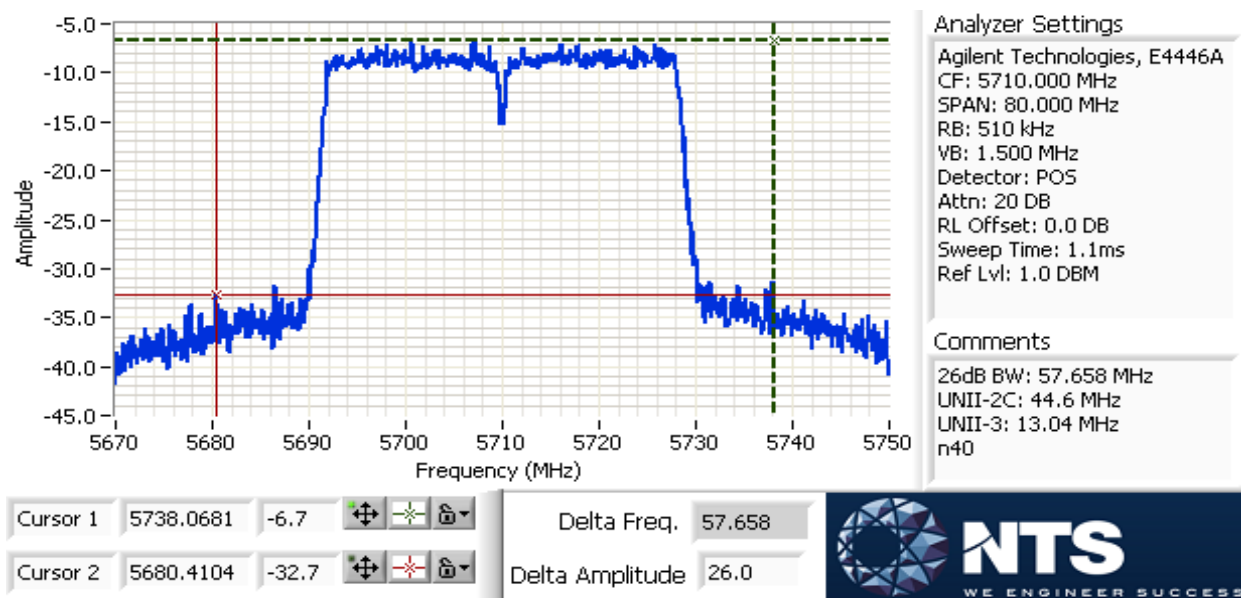
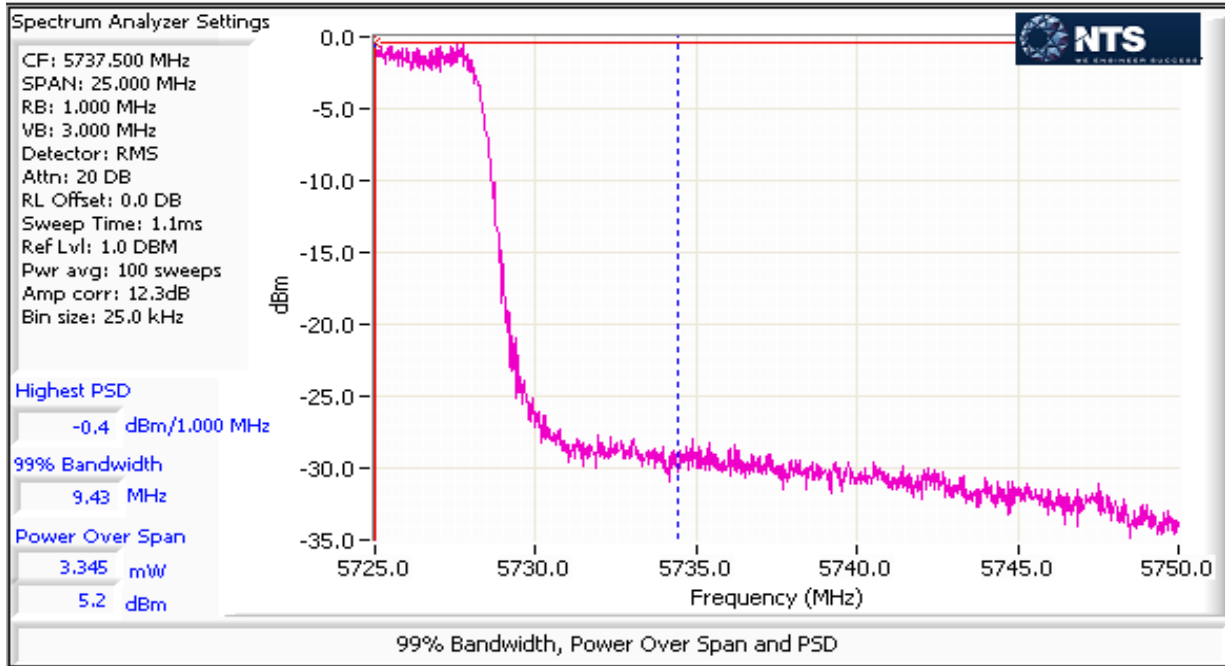
5470-5725 PSD - FCC/IC

Mode: n40 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5710	1	14	[Greyed Out]	98.0	-0.4	3.6	5.6	5.9	11.0	Pass
	3				-0.5					
	4				-0.5					
	2				-0.3					
UNII-3										
5710	1	14	[Greyed Out]	98.0	-0.4	3.7	5.7	24.9	-	Pass
	3				-0.3					
	4				-0.5					
	2				-0.1					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: ac80 - 4Tx

Max EIRP (mW): 300

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5690	1	13	75.5	96.0	13.4	92.7	19.7	24.0	0.093	Pass
	3				13.5					
	4				12.8					
	2				14.1					
UNII-3										
5690	1	13	6.1	96.0	0.2	4.2	6.2	30.0	0.093	Pass
	3				-0.4					
	4				-0.4					
	2				0.7					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: ac80 - 4Tx

Max EIRP (mW): 300

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5690	1	13	73.1	96.0	13.4	92.7	19.7	24.0	0.093	Pass
	3				13.5					
	4				12.8					
	2				14.1					
UNII-3										
5690	1	13	3.1	96.0	0.2	4.2	6.2	30.0	0.093	Pass
	3				-0.4					
	4				-0.4					
	2				0.7					

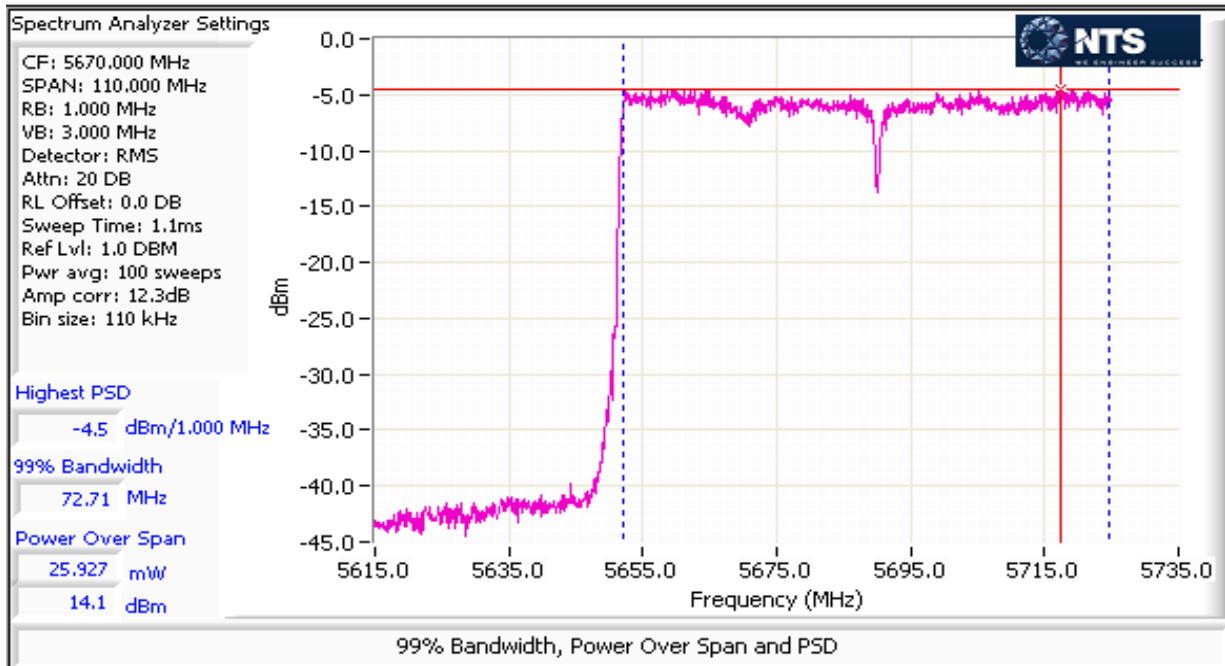


EMC Test Data

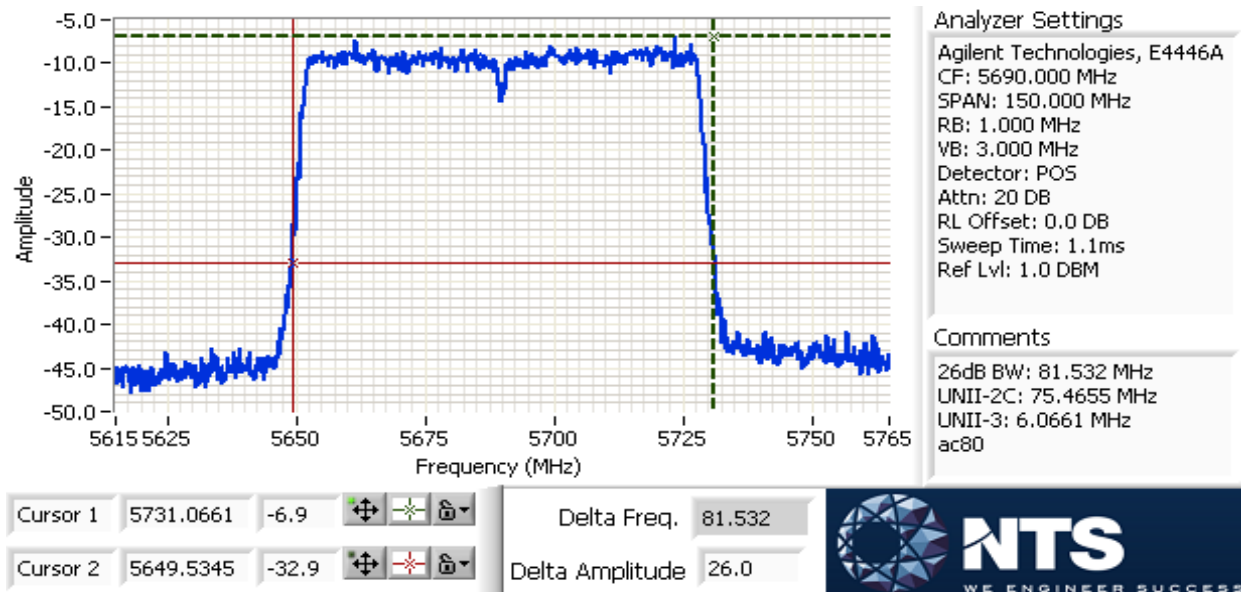
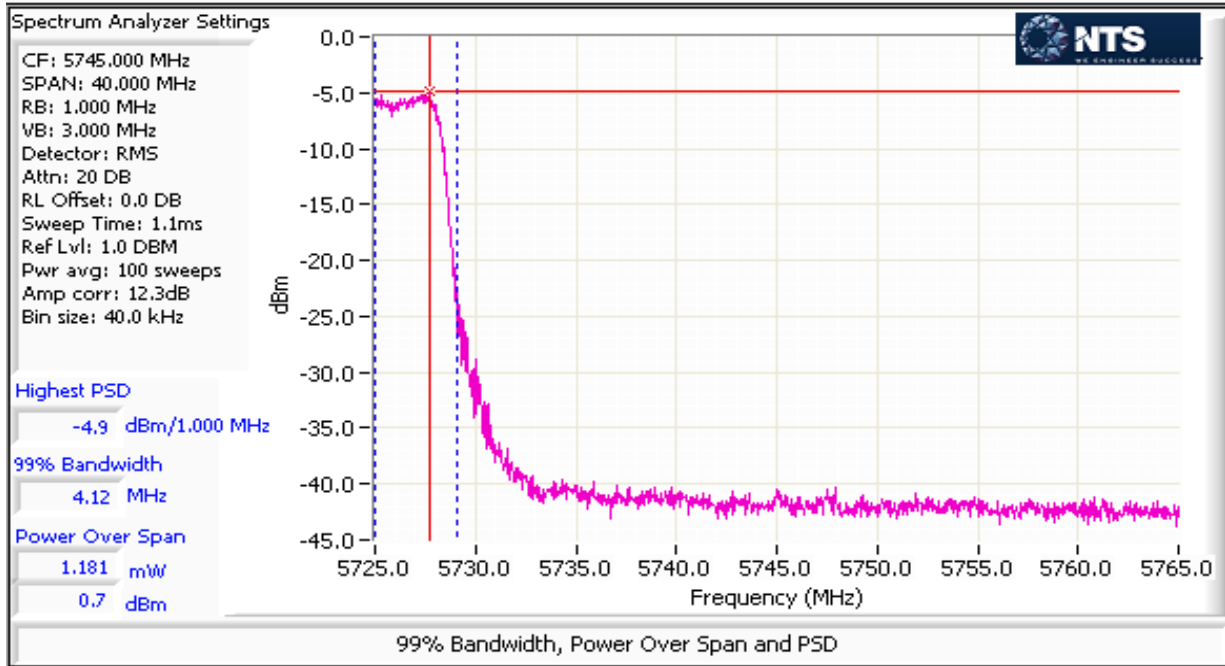
Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5470-5725 PSD - FCC/IC Mode: ac80 - 4Tx

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz	Total PSD ¹ dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5690	1	13	[Greyed out]	96.0	-4.7	1.4	1.5	5.9	11.0	Pass
	3				-4.7					
	4				-5.3					
	2				-4.5					
UNII-3										
5690	1	13	[Greyed out]	96.0	-5.3	1.2	0.8	24.9	-	Pass
	3				-6.1					
	4				-5.9					
	2				-4.9					



Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A





EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: 11a - 4TxBF

Max EIRP (mW): 546.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	10	15.6	98.3	10.4	43.4	16.4	17.9	0.043	Pass
	3				10.6					
	4				9.5					
	2				10.8					
UNII-3										
5720	1	10	5.80	98.3	4.3	10.4	10.2	25.0	0.043	Pass
	3				4.5					
	4				3.7					
	2				4.1					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: 11a - 4TxBF

Max EIRP (mW): 546.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	10	14	98.3	10.4	43.4	16.4	17.5	0.043	Pass
	3				10.6					
	4				9.5					
	2				10.8					
UNII-3										
5720	1	10	4	98.3	4.3	10.4	10.2	25.0	0.043	Pass
	3				4.5					
	4				3.7					
	2				4.1					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: 11a - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz dBm/MHz		FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5720	1	10		98.3	-0.8	3.2	5.1	6.0	11.0	Pass
	3				-0.9					
	4				-2.0					
	2				-0.4					
UNII-3										
5720	1	10		98.3	-1.3	2.8	4.5	25.0	-	Pass
	3				-1.1					
	4				-2.0					
	2				-1.6					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: n20 - 4TxBF

Max EIRP (mW): 635.8

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	11	15.87	98.6	11.3	50.5	17.0	18.0	0.051	Pass
	3				11.0					
	4				10.5					
	2				11.2					
UNII-3										
5720	1	11	6.03	98.6	5.8	14.0	11.5	25.0	0.051	Pass
	3				5.6					
	4				5.2					
	2				5.1					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: n20 - 4TxBF

Max EIRP (mW): 635.8

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5720	1	11	14.56	98.6	11.3	50.5	17.0	17.6	0.051	Pass
	3				11.0					
	4				10.5					
	2				11.2					
UNII-3										
5720	1	11	4.6	98.6	5.8	14.0	11.5	25.0	0.051	Pass
	3				5.6					
	4				5.2					
	2				5.1					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

5470-5725 PSD - FCC/IC
Mode: n20 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹		FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5720	1	11		98.6	-0.6	3.5	5.4	6.0	11.0	Pass
	3				-0.6					
	4				-0.9					
	2				-0.4					
UNII-3										
5720	1	11		98.6	-0.6	3.2	5.1	25.0	-	Pass
	3				-0.9					
	4				-1.2					
	2				-1.2					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: n40 - 4TxBF

Max EIRP (mW): 935.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5710	1	12	44.6	98.0	13.0	74.3	18.7	19.0	0.074	Pass
	3				12.6					
	4				12.1					
	2				13.0					
UNII-3										
5710	1	12	13.0	98.0	3.0	7.7	8.9	25.0	0.074	Pass
	3				3.0					
	4				2.4					
	2				3.0					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: n40 - 4TxBF

Max EIRP (mW): 935.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5710	1	12	33.48	98.0	13.0	74.3	18.7	19.0	0.074	Pass
	3				12.6					
	4				12.1					
	2				13.0					
UNII-3										
5710	1	12	3.56	98.0	3.0	7.7	8.9	25.0	0.074	Pass
	3				3.0					
	4				2.4					
	2				3.0					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: n40 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz dBm/MHz		FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5710	1	12	[REDACTED]	98.0	-2.4	2.2	3.4	6.0	11.0	Pass
	3				-2.6					
	4				-3.2					
	2				-2.1					
UNII-3										
5710	1	12	[REDACTED]	98.0	-2.7	2.2	3.4	25.0	-	Pass
	3				-2.4					
	4				-3.1					
	2				-2.6					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
Contact: Paul Zahra	Project Manager: Christine Krebill
Standard: FCC 15.247/15.407, RSS-247	Project Coordinator: -
	Class: N/A

MIMO Device - Channels that span UNII2c and UNII3 - FCC

Mode: ac80 - 4TxBF

Max EIRP (mW): 973.1

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
UNII-2c										
5690	1	12	75.5	96.0	12.9	77.3	18.9	19.0	0.077	Pass
	3				12.8					
	4				11.4					
	2				13.4					
UNII-3										
5690	1	12	6.1	96.0	0.0	3.7	5.7	25.0	0.077	Pass
	3				-0.4					
	4				-1.7					
	2				0.0					

MIMO Device - Channels that span UNII2c and UNII3 - IC

Mode: ac80 - 4TxBF

Max EIRP (mW): 973.1

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power ¹ dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
UNII-2c										
5690	1	12	73.1	96.0	12.9	77.3	18.9	19.0	0.077	Pass
	3				12.8					
	4				11.4					
	2				13.4					
UNII-3										
5690	1	12	3.1	96.0	0.0	3.7	5.7	25.0	0.077	Pass
	3				-0.4					
	4				-1.7					
	2				0.0					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

5470-5725 PSD - FCC/IC
Mode: ac80 - 4TxBF

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD ¹ mW/MHz dBm/MHz		FCC Limit dBm/MHz	IC limit dBm/MHz	Result
UNII-2c										
5690	1	12	[REDACTED]	96.0	-5.7	1.2	0.8	6.0	11.0	Pass
	3				-5.3					
	4				-6.3					
	2				-5.0					
UNII-3										
5690	1	12	[REDACTED]	96.0	-5.6	1.0	0.0	25.0	-	Pass
	3				-5.9					
	4				-7.3					
	2				-5.7					



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

FCC Part 15 Frequency Stability

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

All measurements are made with the EUT's rf port connected to the measurement instrument via an attenuator. All amplitude measurements are adjusted to account for the attenuation between EUT and measuring instrument. For frequency stability measurements the EUT was placed inside an environmental chamber.

Ambient Conditions:
 Temperature: 24 °C
 Rel. Humidity: 38 %

Run #	Test Performed	Limit	Pass / Fail
1	Frequency Stability	Stays in band	Pass

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client: Xirrus	Job Number: JD99498
Model: XI-AC3470	T-Log Number: T99796
	Project Manager: Christine Krebill
Contact: Paul Zahra	Project Coordinator: -
Standard: FCC 15.247/15.407, RSS-247	Class: N/A

Run #1: Frequency Stability

Date of Test: 10/13/2015
 Test Engineer: Deniz Demirci
 Test Location: FT Lab #4b

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

Nominal Frequency: 5240 MHz

Frequency Stability Over Temperature

The EUT was soaked at each temperature for a minimum of 30 minutes prior to starting the transmitter and making the measurements to ensure the EUT and chamber had stabilized at that temperature.

Measurement performed on a modulated carrier. Center determined from the -10dBc frequency points, captured using RBW=1MHz, VBW=10kHz, RMS detector, trace averaging.

Temperature (Celsius)	Frequency Measured (MHz)	Drift	
		(Hz)	(ppm)
-30	5240.060050	60050	11.5
-20	5240.070050	70050	13.4
-10	5240.060050	60050	11.5
0	5240.040050	40050	7.6
10	5240.020050	20050	3.8
20	5240.000000	0	0.0
30	5239.979950	-20050	-3.8
40	5239.959950	-40050	-7.6
50	5239.959950	-40050	-7.6
Worst case:		-40050	-7.6

Frequency Stability Over Input Voltage

Nominal Voltage is 120Vac.

Voltage (AC)	Frequency Measured (MHz)	Drift	
		(Hz)	(ppm)
102.00	5240.000000	0	0.0
138.00	5240.000000	0	0.0
Worst case:		0	0.0

End of Report

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