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# *EMC Test Report*

## *Application for FCC Grant of Equipment Authorization*
## *Canada Certification*
## *Class II Permissive Change/Reassessment*

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

## *Model: NVG5X8AX*

| | |
|---|---|
| ISED CERTIFICATION #: | 3439B-NGV5XDBAX |
| FCC ID: | PGR-NVG5XDBAX |
| APPLICANT: | Arris<br>310 Providence Mine Road<br>Nevada City, CA 95959 |
| TEST SITE(S): | National Technical Systems<br>41039 Boyce Road.<br>Fremont, CA. 94538-2435 |
| IC SITE REGISTRATION #: | 2845B-3; 2845B-4, 2845B-5, 2845B-7 |
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ACCREDITED
Testing Cert #0214.26

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## *VALIDATING SIGNATORIES*

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## REVISION HISTORY

| Rev# | Date | Comments | Modified By |
|---|---|---|---|
| - | May 26, 2020 | First release | |
| 1 | July 9, 2020 | Revised report correcting typographical errors in the individual chain antenna gains and adding units of dBi for directional gains. | David Guidotti |

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## SCOPE

An electromagnetic emissions test has been performed on the Arris model NVG5X8AX, pursuant to the following rules:

RSS-GEN Issue 5 "General Requirements for Compliance of Radio Apparatus"
RSS 247 Issue 2 "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices"
FCC Part 15, Subpart 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 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.

National Technical Systems is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise.

## OBJECTIVE

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

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

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

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the

submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

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

## STATEMENT OF COMPLIANCE

The tested sample of Arris model NVG5X8AX complied with the requirements of the following regulations:

RSS 247 Issue 2 "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices"
FCC Part 15, Subpart 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 Arris model NVG5X8AX and therefore apply only to the tested sample. The sample was selected and prepared by Wilson Wang of Arris.

## 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

Note: The device is restricted to indoor use only, therefore the spectral density of spurious emissions in the 5.15 – 5.25 GHz band were limited to the power spectral limits for intentional signals detailed in FCC 15.407(b)(2) and RSS 247 6.2.2 (2) i) b

| FCC Rule Part | RSS Rule Part | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|---|---|---|---|---|---|
| 15.407(a) (2) | | 26dB Bandwidth | | N/A – limits output power if < 20MHz | N/A |
| | RSS-247 6.2.2 (1) | 99% Bandwidth | | N/A – limits EIRP if < 20MHz | N/A |
| 15.407(a) (2) | RSS-247 6.2.1 (2) | Output Power | 802.11a: 0.095 W<br>ac20: 0.097 W<br>ac40: 0.178 W<br>ac80: 0.137 W<br>ac160: 0.088 W<br>(Max eirp: 0.658 W) | 24 dBm<br>(250 mW)<br>EIRP <= 1W | Complies |
| 15.407(a) (2) | RSS-247 6.2.2 (1) | Power Spectral Density | 802.11a: 8.5 dBm/MHz<br>ax20: 8.6 dBm/MHz<br>ac40: 8.0 dBm/MHz<br>ax80: 4.3 dBm/MHz<br>ac160: 2.0 dBm/MHz | 8.7 dBm/MHz | Complies |
| 15.407(b) (2) / 15.209 | RSS-247 6.2.2 (2) | Spurious Emissions above 1GHz | 53.8 dBµV/m @ 5350.8 MHz | Refer to the limits section (p21) for restricted bands, all others<br>-27 dBm/MHz EIRP | Complies |
| - | RSS-247 6.2.2 (3) | EIRP Above Horizon | Indoor device. Device's power table can be updated should ISED require a power reduction | Reduction in EIRP only if requested by ISED | Complies |

#### OPERATION IN THE 5.47 – 5.725 GHZ BAND

| FCC Rule Part | RSS Rule Part | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|---|---|---|---|---|---|
| 15.407(a) (2) | | 26dB Bandwidth | | N/A – limits output power if < 20MHz | N/A |
| | RSS-247 6.2.3 (1) | 99% Bandwidth | | N/A – limits EIRP if < 20MHz | N/A |
| 15.407(a) (2) | RSS-210 A9.2(2) | Output Power[1] | 802.11a: 0.091 W<br>ac20: 0.097 W<br>ac40: 0.181 W<br>ac80: 0.195 W<br>ac160: 0.134 W<br>(Max eirp: 0.355 W) | 24 dBm<br>(250 mW)<br>EIRP <= 1W | Complies |
| 15.407(a) (2) | RSS-247 6.2.3 (1) | Power Spectral Density[1] | 802.11a: 8.3 dBm/MHz<br>ac20: 8.4 dBm/MHz<br>ac40: 8.1 dBm/MHz<br>ax80: 7.2 dBm/MHz<br>ac160: 1.1 dBm/MHz | 8.4 dBm/MHz | Complies |

| FCC Rule Part | RSS Rule Part | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|---|---|---|---|---|---|
| 15.407(b) (3) / 15.209 | RSS-247 6.2.3 (2) | Spurious Emissions above 1GHz | 53.9 dBµV/m @ 5459.5 MHz | Refer to the limits section (p21) for restricted bands, all others -27 dBm/MHz EIRP | Complies |
| | RSS-247 6.2.3 | Non-operation in 5600 – 5650 MHz sub band | Device cannot operate in the 5600 – 5650 MHz band –refer to Operational Description | | Complies |
| Note 1: 160 MHz operation not possible in Canada | | | | | |

***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 | No changes from original filing, OFDM modulation used. | | |
| 15.407(b) (6) / 15.209 | RSS-247 6.2.1 (2) | Spurious Emissions below 1GHz | No change from original filing | | |
| 15.31 (m) | RSS-247 6.4 (1) RSS-Gen 6.9 | Channel Selection | Emissions tested at outermost and middle channels in each band | Device was tested on the top, bottom and center channels in each band | N/A |
| 15.407 (c) | RSS-247 6.4 (2) | Operation in the absence of information to transmit | No change from original filing | | |
| 15.407 (g) | | Frequency Stability | Frequency stability is better than 10 ppm. | Signal shall remain within the allocated band | Complies |
| 15.407 (h1) | RSS-247 6.2.2 (1) 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, reference FR-101106.03-NADFS Rev 0 | Threshold -62dBm (-64dBm if eirp > 200mW) Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes | 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 | No change from original filing | | |
| 15.407 (b) (6) | RSS-Gen Table 4 | AC Conducted Emissions | No change from original filing | | |
| 15.247 (i) 15.407 (f) | RSS 102 | RF Exposure Requirements | Refer to MPE calculations in separate exhibit, RSS 102 declaration and User Manual statements. | Refer to OET 65, FCC Part 1 and RSS 102 | Complies |
| - | RSS-Gen 6.8 | User Manual | No change from original filing | | |
| - | RSS-Gen 8.4 | User Manual | No change from original filing | | |
| - | RSP-100 RSS-Gen 6.7 | Occupied Bandwidth | 802.11a: 16.8 MHz<br>ax20: 19.7 MHz<br>ax40: 38.0 MHz<br>ax80: 77.3 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) | dBµV/m | 25 to 1000 MHz | ± 3.6 dB |
| | | 1000 to 40000 MHz | ± 6.0 dB |
| Conducted Emissions (AC Power) | dBµV | 0.15 to 30 MHz | ± 2.4 dB |

## EQUIPMENT UNDER TEST (EUT) DETAILS

### GENERAL

The Arris model NVG5X8AX is an 802.11 radio module that is designed to be installed in Arris host equipment. Since the EUT would be installed in a host device during operation, the EUT was treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 3.3 Volts DC supplied from the host device.

The sample was received on July 9, 2019 and tested on February 3 and 4, March 24 and April 6, 2020. The EUT consisted of the following component(s):

| Company | Model | Description | Serial Number | FCC ID |
|---|---|---|---|---|
| Arris | NVG5X8AX | Radio Module | M11917QW000T | PGR-NVG5XDBAX |

### OTHER EUT DETAILS

The following EUT details should be noted: The EUT was installed on a metal carrier along with the Gateway PCB to allow testing. The antennas are mounted to a plastic holder as will be used in the host product. Canadian Certification number IC: 3439B-NVG5XDBAX

### ANTENNA SYSTEM

The antenna system consists of 4 Airgain N2420DAR1 and 4 Airgain 5X30AR1 antennas mounted on a plastic carrier. Details of antenna gain are provided in a separate exhibit.

### ENCLOSURE

The EUT does not have an enclosure. The PCB measures approximately 9.5 cm wide by 19 cm high.

### 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 |
|---|---|---|---|---|
| Arris | NBS40B120375M2 | Power Supply | None | - |
| Arris | None | Gateway PCB | 0015 | - |

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

| Company | Model | Description | Serial Number | FCC ID |
|---|---|---|---|---|
| Dell | Precision M6700 | Laptop | 9WB3CW1 | - |

***EUT INTERFACE PORTS***

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

EUT

| Port | Connected To | Cable(s) | | |
|---|---|---|---|---|
| | | Description | Shielded or Unshielded | Length(m) |
| Antenna (x8) | Antennas | Coax | Shielded | Various |

Additional on Support Equipment

| Port | Connected To | Cable(s) | | |
|---|---|---|---|---|
| | | Description | Shielded or Unshielded | Length(m) |
| Gateway PCB Ethernet (x2) | Laptop Ethernet | Cat 6 | Unshielded | 7.5 |
| Gateway PCB Power Input | Power Supply | Two wire | Unshielded | 1 |
| Power Supply AC | Mains | Two wire | Unshielded | 1 |

***EUT OPERATION***

During emissions testing the EUT was commanded to operate continuously with the noted duty cycle on the desired channel at the selected power level using Mtool software on the Laptop communicating through the Gateway PCB. Testing was performed using the lowest data rate as this was found to produce the highest power during preliminary testing.

## PROPOSED MODIFICATION DETAILS

### GENERAL

This section details the modifications to the Arris model NVG5X8AX being proposed. All performance and construction deviations from the characteristics originally reported to the FCC are addressed

### SOFTWARE

New firmware to enable operation in 5250-5350 MHz and 5470-5725 MHz bands will be installed.

## 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 6.2 of RSS-GEN, NTS has been recognized as an accredited test laboratory by the Commission and Innovation, Science and Economic Development Canada. A description of the facilities employed for testing is maintained by NTS.

| Site | Company / Registration Numbers | | Location |
|---|---|---|---|
| | FCC | Canada | |
| Chamber 3 | US1031 | 2845B (Wireless Test Lab #US0027) | 41039 Boyce Road Fremont, CA 94538-2435 |
| Chamber 4 | | | |
| Chamber 5 | | | |
| Chamber 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. Results from testing performed in this chamber have been correlated with results from an open area test site. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4.

### CONDUCTED EMISSIONS CONSIDERATIONS

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

### RADIATED EMISSIONS CONSIDERATIONS

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

## MEASUREMENT INSTRUMENTATION

### RECEIVER SYSTEM

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

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

### INSTRUMENT CONTROL COMPUTER

Software is used to view and convert receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers. The software used for radiated and conducted emissions measurements is NTS EMI Test Software (rev 2.10)

### LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

### FILTERS/ATTENUATORS

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

### ANTENNAS

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

### ANTENNA MAST AND EQUIPMENT TURNTABLE

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

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

### INSTRUMENT CALIBRATION

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

## TEST PROCEDURES

### EUT AND CABLE PLACEMENT

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

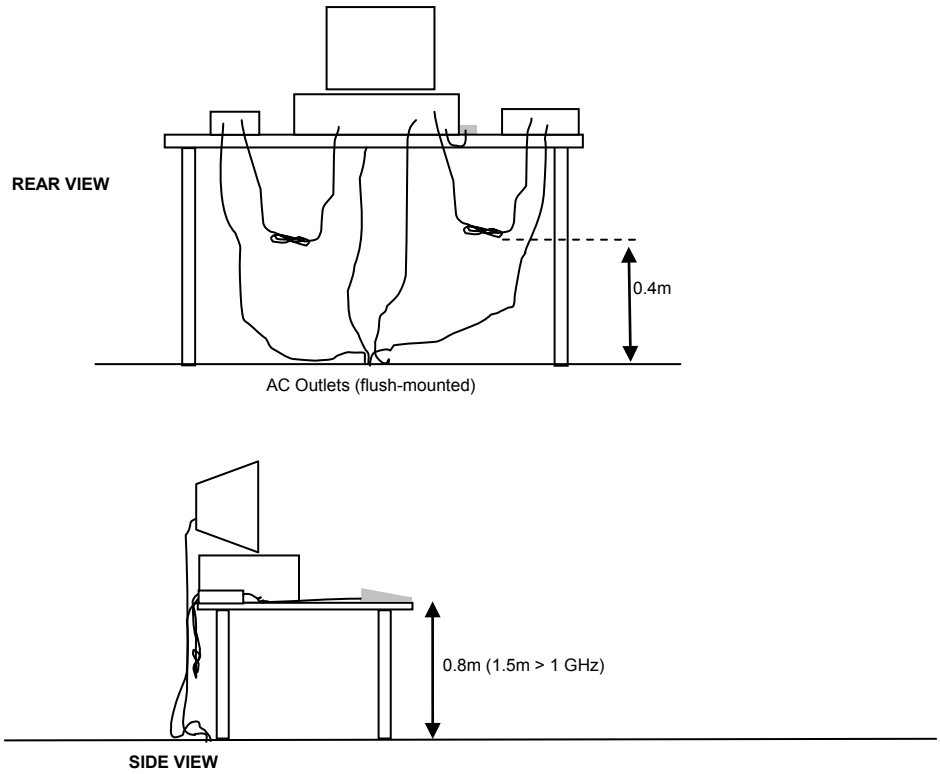
### RADIATED EMISSIONS

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

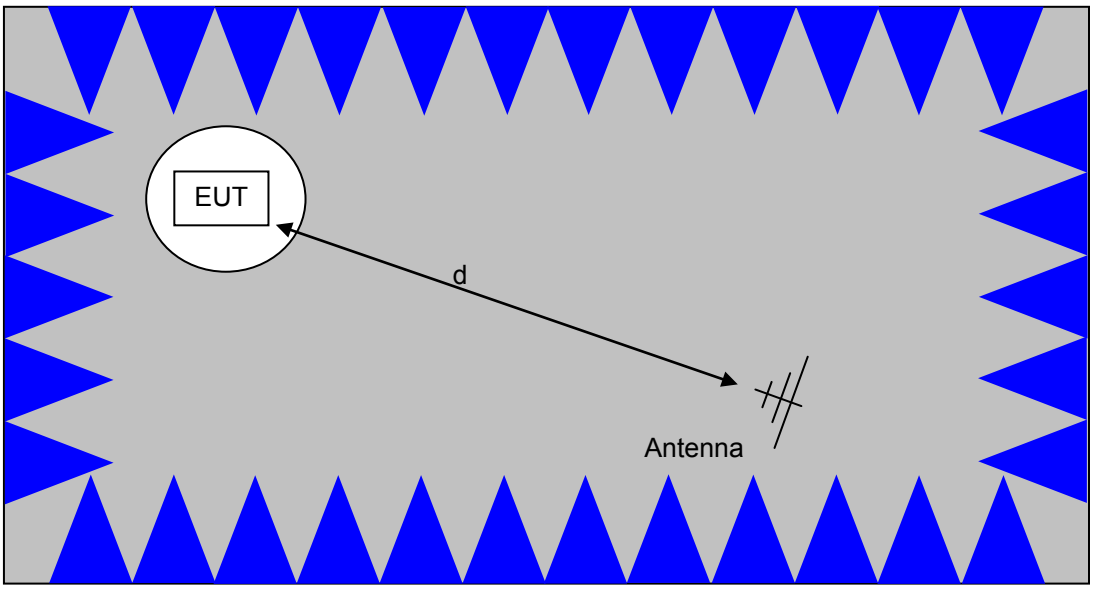
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

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

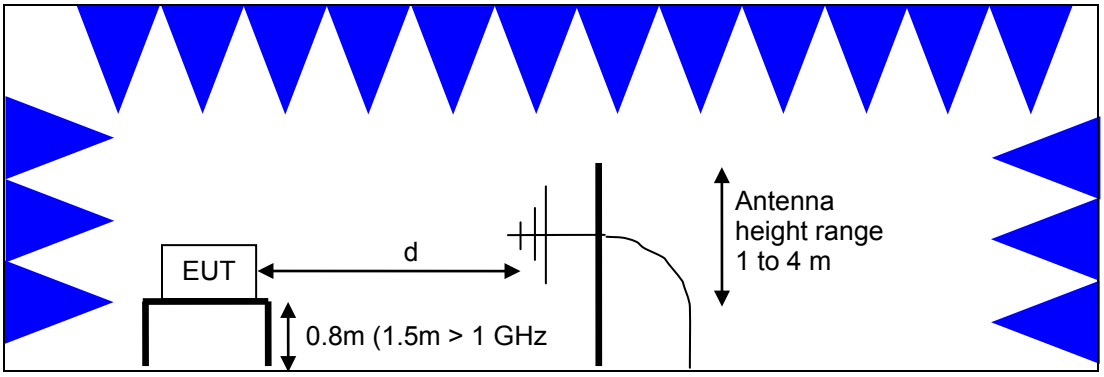



Typical Test Configuration for Radiated Field Strength Measurements




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

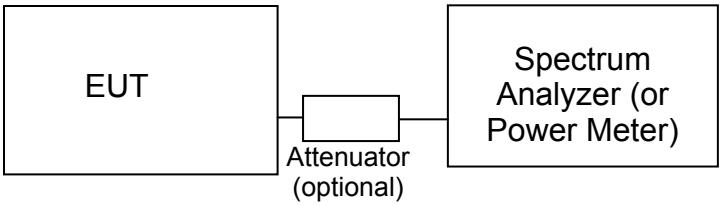
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.




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

***CONDUCTED EMISSIONS FROM ANTENNA PORT***

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




Test Configuration for Antenna Port Measurements

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

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

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

***BANDWIDTH MEASUREMENTS***

The 6dB, 20dB, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and RSS GEN.

### SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

#### CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; RSS GEN

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

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

#### GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1].

| Frequency Range (MHz) | Limit (uV/m) | Limit (dBuV/m @ 3m) |
|---|---|---|
| 0.009-0.490 | $2400/F_{KHz}$ @ 300m | $67.6-20*\log_{10}(F_{KHz})$ @ 300m |
| 0.490-1.705 | $24000/F_{KHz}$ @ 30m | $87.6-20*\log_{10}(F_{KHz})$ @ 30m |
| 1.705 to 30 | 30 @ 30m | 29.5 @ 30m |
| 30 to 88 | 100 @ 3m | 40 @ 3m |
| 88 to 216 | 150 @ 3m | 43.5 @ 3m |
| 216 to 960 | 200 @ 3m | 46.0 @ 3m |
| Above 960 | 500 @ 3m | 54.0 @ 3m |

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

### FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. For the 5250-5350 and 5470-5725 MHz 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 | 1Watt (30 dBm) | 17 dBm/MHz |
| 5250–5350 and 5470-5725 | 250 mW (24 dBm) | 11 dBm/MHz |
| 5725–5850 | 1 Watt (30 dBm) | 30 dBm/500kHz |
| 5925–6425 and 6525–6875 | 1Watt (30 dBm) | 17 dBm/MHz |
| 6425–6525 and 6875–7125 | 250 mW (24 dBm) | 11 dBm/MHz |

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band may use antennas of any gain without this limitation.

### OUTPUT POWER LIMITS –LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 247. 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 and 5470 - 5725 | 250 mW (24 dBm)2<br>1W (30dBm) eirp | 11 dBm/MHz |
| 5725 – 5850 | 1 Watt (30 dBm)<br>4W eirp | 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. Fixed point-to-point applications using the 5725 – 5850 MHz band may use antennas with any gain without this limitation.

[2] If EIRP exceeds 500mW the device must employ TPC

### SPURIOUS EMISSIONS LIMITS –UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-Gen general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS-Gen general limits. All other signals have a limit of –27dBm/MHz, which is field strength of 68.3dBuV/m/MHz at a distance of 3m. For devices operating in the 5725-5850 MHz band under the LELAN/UNII rules, the limit within 5 MHz of the allocated band slopes from 27 dBm/MHz to 15.6 dBm/MHz, from 5 MHz to 25 MHz from the allocated band slopes from 15.6 dBm/MHz to 10 dBm/MHz, from 25 MHz to 75 MHz from the allocated band slopes from 10 dBm/MHz to -27 dBm/MHz and for more than 75 MHz from the allocated band is –27dBm/MHz.

### SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

$R_r$ = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

**SAMPLE CALCULATIONS - RADIATED EMISSIONS**

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

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

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

where:

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

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

$R_r$ = Receiver Reading in dBuV/m
$F_d$ = Distance Factor in dB
$R_c$ = Corrected Reading in dBuV/m
$L_s$ = Specification Limit in dBuV/m
$M$ = Margin in dB Relative to Spec

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

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

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

where P is the eirp (Watts)

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

# Appendix A Test Equipment Calibration Data

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| **Radiated Emissions, 1,000 - 6,000 MHz, 12-Jul-19** | | | | | |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 9/18/2018 | 9/18/2020 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB 7 | 9482 | 10/13/2018 | 10/13/2019 |
| **Radiated Emissions, 1,000 - 6,000 MHz, 15-Jul-19** | | | | | |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 9/18/2018 | 9/18/2020 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB 7 | 9482 | 10/13/2018 | 10/13/2019 |
| **Radiated Emissions, 1,000 - 12,000 MHz, 16-Jul-19** | | | | | |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 487 | 8/9/2018 | 8/9/2020 |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 9/5/2018 | 9/5/2019 |
| Hewlett Packard | Spectrum Analyzer (SA40) Red 30 Hz -40 GHz | 8564E (84125C) | 1148 | 9/27/2018 | 9/27/2019 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz 18GHz | BRM50702-02 | 2238 | 4/26/2019 | 4/26/2020 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2251 | 7/15/2019 | 7/15/2020 |
| **Radiated Emissions, 1,000 - 18,000 MHz, 17-Jul-19** | | | | | |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 487 | 8/9/2018 | 8/9/2020 |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 9/5/2018 | 9/5/2019 |
| Hewlett Packard | Spectrum Analyzer (SA40) Red 30 Hz -40 GHz | 8564E (84125C) | 1148 | 9/27/2018 | 9/27/2019 |
| Hewlett Packard | High Pass filter, 8.2 GHz (Purple System) | P/N 84300-80039 | 1767 | 7/15/2019 | 7/15/2020 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz 18GHz | BRM50702-02 | 2238 | 4/26/2019 | 4/26/2020 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2251 | 7/15/2019 | 7/15/2020 |
| Micro-Tronics | Band Reject Filter, 5725-5875 MHz | BRC50705-01 | 2738 | 7/15/2019 | 7/15/2020 |
| **Radiated Emissions, 1,000 - 40,000 MHz, 22-Jul-19** | | | | | |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 487 | 8/9/2018 | 8/9/2020 |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 7/18/2019 | 7/18/2020 |
| HP / Miteq | SA40 R Head HF preAmplifier, 18-40 GHz (w/1148) | TTA1840-45-5P-HG-S | 1145 | 9/8/2018 | 9/8/2019 |
| Hewlett Packard | Spectrum Analyzer (SA40) Red 30 Hz -40 GHz | 8564E (84125C) | 1148 | 9/27/2018 | 9/27/2019 |
| Hewlett Packard | High Pass filter, 8.2 GHz (Purple System) | P/N 84300-80039 | 1767 | 7/15/2019 | 7/15/2020 |
| A. H. Systems | System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2161 | 7/8/2019 | 7/8/2021 |
| Micro-Tronics | Band Reject Filter, 2400- | BRM50702-02 | 2238 | 4/26/2019 | 4/26/2020 |

| | | | | | |
|---|---|---|---|---|---|
| Micro-Tronics | 2500 MHz 18GHz Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2251 | 7/15/2019 | 7/15/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 24-Jul-19**

| | | | | | |
|---|---|---|---|---|---|
| Rohde & Schwarz | Signal Analyzer 20 Hz - 26.5 GHz | FSQ26 | 2327 | 7/4/2019 | 7/4/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 25-Jul-19**

| | | | | | |
|---|---|---|---|---|---|
| Rohde & Schwarz | Signal Analyzer 20 Hz - 26.5 GHz | FSQ26 | 2327 | 7/4/2019 | 7/4/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 26-Jul-19**

| | | | | | |
|---|---|---|---|---|---|
| Rohde & Schwarz | Signal Analyzer 20 Hz - 26.5 GHz | FSQ26 | 2327 | 7/4/2019 | 7/4/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 29-Jul-19**

| | | | | | |
|---|---|---|---|---|---|
| Agilent Technologies | PSA, Spectrum Analyzer | E4446A | 2139 | 7/18/2019 | 7/18/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 30-Jul-19**

| | | | | | |
|---|---|---|---|---|---|
| Agilent Technologies | PSA, Spectrum Analyzer | E4446A | 2139 | 7/18/2019 | 7/18/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 31-Jul-19**

| | | | | | |
|---|---|---|---|---|---|
| Agilent Technologies | PSA, Spectrum Analyzer | E4446A | 2139 | 7/18/2019 | 7/18/2020 |

**Band edge Measurement, 20-Sep-19 through 25-Sep-2019**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| EMCO | Horn Antenna | 3115 | WC062583 | 7/9/2018 | 7/9/2020 |
| Rohde & Schwarz | EMI test receiver | ESI 40 | WC068000 | 3/15/2019 | 3/15/2020 |

**Radiated Emissions, 1,000 - 40,000 MHz, 27-Sep-19 through 01-Oct-19**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| Hewlett Packard | Spectrum Analyzer (Red) | 8564E (84125C) | WC055584 | 9/27/2019 | 9/27/2020 |
| Hewlett Packard | Microwave Preamplifier Head, 18-40 GHz (Red) | 84125C Head | WC055586 | 7/25/2019 | 7/25/2020 |
| EMCO | Horn Antenna | 3115 | WC062583 | 7/9/2018 | 7/9/2020 |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | WC064416 | 7/18/2019 | 7/18/2020 |
| Hewlett Packard | High Pass filter, 8.2 GHz | P/N 84300-80039 | WC064433 | 4/25/2019 | 4/25/2020 |
| A. H. Systems | Antenna, Horn, 18-40GHz | SAS-574 | WC064553 | 9/5/2017 | 8/8/2020 |
| Rohde & Schwarz | EMI test receiver | ESI 40 | WC068000 | 3/15/2019 | 3/15/2020 |

**Band edge Measurement, 3-Feb-20 through 11-Mar-20**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| EMCO | Horn Antenna | 3115 | WC062583 | 7/9/2018 | 7/9/2020 |
| Rohde & Schwarz | EMI test receiver | ESI 40 | WC068000 | 3/15/2019 | 3/15/2020 |

**Radio Antenna Port (Power and Spurious Emissions), Feb 3-4 of 2020 and 11-Mar-20**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| Rohde & Schwarz | Spectrum Analyzer | FSQ26 | WC055662 | 7/4/2019 | 7/4/2020 |
| Rohde & Schwarz | Open Switch and Control Unit | OSP 120 with B157 | WC064756 | 7/16/2019 | 7/16/2020 |

**Radio Antenna Port (Power and Spurious Emissions), 24-Mar-20**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| Rohde & Schwarz | Spectrum Analyzer | FSQ26 | WC055662 | 7/4/2019 | 7/4/2020 |
| Rohde & Schwarz | Open Switch and Control Unit | OSP 120 with B157 | WC064756 | 7/16/2019 | 7/16/2020 |

**Bandedge Measurment, 24-Mar-20**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| EMCO | Horn Antenna | 3115 | WC062583 | 7/9/2018 | 7/9/2020 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | WC064455 | 2/11/2020 | 2/11/2021 |

**Radio Antenna Port (Power and Spurious Emissions), 26-Mar-20**

| Manufacturer | Description | Model | Asset # | Calibrated | Cal Due |
|---|---|---|---|---|---|
| Rohde & Schwarz | Spectrum Analyzer | FSQ26 | WC055662 | 7/4/2019 | 7/4/2020 |
| Rohde & Schwarz | Open Switch and Control Unit | OSP 120 with B157 | WC064756 | 7/16/2019 | 7/16/2020 |

# Appendix B Test Data

TL101106-RANA Pages 30 -208

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Product | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| System Configuration: | Radio Module | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Emissions Standard(s): | FCC Part 15, RSS-247 | Class: | - |
| Immunity Standard(s): | - | Environment: | Radio |

# EMC Test Data

For The

# Arris

Product

NVG5X8AX

Date of Last Test: 4/6/2020

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, 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.

## Ambient Conditions:

Temperature: 22-25 °C

Rel. Humidity: 39-43 %

## 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.

## 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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel | Power Setting | Measured Power | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Scans on "center" channel in all five OFDM modes to determine the worst case mode. | | | | | | | |
| 1 | g / a | 6 & 60 | 26 / 26 | 26 / 26 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 48.1 dBµV/m @ 4883.4 MHz (-5.9 dB) |
| | ac20 | 6 & 60 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 49.5 dBµV/m @ 4880.3 MHz (-4.5 dB) |
| | ac40 | 6 & 62 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 48.8 dBµV/m @ 2390.0 MHz (-5.2 dB) |
| | b / ac80 | 6 & 58 | 26 / 18 | 22.25 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 52.8 dBµV/m @ 4873.8 MHz (-1.2 dB) |
| | b / ac160 | 6 & 50 | 26 / 18 | 22.25 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 52.6 dBµV/m @ 4873.8 MHz (-1.4 dB) |
| Measurements on low and high channels in worst-case OFDM mode. | | | | | | | |
| 2 | ac20 | 1 & 52 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.0 dBµV/m @ 4812.4 MHz (-3.0 dB) |
| | ac20 | 11 & 64 | 24 / 18 | 23.5 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 53.3 dBµV/m @ 4925.3 MHz (-0.7 dB) |
| Scans on "center" channel in all four OFDM modes to determine the worst case mode. Channels 114 and 122 not used in Canada | | | | | | | |
| 3 | g / a | 6 & 116 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 48.3 dBµV/m @ 18600.0 MHz (-5.7 dB) |
| | ac20 | 6 & 116 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 49.1 dBµV/m @ 4883.8 MHz (-4.9 dB) |
| | ac40 | 6 & 110 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 49.6 dBµV/m @ 22199.9 MHz (-4.4 dB) |
| | b / ac80 | 6 & 122 | 26 / 18 | 22.25 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 52.9 dBµV/m @ 4873.9 MHz (-1.1 dB) |
| | b / ac160 | 6 & 114 | 26 / 18 | 22.25 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 52.5 dBµV/m @ 4874.0 MHz (-1.5 dB) |
| 80MHz - use if worse case from 3 but must do highest 20 MHz channel also | | | | | | | |
| 4 | b / ac80 | 1 & 106 | 26 / 18 | 18 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 53.6 dBµV/m @ 4824.1 MHz (-0.4 dB) |
| | b / ac80 | 11 & 138 | 26 / 18 | 16 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 53.8 dBµV/m @ 4924.1 MHz (-0.2 dB) |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## 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 50 traces. (method VB of KDB 789033)

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | | |
|---|---|---|---|---|---|---|---|---|---|
| 11b | 1 | 99.2% | Yes | 12.422 | 0.0 | 0.0 | 10 | 1285 | -1 |
| 11a/g | 6 | 99.0% | Yes | 5.06 | 0.0 | 0.0 | 10 | 7974 | -1 |
| ac20 | 6.5 | 0.98 | Yes | 5.271 | 0.1 | 0.2 | 190 | 4324 | -1 |
| ac40 | 13.5 | 0.97 | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 | -1 |
| ac80 | 29.3 | 0.96 | Yes | 1.432 | 0.2 | 0.4 | 698 | 5159 | -1 |
| ac160 | 58.5 | 0.96 | Yes | 1.439 | 0.2 | 0.4 | 695 | 10443 | -1 |

## Sample Notes

Sample S/N:
Driver:

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |
| Note 5: | Not releated to radio. |
| Note 6: | For SISO measurment, evaluation of each chain showed that chain 4 has the highest power measurment. All SISO test measurment were performed with chain 4 active. |

Scan 1-3.5GHz using 10+6dB pads and 5GHz notch filter (RB 100kHz VB 100kHz)
Scan 3.5-6GHz using 10dB pad and 2.4GHz notch filter (RB 100kHz VB 100kHz)
Scan 6-12GHz using 5GHz and 2.4GHz notch filters (RB 300kHz VB 100kHz)

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

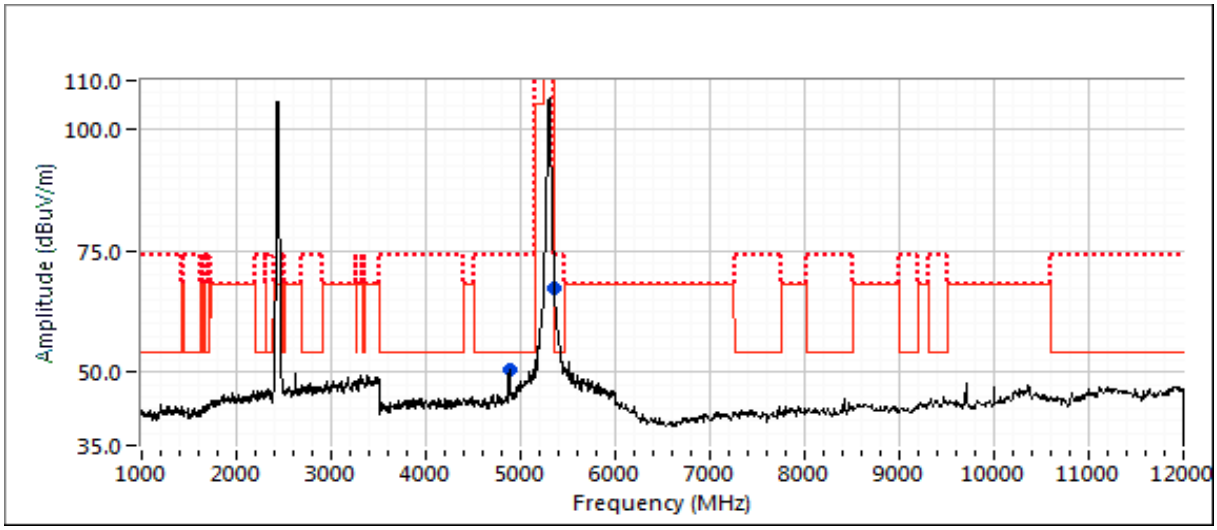
Date of Test: 07/17/19 Config. Used: 1
Test Engineer: Mehran Birgani Config Change: None
Test Location: FT Chamber #5 Host EUT Voltage: 110V/60Hz

Run #1a: Center Channel

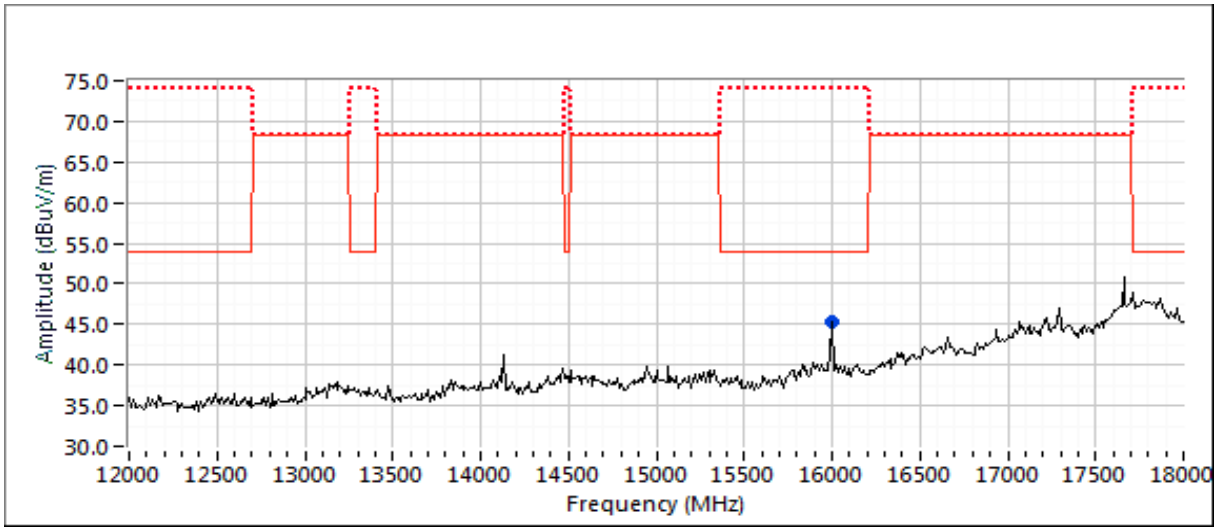
Channel: 6 & 60 Mode: g / a Pwr Setting: 26 (q104)
Tx Chain: 1TX Data Rate: 6 Mbps

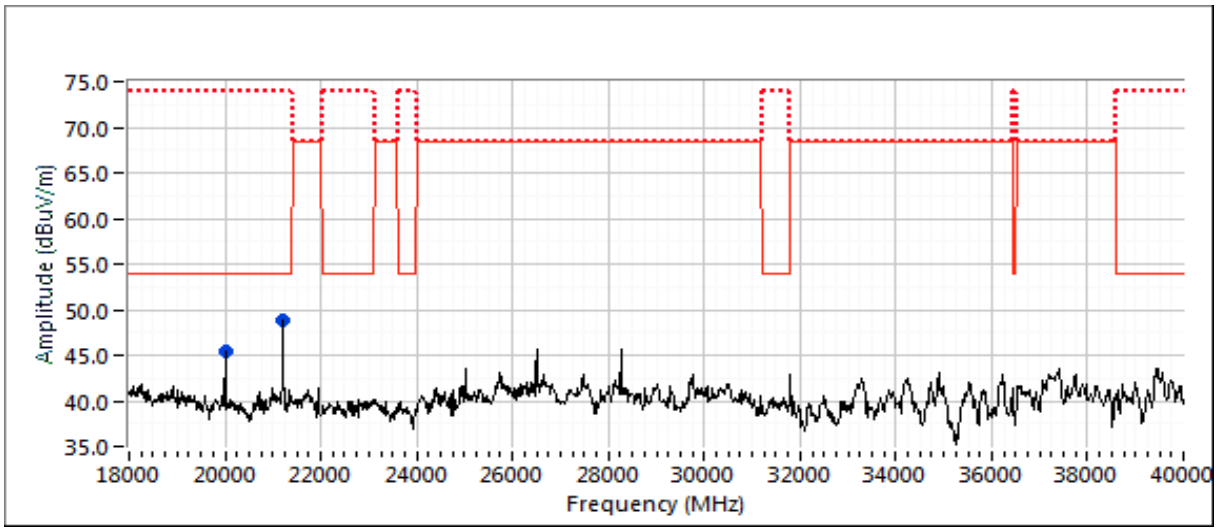
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4883.380 | 48.1 | V | 54.0 | -5.9 | AVG | 157 | 1.5 | RB 1 MHz;VB 10 Hz |
| 4884.220 | 62.6 | V | 74.0 | -11.4 | PK | 157 | 1.5 | RB 1 MHz;VB 3 MHz |
| 16000.180 | 45.3 | H | 54.0 | -8.7 | AVG | 321 | 1.5 | RB 1 MHz;VB 10 Hz Note 5 |
| 16000.170 | 52.1 | H | 74.0 | -21.9 | PK | 321 | 1.5 | RB 1 MHz;VB 3 MHz Note 5 |
| 20000.250 | 41.0 | H | 54.0 | -13.0 | AVG | 327 | 1.5 | RB 1 MHz;VB 10 Hz |
| 20000.610 | 50.2 | H | 74.0 | -23.8 | PK | 327 | 1.5 | RB 1 MHz;VB 3 MHz |
| 21199.900 | 45.6 | H | 54.0 | -8.4 | AVG | 143 | 1.5 | RB 1 MHz;VB 10 Hz |
| 21200.220 | 53.7 | H | 74.0 | -20.3 | PK | 143 | 1.5 | RB 1 MHz;VB 3 MHz |
| 5358.330 | 67.5 | V | - | - | PK | 209 | 2.0 | Refer to Bandedge test data |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

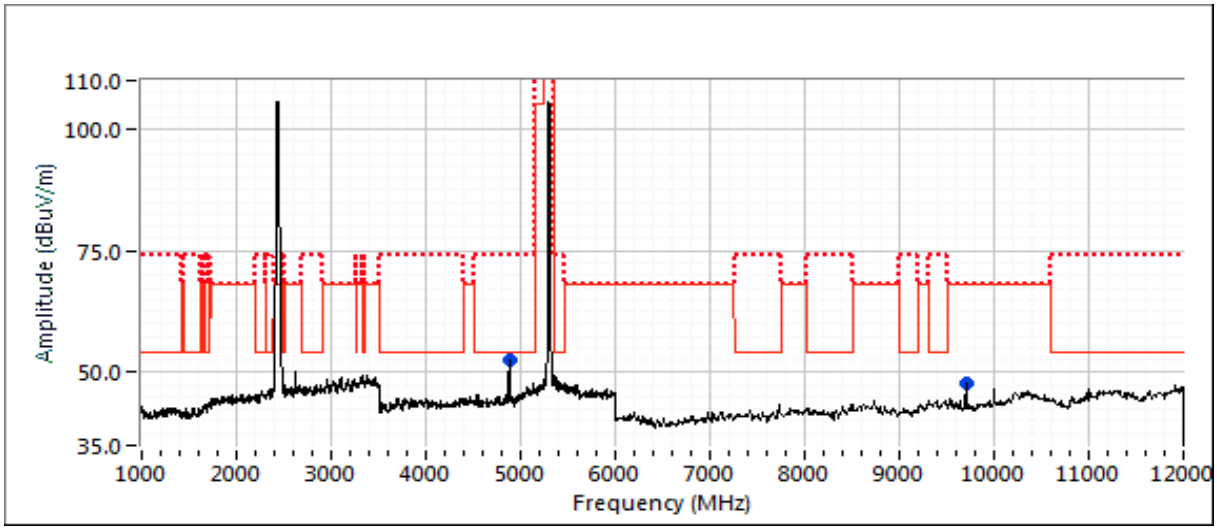
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #1b: Center Channel

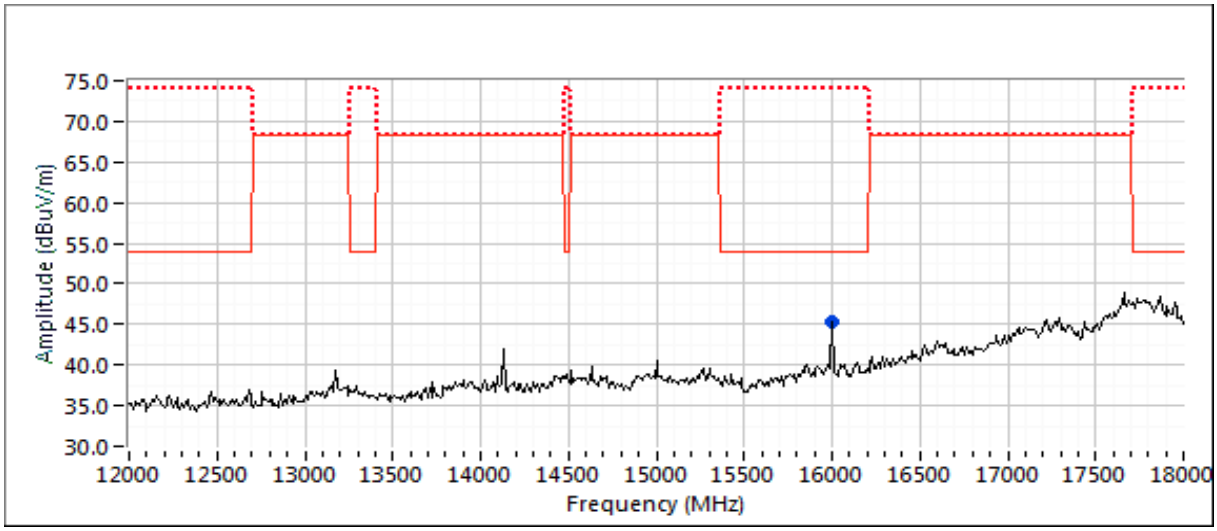
Channel: 6 & 60 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

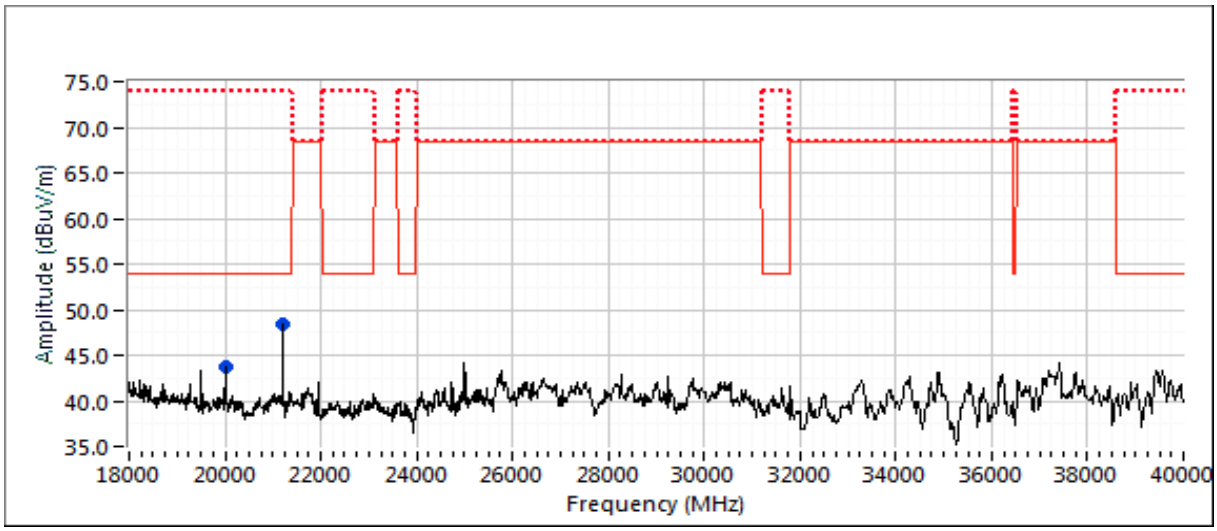
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4880.310 | 49.5 | V | 54.0 | -4.5 | AVG | 25 | 2.0 | Note 3; RB 1 MHz;VB 300 Hz |
| 4880.340 | 64.3 | V | 74.0 | -9.7 | PK | 25 | 2.0 | RB 1 MHz;VB 3 MHz |
| 16000.230 | 43.9 | H | 54.0 | -10.1 | AVG | 320 | 1.5 | RB 1 MHz;VB 10 Hz Note 5 |
| 16000.250 | 51.7 | H | 74.0 | -22.3 | PK | 320 | 1.5 | RB 1 MHz;VB 3 MHz Note 5 |
| 21199.910 | 45.5 | H | 54.0 | -8.5 | AVG | 146 | 1.5 | Note 3; RB 1 MHz;VB 300 Hz |
| 21200.060 | 51.4 | H | 74.0 | -22.6 | PK | 146 | 1.5 | RB 1 MHz;VB 3 MHz |
| 20000.250 | 38.8 | H | 54.0 | -15.2 | AVG | 325 | 1.5 | Note 3; RB 1 MHz;VB 300 Hz |
| 20000.530 | 49.3 | H | 74.0 | -24.7 | PK | 325 | 1.5 | RB 1 MHz;VB 3 MHz |
| 9700.000 | 54.2 | H | 68.3 | -14.1 | PK | 286 | 2.0 | RB 1 MHz;VB 3 MHz |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

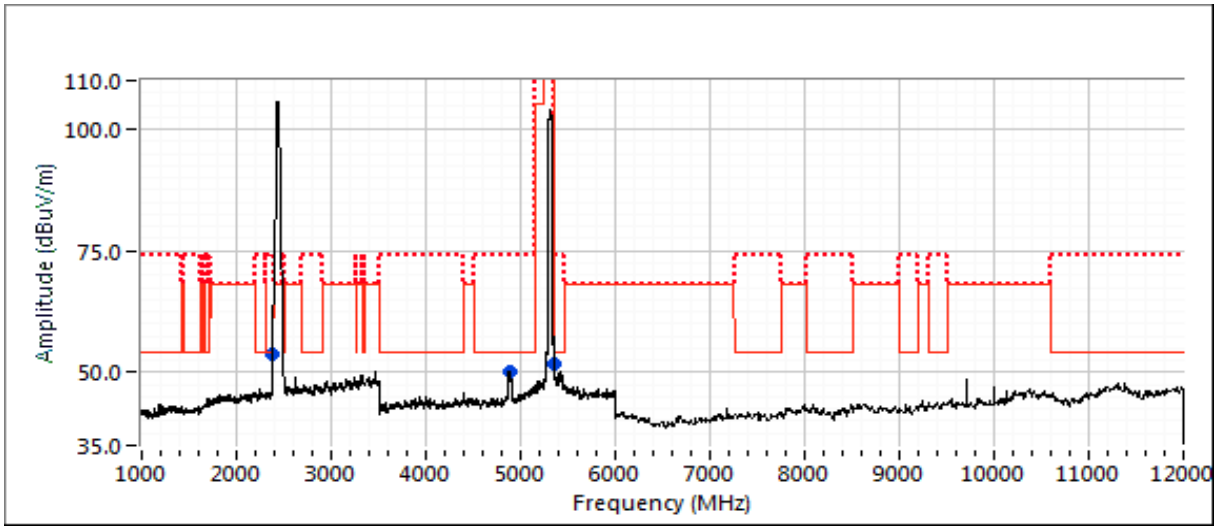
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #1c: Center Channel

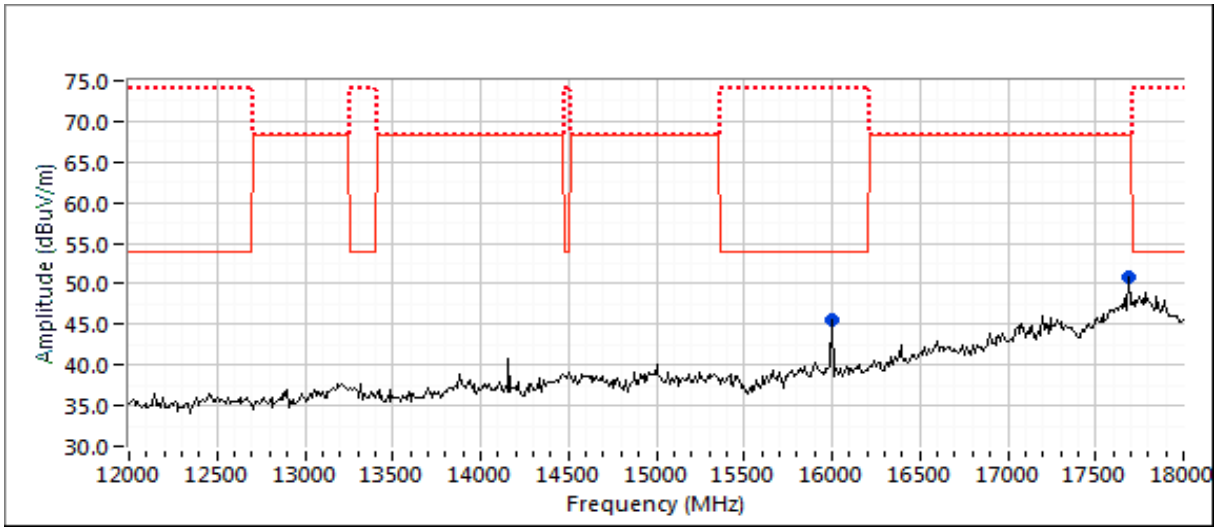
Channel: 6 & 62 Mode: ac40 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 13.5Mbps

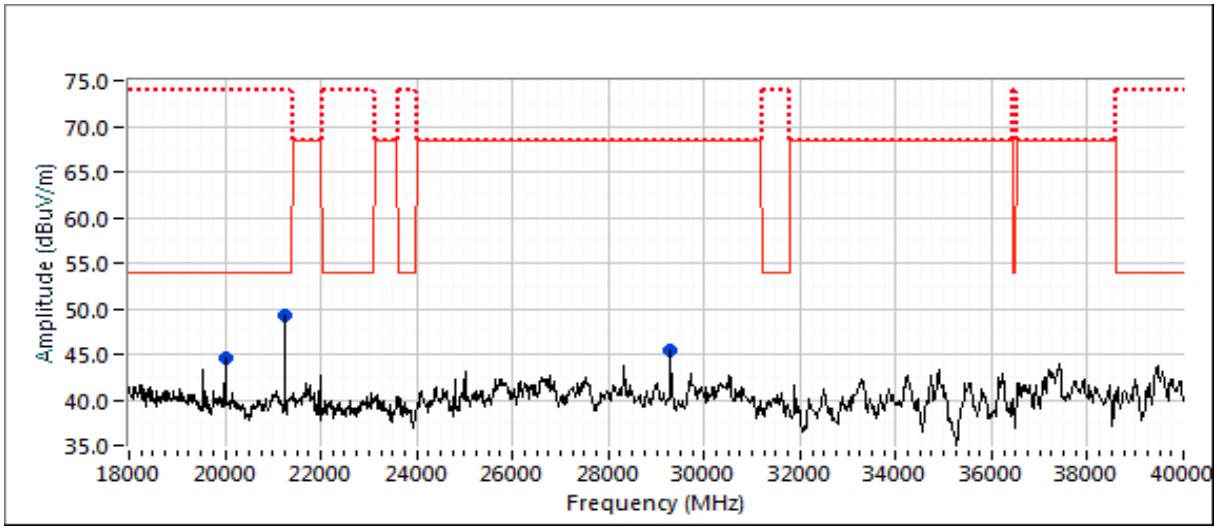
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 2389.970 | 48.8 | V | 54.0 | -5.2 | AVG | 105 | 1.6 | Note 3; RB 1 MHz;VB 300 Hz |
| 2389.860 | 67.4 | V | 74.0 | -6.6 | PK | 105 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 21239.920 | 48.6 | H | 54.0 | -5.4 | AVG | 147 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 21239.860 | 53.2 | H | 74.0 | -20.8 | PK | 147 | 1.5 | RB 1 MHz;VB 3 MHz |
| 16000.000 | 45.6 | H | 54.0 | -8.4 | AVG | 265 | 1.5 | RB 1 MHz;VB 10 Hz Note 5 |
| 16000.180 | 51.7 | H | 74.0 | -22.3 | PK | 265 | 1.5 | RB 1 MHz;VB 3 MHz Note 5 |
| 17690.000 | 56.9 | H | 68.3 | -11.4 | PK | 6 | 1.5 | RB 1 MHz;VB 3 MHz |
| 9710.000 | 54.4 | H | 68.3 | -13.9 | PK | 278 | 1.5 | RB 1 MHz;VB 3 MHz |
| 29290.000 | 51.8 | V | 68.3 | -16.5 | PK | 153 | 1.5 | RB 1 MHz;VB 3 MHz |
| 20000.260 | 39.4 | H | 54.0 | -14.6 | AVG | 327 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 20000.100 | 50.0 | H | 74.0 | -24.0 | PK | 327 | 1.5 | RB 1 MHz;VB 3 MHz |
| 4889.630 | 47.3 | V | 54.0 | -6.7 | AVG | 334 | 2.0 | Note 3; RB 1 MHz;VB 300 Hz |
| 4889.970 | 61.2 | V | 74.0 | -12.8 | PK | 334 | 2.0 | RB 1 MHz;VB 3 MHz |
| 5354.170 | 51.8 | V | - | - | PK | 193 | 1.5 | Refer to Bandedge test data |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

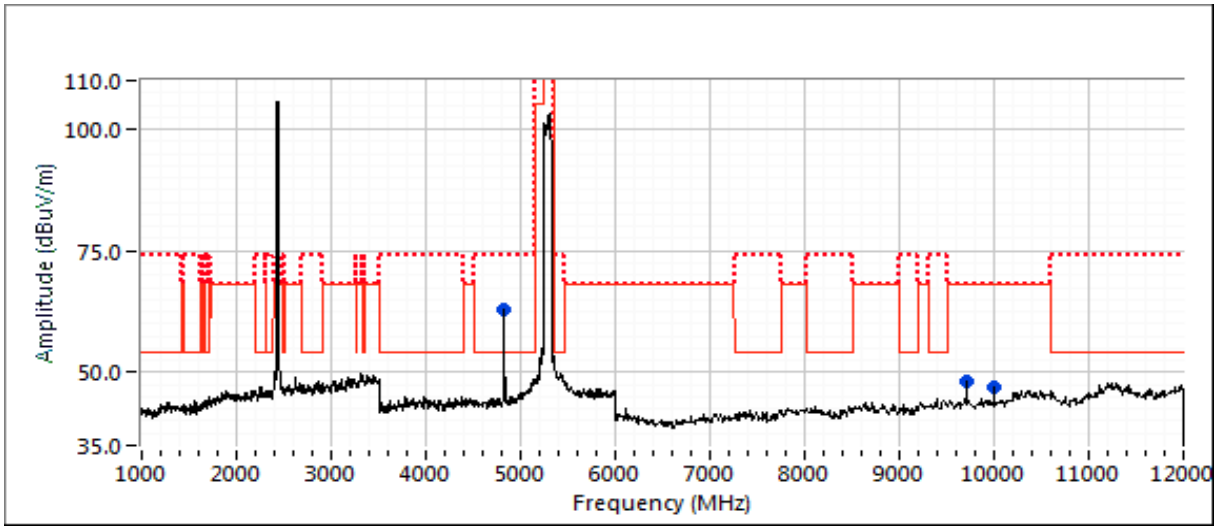
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #1d: Center Channel

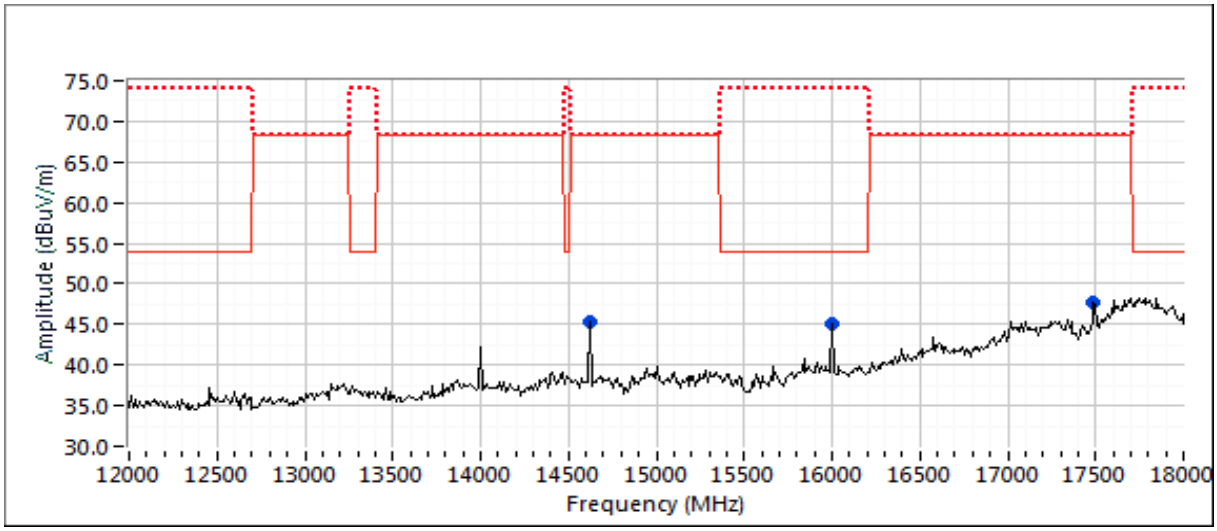
Channel: 6 & 58 Mode: b & ac80 Pwr Setting: 22.25 (q89) & 18 (q72)
Tx Chain: 1TX & 4TX Data Rate: 1 Mbps & MCS0

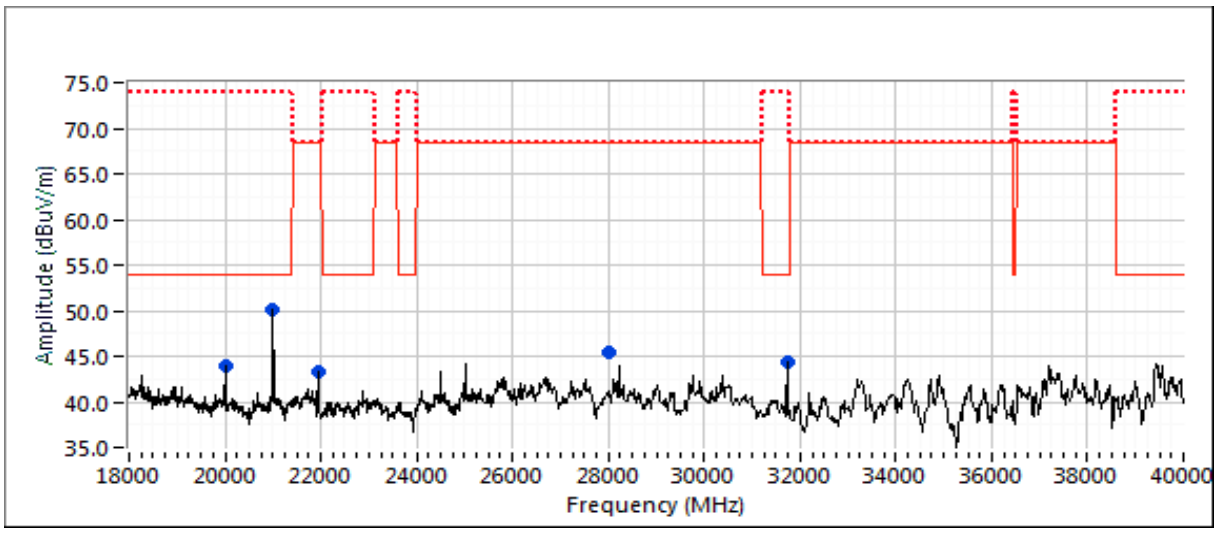
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4873.780 | 52.8 | V | 54.0 | -1.2 | AVG | 148 | 1.6 | RB 1 MHz;VB 10 Hz |
| 4873.980 | 59.0 | V | 74.0 | -15.0 | PK | 148 | 1.6 | RB 1 MHz;VB 3 MHz |
| 17630.000 | 55.6 | V | 68.3 | -12.7 | PK | 48 | 1.5 | RB 1 MHz;VB 3 MHz |
| 14620.000 | 53.1 | H | 68.3 | -15.2 | PK | 137 | 1.5 | RB 1 MHz;VB 3 MHz |
| 16000.000 | 44.8 | H | 54.0 | -9.2 | AVG | 318 | 1.5 | RB 1 MHz;VB 10 Hz Note 5 |
| 16000.220 | 51.2 | H | 74.0 | -22.8 | PK | 318 | 1.5 | RB 1 MHz;VB 3 MHz Note 5 |
| 9710.000 | 54.1 | H | 68.3 | -14.2 | PK | 255 | 1.5 | RB 1 MHz;VB 3 MHz |
| 10000.000 | 53.1 | H | 68.3 | -15.2 | PK | 29 | 1.5 | RB 1 MHz;VB 3 MHz |
| 21159.900 | 43.7 | H | 54.0 | -10.7 | AVG | 145 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 21159.790 | 51.6 | H | 74.0 | -22.4 | PK | 145 | 1.5 | RB 1 MHz;VB 3 MHz |
| 31739.800 | 42.8 | H | 54.0 | -11.2 | AVG | 165 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 31739.590 | 50.5 | H | 74.0 | -23.5 | PK | 165 | 1.5 | RB 1 MHz;VB 3 MHz |
| 20010.750 | 36.0 | H | 54.0 | -18.0 | AVG | 325 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 20010.480 | 46.8 | H | 74.0 | -27.2 | PK | 325 | 1.5 | RB 1 MHz;VB 3 MHz |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

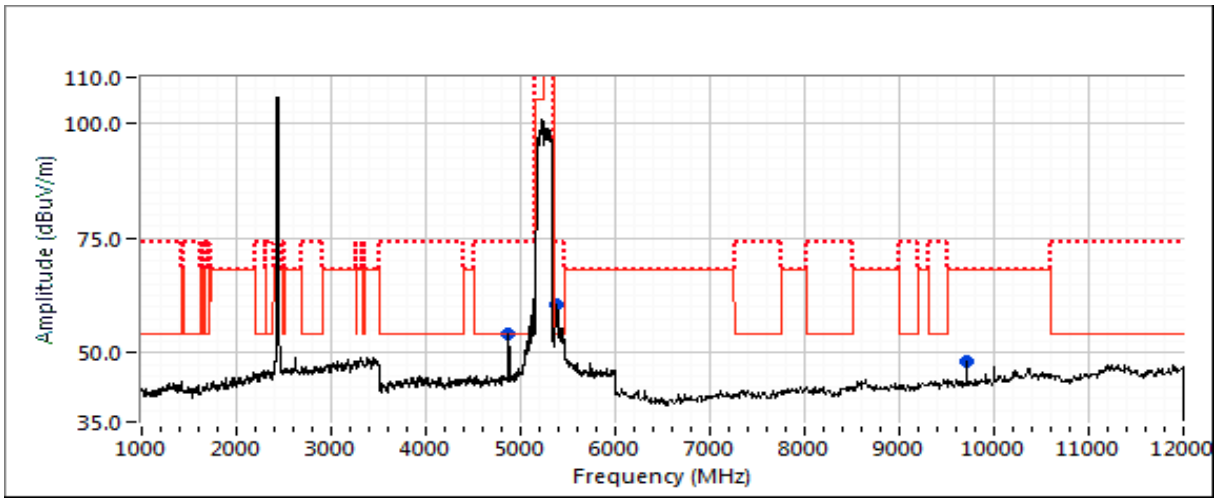
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #1e: Center Channel

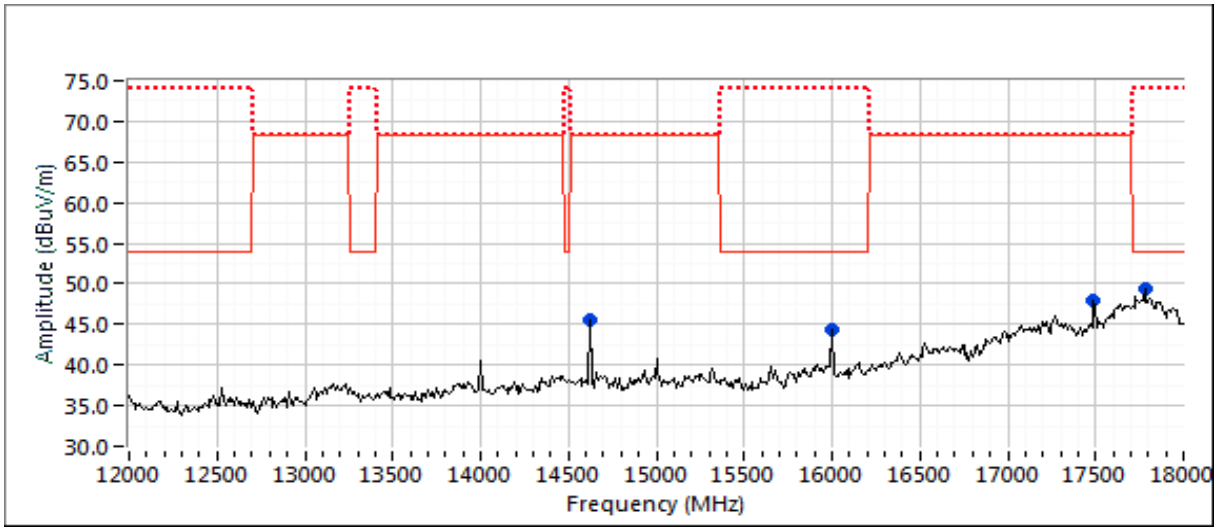
Channel: 6 & 50 Mode: b & ac160 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 1TX & 4TX Data Rate: 1 Mbps & MCS0

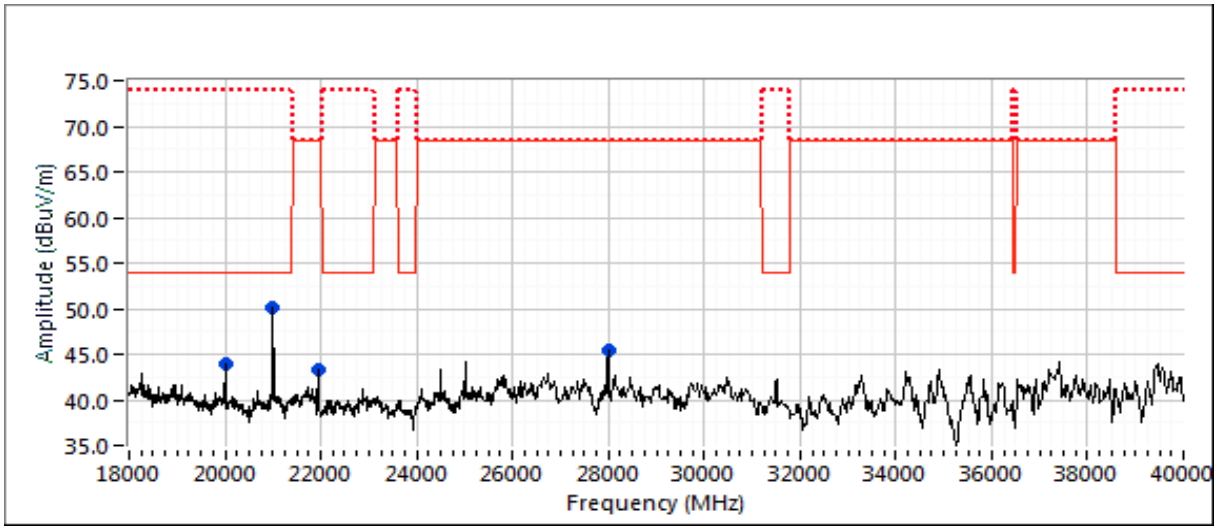
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4873.780 | 52.6 | V | 54.0 | -1.4 | AVG | 201 | 1.5 | RB 1 MHz;VB 10 Hz |
| 20999.910 | 49.3 | H | 54.0 | -4.7 | AVG | 160 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 17781.430 | 45.2 | V | 54.0 | -8.8 | AVG | 173 | 1.0 | Note 3; RB 1 MHz;VB 1 kHz |
| 16000.000 | 44.4 | H | 54.0 | -9.6 | AVG | 310 | 1.5 | RB 1 MHz;VB 10 Hz Note 5 |
| 9710.000 | 54.4 | H | 68.3 | -13.9 | PK | 271 | 1.5 | RB 1 MHz;VB 3 MHz |
| 17490.000 | 54.2 | V | 68.3 | -14.1 | PK | 138 | 1.5 | RB 1 MHz;VB 3 MHz |
| 20000.220 | 38.5 | H | 54.0 | -15.5 | AVG | 13 | 1.5 | Note 3; RB 1 MHz;VB 1 kHz |
| 4873.980 | 58.3 | V | 74.0 | -15.7 | PK | 201 | 1.5 | RB 1 MHz;VB 3 MHz |
| 14620.000 | 51.9 | H | 68.3 | -16.4 | PK | 130 | 1.5 | RB 1 MHz;VB 3 MHz |
| 28007.500 | 51.3 | H | 68.3 | -17.0 | PK | 161 | 2.0 | RB 1 MHz;VB 3 MHz |
| 17780.290 | 56.6 | V | 74.0 | -17.4 | PK | 173 | 1.0 | RB 1 MHz;VB 3 MHz |
| 21938.330 | 49.6 | H | 68.3 | -18.7 | PK | 117 | 2.0 | RB 1 MHz;VB 3 MHz |
| 20999.940 | 54.2 | H | 74.0 | -19.8 | PK | 160 | 1.5 | RB 1 MHz;VB 3 MHz |
| 16000.220 | 51.2 | H | 74.0 | -22.8 | PK | 310 | 1.5 | RB 1 MHz;VB 3 MHz Note 5 |
| 20000.120 | 48.6 | H | 74.0 | -25.4 | PK | 13 | 1.5 | RB 1 MHz;VB 3 MHz |
| 5375.000 | 60.4 | V | - | - | PK | 212 | 2.0 | Refer to Bandedge test data |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

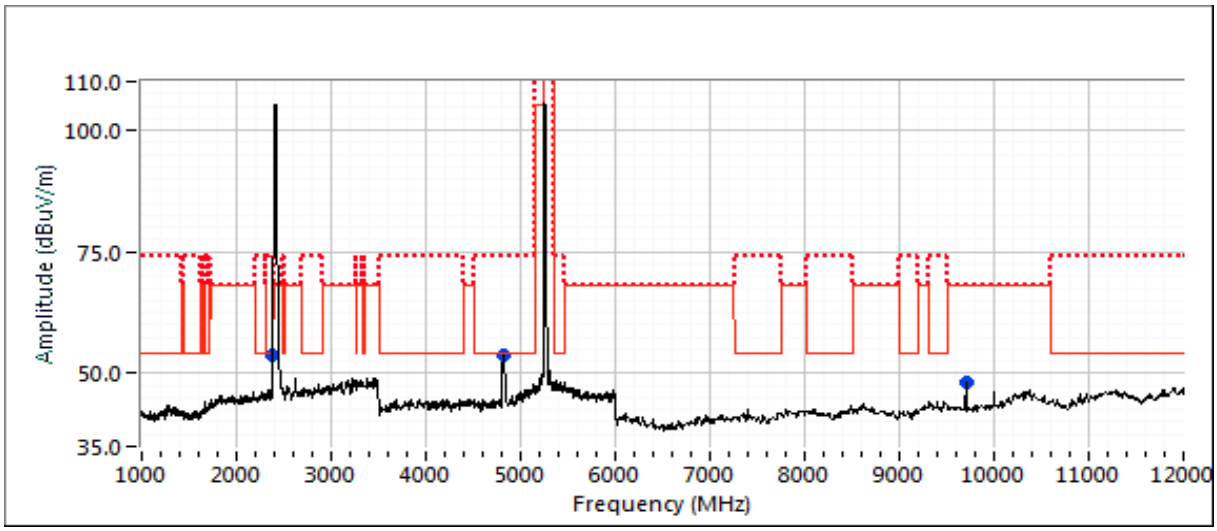
Run #2: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #1

Date of Test: 07/22/19 — Config. Used: 1
Test Engineer: Rafael Varelas — Config Change: -
Test Location: FT Chamber #5 — Host EUT Voltage: 110V/60Hz

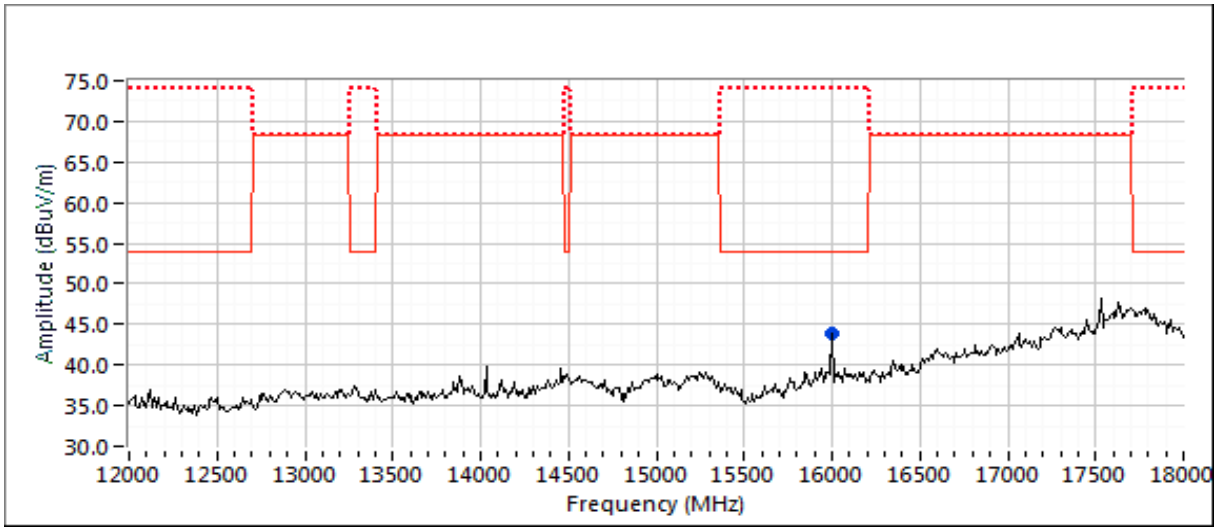
Run #2a: Low Channel

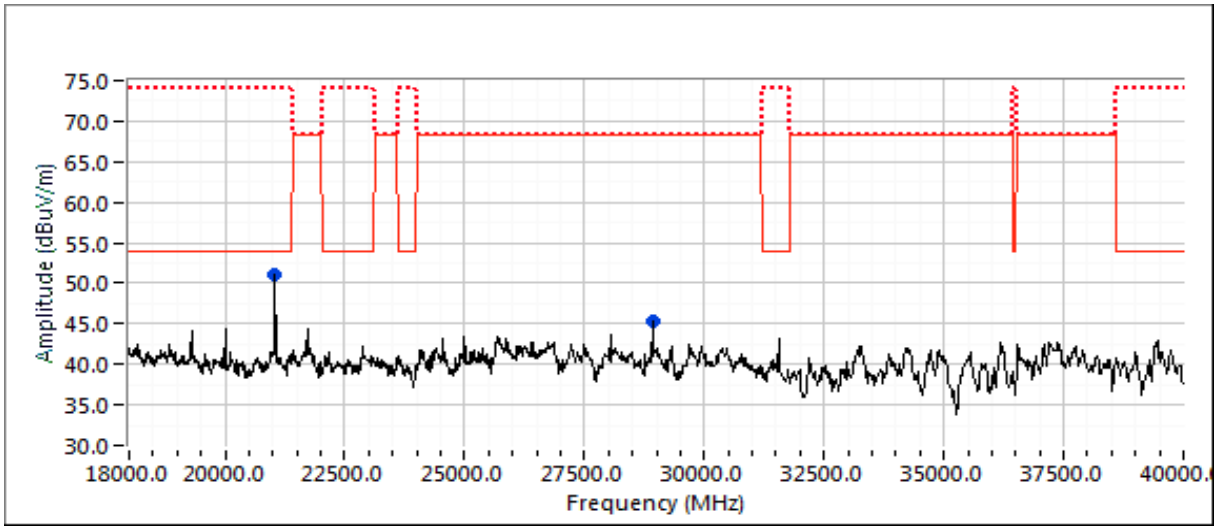
Channel: 1 & 52 — Mode: ac20 — Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX — Data Rate: 6.5 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4812.420 | 51.0 | V | 54.0 | -3.0 | AVG | 319 | 2.0 | Note 3; RB 1 MHz;VB 300 Hz |
| 4808.850 | 65.7 | V | 74.0 | -8.3 | PK | 319 | 2.0 | RB 1 MHz;VB 3 MHz |
| 9700.970 | 54.5 | H | 68.3 | -13.8 | PK | 280 | 1.3 | RB 1 MHz;VB 3 MHz |
| 16000.000 | 47.1 | H | 54.0 | -6.9 | AVG | 300 | 1.0 | RB 1 MHz;VB 10 Hz Note 5 |
| 16000.410 | 58.1 | H | 74.0 | -15.9 | PK | 300 | 1.0 | RB 1 MHz;VB 3 MHz Note 5 |
| 21039.900 | 51.0 | H | 54.0 | -3.0 | AVG | 173 | 1.2 | Note 3; RB 1 MHz;VB 300 Hz |
| 21039.960 | 55.0 | H | 74.0 | -19.0 | PK | 173 | 1.2 | RB 1 MHz;VB 3 MHz |
| 28943.960 | 50.9 | H | 68.3 | -17.4 | PK | 160 | 2.0 | RB 1 MHz;VB 3 MHz |
| 2379.170 | 53.6 | V | 54.0 | -0.4 | Peak | 97 | 1.5 | Refer to bandedge test data |



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



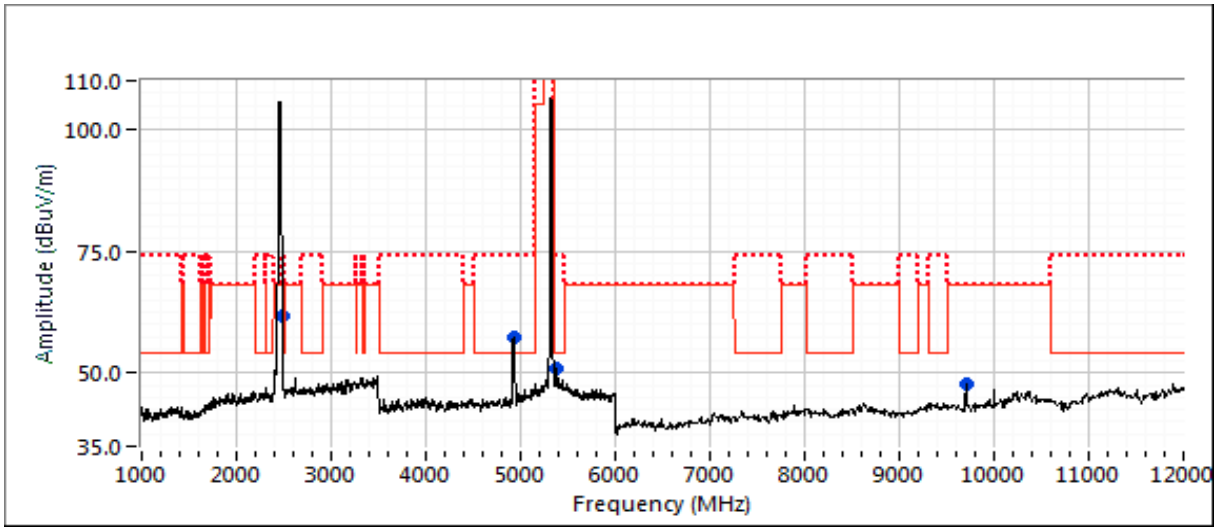
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

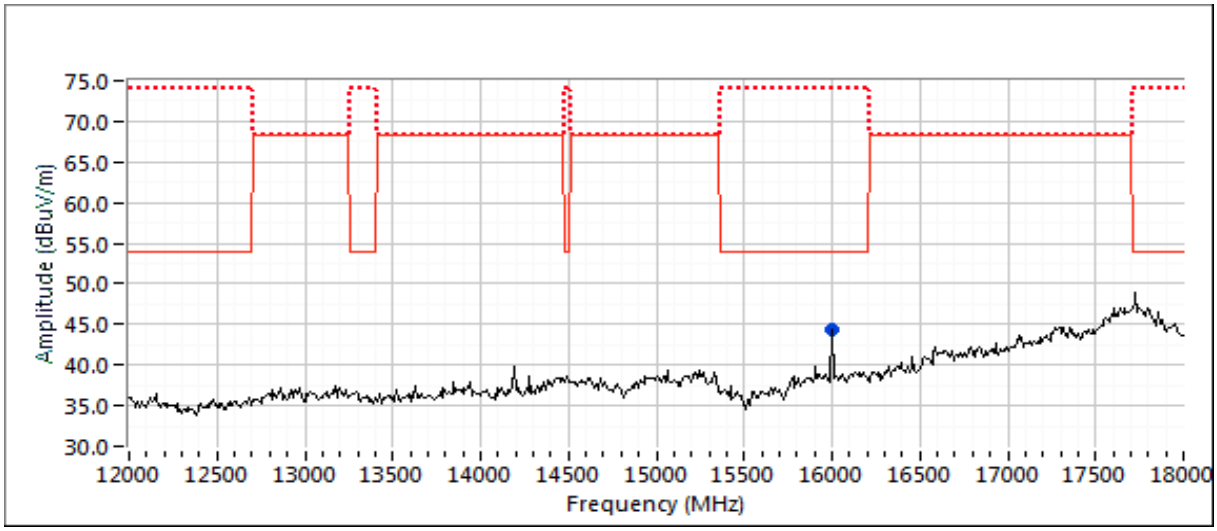
Run #2b: High Channel

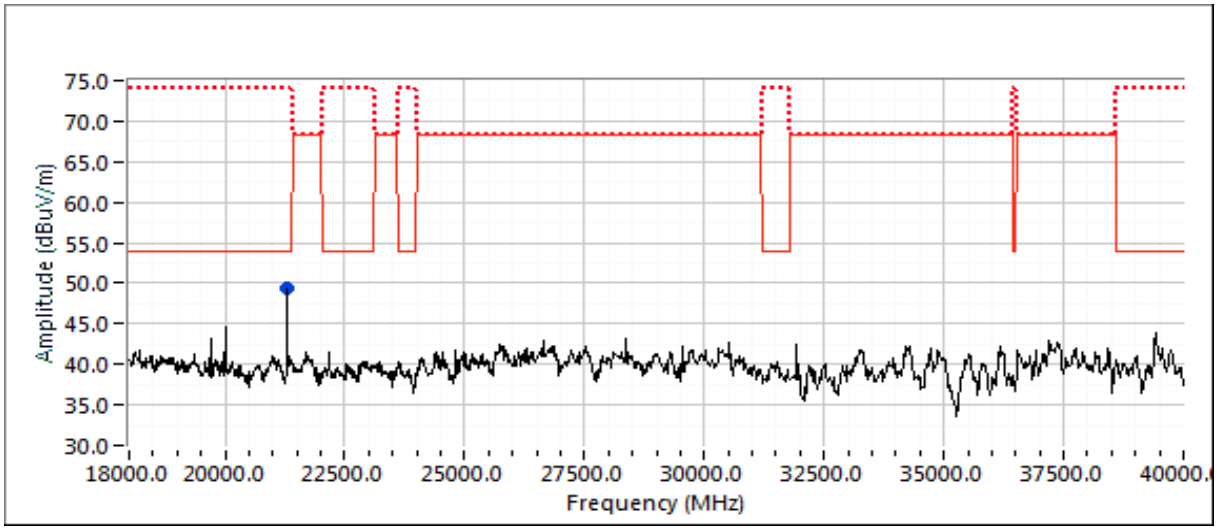
Channel: 11 & 64 Mode: ac20 Pwr Setting: 23.5 (q94) & 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4925.290 | 53.3 | H | 54.0 | -0.7 | AVG | 279 | 1.7 | Note 3; RB 1 MHz;VB 300 Hz |
| 4925.460 | 67.5 | H | 74.0 | -6.5 | PK | 279 | 1.7 | RB 1 MHz;VB 3 MHz |
| 5382.380 | 50.2 | V | 54.0 | -3.8 | AVG | 209 | 2.1 | Note 3; RB 1 MHz;VB 300 Hz |
| 5379.710 | 62.1 | V | 74.0 | -11.9 | PK | 209 | 2.1 | RB 1 MHz;VB 3 MHz |
| 9704.030 | 54.4 | H | 68.3 | -13.9 | PK | 277 | 2.0 | RB 1 MHz;VB 3 MHz |
| 16000.110 | 47.1 | H | 54.0 | -6.9 | AVG | 300 | 1.0 | RB 1 MHz;VB 10 Hz Note 5 |
| 15999.950 | 58.5 | H | 74.0 | -15.5 | PK | 300 | 1.0 | RB 1 MHz;VB 3 MHz Note 5 |
| 21279.800 | 49.5 | H | 54.0 | -4.7 | AVG | 164 | 1.1 | Note 3; RB 1 MHz;VB 300 Hz |
| 21279.800 | 53.3 | H | 74.0 | -20.7 | PK | 164 | 1.1 | RB 1 MHz;VB 3 MHz |
| 2487.500 | 61.8 | V | 54.0 | 7.8 | Peak | 121 | 1.5 | Refer to bandedge test data |



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

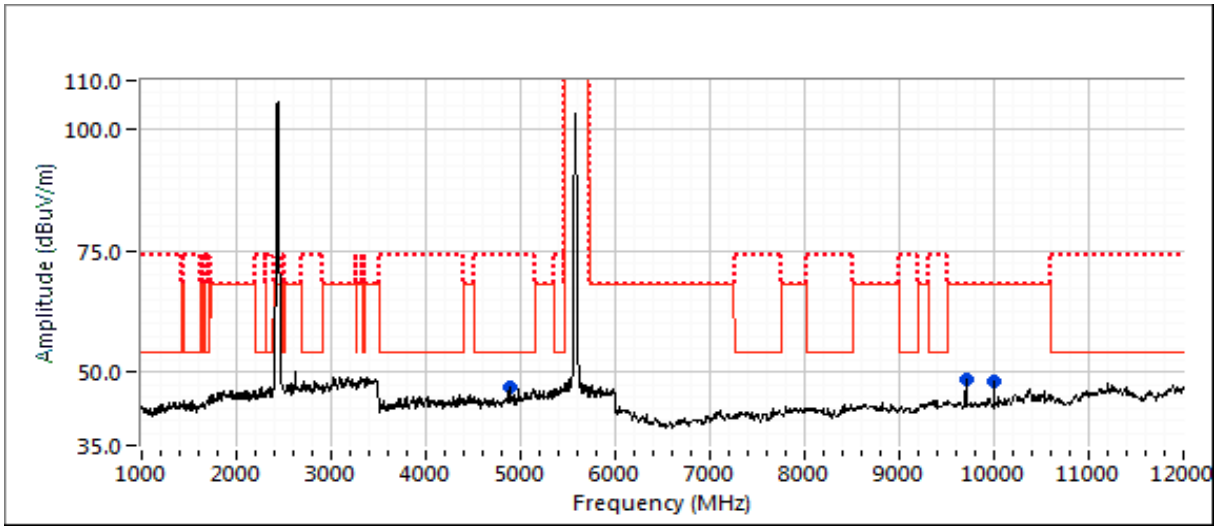
Date of Test: 7/22-23/2019 Config. Used: 1
Test Engineer: R. Varelas & M. Birgani Config Change: -
Test Location: FT Chamber #5 Host EUT Voltage: 110V/60Hz

Run #3a: Center Channel

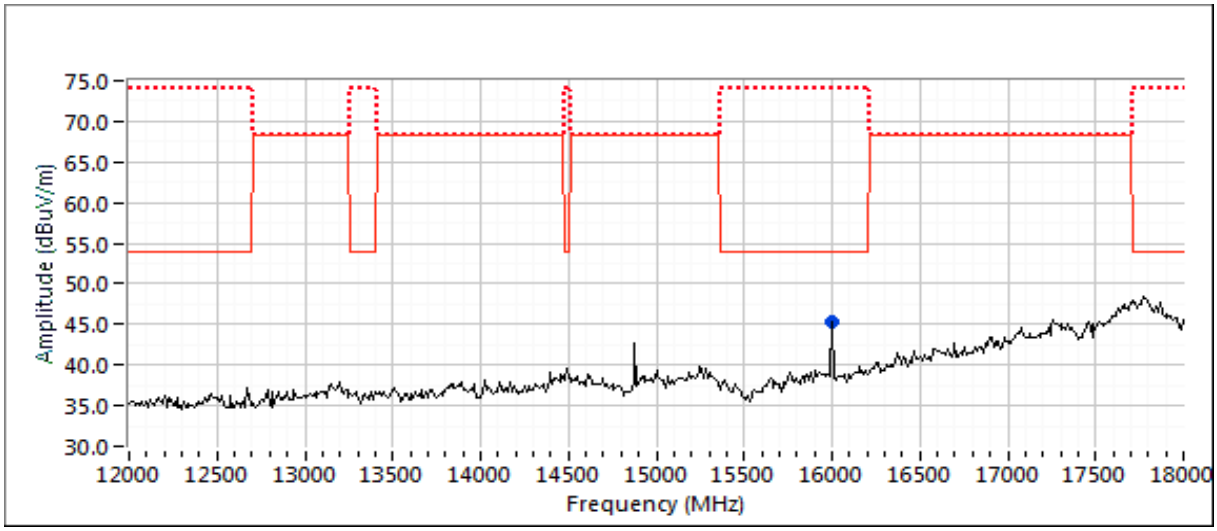
Channel: 6 &116 Mode: g / a Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 1Tx Data Rate: 6

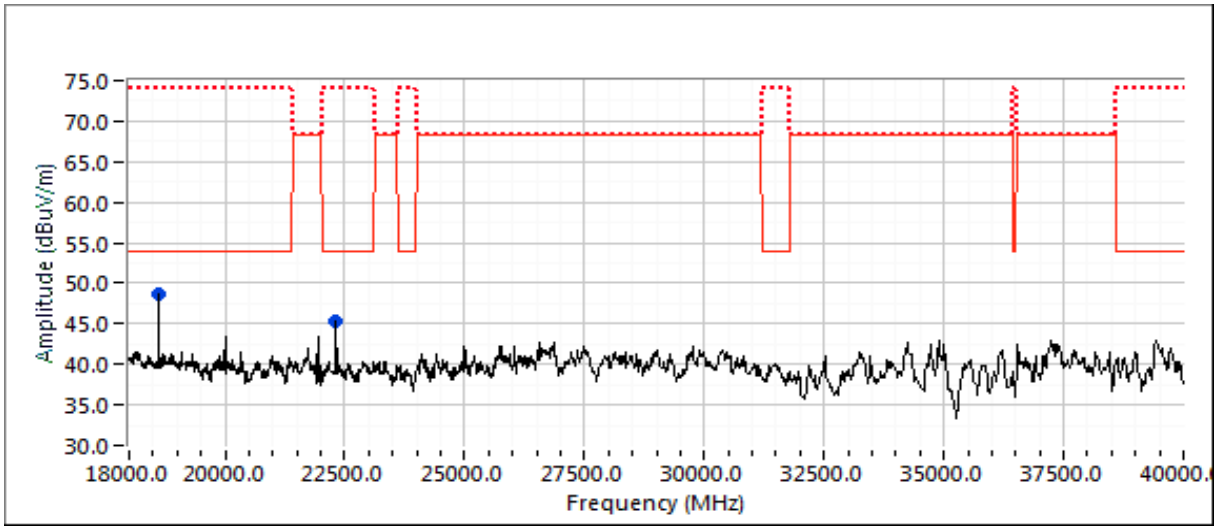
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments | |
|---|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | | |
| 18599.990 | 48.3 | H | 54.0 | -5.7 | AVG | 51 | 1.2 | RB 1 MHz;VB 10 Hz | |
| 4883.020 | 47.0 | V | 54.0 | -7.0 | AVG | 146 | 2.0 | RB 1 MHz;VB 10 Hz | |
| 22319.900 | 42.9 | H | 54.0 | -11.1 | AVG | 159 | 1.2 | RB 1 MHz;VB 10 Hz | |
| 4884.020 | 62.0 | V | 74.0 | -12.0 | PK | 146 | 2.0 | RB 1 MHz;VB 3 MHz | |
| 9705.490 | 54.9 | H | 68.3 | -13.4 | PK | 278 | 1.4 | RB 1 MHz;VB 3 MHz | |
| 10000.070 | 54.6 | H | 68.3 | -13.7 | PK | 0 | 1.1 | RB 1 MHz;VB 3 MHz | |
| 16000.180 | 38.9 | H | 54.0 | -15.1 | AVG | 257 | 1.4 | RB 1 MHz;VB 10 Hz | Note 5 |
| 18599.940 | 53.5 | H | 74.0 | -20.5 | PK | 51 | 1.2 | RB 1 MHz;VB 3 MHz | |
| 22320.100 | 50.6 | H | 74.0 | -23.4 | PK | 159 | 1.2 | RB 1 MHz;VB 3 MHz | |
| 16000.470 | 48.7 | H | 74.0 | -25.3 | PK | 257 | 1.4 | RB 1 MHz;VB 3 MHz | Note 5 |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

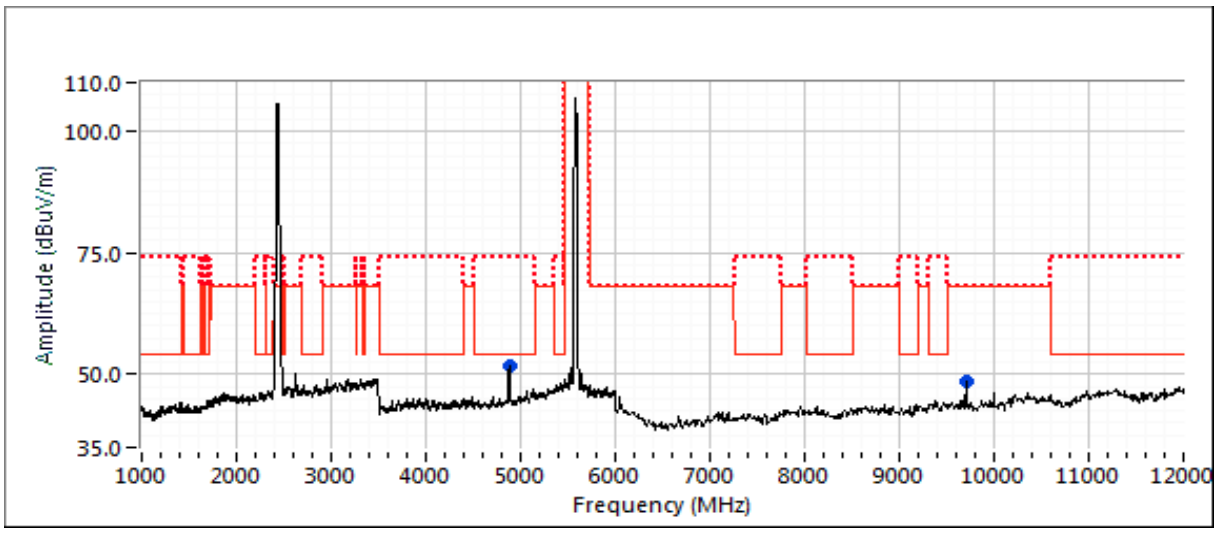
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3b: Center Channel

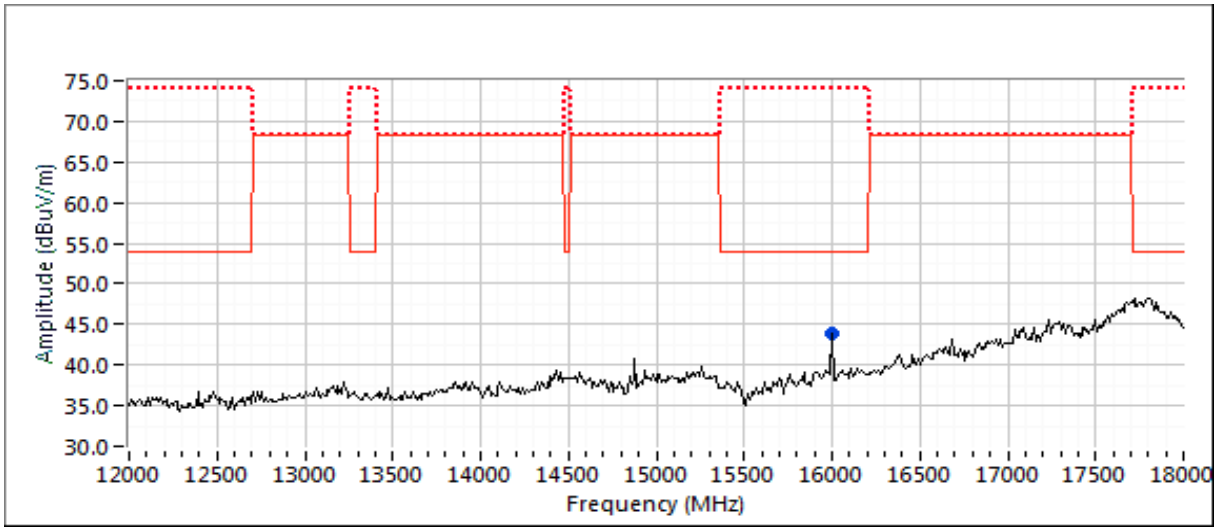
Channel: 6 & 116 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 6.5

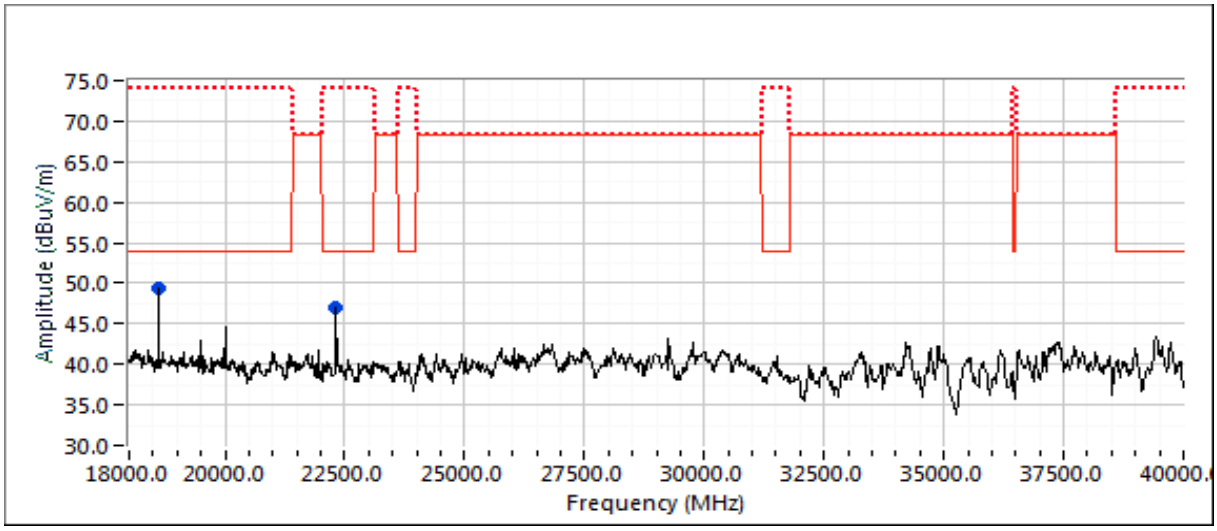
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4883.810 | 49.1 | V | 54.0 | -4.9 | AVG | 153 | 2.0 | Note 3; RB 1 MHz;VB 300 Hz |
| 18599.870 | 48.7 | H | 54.0 | -5.3 | AVG | 43 | 1.1 | Note 3; RB 1 MHz;VB 300 Hz |
| 22319.900 | 46.0 | H | 54.0 | -8.0 | AVG | 183 | 1.8 | Note 3; RB 1 MHz;VB 300 Hz |
| 4884.150 | 63.7 | V | 74.0 | -10.3 | PK | 153 | 2.0 | RB 1 MHz;VB 3 MHz |
| 16000.210 | 41.9 | V | 54.0 | -12.1 | AVG | 271 | 1.6 | RB 1 MHz;VB 10 Hz Note 5 |
| 9710.000 | 54.7 | H | 68.3 | -13.6 | PK | 295 | 1.6 | RB 1 MHz;VB 3 MHz |
| 18599.890 | 53.5 | H | 74.0 | -20.5 | PK | 43 | 1.1 | RB 1 MHz;VB 3 MHz |
| 22319.890 | 52.3 | H | 74.0 | -21.7 | PK | 183 | 1.8 | RB 1 MHz;VB 3 MHz |
| 15999.800 | 50.5 | V | 74.0 | -23.5 | PK | 271 | 1.6 | RB 1 MHz;VB 3 MHz Note 5 |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

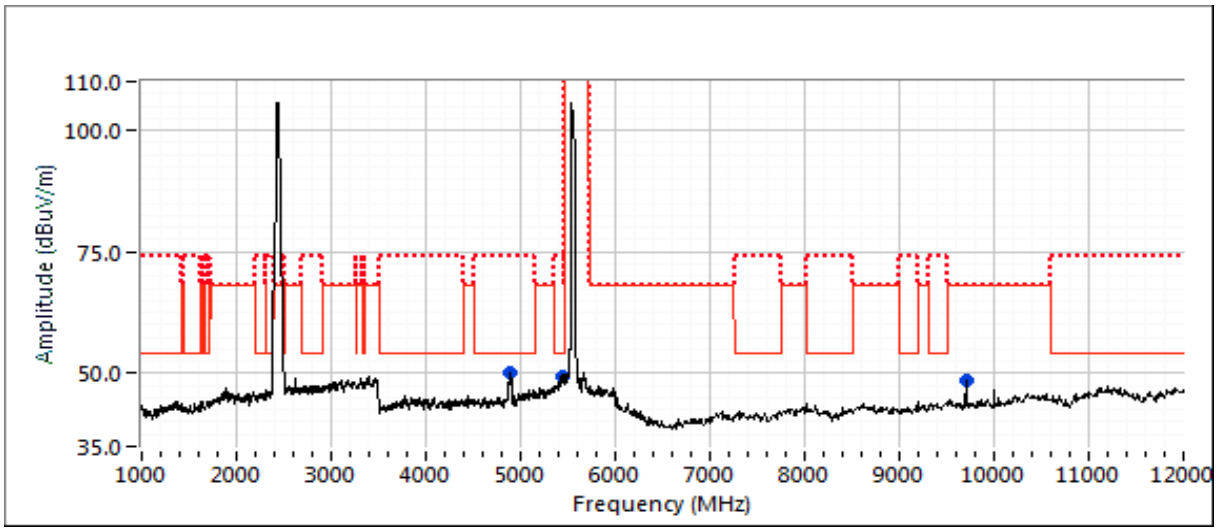
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3c: Center Channel

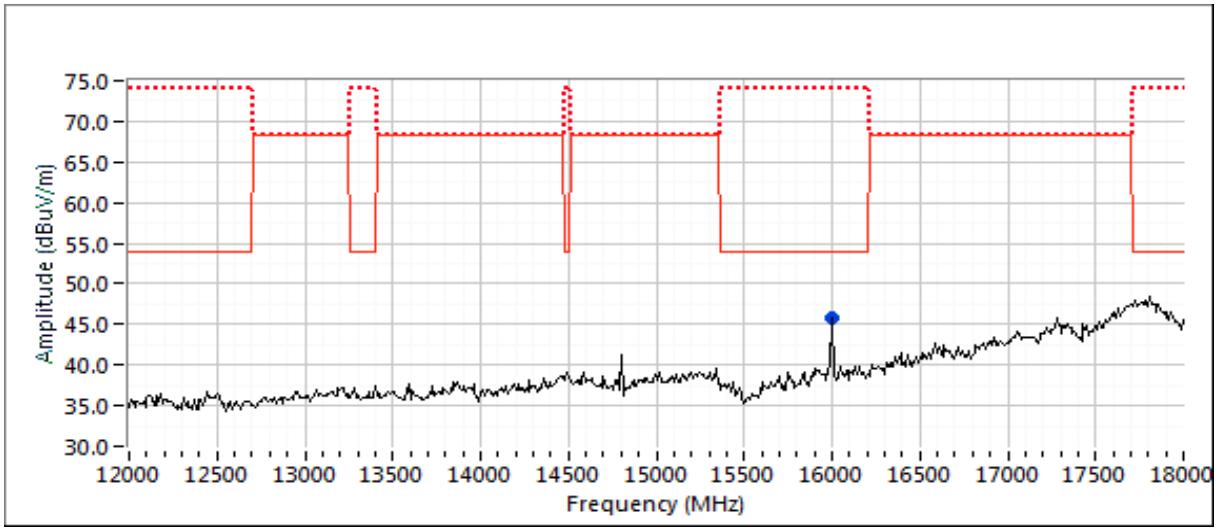
Channel: 6 &110 Mode: 11ac40 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 13.5

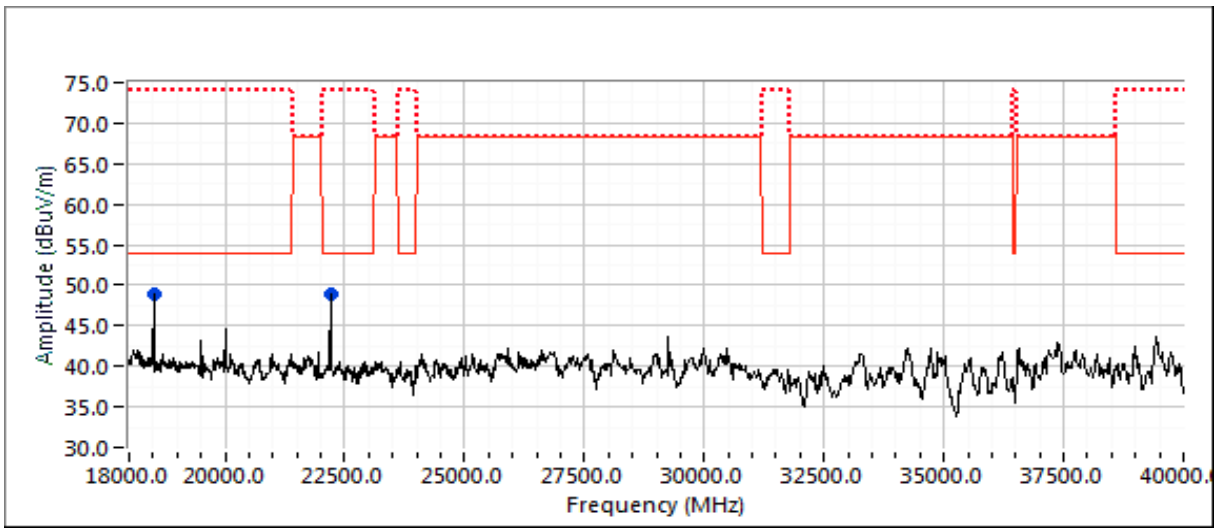
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 22199.920 | 49.6 | H | 54.0 | -4.4 | AVG | 56 | 1.4 | Note 3; RB 1 MHz;VB 300 Hz |
| 18499.940 | 48.5 | H | 54.0 | -5.5 | AVG | 55 | 1.1 | Note 3; RB 1 MHz;VB 300 Hz |
| 4894.490 | 48.2 | V | 54.0 | -5.8 | AVG | 150 | 1.6 | Note 3; RB 1 MHz;VB 300 Hz |
| 5429.700 | 48.2 | H | 54.0 | -5.8 | AVG | 66 | 2.2 | Note 3; RB 1 MHz;VB 300 Hz |
| 4894.020 | 63.6 | V | 74.0 | -10.4 | PK | 150 | 1.6 | RB 1 MHz;VB 3 MHz |
| 16000.190 | 42.4 | V | 54.0 | -11.6 | AVG | 271 | 1.6 | RB 1 MHz;VB 10 Hz Note 5 |
| 9700.000 | 54.9 | H | 68.3 | -13.4 | PK | 293 | 1.6 | RB 1 MHz;VB 3 MHz |
| 5429.430 | 59.7 | H | 74.0 | -14.3 | PK | 66 | 2.2 | RB 1 MHz;VB 3 MHz |
| 22200.040 | 53.7 | H | 74.0 | -20.3 | PK | 56 | 1.4 | RB 1 MHz;VB 3 MHz |
| 18499.910 | 53.5 | H | 74.0 | -20.5 | PK | 55 | 1.1 | RB 1 MHz;VB 3 MHz |
| 15999.770 | 50.8 | V | 74.0 | -23.2 | PK | 271 | 1.6 | RB 1 MHz;VB 3 MHz Note 5 |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

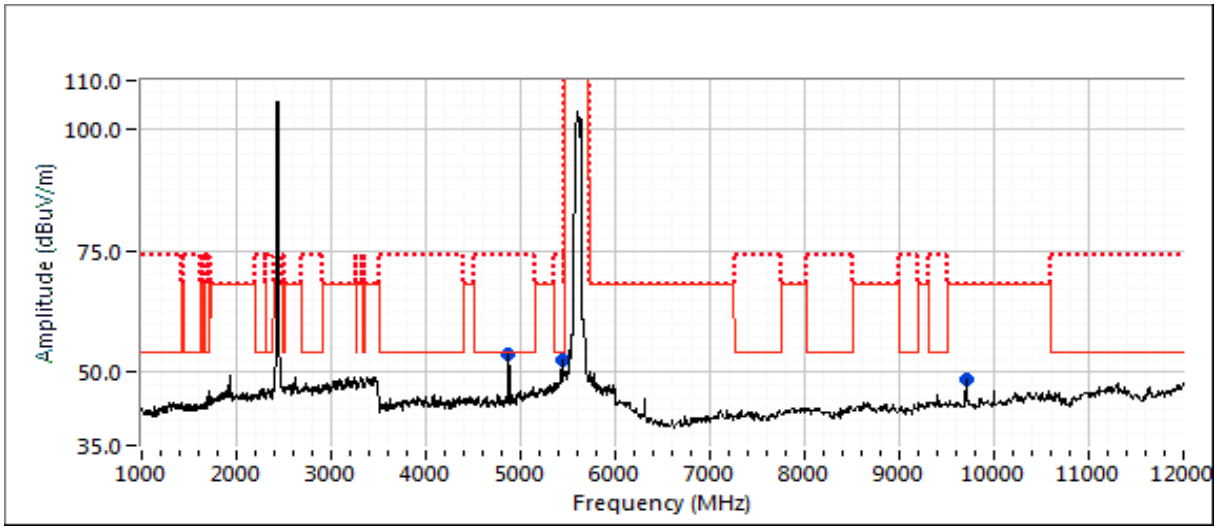
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3d: Low Channel

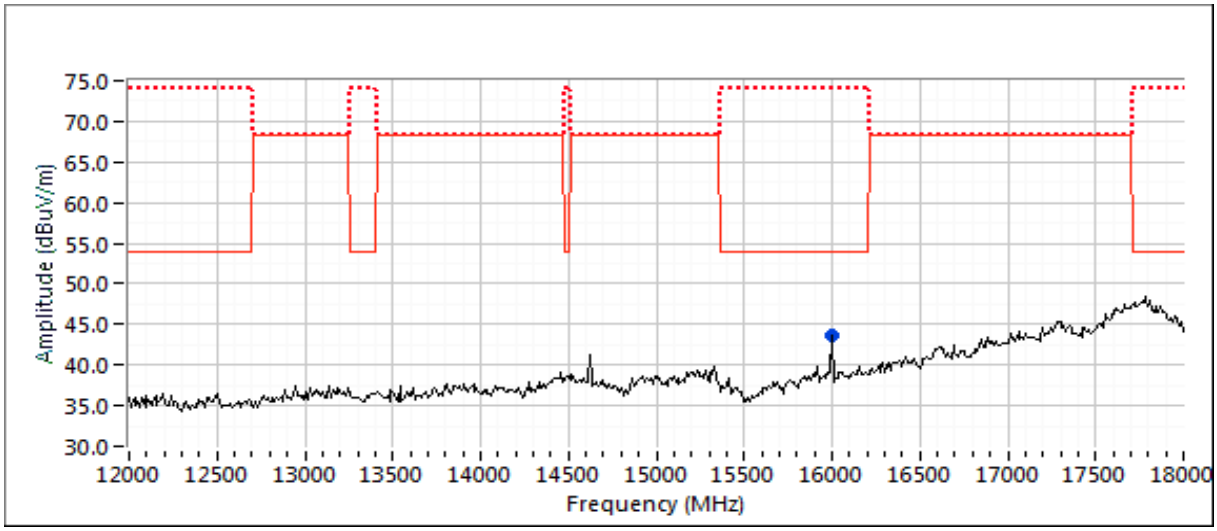
Channel: 6 & 122 Mode: b & ac80 Pwr Setting: 22.25 (q89) & 18 (q72)
Tx Chain: 1Tx & 4Tx Data Rate: 1 & 29.3

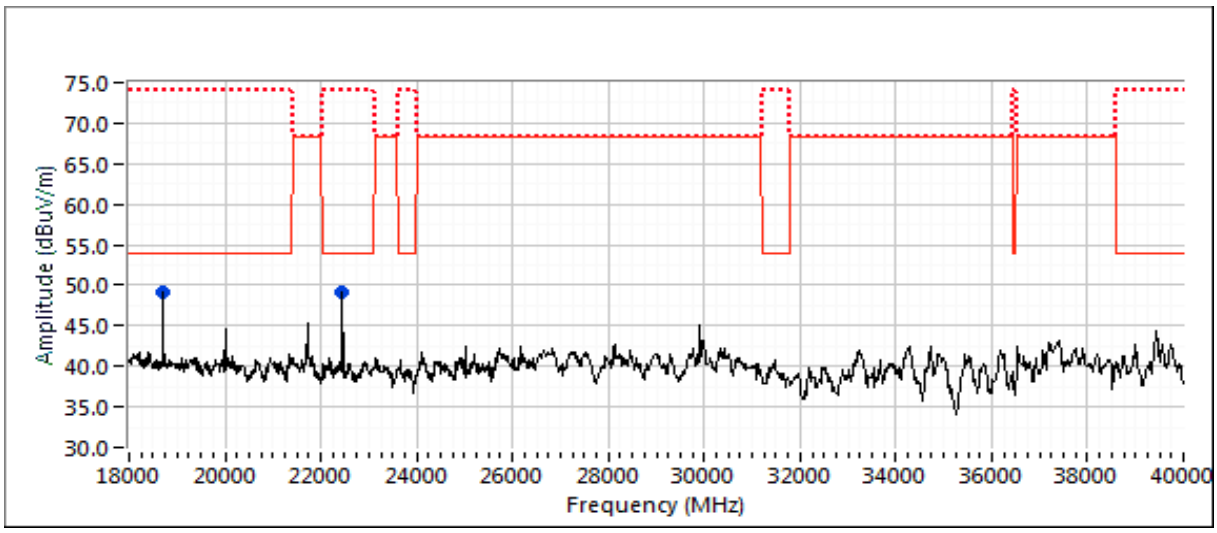
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4873.890 | 52.9 | V | 54.0 | -1.1 | AVG | 148 | 1.6 | RB 1 MHz;VB 10 Hz |
| 5434.680 | 52.0 | V | 54.0 | -2.0 | AVG | 191 | 1.6 | Note 3; RB 1 MHz;VB 1 kHz |
| 18699.910 | 48.8 | H | 54.0 | -5.2 | AVG | 38 | 1.6 | Note 3; RB 1 MHz;VB 1 kHz |
| 22439.870 | 48.1 | H | 54.0 | -5.9 | AVG | 164 | 1.9 | Note 3; RB 1 MHz;VB 1 kHz |
| 16000.190 | 42.5 | V | 54.0 | -11.5 | AVG | 272 | 1.6 | RB 1 MHz;VB 10 Hz Note 5 |
| 5434.650 | 62.0 | V | 74.0 | -12.0 | PK | 191 | 1.6 | RB 1 MHz;VB 3 MHz |
| 9700.000 | 54.7 | H | 68.3 | -13.6 | PK | 257 | 1.6 | RB 1 MHz;VB 3 MHz |
| 4873.980 | 60.1 | V | 74.0 | -13.9 | PK | 148 | 1.6 | RB 1 MHz;VB 3 MHz |
| 18699.930 | 53.5 | H | 74.0 | -20.5 | PK | 38 | 1.6 | RB 1 MHz;VB 3 MHz |
| 22439.930 | 52.8 | H | 74.0 | -21.2 | PK | 164 | 1.9 | RB 1 MHz;VB 3 MHz |
| 16000.290 | 50.3 | V | 74.0 | -23.7 | PK | 272 | 1.6 | RB 1 MHz;VB 3 MHz Note 5 |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

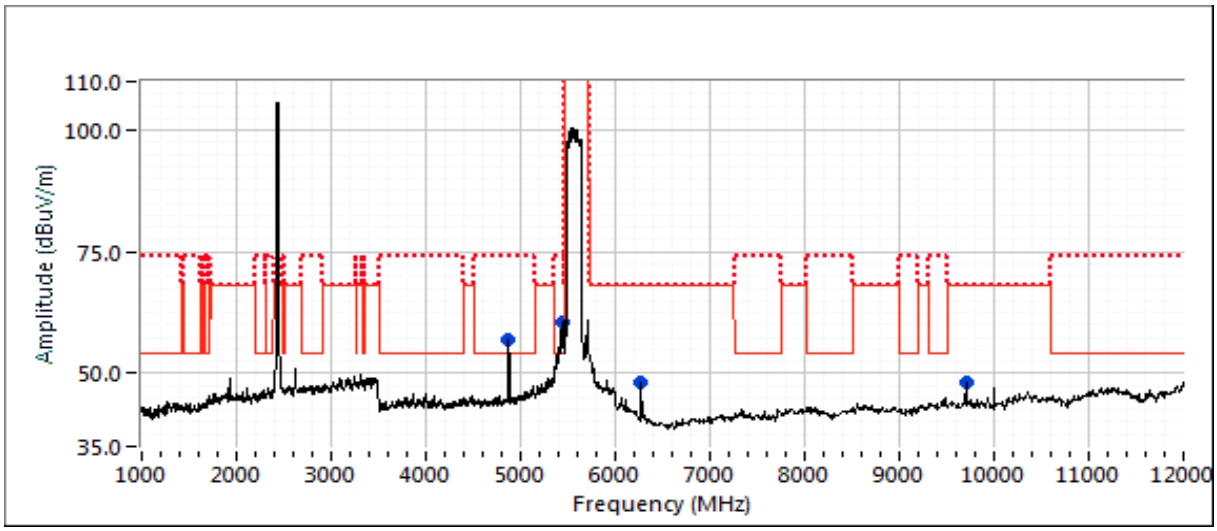
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3e: Low Channel

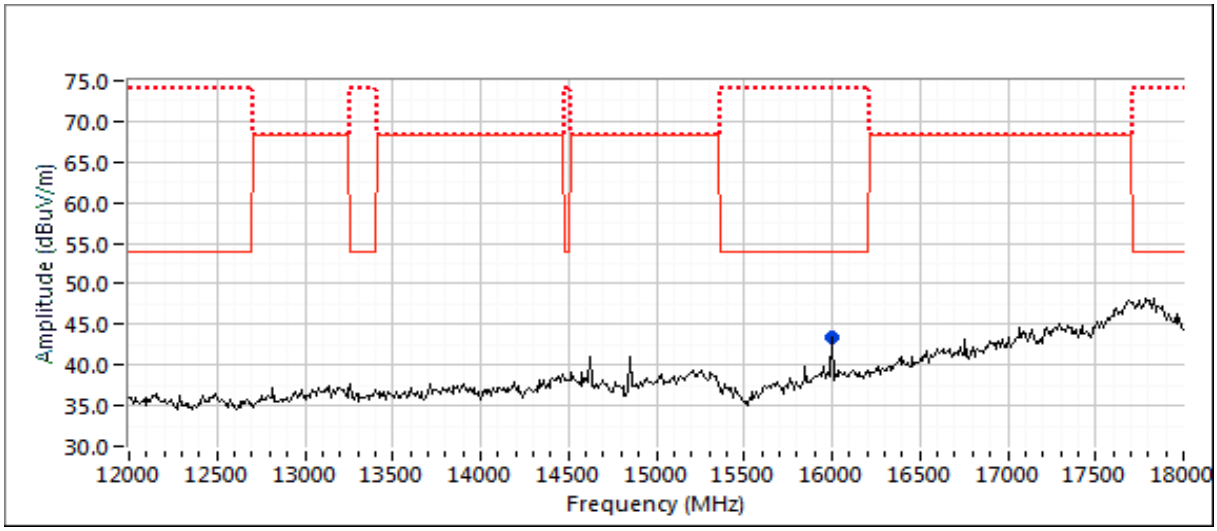
Channel: 6 & 114 Mode: 1 & ac160 Pwr Setting: 22.25 (q89) & 18 (q72)
Tx Chain: 1Tx & 4Tx Data Rate: 1 & 58.5 Mbps

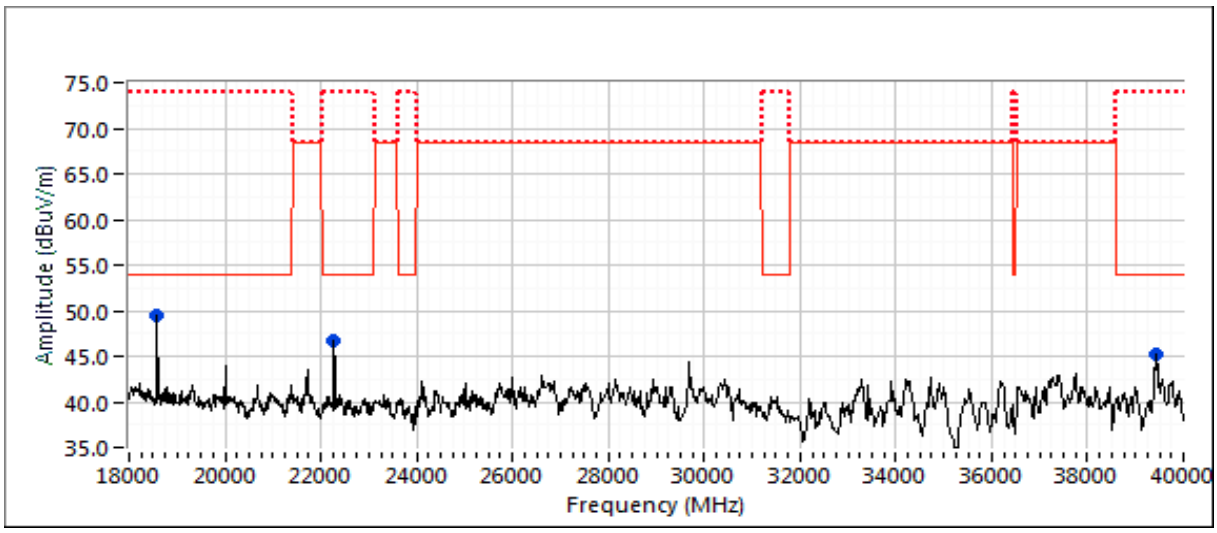
| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4874.010 | 52.5 | V | 54.0 | -1.5 | AVG | 147 | 1.6 | RB 1 MHz;VB 10 Hz |
| 18566.600 | 48.3 | H | 54.0 | -5.7 | AVG | 42 | 1.3 | Note 3; RB 1 MHz;VB 1 kHz |
| 22279.880 | 45.8 | H | 54.0 | -8.2 | AVG | 169 | 1.9 | Note 3; RB 1 MHz;VB 1 kHz |
| 16000.160 | 41.0 | H | 54.0 | -13.0 | AVG | 269 | 1.4 | RB 1 MHz;VB 10 Hz Note 5 |
| 9700.000 | 54.5 | H | 68.3 | -13.8 | PK | 277 | 1.6 | RB 1 MHz;VB 3 MHz |
| 6270.000 | 54.5 | V | 68.3 | -13.8 | PK | 233 | 1.6 | RB 1 MHz;VB 3 MHz |
| 39438.730 | 39.9 | V | 54.0 | -14.1 | AVG | 274 | 1.0 | Note 3; RB 1 MHz;VB 1 kHz |
| 4873.750 | 59.0 | V | 74.0 | -15.0 | PK | 147 | 1.6 | RB 1 MHz;VB 3 MHz |
| 18566.540 | 53.3 | H | 74.0 | -20.7 | PK | 42 | 1.3 | RB 1 MHz;VB 3 MHz |
| 39437.400 | 52.6 | V | 74.0 | -21.4 | PK | 274 | 1.0 | RB 1 MHz;VB 3 MHz |
| 22279.830 | 52.1 | H | 74.0 | -21.9 | PK | 169 | 1.9 | RB 1 MHz;VB 3 MHz |
| 15999.880 | 49.6 | H | 74.0 | -24.4 | PK | 269 | 1.4 | RB 1 MHz;VB 3 MHz Note 5 |
| 5441.670 | 60.7 | V | - | - | PK | 77 | 1.6 | Refer to bandedge test data |

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



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

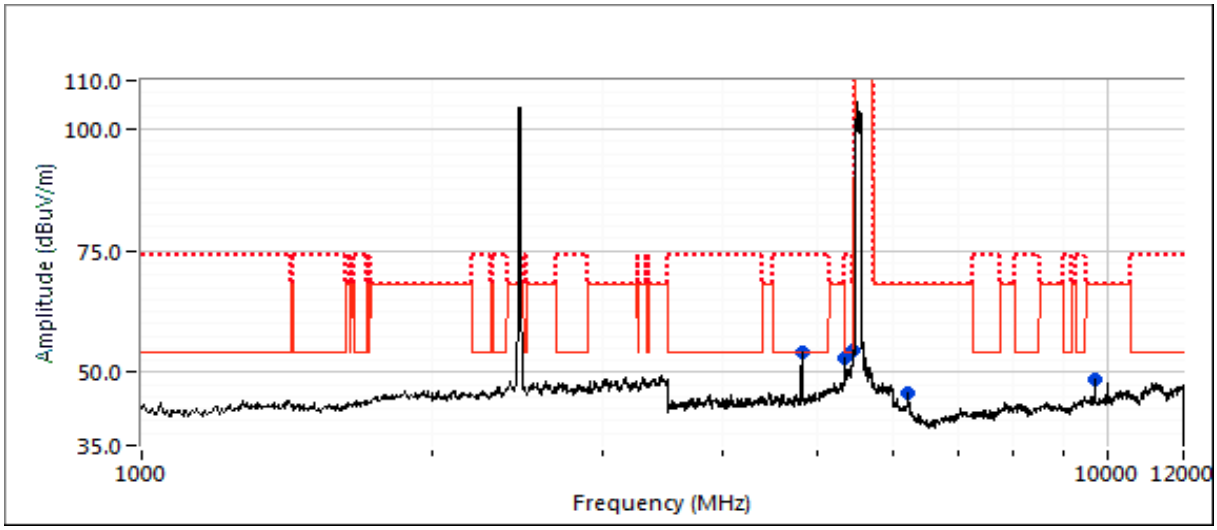
Run #4: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #3

Date of Test: 7/22-23/2019 Config. Used: 1
Test Engineer: R. Varelas & M. Birgani Config Change: -
Test Location: FT Chamber #5 Host EUT Voltage: 110V/60Hz

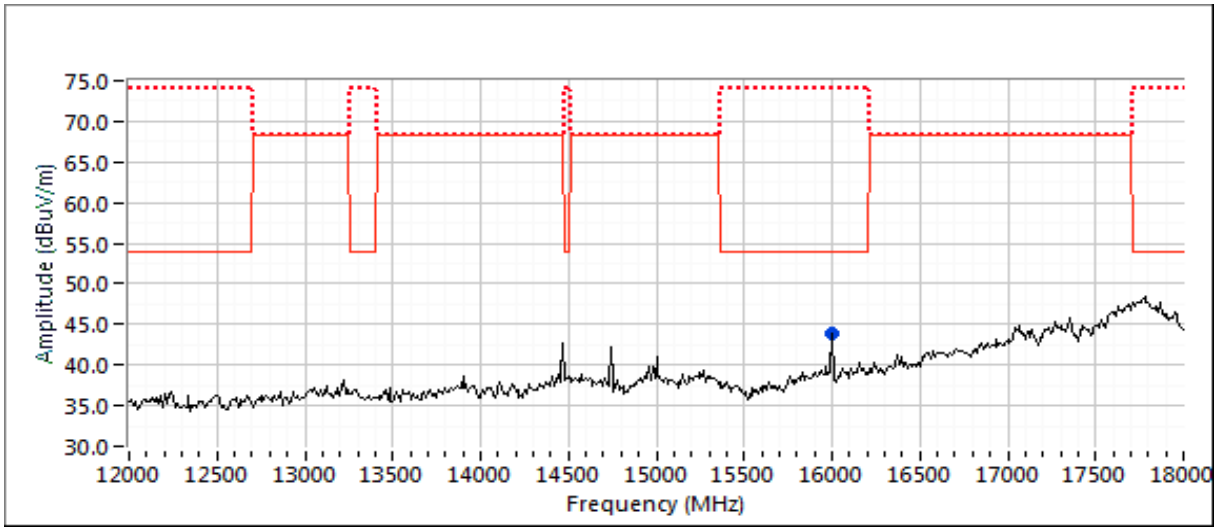
Run #4a: Low Channel

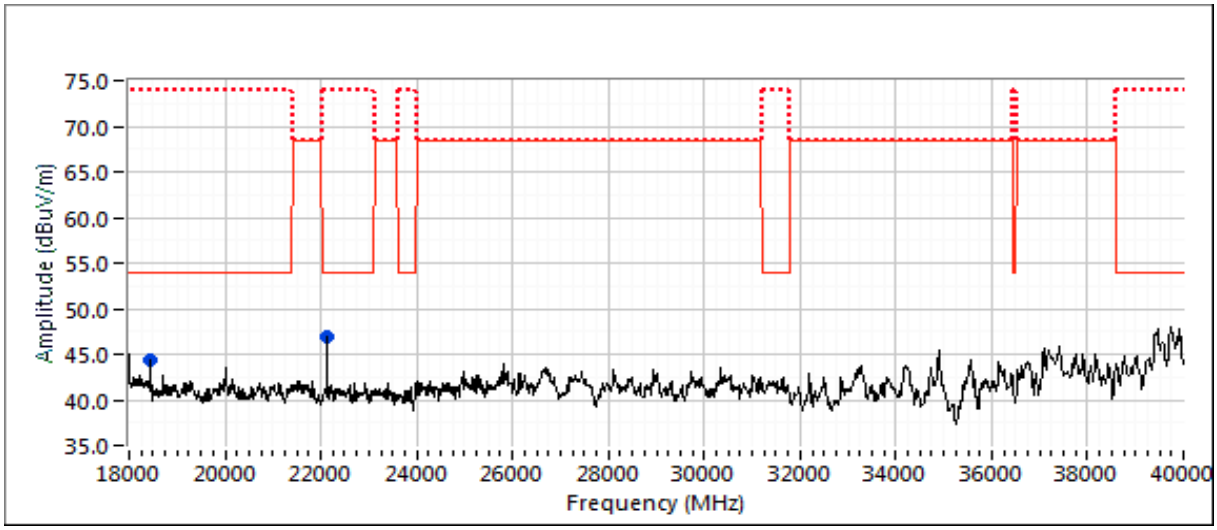
Channel: 1 & 106 Mode: b & ac80 Pwr Setting: 18 (q72) & 18 (q72)
Tx Chain: 1Tx & 4Tx Data Rate: 1 & 29.3 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4824.060 | 53.6 | V | 54.0 | -0.4 | AVG | 133 | 1.5 | RB 1 MHz;VB 10 Hz |
| 5357.160 | 48.7 | V | 54.0 | -5.3 | AVG | 190 | 1.9 | Note 3; RB 1 MHz;VB 1 kHz |
| 5356.690 | 61.4 | V | 74.0 | -12.6 | PK | 190 | 1.9 | RB 1 MHz;VB 3 MHz |
| 9710.000 | 54.7 | H | 68.3 | -13.6 | PK | 276 | 2.2 | RB 1 MHz;VB 3 MHz |
| 4823.940 | 60.2 | V | 74.0 | -13.8 | PK | 133 | 1.5 | RB 1 MHz;VB 3 MHz |
| 16000.120 | 38.9 | H | 54.0 | -15.1 | AVG | 252 | 1.4 | RB 1 MHz;VB 10 Hz Note 5 |
| 6230.000 | 52.1 | V | 68.3 | -16.2 | PK | 183 | 1.3 | RB 1 MHz;VB 3 MHz |
| 15999.680 | 49.4 | H | 74.0 | -24.6 | PK | 252 | 1.4 | RB 1 MHz;VB 3 MHz Note 5 |
| 18439.170 | 44.4 | V | 54.0 | -9.6 | AVG | 113 | 1.0 | Note 3; RB 1 MHz;VB 1 kHz |
| 18441.430 | 57.4 | V | 74.0 | -16.6 | PK | 113 | 1.0 | RB 1 MHz;VB 3 MHz |
| 22122.500 | 46.9 | V | 54.0 | -7.1 | AVG | 17 | 1.3 | Note 3; RB 1 MHz;VB 1 kHz |
| 22123.600 | 58.9 | V | 74.0 | -15.1 | PK | 17 | 1.3 | RB 1 MHz;VB 3 MHz |
| 5454.170 | 54.7 | V | - | - | PK | 359 | 2.5 | Refer to bandedge test data |



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



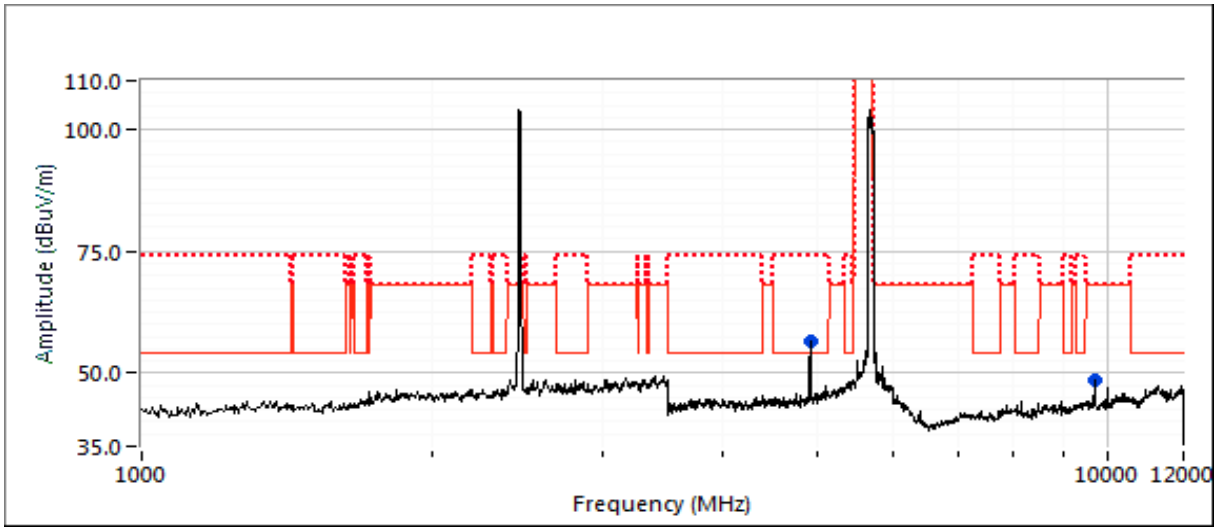
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

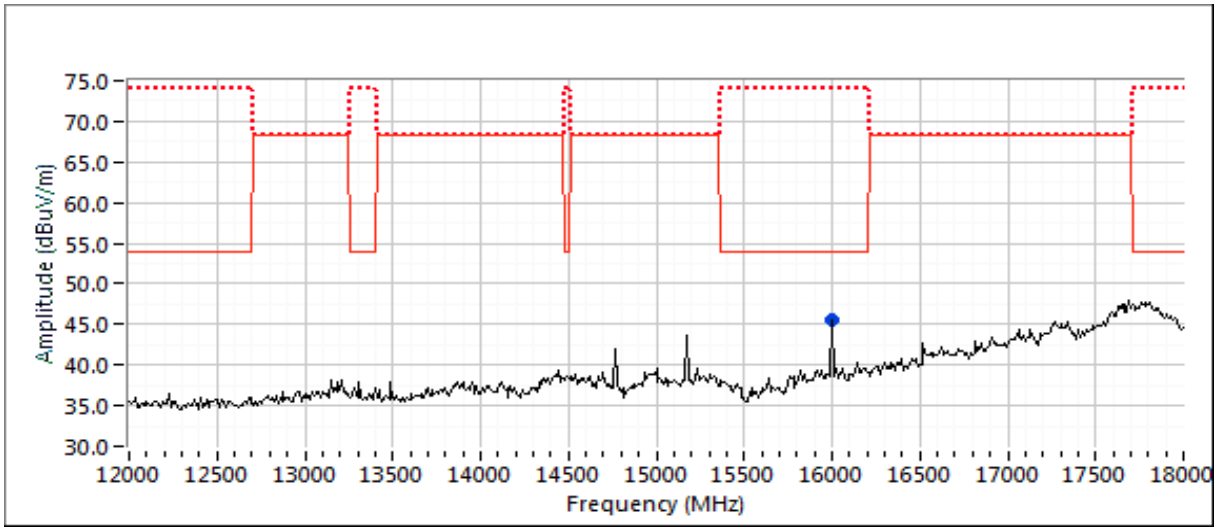
Run #4b: High Channel

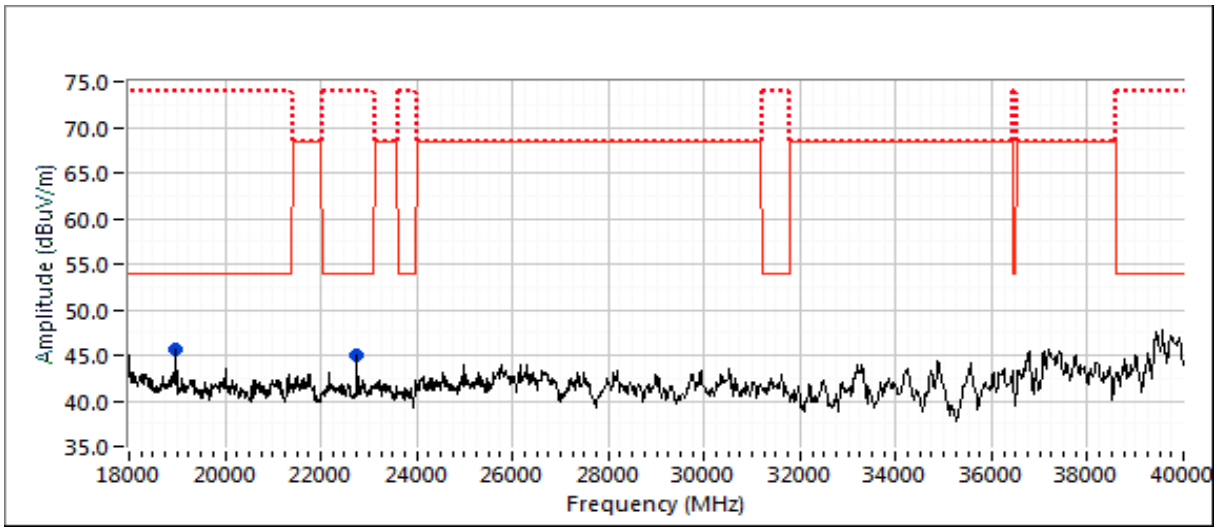
Channel: 11 & 138 Mode: b & ac80 Pwr Setting: 16 (q64) & 18 (q72)
Tx Chain: 1Tx & 4Tx Data Rate: 1 & 29.3 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 4924.070 | 53.8 | V | 54.0 | -0.2 | AVG | 132 | 1.5 | RB 1 MHz;VB 10 Hz |
| 16000.200 | 44.2 | V | 54.0 | -9.8 | AVG | 274 | 1.6 | RB 1 MHz;VB 10 Hz |
| 4923.960 | 60.8 | V | 74.0 | -13.2 | PK | 132 | 1.5 | RB 1 MHz;VB 3 MHz |
| 9710.000 | 54.6 | H | 68.3 | -13.7 | PK | 290 | 1.7 | RB 1 MHz;VB 3 MHz |
| 18966.750 | 37.3 | V | 54.0 | -16.7 | AVG | 112 | 1.3 | Note 3; RB 1 MHz;VB 1 kHz |
| 16000.090 | 51.5 | V | 74.0 | -22.5 | PK | 274 | 1.6 | RB 1 MHz;VB 3 MHz |
| 18971.180 | 49.3 | V | 74.0 | -24.7 | PK | 112 | 1.3 | RB 1 MHz;VB 3 MHz |



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, 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.

Date of Test: 9/27-30/2019
Test Engineer: M. Birgani
Test Location: Chamber 7

Config. Used: 1
Config Change: -
EUT Voltage: 120V/ 60Hz

### 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: 24-26 °C
Rel. Humidity: 41-45 %

### 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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel | NBF Setting | BF Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Scans on "center" channel in all four OFDM modes to determine the worst case mode. | | | | | | | |
| 3 | ac20 | 6 & 60 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 45.5 dBµV/m @ 16000.1 MHz (-8.5 dB) |
| | ac40 | 6 & 62 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 62.8 dBµV/m @ 17685.6 MHz (-5.5 dB) |
| | ac20 / ac80 | 6 & 58 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.8 dBµV/m @ 21160.0 MHz (-2.2 dB) |
| | ac20 / ac160 | 6 & 50 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.7 dBµV/m @ 20999.9 MHz (-2.3 dB) |
| Measurements on low and high channels in worst-case OFDM mode. | | | | | | | |
| 4 | ac20 | 1 & 52 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 52.8 dBµV/m @ 21039.9 MHz (-1.2 dB) |
| | ac20 | 11 & 64 | 24 / 18 | 23.5 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 45.7 dBµV/m @ 21279.9 MHz (-8.3 dB) |
| Scans on "center" channel in all four OFDM modes to determine the worst case mode. | | | | | | | |
| 5 | ac20 | 6 & 116 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.5 dBµV/m @ 18600.0 MHz (-2.5 dB) |
| | ac40 | 6 & 110 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.4 dBµV/m @ 22199.7 MHz (-2.6 dB) |
| | ac20 / ac80 | 6 & 122 | 26 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 48.7 dBµV/m @ 18699.9 MHz (-5.3 dB) |
| | ac20 / ac160 | 6 & 114 | 26 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.3 dBµV/m @ 18566.6 MHz (-2.7 dB) |
| Measurements on low and high channels in worst-case OFDM mode. | | | | | | | |
| 6 | ac20 | 1 & 100 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 45.5 dBµV/m @ 16000.1 MHz (-8.5 dB) |
| | ac20 | 11 & 144 | 24 / 18 | 24 / 18 | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 51.8 dBµV/m @ 22879.9 MHz (-2.2 dB) |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## 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 50 traces. (method VB of KDB 789033)

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | | |
|---|---|---|---|---|---|---|---|---|---|
| ac20 | 6.5 | 0.98 | Yes | 5.271 | 0.1 | 0.2 | 190 | 4324 | -1 |
| ac40 | 13.5 | 0.97 | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 | -1 |
| ac80 | 29.3 | 0.96 | Yes | 1.432 | 0.2 | 0.4 | 698 | 5159 | -1 |
| ac160 | 58.5 | 0.96 | Yes | 1.439 | 0.2 | 0.4 | 695 | 10443 | -1 |

## Sample Notes

Sample S/N: M11917QW000T

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |

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

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Run #1a: Center Channel

Channel: 6 & 60 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 19999.770 | 44.2 | H | 54.0 | -9.8 | AVG | 321 | 1.4 | RB 1 MHz;VB 300 Hz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 21199.760 | 57.3 | H | 74.0 | -16.7 | PK | 165 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 20000.220 | 54.4 | H | 74.0 | -19.6 | PK | 321 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |

Run #1b: Center Channel

Channel: 6 & 62 Mode: ac40 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 13.5Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 17685.600 | 62.8 | H | 68.3 | -5.5 | PK | 77 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |
| 21239.900 | 46.6 | H | 54.0 | -7.4 | AVG | 0 | 1.2 | RB 1 MHz;VB 300 Hz;Peak |
| 20000.250 | 46.4 | H | 54.0 | -7.6 | AVG | 2 | 1.4 | RB 1 MHz;VB 300 Hz;Peak |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 29289.850 | 54.9 | V | 68.3 | -13.4 | PK | 155 | 1.2 | RB 1 MHz;VB 3 MHz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 20000.320 | 55.2 | H | 74.0 | -18.8 | PK | 2 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |
| 21239.740 | 54.5 | H | 74.0 | -19.5 | PK | 0 | 1.2 | RB 1 MHz;VB 3 MHz;Peak |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #1c: Center Channel

Channel: 6 & 58 Mode: b & ac80 Pwr Setting: 22.25 (q89) & 18 (q72)
Tx Chain: 1TX & 4TX Data Rate: 1 Mbps & MCS0

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 21159.960 | 51.8 | H | 54.0 | -2.2 | AVG | 155 | 1.3 | RB 1 MHz;VB 1 kHz;Peak |
| 14620.000 | 62.4 | H | 68.3 | -5.9 | PK | 137 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 31739.950 | 46.5 | H | 54.0 | -7.5 | AVG | 150 | 1.3 | RB 1 MHz;VB 1 kHz;Peak |
| 15999.990 | 46.2 | H | 54.0 | -7.8 | AVG | 261 | 1.6 | RB 1 MHz;VB 1 kHz;Peak |
| 17630.000 | 54.8 | V | 68.3 | -13.5 | PK | 48 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 10000.220 | 54.0 | H | 68.3 | -14.3 | PK | 145 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 20008.350 | 38.6 | H | 54.0 | -15.4 | AVG | 0 | 1.0 | RB 1 MHz;VB 1 kHz;Peak |
| 21159.870 | 56.9 | H | 74.0 | -17.1 | PK | 155 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 31739.610 | 55.8 | H | 74.0 | -18.2 | PK | 150 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.330 | 55.7 | H | 74.0 | -18.3 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 20014.130 | 51.4 | H | 74.0 | -22.6 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Peak |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #1d: Center Channel

Channel: 6 & 50 Mode: b & ac160 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 1TX & 4TX Data Rate: 1 Mbps & MCS0

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 20999.910 | 51.7 | H | 54.0 | -2.3 | AVG | 120 | 1.0 | RB 1 MHz;VB 1 kHz;Peak |
| 14620.000 | 62.4 | H | 68.3 | -5.9 | PK | 137 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 15999.990 | 46.2 | H | 54.0 | -7.8 | AVG | 261 | 1.6 | RB 1 MHz;VB 1 kHz;Peak |
| 20000.250 | 45.3 | H | 54.0 | -8.7 | AVG | 28 | 1.3 | RB 1 MHz;VB 1 kHz;Peak |
| 17781.430 | 45.2 | V | 54.0 | -8.8 | AVG | 10 | 1.3 | RB 1 MHz;VB 1 kHz;Peak |
| 9708.730 | 55.2 | H | 68.3 | -13.1 | PK | 220 | 1.7 | RB 1 MHz;VB 3 MHz;Peak |
| 17780.290 | 59.3 | V | 74.0 | -14.7 | PK | 10 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 20999.940 | 57.7 | H | 74.0 | -16.3 | PK | 120 | 1.0 | RB 1 MHz;VB 3 MHz;Peak |
| 20000.320 | 55.8 | H | 74.0 | -18.2 | PK | 28 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.330 | 55.7 | H | 74.0 | -18.3 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 17490.000 | 49.2 | V | 68.3 | -19.1 | PK | 110 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |

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

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Run #2a: Low Channel

Channel: 1 & 52 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 21039.930 | 52.8 | H | 54.0 | -1.2 | AVG | 148 | 1.4 | RB 1 MHz;VB 300 Hz;Peak |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 28942.000 | 55.0 | H | 68.3 | -13.3 | PK | 85 | 1.0 | RB 1 MHz;VB 3 MHz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 21040.100 | 57.7 | H | 74.0 | -16.3 | PK | 148 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |

Run #2b: High Channel

Channel: 11 & 64 Mode: ac20 Pwr Setting: 23.5 (q94) & 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 21279.880 | 45.7 | H | 54.0 | -8.3 | AVG | 343 | 1.3 | RB 1 MHz;VB 300 Hz;Peak |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 21280.140 | 54.3 | H | 74.0 | -19.7 | PK | 343 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

Run #5a: Center Channel

Channel: 6 & 116 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 6.5

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 18599.980 | 51.5 | H | 54.0 | -2.5 | AVG | 26 | 1.3 | RB 1 MHz;VB 300 Hz;Peak |
| 22319.900 | 46.6 | H | 54.0 | -7.4 | AVG | 46 | 1.3 | RB 1 MHz;VB 300 Hz;Peak |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 18599.980 | 57.0 | H | 74.0 | -17.0 | PK | 26 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 22319.890 | 54.9 | H | 74.0 | -19.1 | PK | 46 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |

Run #3b: Center Channel

Channel: 6 &110 Mode: 11ac40 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 13.5

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 22199.650 | 51.4 | H | 54.0 | -2.6 | AVG | 54 | 1.3 | RB 1 MHz;VB 300 Hz;Peak |
| 18499.920 | 50.9 | H | 54.0 | -3.1 | AVG | 25 | 1.4 | RB 1 MHz;VB 300 Hz;Peak |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 22199.870 | 57.7 | H | 74.0 | -16.3 | PK | 54 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 18499.800 | 56.2 | H | 74.0 | -17.8 | PK | 25 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #3d: Low Channel

Channel: 6 & 122 Mode: b & ac80 Pwr Setting: 22.25 (q89) & 18 (q72)
Tx Chain: 1Tx & 4Tx Data Rate: 1 & 29.3

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 18699.920 | 48.7 | H | 54.0 | -5.3 | AVG | 38 | 1.4 | RB 1 MHz;VB 1 kHz;Peak |
| 22439.730 | 48.5 | H | 54.0 | -5.5 | AVG | 61 | 1.3 | RB 1 MHz;VB 1 kHz;Peak |
| 15999.990 | 46.2 | H | 54.0 | -7.8 | AVG | 261 | 1.6 | RB 1 MHz;VB 1 kHz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.330 | 55.7 | H | 74.0 | -18.3 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 22439.950 | 55.1 | H | 74.0 | -18.9 | PK | 61 | 1.3 | RB 1 MHz;VB 3 MHz;Peak |
| 18700.050 | 54.0 | H | 74.0 | -20.0 | PK | 38 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |

Run #3e: Low Channel

Channel: 6 & 114 Mode: 1 & ac160 Pwr Setting: 22.25 (q89) & 18 (q72)
Tx Chain: 1Tx & 4Tx Data Rate: 1 & 58.5 Mbps

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 18566.600 | 51.3 | H | 54.0 | -2.7 | AVG | 110 | 1.4 | RB 1 MHz;VB 1 kHz;Peak |
| 22279.880 | 50.2 | H | 54.0 | -3.8 | AVG | 122 | 1.5 | RB 1 MHz;VB 1 kHz;Peak |
| 6270.000 | 62.8 | V | 68.3 | -5.5 | PK | 360 | 2.1 | POS; RB 1 MHz; VB: 3 MHz |
| 15999.990 | 46.2 | H | 54.0 | -7.8 | AVG | 261 | 1.6 | RB 1 MHz;VB 1 kHz;Peak |
| 18566.540 | 62.2 | H | 74.0 | -11.8 | PK | 110 | 1.4 | RB 1 MHz;VB 3 MHz;Peak |
| 9706.480 | 54.5 | H | 68.3 | -13.8 | PK | 268 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 22279.830 | 58.0 | H | 74.0 | -16.0 | PK | 122 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.330 | 55.7 | H | 74.0 | -18.3 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Run #4a: Low Channel

Channel: 1 & 100 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 6.5

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 18333.330 | 43.4 | H | 54.0 | -10.6 | AVG | 137 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 21999.760 | 55.5 | H | 68.3 | -12.8 | PK | 162 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 18333.190 | 51.0 | H | 74.0 | -23.0 | PK | 137 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |

Run #4b: High Channel

Channel: 11 & 144 Mode: ac20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 6.5

| Frequency | Level | Pol | 15.209 / 15E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/AVG | degrees | meters | |
| 22879.900 | 51.8 | H | 54.0 | -2.2 | AVG | 144 | 1.5 | RB 1 MHz;VB 300 Hz;Peak |
| 16000.130 | 45.5 | H | 54.0 | -8.5 | AVG | 261 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 19066.310 | 44.5 | H | 54.0 | -9.5 | AVG | 132 | 1.6 | RB 1 MHz;VB 300 Hz;Peak |
| 22879.800 | 56.6 | H | 74.0 | -17.4 | PK | 144 | 1.5 | RB 1 MHz;VB 3 MHz;Peak |
| 16000.090 | 55.6 | H | 74.0 | -18.4 | PK | 261 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |
| 19066.440 | 52.1 | H | 74.0 | -21.9 | PK | 132 | 1.6 | RB 1 MHz;VB 3 MHz;Peak |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, 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: 19-23 °C
Rel. Humidity: 42-45 %

## 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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel Frequency | Power Setting | Measured Power | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| 20MHz Bandwith Modes | | | | | | | |
| 2 | g / a | 11 & 64 | 26 / 26 | 26 / 20 | Restricted Band Edge at 5350 MHz | 15.209 | 73.7 dBµV/m @ 5351.4 MHz (-0.3 dB) |
| | g / a | 11 & 60 | 26 / 26 | 26 / 26 | Restricted Band Edge at 5350 MHz | 15.209 | 52.0 dBµV/m @ 5350.0 MHz (-2.0 dB) |
| 3 | g / a | 1 & 100 | 26 / 26 | 26 / 26 | Restricted Band Edge at 5460 MHz | 15.209 | 73.6 dBµV/m @ 5459.4 MHz (-0.4 dB) |
| | g / a | 1 & 100 | 26 / 26 | 26 / 13 | Band Edge 5460 - 5470 MHz | 15E | 66.9 dBµV/m @ 5465.0 MHz (-1.4 dB) |
| | g / a | 1 & 104 | 26 / 26 | 26 / 23 | Band Edge 5460 - 5470 MHz | 15E | 67.1 dBµV/m @ 5469.9 MHz (-1.2 dB) |
| | g / a | 11 & 140 | 26 / 26 | 26 / 12 | Band Edge 5725MHz | 15E | 66.9 dBµV/m @ 5465.0 MHz (-1.4 dB) |
| | g / a | 11 & 136 | 26 / 18 | 26 / 18 | Band Edge 5725MHz | 15E | 66.1 dBµV/m @ 5758.8 MHz (-2.2 dB) |
| | g / a | 11 & 132 | 26 / 26 | 26 / 25 | Band Edge 5725MHz | 15E | 64.5 dBµV/m @ 5763.3 MHz (-3.8 dB) |
| 4 | ac20 | 11 & 64 | 24 / 18 | 24 / 18 | Restricted Band Edge at 5350 MHz | 15.209 | 52.2 dBµV/m @ 5372.0 MHz (-1.8 dB) |
| 5 | ac20 | 1 & 100 | 24 / 18 | 24 / 18 | Restricted Band Edge at 5460 MHz | 15.209 | 51.2 dBµV/m @ 5448.8 MHz (-2.8 dB) |
| | ac20 | 1 & 100 | 24 / 18 | 24 / 18 | Band Edge 5460 - 5470 MHz | 15E | 64.2 dBµV/m @ 5469.8 MHz (-4.1 dB) |
| | ac20 | 11 & 140 | 24 / 18 | 24 / 18 | Band Edge 5725MHz | 15E | 66.8 dBµV/m @ 5725.1 MHz (-1.5 dB) |
| 40MHz Bandwith Modes | | | | | | | |
| 6 | ac40 | 9 & 62 | 24 / 18 | 24 / 16.75 | Restricted Band Edge at 5350 MHz | 15.209 | 53.8 dBµV/m @ 5350.8 MHz (-0.2 dB) |
| 7 | ac40 | 3 & 102 | 24 / 18 | 24 / 18 | Restricted Band Edge at 5460 MHz | 15.209 | 52.4 dBµV/m @ 5458.2 MHz (-1.6 dB) |
| | ac40 | 3 & 102 | 24 / 18 | 24 / 18 | Band Edge 5460 - 5470 MHz | 15E | 66.7 dBµV/m @ 5463.1 MHz (-1.6 dB) |
| | ac40 | 9 & 134 | 24 / 18 | 24 / 18 | Band Edge 5725MHz | 15E | 64.2 dBµV/m @ 5728.5 MHz (-4.1 dB) |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel Frequency | Power Setting | Measured Power | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| 80MHz Bandwith Modes | | | | | | | |
| 8 | b / ac80 | 6 & 58 | 26 / 18 | 26 / 16.5 | Restricted Band Edge at 5350 MHz | 15.209 | 53.3 dBµV/m @ 5350.8 MHz (-0.7 dB) |
| 9 | b / ac80 | 1 & 106 | 26 / 18 | 26 / 18 | Restricted Band Edge at 5460 MHz | 15.209 | 52.6 dBµV/m @ 5459.0 MHz (-1.4 dB) |
| | b / ac80 | 1 & 106 | 26 / 18 | 26 / 18 | Band Edge 5460 - 5470 MHz | 15E | 66.5 dBµV/m @ 5463.6 MHz (-1.8 dB) |
| 160MHz Bandwith Modes | | | | | | | |
| 10 | b / ac160 | 6 & 50 | 26 / 18 | 26 / 17.25 | Restricted Band Edge at 5150 MHz | 15.209 | 53.8 dBµV/m @ 5142.2 MHz (-0.2 dB) |
| | b / ac160 | 6 & 50 | 26 / 18 | 26 / 17.25 | Restricted Band Edge at 5350 MHz | 15.209 | 53.3 dBµV/m @ 5373.7 MHz (-0.7 dB) |
| 11 | b / ac160 | 6 & 114 | 26 / 18 | 26 / 17 | Restricted Band Edge at 5460 MHz | 15.209 | 53.5 dBµV/m @ 5459.0 MHz (-0.5 dB) |
| | b / ac160 | 6 & 114 | 26 / 18 | 26 / 17 | Band Edge 5460 - 5470 MHz | 15E | 66.5 dBµV/m @ 5463.2 MHz (-1.8 dB) |

## Sample Notes

Sample S/N: M11917QW000T

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## 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 50 traces. (method VB of KDB 789033)

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet |
|---|---|---|---|---|---|---|---|---|
| 11a | 6 | 99.0% | Yes | 5.06 | 0.0 | 0.0 | 10 | 7974 |
| ac20 | 6.5 | 0.98 | Yes | 5.271 | 0.1 | 0.2 | 190 | 4324 |
| ac40 | 13.5 | 0.97 | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 |
| ac80 | 29.3 | 0.96 | Yes | 1.432 | 0.2 | 0.4 | 698 | 5159 |
| ac160 | 58.5 | 0.96 | Yes | 1.439 | 0.2 | 0.4 | 695 | 10443 |

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |
| Note 5: | Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements. |
| Note 6: | For SISO measurment, evaluation of each chain showed that chain 4 has the highest power measurment. All SISO test measurment were performed with chain 4 active. |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

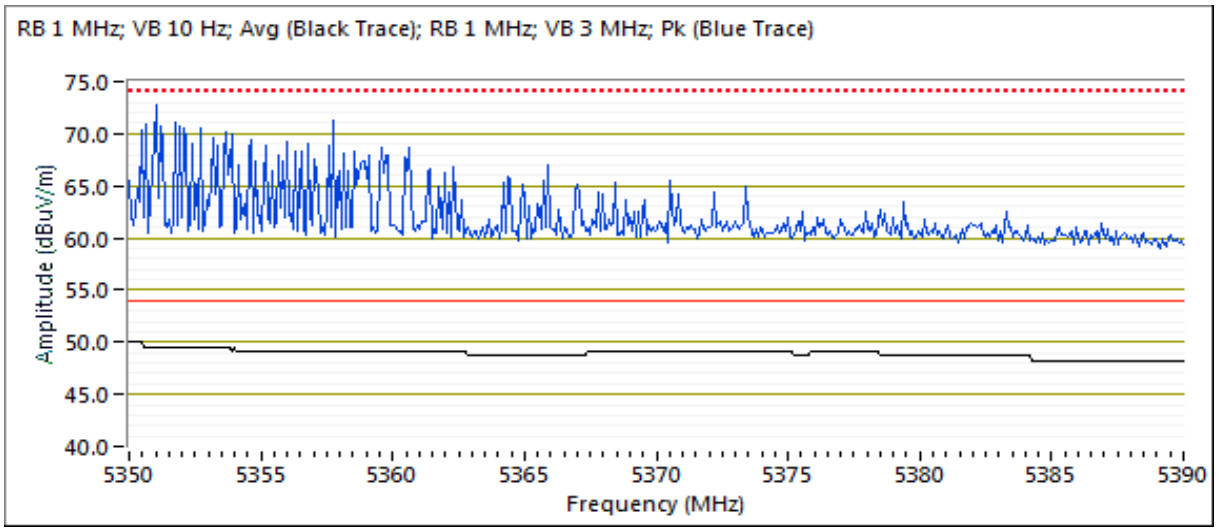
Run #2: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 07/12/19 — Config. Used: 1
Test Engineer: Rafael Varelas — Config Change: None
Test Location: FT Chamber #5 — EUT Voltage: 120V/60Hz

Channel: 64 — Mode: a — Pwr Setting: 20 (q80)
Tx Chain: Tx1 — Data Rate: 6.0 Mbps

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.020 | 50.0 | V | 54.0 | -4.0 | AVG | 79 | 1.4 | POS; RB 1 MHz; VB: 10 Hz |
| 5351.420 | 73.7 | V | 74.0 | -0.3 | PK | 79 | 1.4 | POS; RB 1 MHz; VB: 3 MHz |
| 5350.000 | 48.2 | H | 54.0 | -5.8 | AVG | 178 | 1.3 | POS; RB 1 MHz; VB: 10 Hz |
| 5351.840 | 67.0 | H | 74.0 | -7.0 | PK | 178 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |



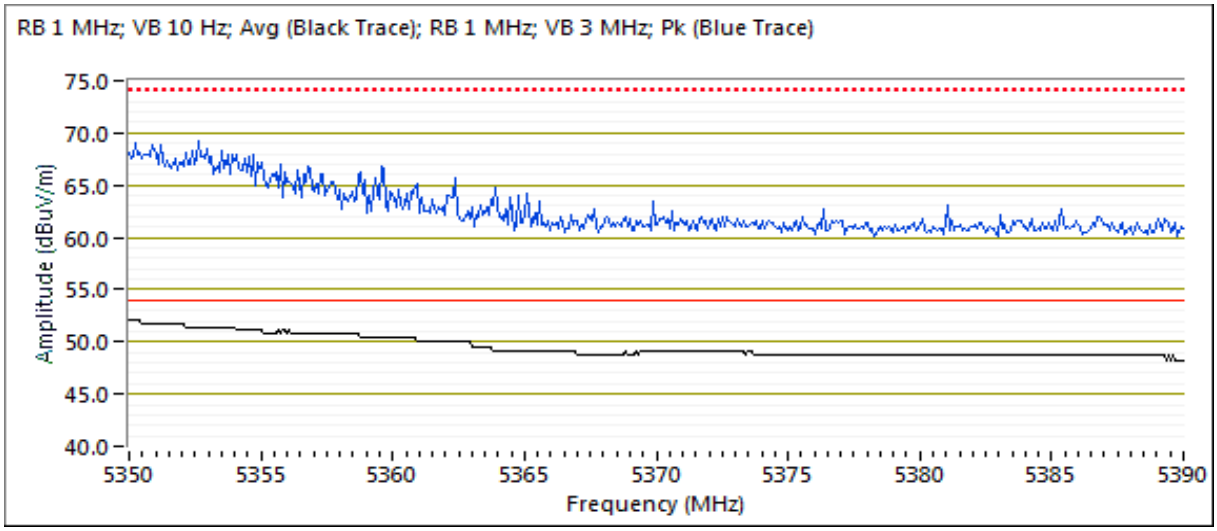
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 60 Mode: a Pwr Setting: 26 (q104)
Tx Chain: Tx1 Data Rate: 6.0 Mbps

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.000 | 52.0 | V | 54.0 | -2.0 | AVG | 204 | 1.0 | POS; RB 1 MHz; VB: 10 Hz |
| 5350.460 | 71.5 | V | 74.0 | -2.5 | PK | 204 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |
| 5350.000 | 48.2 | H | 54.0 | -5.8 | AVG | 112 | 1.0 | POS; RB 1 MHz; VB: 10 Hz |
| 5353.230 | 62.6 | H | 74.0 | -11.4 | PK | 112 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

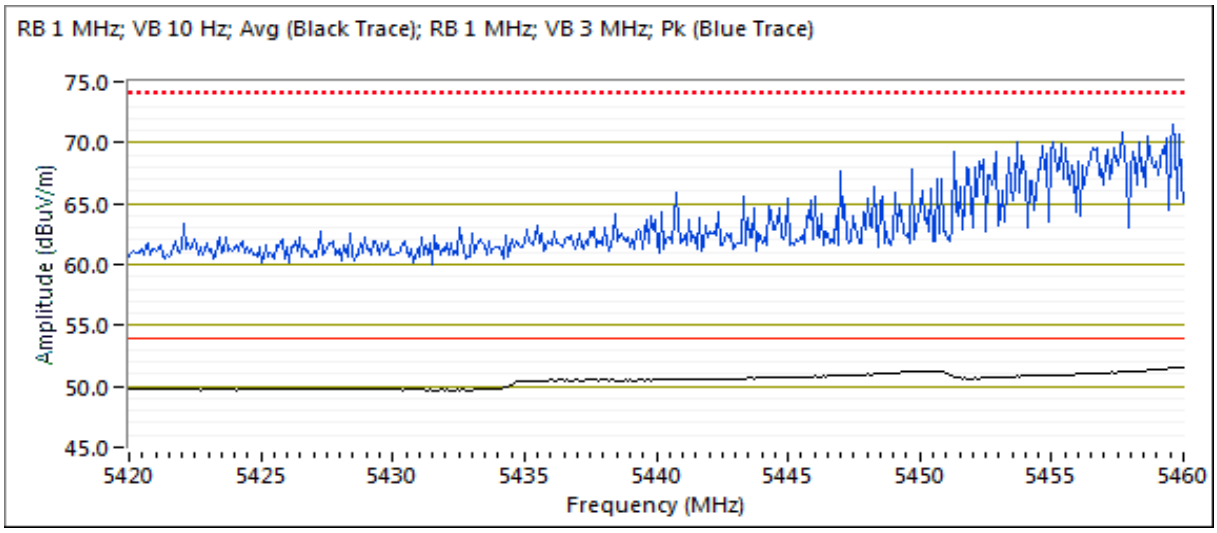
Run #3: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 07/12/19 — Config. Used: 1
Test Engineer: Mehran Birgani — Config Change: None
Test Location: FT Chamber #5 — EUT Voltage: 120V/60Hz

Channel: 100 — Mode: a — Pwr Setting: 26 (q104)
Tx Chain: 1TX — Data Rate: 6.0 Mbps

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.430 | 73.6 | V | 74.0 | -0.4 | PK | 210 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |
| 5459.940 | 51.6 | V | 54.0 | -2.4 | AVG | 210 | 1.3 | POS; RB 1 MHz; VB: 10 Hz |
| 5460.000 | 50.5 | H | 54.0 | -3.5 | AVG | 46 | 1.3 | POS; RB 1 MHz; VB: 10 Hz |
| 5458.800 | 69.6 | H | 74.0 | -4.4 | PK | 46 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |



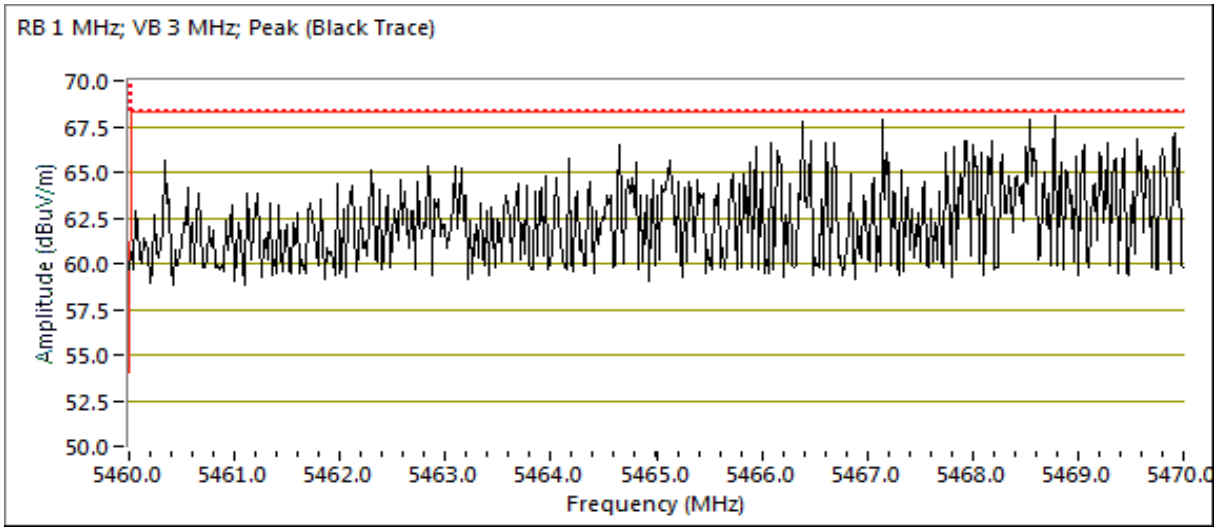
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 100 Mode: a Pwr Setting: 13 (q52)
Tx Chain: 1TX Data Rate: 6.0 Mbps

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5464.970 | 66.9 | V | 68.3 | -1.4 | PK | 210 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |
| 5460.380 | 60.8 | H | 68.3 | -7.5 | PK | 360 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |



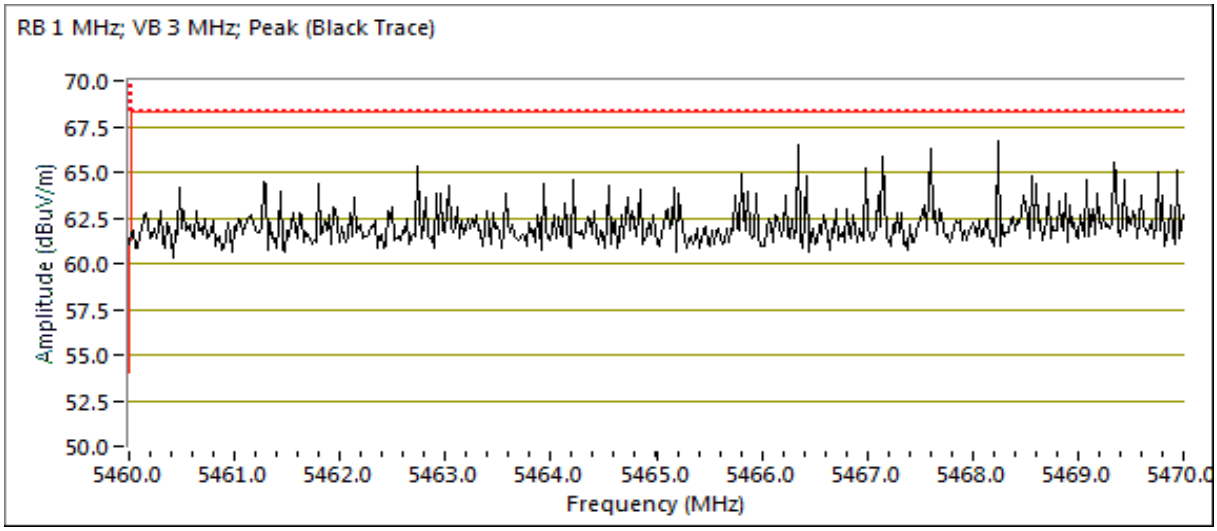
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 104 Mode: a Pwr Setting: 23 (q92)
Tx Chain: 1TX Data Rate: 6.0 Mbps

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5469.860 | 67.1 | V | 68.3 | -1.2 | PK | 208 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |
| 5463.650 | 61.6 | H | 68.3 | -6.7 | PK | 360 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |



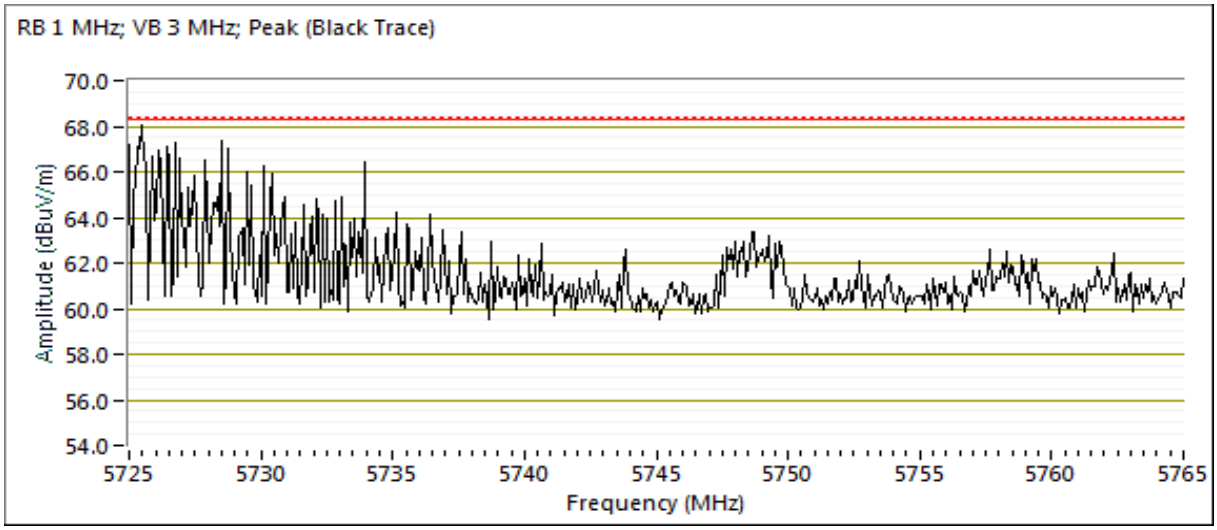
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 140 Mode: a Pwr Setting: 12 (q48)
Tx Chain: 1TX Data Rate: 6.0 Mbps

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5732.640 | 67.4 | V | 68.3 | -0.9 | PK | 208 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |



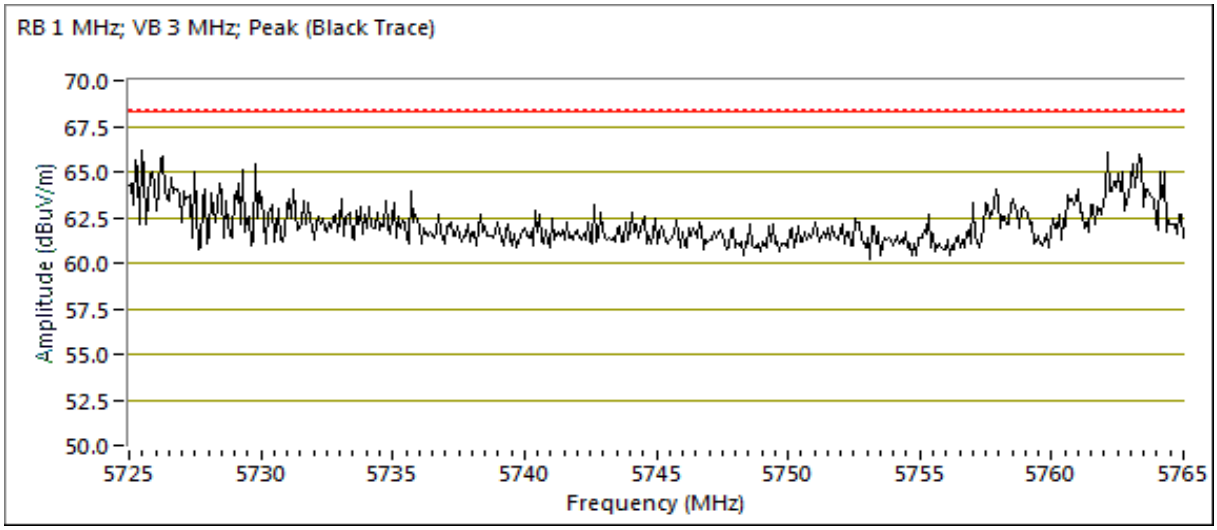
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 136 Mode: a Pwr Setting: 18 (q72)
Tx Chain: 1TX Data Rate: 6.0 Mbps

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5758.750 | 66.1 | V | 68.3 | -2.2 | PK | 208 | 1.3 | RB 1 MHz; VB: 3 MHz |



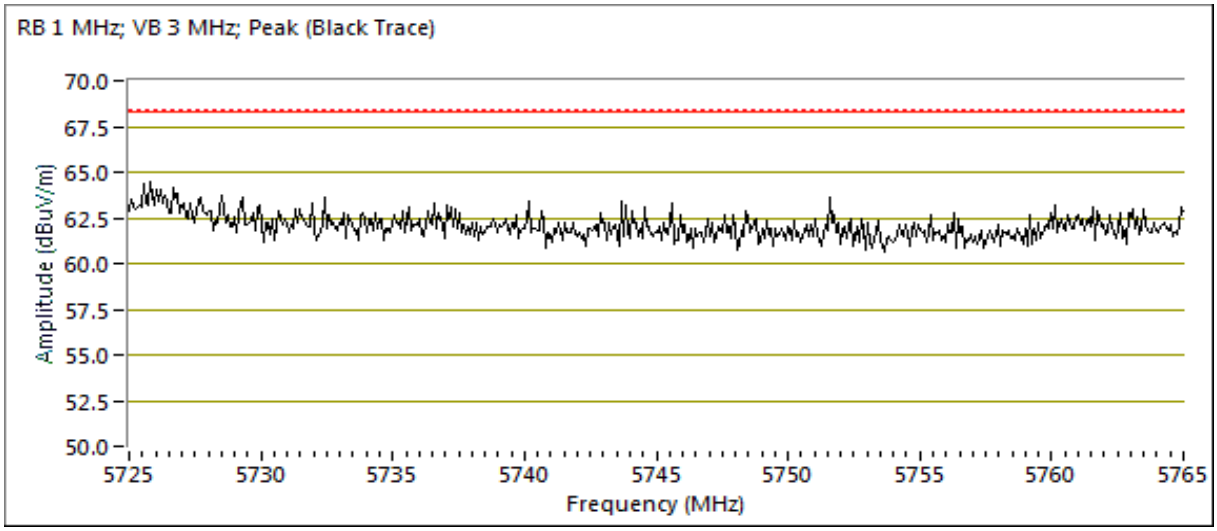
# EMC Test Data

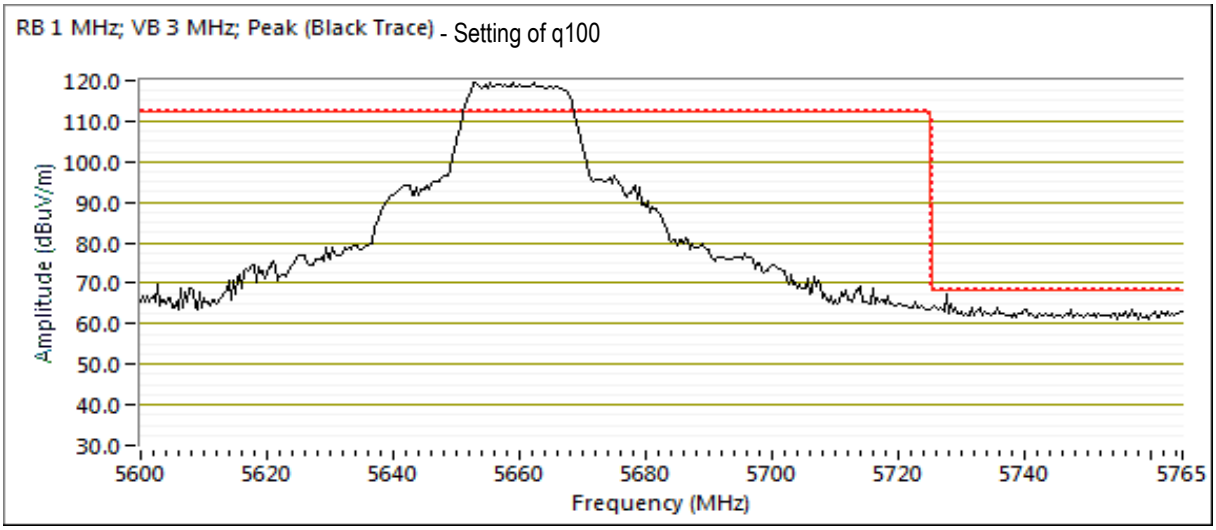
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 132 Mode: a Pwr Setting: 25 (a100)
Tx Chain: 1TX Data Rate: 6.0 Mbps

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5763.320 | 64.5 | V | 68.3 | -3.8 | PK | 208 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #4: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 07/12/19
Test Engineer: Mehran Birgani
Test Location: FT Chamber #5

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

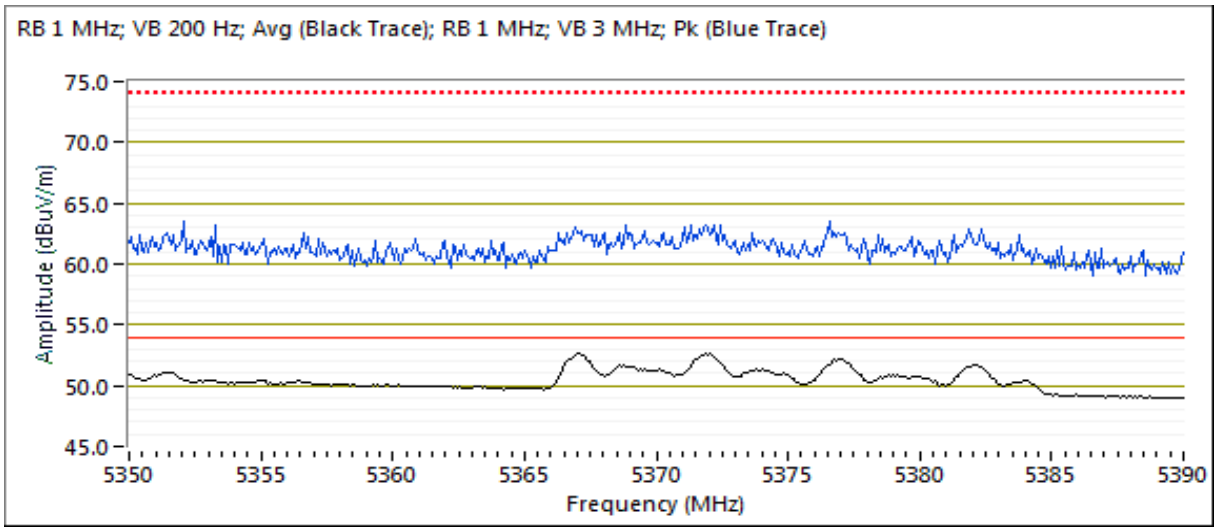
Channel: 64
Tx Chain: 4TX

Mode: ac20
Data Rate: 6.5 Mbps

Pwr Setting: 18 (q72)

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5372.040 | 52.2 | V | 54.0 | -1.8 | AVG | 66 | 1.8 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5367.070 | 63.4 | V | 74.0 | -10.6 | PK | 66 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5370.680 | 51.5 | H | 54.0 | -2.5 | AVG | 74 | 1.8 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5379.260 | 62.8 | H | 74.0 | -11.2 | PK | 74 | 1.8 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #5: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 07/12/19
Test Engineer: Mehran Birgani
Test Location: FT Chamber #5

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

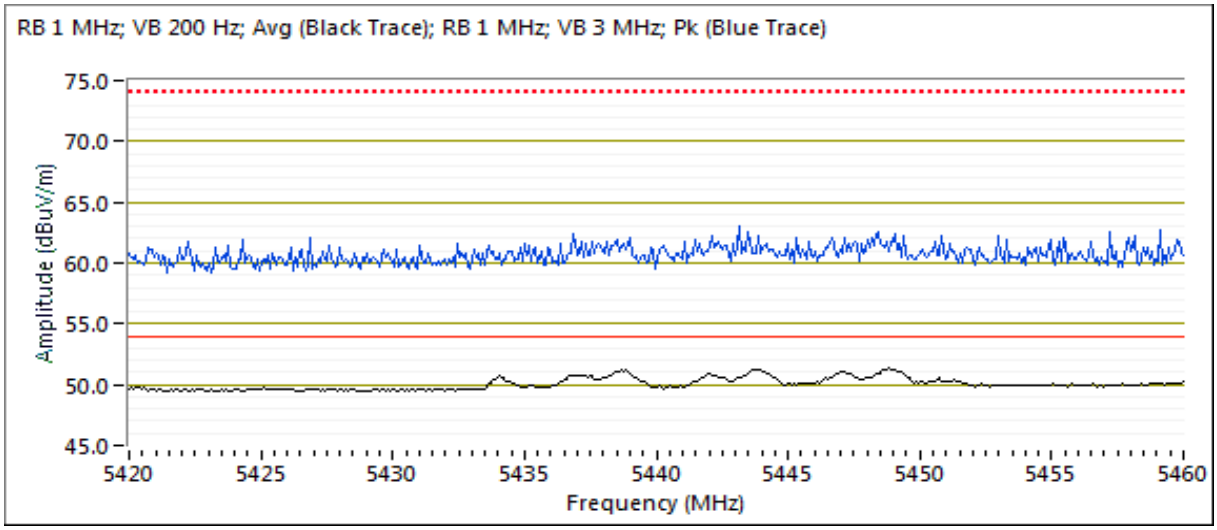
Channel: 100
Tx Chain: 4TX

Mode: ac20
Data Rate: 6.5 Mbps

Pwr Setting: 18 (q72)

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5448.780 | 51.2 | V | 54.0 | -2.8 | AVG | 26 | 1.8 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5451.420 | 64.0 | V | 74.0 | -10.0 | PK | 26 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5446.020 | 50.6 | H | 54.0 | -3.4 | AVG | 79 | 1.8 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5437.040 | 62.8 | H | 74.0 | -11.2 | PK | 79 | 1.8 | RB 1 MHz; VB: 3 MHz |

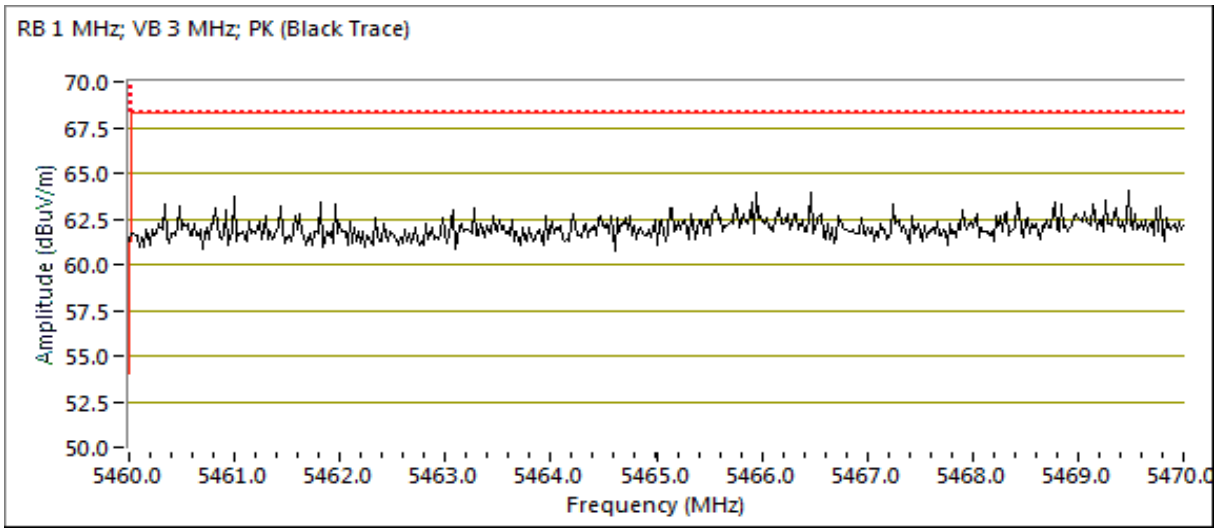


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5469.800 | 64.2 | V | 68.3 | -4.1 | PK | 26 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5469.880 | 62.2 | H | 68.3 | -6.1 | PK | 79 | 1.8 | RB 1 MHz; VB: 3 MHz |

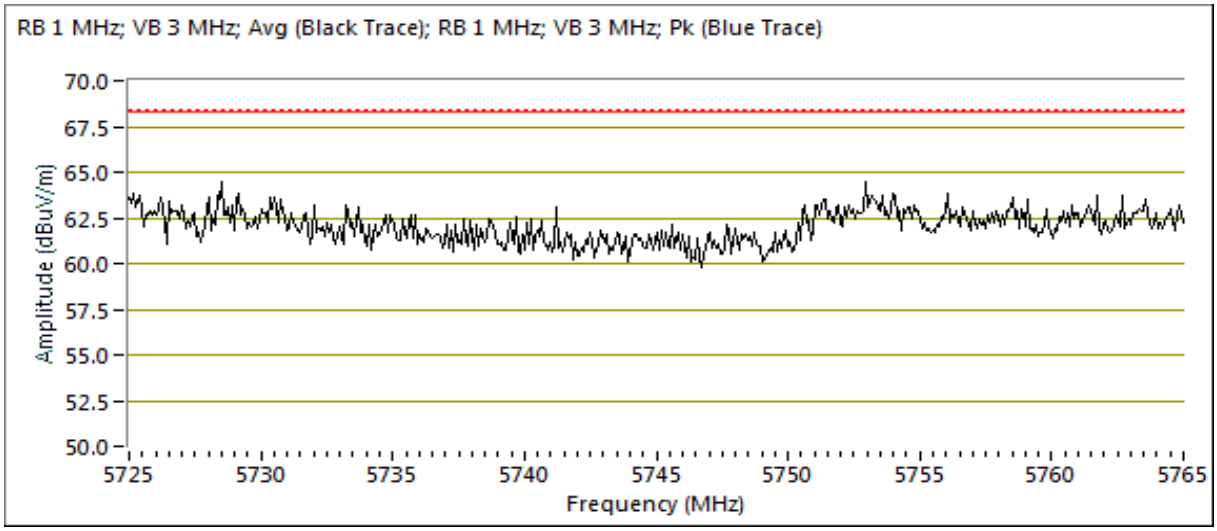


| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 140 Mode: ac20 Pwr Setting: 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5725.100 | 66.8 | V | 68.3 | -1.5 | PK | 48 | 1.8 | POS; RB 1 MHz; VB: 3 MHz |
| 5726.760 | 62.0 | H | 68.3 | -6.3 | PK | 202 | 1.8 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

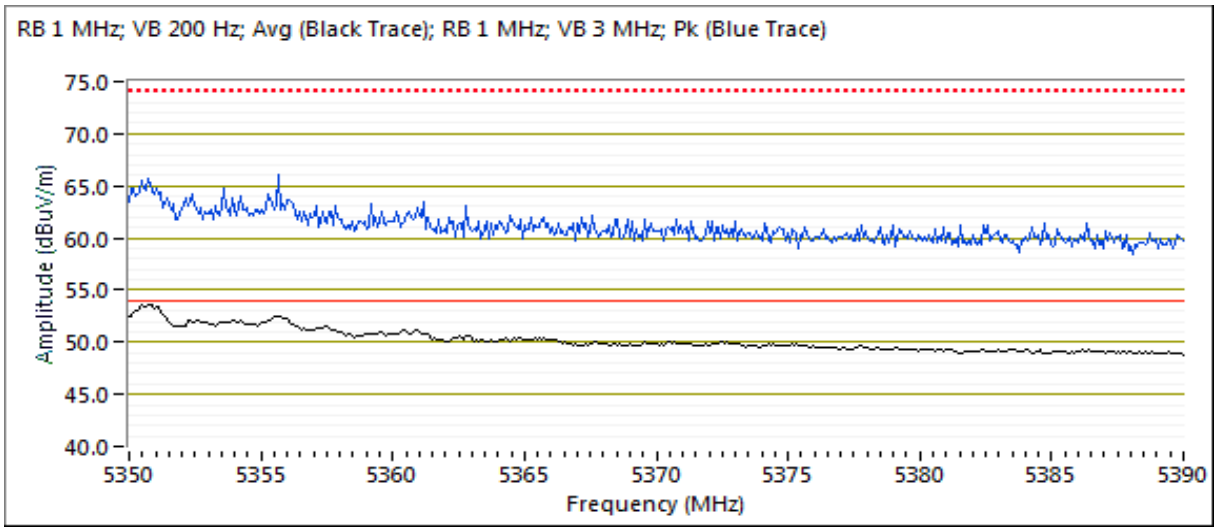
Run #6: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 07/15/19 — Config. Used: 1
Test Engineer: Rafael Varelas — Config Change: None
Test Location: FT Chamber #5 — EUT Voltage: 120V/60Hz

Channel: 62 — Mode: ac40 — Pwr Setting: 16.75 (q67)
Tx Chain: 4TX — Data Rate: 13.5

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.800 | 53.8 | V | 54.0 | -0.2 | Avg | 23 | 1.9 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5350.660 | 65.9 | V | 74.0 | -8.1 | PK | 23 | 1.9 | RB 1 MHz; VB: 3 MHz |
| 5350.140 | 52.7 | H | 54.0 | -1.3 | Avg | 73 | 1.3 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5354.290 | 66.7 | H | 74.0 | -7.3 | PK | 73 | 1.3 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

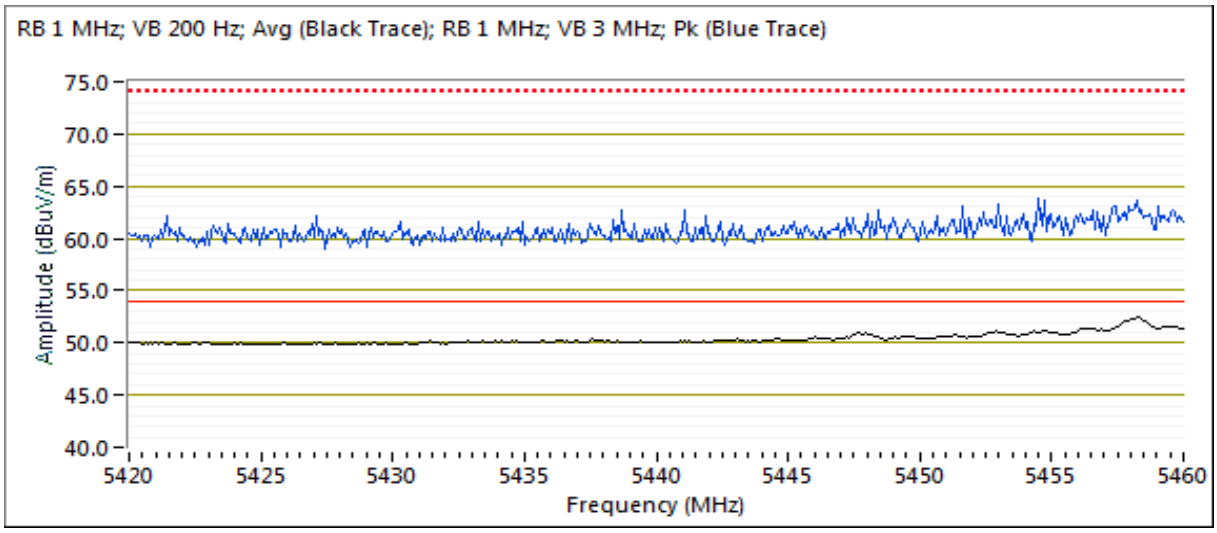
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 102 Mode: ac40 Pwr Setting: 16.75 (q67)
Tx Chain: 5Tx Data Rate: 13.5

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5458.240 | 52.4 | V | 54.0 | -1.6 | Avg | 191 | 1.7 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5457.950 | 64.2 | V | 74.0 | -9.8 | PK | 191 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5455.890 | 51.2 | H | 54.0 | -2.8 | Avg | 62 | 2.3 | Note 3: RB 1 MHz; VB: 200 Hz |
| 5455.190 | 63.8 | H | 74.0 | -10.2 | PK | 62 | 2.3 | RB 1 MHz; VB: 3 MHz |

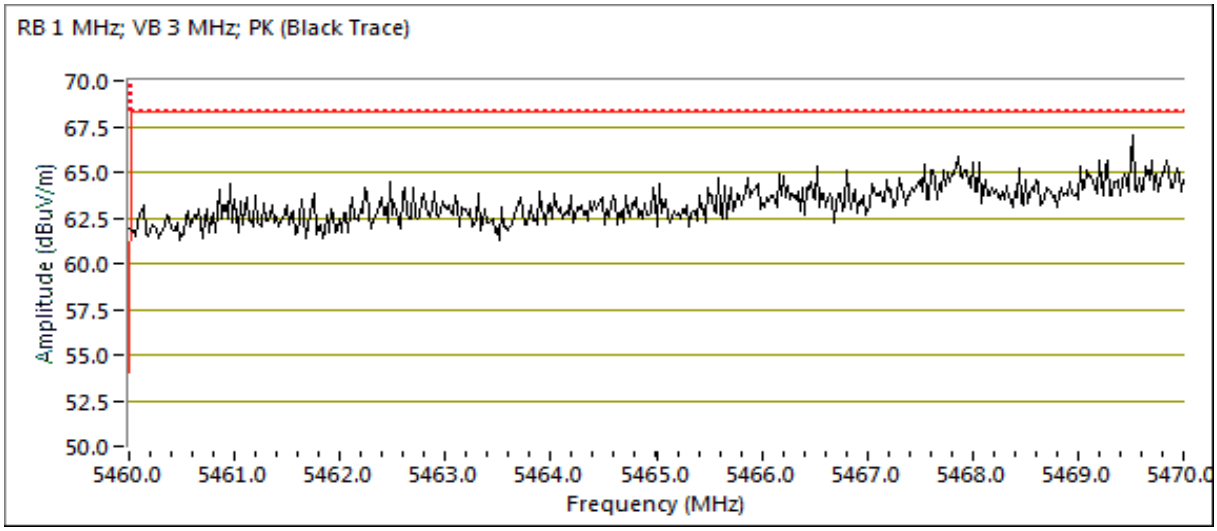


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5469.050 | 66.7 | V | 68.3 | -1.6 | PK | 191 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5468.280 | 66.3 | H | 68.3 | -2.0 | PK | 62 | 2.3 | RB 1 MHz; VB: 3 MHz |



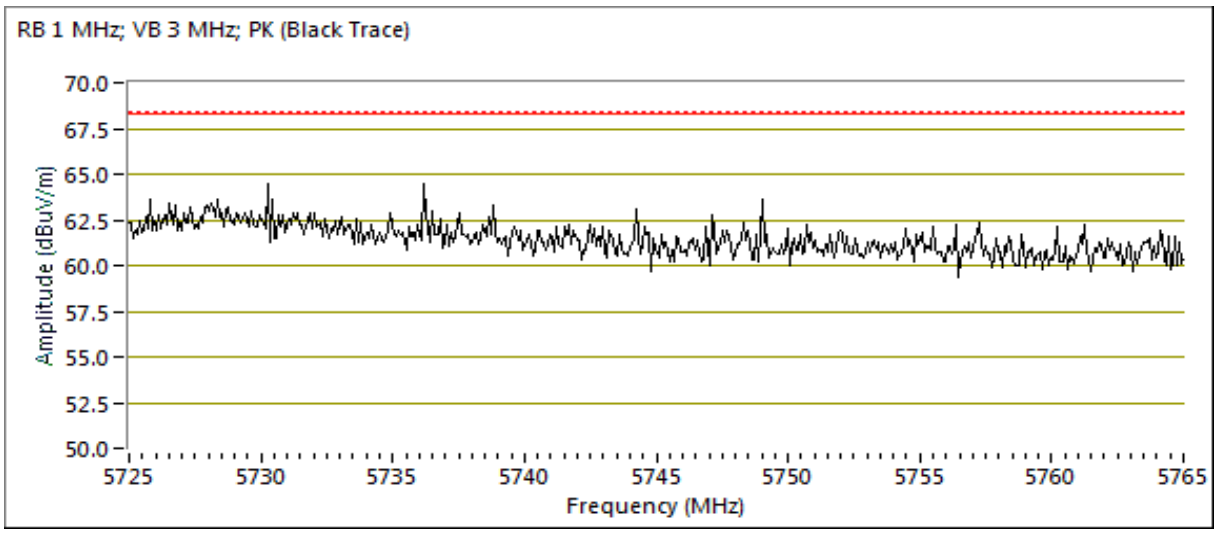
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 134 Mode: ac40 Pwr Setting: 18 (q72)
Tx Chain: 4Tx Data Rate: 13.5

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5728.490 | 64.2 | V | 68.3 | -4.1 | PK | 190 | 2.0 | RB 1 MHz; VB: 3 MHz |
| 5758.430 | 63.3 | H | 68.3 | -5.0 | PK | 254 | 1.1 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

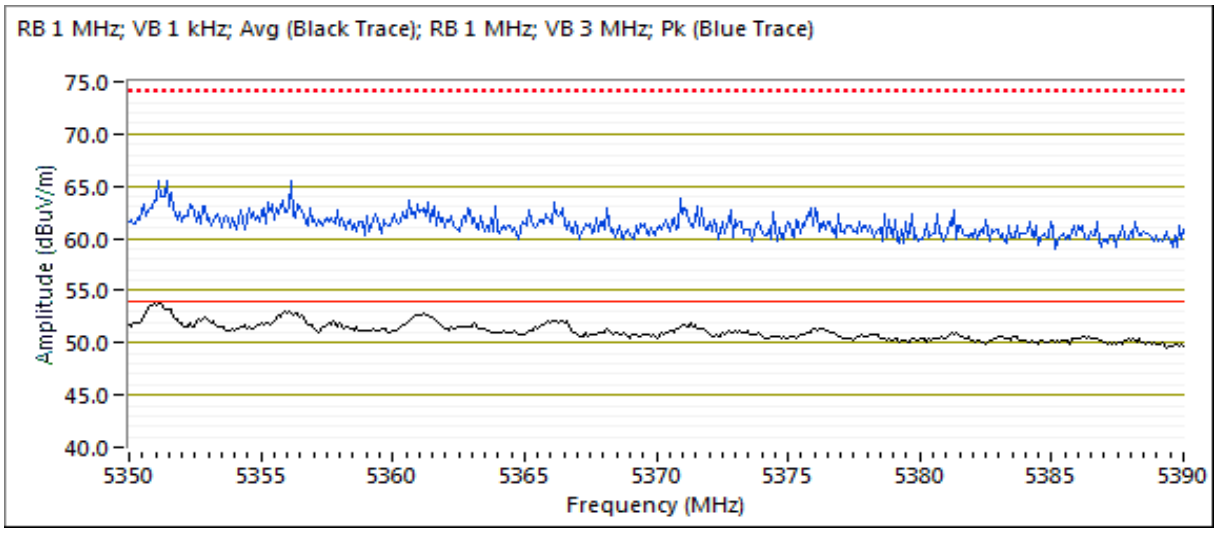
Run #8: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 07/15/19 — Config. Used: 1
Test Engineer: Rafael Varelas — Config Change: None
Test Location: FT Chamber #5 — EUT Voltage: 120V/60Hz

Channel: 58 — Mode: ac80 — Pwr Setting: 16.5 (q66)
Tx Chain: 4Tx — Data Rate: 29.3

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.780 | 53.3 | V | 54.0 | -0.7 | Avg | 17 | 1.9 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5358.060 | 65.9 | V | 74.0 | -8.1 | PK | 17 | 1.9 | RB 1 MHz; VB: 3 MHz |
| 5353.450 | 51.2 | H | 54.0 | -2.8 | Avg | 79 | 2.2 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5353.570 | 63.5 | H | 74.0 | -10.5 | PK | 79 | 2.2 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

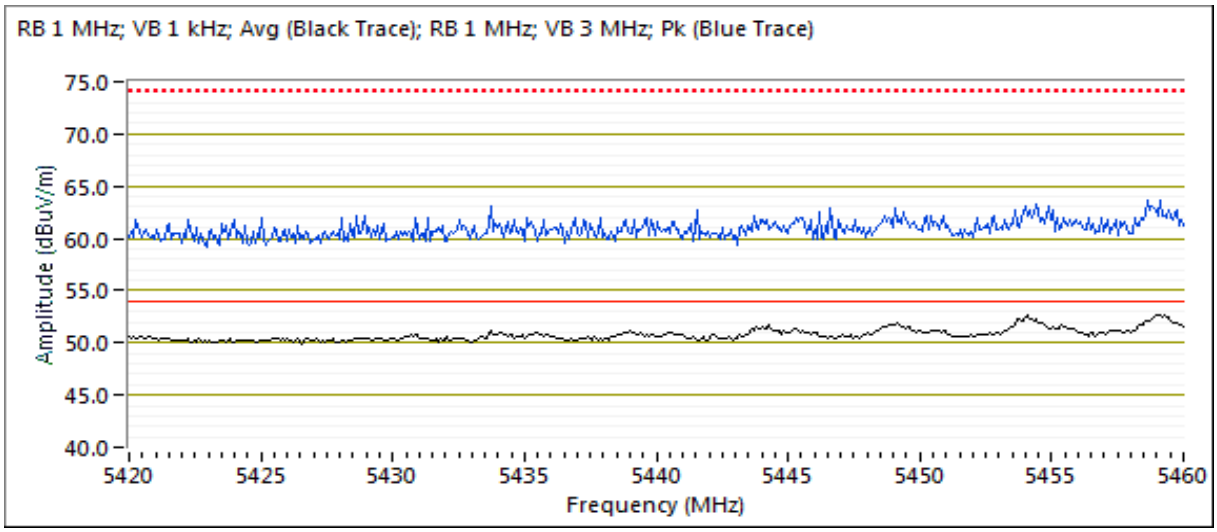
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #9: Radiated Bandedge Measurements, 5470-5725MHz

Channel: 106 Mode: ac80 Pwr Setting: 18 (q72)
Tx Chain: 4Tx Data Rate: 29.3

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5458.980 | 52.6 | V | 54.0 | -1.4 | Avg | 206 | 2.3 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5454.370 | 64.7 | V | 74.0 | -9.3 | PK | 206 | 2.3 | RB 1 MHz; VB: 3 MHz |
| 5459.360 | 52.4 | H | 54.0 | -1.6 | Avg | 77 | 1.1 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5458.720 | 63.6 | H | 74.0 | -10.4 | PK | 77 | 1.1 | RB 1 MHz; VB: 3 MHz |

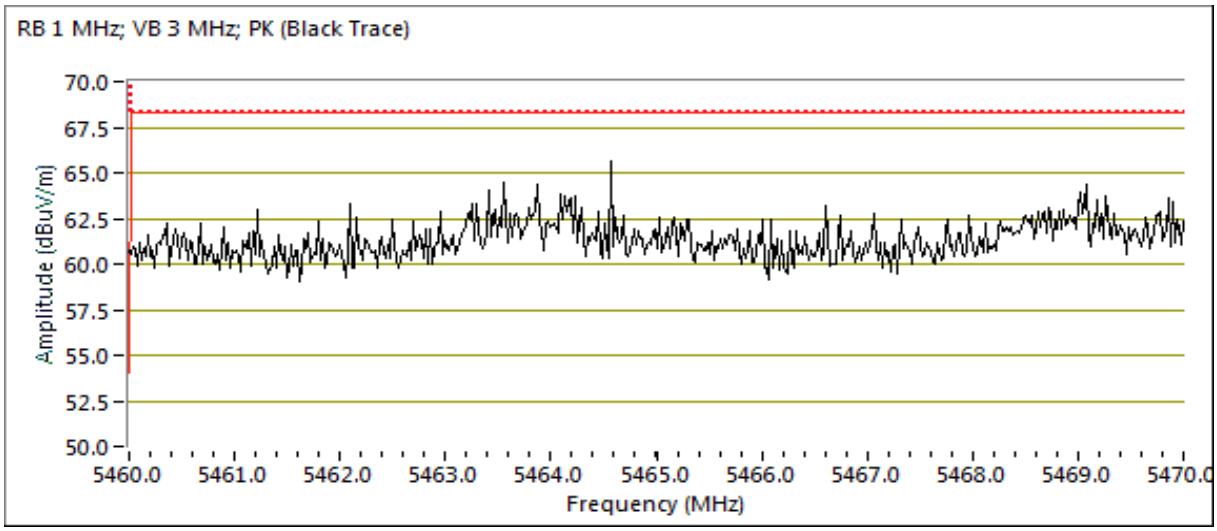


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5464.610 | 66.5 | V | 68.3 | -1.8 | PK | 206 | 2.3 | RB 1 MHz; VB: 3 MHz |
| 5469.140 | 64.1 | H | 68.3 | -4.2 | PK | 77 | 1.1 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

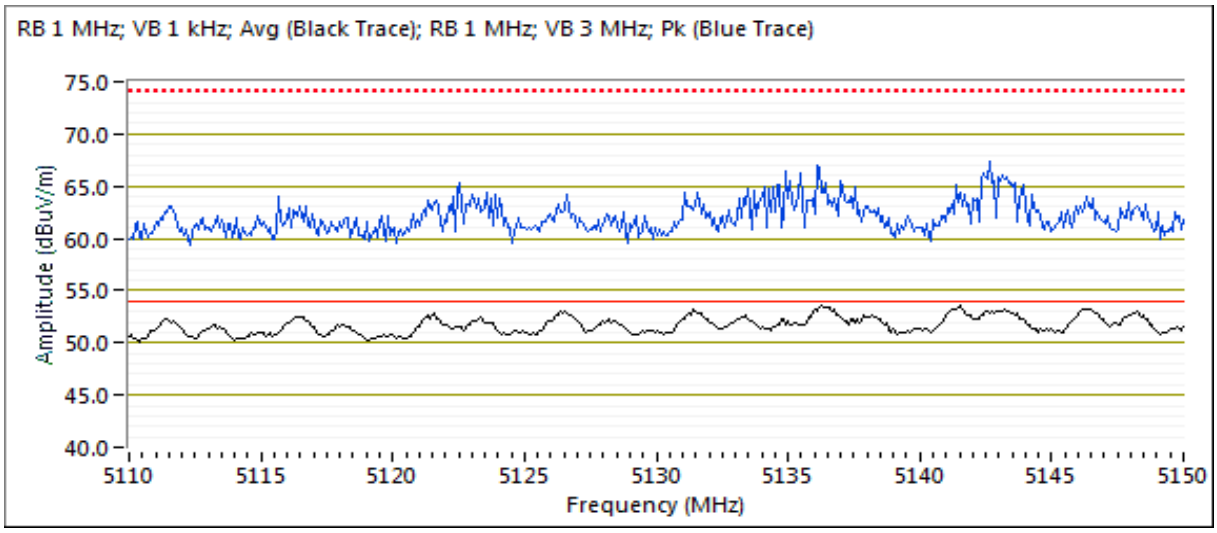
Run #10: Radiated Bandedge Measurements, 5150-5350MHz

Date of Test: 07/15/19 — Config. Used: 1
Test Engineer: Rafael Varelas — Config Change: None
Test Location: FT Chamber #5 — EUT Voltage: 120V/60Hz

Channel: 50 — Mode: ac160 — Pwr Setting: 17.25 (q69)
Tx Chain: 4Tx — Data Rate: 58.5

*5150 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5142.180 | 53.8 | H | 54.0 | -0.2 | Avg | 233 | 1.1 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5144.260 | 66.4 | H | 74.0 | -7.6 | PK | 233 | 1.1 | RB 1 MHz; VB: 3 MHz |
| 5141.500 | 53.5 | V | 54.0 | -0.5 | Avg | 205 | 1.6 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5136.450 | 66.4 | V | 74.0 | -7.6 | PK | 205 | 1.6 | RB 1 MHz; VB: 3 MHz |

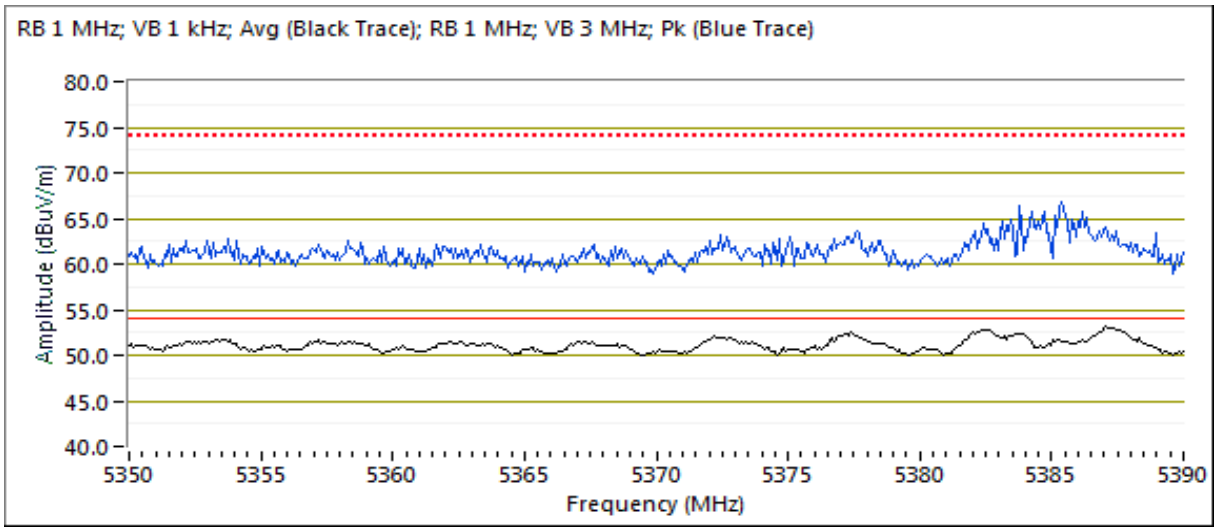


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5373.650 | 53.3 | H | 54.0 | -0.7 | Avg | 78 | 1.9 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5375.250 | 65.9 | H | 74.0 | -8.1 | PK | 78 | 1.9 | RB 1 MHz; VB: 3 MHz |
| 5387.070 | 53.1 | V | 54.0 | -0.9 | Avg | 60 | 2.4 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5383.430 | 66.0 | V | 74.0 | -8.0 | PK | 60 | 2.4 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Date of Test: 07/15/19 — Config. Used: 1

Test Engineer: Rafael Varelas — Config Change: None

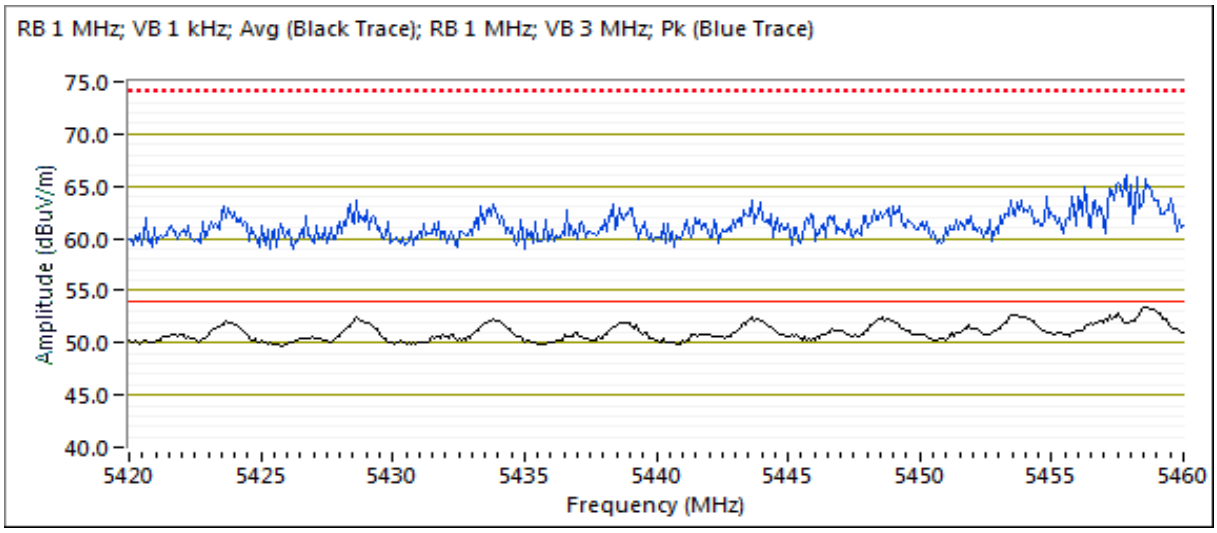
Test Location: FT Chamber #5 — EUT Voltage: 120V/60Hz

Channel: 114 — Mode: ac160 — Pwr Setting: 17 (q68)

Tx Chain: 4Tx — Data Rate: 58.5

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5458.980 | 53.5 | V | 54.0 | -0.5 | Avg | 201 | 2.1 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5458.280 | 66.6 | V | 74.0 | -7.4 | PK | 201 | 2.1 | RB 1 MHz; VB: 3 MHz |
| 5460.000 | 51.8 | H | 54.0 | -2.2 | Avg | 60 | 1.5 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5454.950 | 64.2 | H | 74.0 | -9.8 | PK | 60 | 1.5 | RB 1 MHz; VB: 3 MHz |

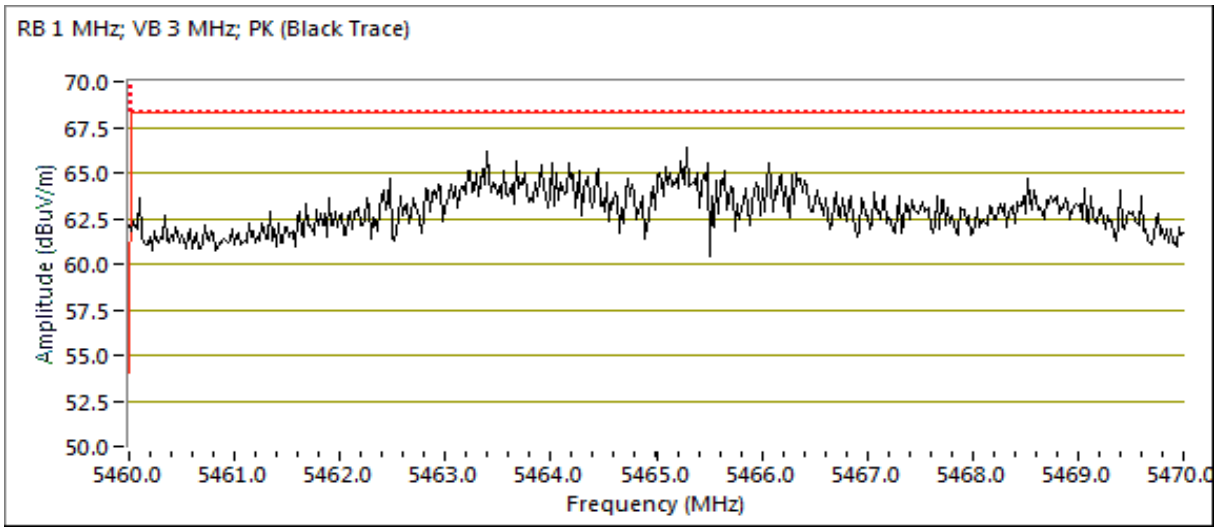


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5463.170 | 66.5 | V | 68.3 | -1.8 | PK | 201 | 2.1 | RB 1 MHz; VB: 3 MHz |
| 5468.120 | 65.2 | H | 68.3 | -3.1 | PK | 60 | 1.5 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, 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: 24-26 °C
Rel. Humidity: 41-45 %

### 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.

| | | | |
|---|---|---|---|
| Date of Test: | 9/23-25/2019 | Config. Used: | 1 |
| Test Engineer: | M. Birgani | Config Change: | - |
| Test Location: | Chamber 7 | EUT Voltage: | 120V/ 60Hz |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel Frequency | NBF Setting | BF Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| 20MHz Bandwith Mode | | | | | | | |
| 6 | ac20 | 64 5320MHz | 24 / 18 | 24 / 18 | Restricted Band Edge at 5350 MHz | 15.209 | 49.5 dBµV/m @ 5369.8 MHz (-4.5 dB) |
| 7 | ac20 | 100 5500MHz | 24 / 18 | 24 / 9 | Restricted Band Edge at 5460 MHz | 15.209 | 53.7 dBµV/m @ 5403.9 MHz (-0.3 dB) |
| | ac20 | 100 5500MHz | 24 / 18 | 24 / 9 | Band Edge 5460 - 5470 MHz | 15E | 67.9 dBµV/m @ 5465.1 MHz (-0.4 dB) |
| | ac20 | 140 5700MHz | 24 / 18 | 24 / 18 | Band Edge 5725MHz | 15E | 62.8 dBµV/m @ 5763.3 MHz (-5.5 dB) |
| 40MHz Bandwith Mode | | | | | | | |
| 10 | ac40 | 62 5310MHz | 24 / 16.75 | 24 / 15.5 | Restricted Band Edge at 5350 MHz | 15.209 | 53.5 dBµV/m @ 5350.2 MHz (-0.5 dB) |
| 11 | ac40 | 102 5510MHz | 24 / 18 | 24 / 17 | Restricted Band Edge at 5460 MHz | 15.209 | 50.1 dBµV/m @ 5459.8 MHz (-3.9 dB) |
| | ac40 | 102 5510MHz | 24 / 18 | 24 / 17 | Band Edge 5460 - 5470 MHz | 15E | 67.6 dBµV/m @ 5468.2 MHz (-0.7 dB) |
| | ac40 | 134 5670MHz | 24 / 18 | 24 / 18 | Band Edge 5725MHz | 15E | 63.1 dBµV/m @ 5764.2 MHz (-5.2 dB) |
| 80MHz Bandwith Mode | | | | | | | |
| 14 | ac80 | 58 5290MHz | 26 / 16.5 | 26 / 16.5 | Restricted Band Edge at 5350 MHz | 15.209 | 49.6 dBµV/m @ 5352.2 MHz (-4.4 dB) |
| 15 | ac80 | 106 5530MHz | 26 / 18 | 26 / 17 | Restricted Band Edge at 5460 MHz | 15.209 | 53.2 dBµV/m @ 5459.1 MHz (-0.8 dB) |
| | ac80 | 106 5530MHz | 26 / 18 | 26 / 17 | Band Edge 5460 - 5470 MHz | 15E | 67.4 dBµV/m @ 5461.1 MHz (-0.9 dB) |
| 160MHz Bandwith Mode | | | | | | | |
| 17 | ac160 | 50 5250MHz | 26 / 18 | 26 / 17 | Restricted Band Edge at 5150 MHz | 15.209 | 53.2 dBµV/m @ 5146.2 MHz (-0.8 dB) |
| | ac160 | 50 5250MHz | 26 / 18 | 26 / 17 | Restricted Band Edge at 5350 MHz | 15.209 | 53.6 dBµV/m @ 5355.7 MHz (-0.4 dB) |
| 18 | ac160 | 114 5570MHz | 26 / 18 | 26 / 15 | Restricted Band Edge at 5460 MHz | 15.209 | 49.1 dBµV/m @ 5437.5 MHz (-4.9 dB) |
| | ac160 | 114 5570MHz | 26 / 18 | 26 / 15 | Band Edge 5460 - 5470 MHz | 15E | 67.9 dBµV/m @ 5463.9 MHz (-0.4 dB) |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## 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 50 traces. (method VB of KDB 789033)

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet |
|---|---|---|---|---|---|---|---|---|
| ac20 | 6.5 | 0.98 | Yes | 5.271 | 0.1 | 0.2 | 190 | 4324 |
| ac40 | 13.5 | 0.97 | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 |
| ac80 | 29.3 | 0.96 | Yes | 1.432 | 0.2 | 0.4 | 698 | 5159 |
| ac160 | 58.5 | 0.96 | Yes | 1.439 | 0.2 | 0.4 | 695 | 10443 |

## Sample Notes

Sample S/N: M11917QW000T

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |
| Note 5: | 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

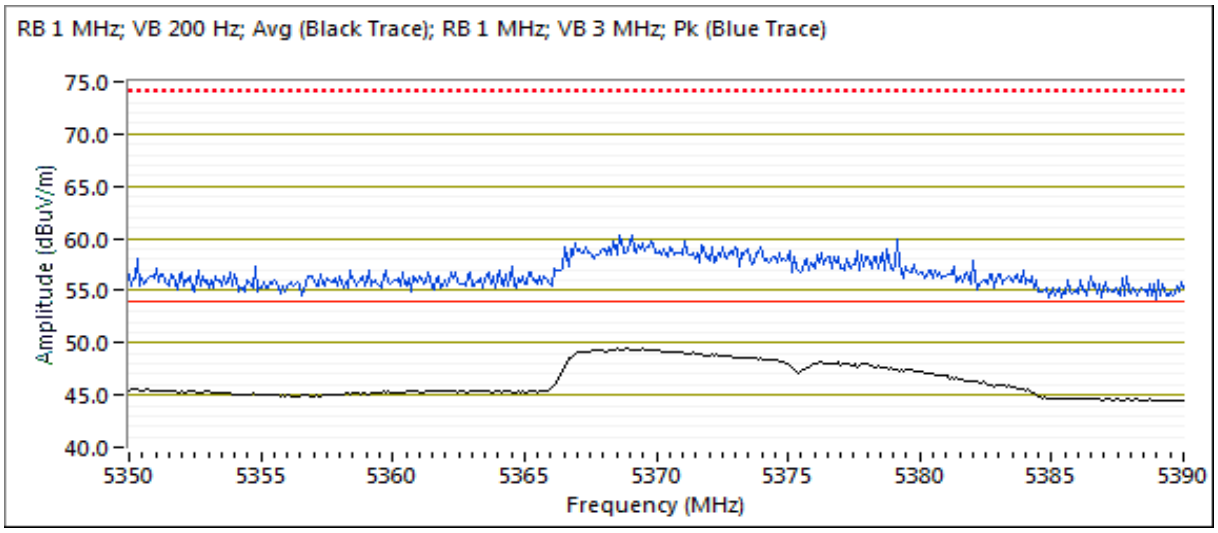
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 64 Mode: n20 Pwr Setting: 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5369.830 | 49.5 | V | 54.0 | -4.5 | AVG | 71 | 1.3 | RB 1 MHz; VB: 200 Hz |
| 5369.710 | 48.6 | H | 54.0 | -5.4 | AVG | 78 | 2.1 | RB 1 MHz; VB: 200 Hz |
| 5367.930 | 60.8 | V | 74.0 | -13.2 | PK | 71 | 1.3 | RB 1 MHz; VB: 3 MHz |
| 5367.890 | 60.3 | H | 74.0 | -13.7 | PK | 78 | 2.1 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

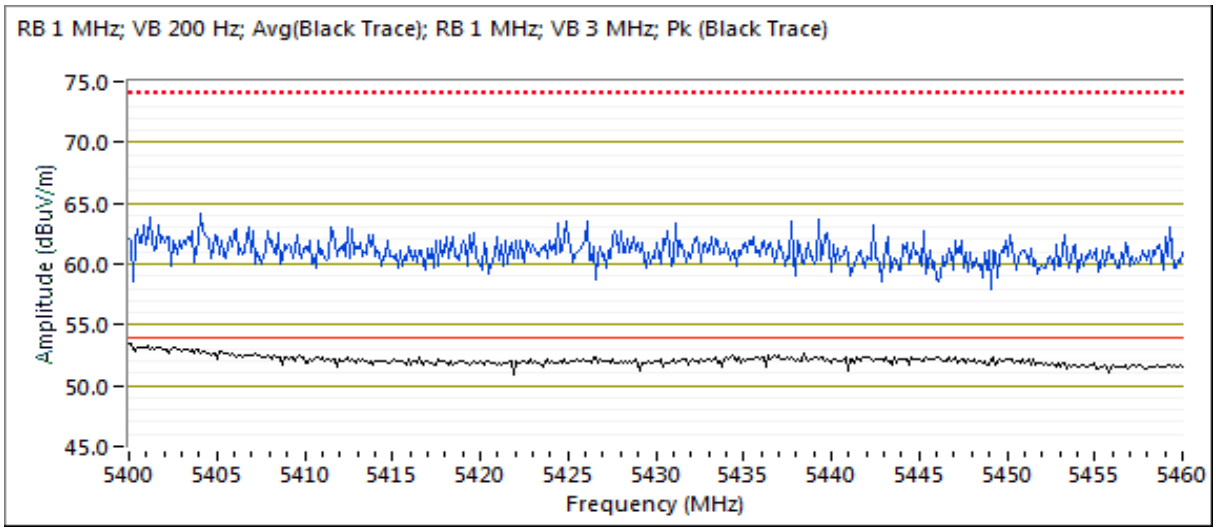
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 100 Mode: n20 Pwr Setting: 9 (q36)
Tx Chain: 4TX Data Rate: 6.5 Mbps

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5403.850 | 53.7 | V | 54.0 | -0.3 | AVG | 196 | 1.8 | RB 1 MHz; VB: 200 Hz |
| 5425.450 | 47.6 | H | 54.0 | -6.4 | AVG | 290 | 1.0 | RB 1 MHz; VB: 200 Hz |
| 5410.460 | 65.0 | V | 74.0 | -9.0 | PK | 196 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5443.090 | 59.6 | H | 74.0 | -14.4 | PK | 290 | 1.0 | RB 1 MHz; VB: 3 MHz |

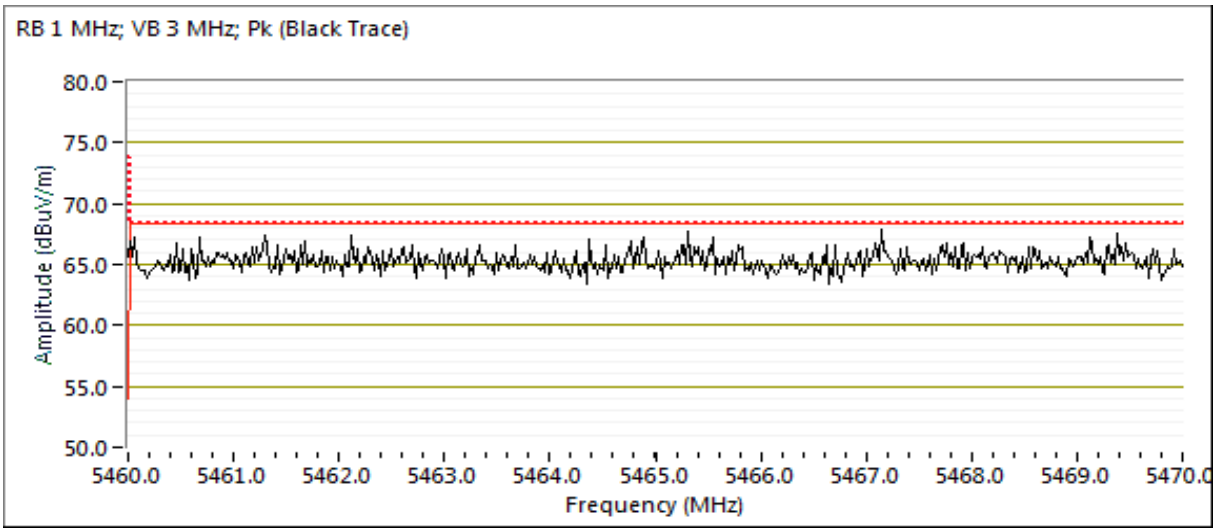


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5465.050 | 67.9 | V | 68.3 | -0.4 | PK | 196 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5468.420 | 60.0 | H | 68.3 | -8.3 | PK | 290 | 1.0 | RB 1 MHz; VB: 3 MHz |



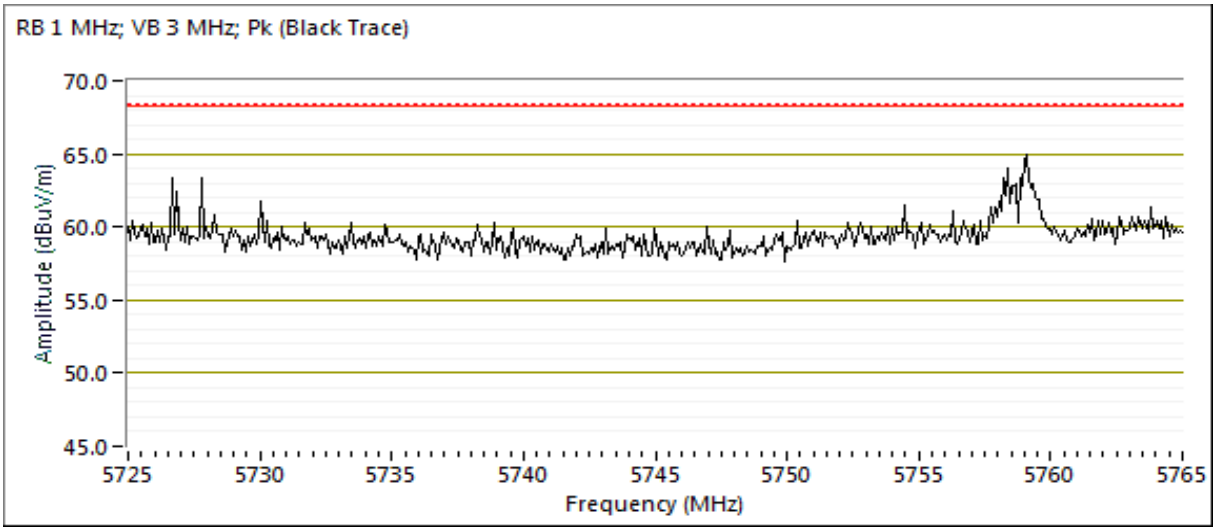
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 140 Mode: n20 Pwr Setting: 18 (q72)
Tx Chain: 4TX Data Rate: 6.5 Mbps

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5763.320 | 62.8 | V | 68.3 | -5.5 | PK | 80 | 1.2 | RB 1 MHz; VB: 3 MHz |
| 5745.440 | 61.6 | H | 68.3 | -6.7 | PK | 190 | 1.2 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

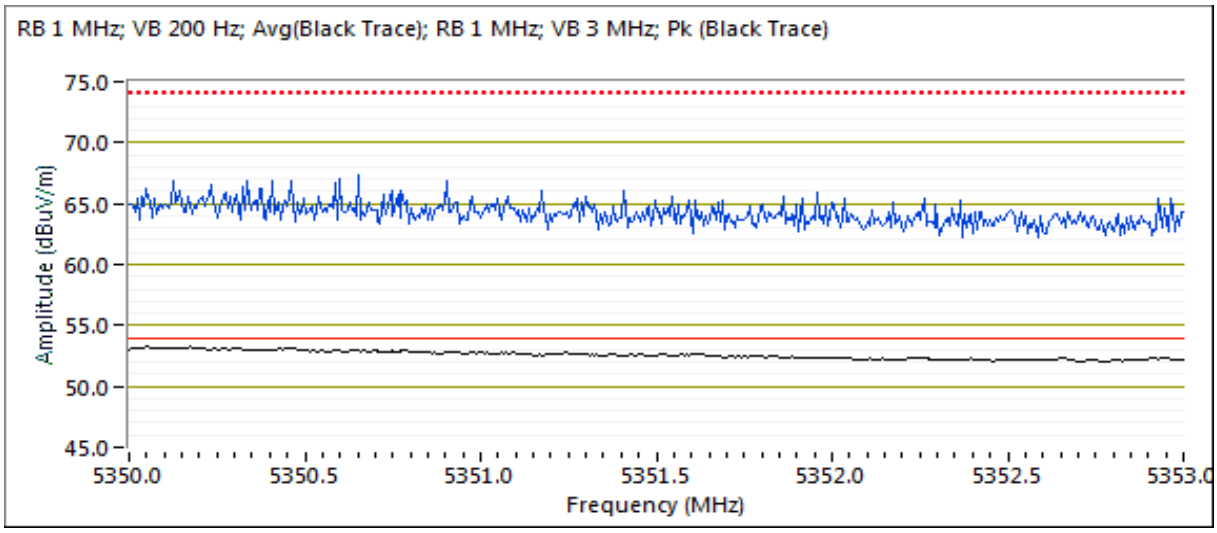
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 62 Mode: n40 Pwr Setting: 15.5(q62)
Tx Chain: 4TX Data Rate: 13.5

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.220 | 53.5 | V | 54.0 | -0.5 | AVG | 197 | 1.7 | RB 1 MHz; VB: 200 Hz |
| 5350.300 | 67.0 | V | 74.0 | -7.0 | PK | 197 | 1.7 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

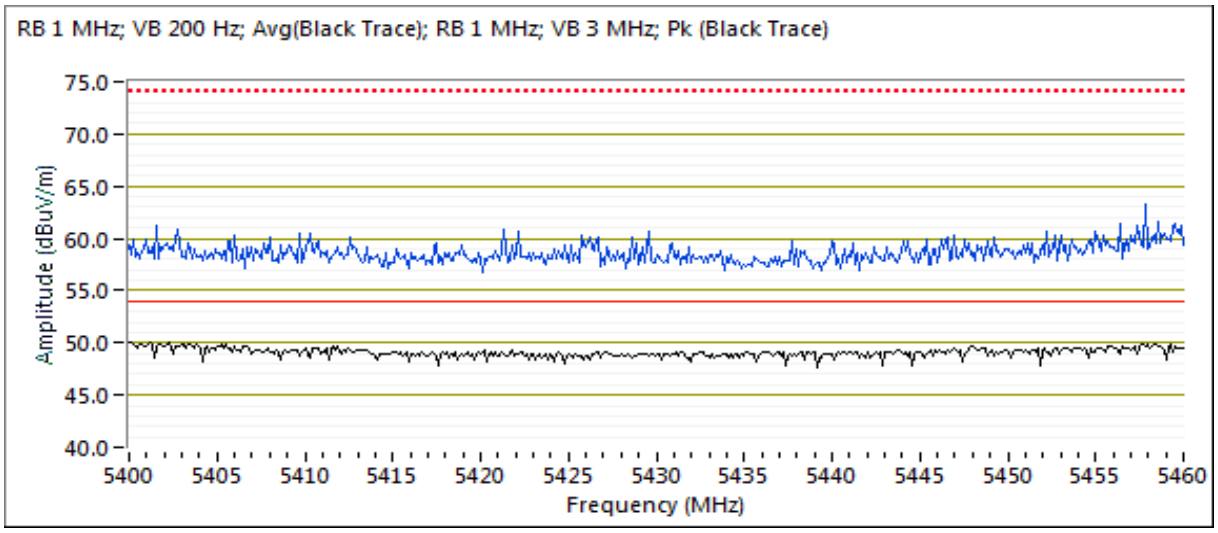
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 102 Mode: n40 Pwr Setting: 17 (q68)
Tx Chain: 4TX Data Rate: 13.5

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.780 | 50.1 | V | 54.0 | -3.9 | AVG | 83 | 1.4 | POS; RB 1 MHz; VB: 200 Hz |
| 5458.750 | 65.4 | V | 74.0 | -8.6 | PK | 83 | 1.4 | POS; RB 1 MHz; VB: 3 MHz |

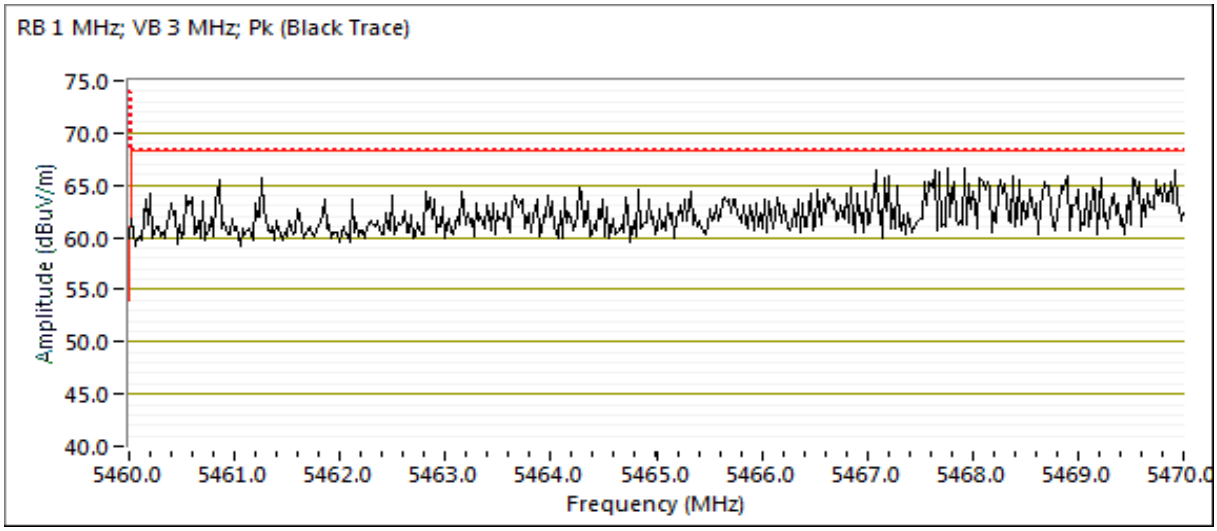


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5468.240 | 67.6 | V | 68.3 | -0.7 | PK | 83 | 1.4 | POS; RB 1 MHz; VB: 3 MHz |



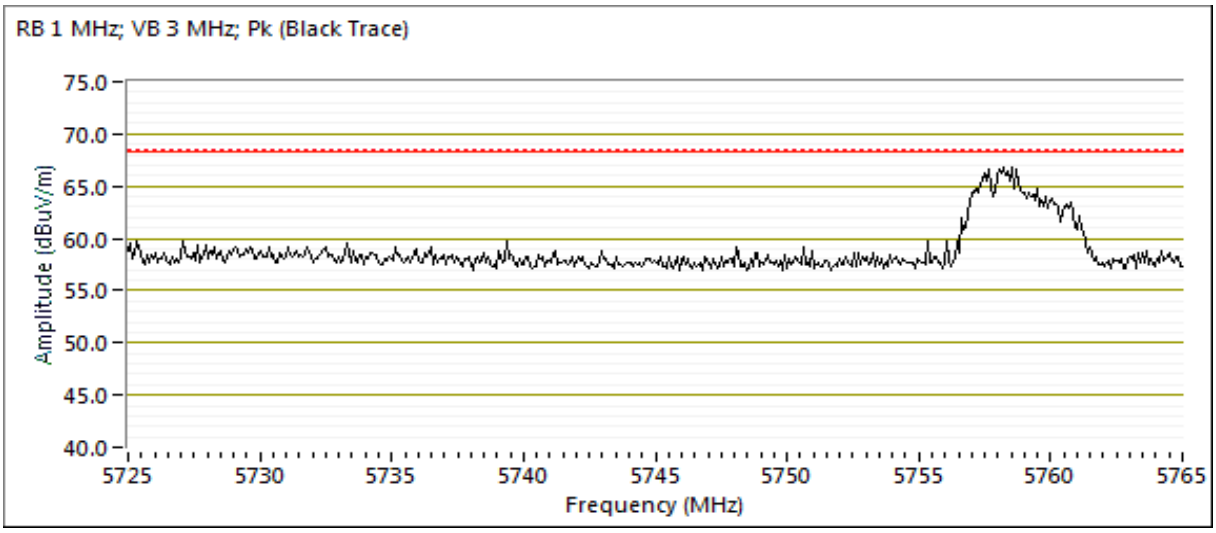
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 134 Mode: n40 Pwr Setting: 18 (q72)
Tx Chain: 4TX Data Rate: 13.5

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5764.220 | 63.1 | V | 68.3 | -5.2 | PK | 76 | 1.4 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

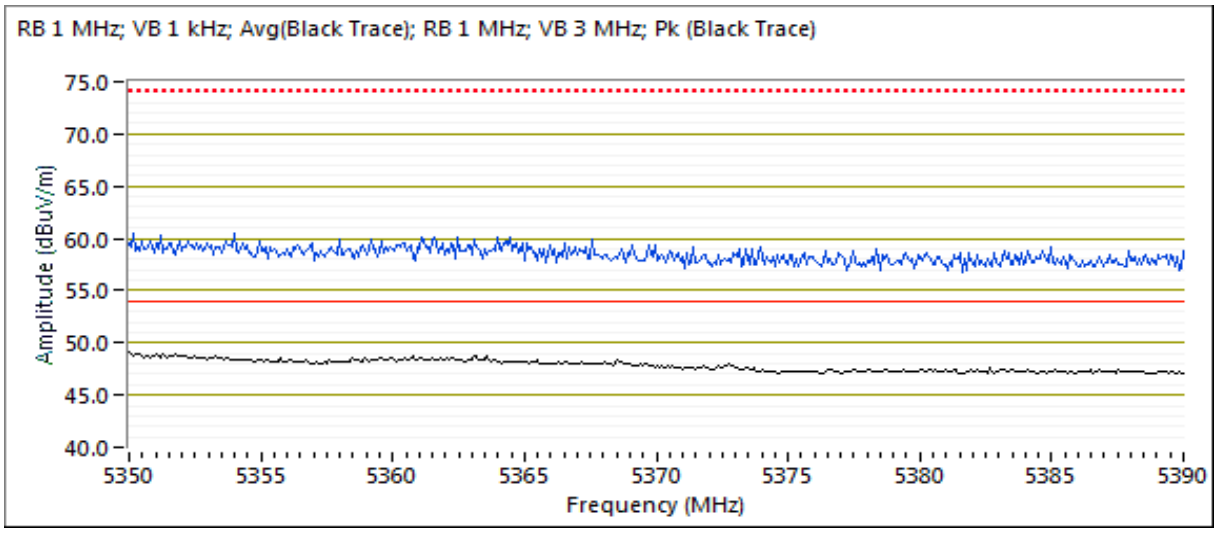
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 58 Mode: ac80 Pwr Setting: 16.5 (q66)
Tx Chain: 4Tx Data Rate: 29.3

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5352.210 | 49.6 | V | 54.0 | -4.4 | AVG | 194 | 1.8 | RB 1 MHz; VB: 1 kHz |
| 5354.700 | 61.0 | V | 74.0 | -13.0 | PK | 194 | 1.8 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

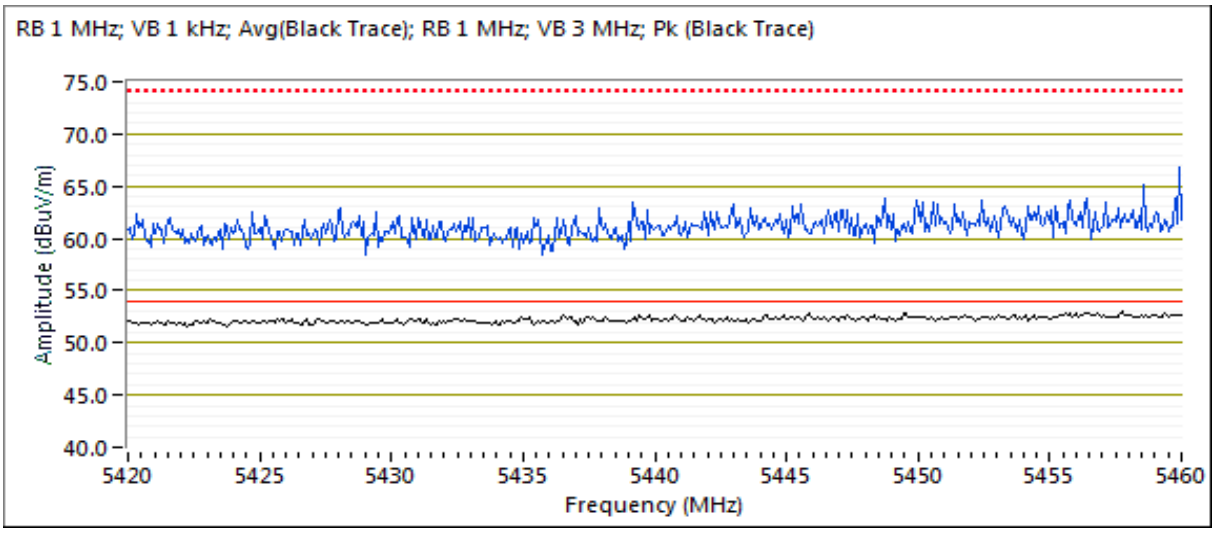
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 106 Mode: ac80 Pwr Setting: 17 (q72)
Tx Chain: 4Tx Data Rate: 29.3

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.050 | 53.2 | V | 54.0 | -0.8 | AVG | 194 | 1.8 | RB 1 MHz; VB: 1 kHz |
| 5456.910 | 67.5 | V | 74.0 | -6.5 | PK | 194 | 1.8 | RB 1 MHz; VB: 3 MHz |

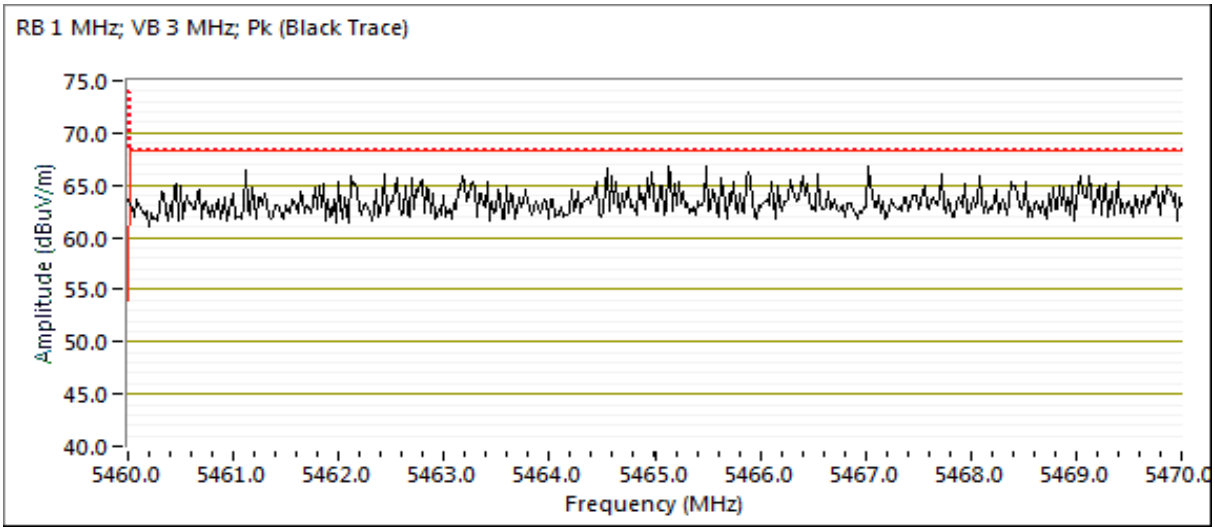


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5461.120 | 67.4 | V | 68.3 | -0.9 | PK | 194 | 1.8 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

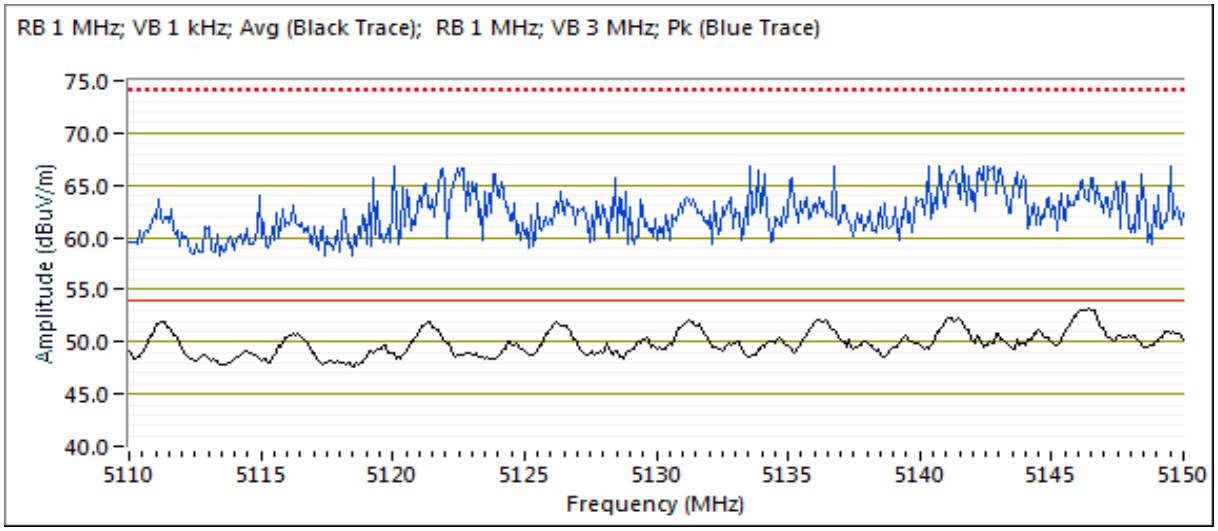
Run #17: Radiated Bandedge Measurements, 5150-5350MHz

Date of Test: 10/22/19 — Config. Used: 1
Test Engineer: M. Birgani — Config Change: -
Test Location: Chamber 4 — EUT Voltage: 120V/ 60Hz

Channel: 50 — Mode: ac160 — Pwr Setting: 17 (q68)
Tx Chain: 4Tx — Data Rate: 58.5

*5150 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5146.150 | 53.2 | V | 54.0 | -0.8 | AVG | 206 | 1.6 | POS; RB 1 MHz; VB: 1 kHz |
| 5128.040 | 71.0 | V | 74.0 | -3.0 | PK | 206 | 1.6 | POS; RB 1 MHz; VB: 3 MHz |

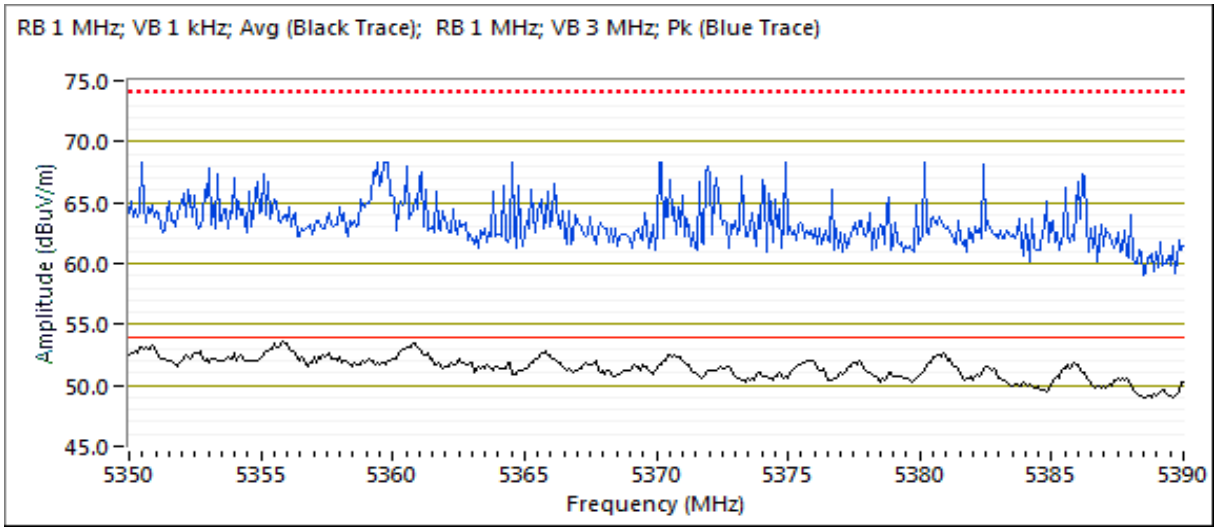


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5355.690 | 53.6 | V | 54.0 | -0.4 | AVG | 178 | 1.7 | POS; RB 1 MHz; VB: 1 kHz |
| 5371.240 | 71.9 | V | 74.0 | -2.1 | PK | 178 | 1.7 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #18: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/22/19
Test Engineer: M. Birgani
Test Location: Chamber 4

Config. Used: 1
Config Change: -
EUT Voltage: 120V/ 60Hz

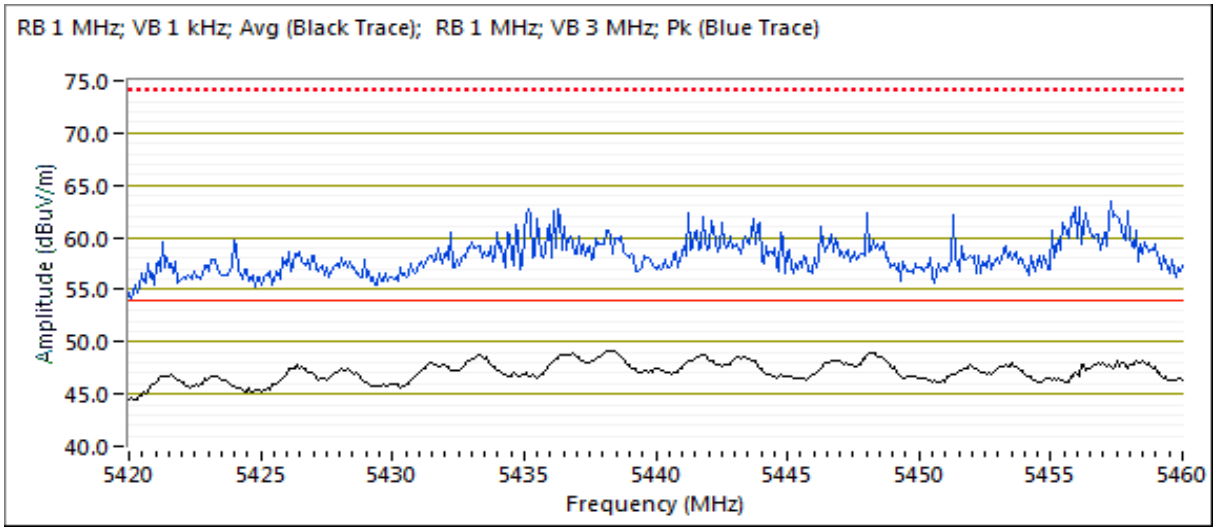
Channel: 114
Tx Chain: 4Tx

Mode: ac160
Data Rate: 58.5

Pwr Setting: 15 (q60)

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5437.480 | 49.1 | V | 54.0 | -4.9 | AVG | 44 | 1.0 | POS; RB 1 MHz; VB: 1 kHz |
| 5446.690 | 62.7 | V | 74.0 | -11.3 | PK | 44 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |

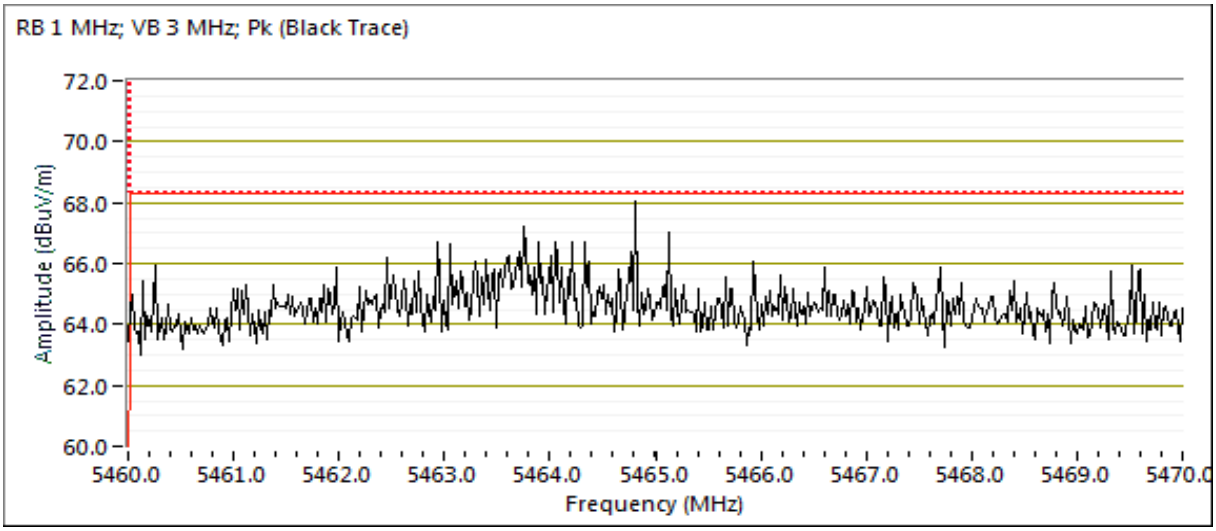


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5463.930 | 67.9 | V | 68.3 | -0.4 | PK | 44 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, 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: 18-19 °C
Rel. Humidity: 48-51 %

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

No deviations were made from the requirements of the standard.

### Sample Notes

Sample S/N: M11917QW000T

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel Frequency | Power Setting | | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| 20MHz Bandwith Modes | | | | | | | |
| 4 | ax20 | 11 & 64 | 24 / 18 | | Restricted Band Edge at 5350 MHz | 15.209 | 51.3 dBµV/m @ 5350.7 MHz (-2.7 dB) |
| 5 | ax20 | 1 & 100 | 24 / 18 | | Restricted Band Edge at 5460 MHz | 15.209 | 49.5 dBµV/m @ 5438.6 MHz (-4.5 dB) |
| | ax20 | 1 & 100 | 24 / 18 | | Band Edge 5460 - 5470 MHz | 15E | 64.8 dBµV/m @ 5466.5 MHz (-3.5 dB) |
| | ax20 | 11 & 140 | 24 / 18 | | Band Edge 5725MHz | 15E | 66.3 dBµV/m @ 5728.9 MHz (-2.0 dB) |
| 40MHz Bandwith Modes | | | | | | | |
| 6 | ax40 | 9 & 62 | 24 / 16.75 | | Restricted Band Edge at 5350 MHz | 15.209 | 53.2 dBµV/m @ 5350.4 MHz (-0.8 dB) |
| 7 | ax40 | 3 & 102 | 24 / 18 | | Restricted Band Edge at 5460 MHz | 15.209 | 52.9 dBµV/m @ 5458.8 MHz (-1.1 dB) |
| | ax40 | 3 & 102 | 24 / 18 | | Band Edge 5460 - 5470 MHz | 15E | 67.2 dBµV/m @ 5466.5 MHz (-1.1 dB) |
| | ax40 | 9 & 134 | 24 / 18 | | Band Edge 5725MHz | 15E | 65.7 dBµV/m @ 5741.4 MHz (-2.6 dB) |
| 80MHz Bandwith Modes | | | | | | | |
| 8 | ax20 / ax80 | 6 & 58 | 24 / 16.5 | | Restricted Band Edge at 5350 MHz | 15.209 | 50.8 dBµV/m @ 5351.0 MHz (-3.2 dB) |
| 9 | ax20 / ax80 | 1 & 106 | 24 / 18 | | Restricted Band Edge at 5460 MHz | 15.209 | 51.5 dBµV/m @ 5458.5 MHz (-2.5 dB) |
| | ax20 / ax80 | 1 & 106 | 24 / 18 | | Band Edge 5460 - 5470 MHz | 15E | 64.0 dBµV/m @ 5463.7 MHz (-4.3 dB) |
| 160MHz Bandwith Modes | | | | | | | |
| 10 | ax20 / ax160 | 6 & 50 | 24 / 17.25 | | Restricted Band Edge at 5150 MHz | 15.209 | 51.3 dBµV/m @ 5149.0 MHz (-2.7 dB) |
| | ax20 / ax160 | 6 & 50 | 24 / 17.25 | | Restricted Band Edge at 5350 MHz | 15.209 | 51.0 dBµV/m @ 5378.6 MHz (-3.0 dB) |
| 11 | ax20 / ax160 | 6 & 114 | 24 / 17 | | Restricted Band Edge at 5460 MHz | 15.209 | 46.4 dBµV/m @ 5451.4 MHz (-7.6 dB) |
| | ax20 / ax160 | 6 & 114 | 24 / 17 | | Band Edge 5460 - 5470 MHz | 15E | 59.3 dBµV/m @ 5466.6 MHz (-9.0 dB) |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## 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 50 traces. (method VB of KDB 789033)

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet |
|---|---|---|---|---|---|---|---|---|
| ac20 | 6.5 | 97.6% | Yes | 5.27 | 0.1 | 0.2 | 190 | 4324 |
| ac40 | 13.5 | 97.3% | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 |
| ac80 | 29.3 | 96.0% | Yes | 1.43 | 0.2 | 0.4 | 698 | 5159 |
| ac160 | 58.5 | 95.6% | Yes | 1.44 | 0.2 | 0.4 | 695 | 10443 |

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |
| Note 5: | Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements. |
| Note 6: | For SISO measurment, evaluation of each chain showed that chain 4 has the highest power measurment. All SISO test measurment were performed with chain 4 active. |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

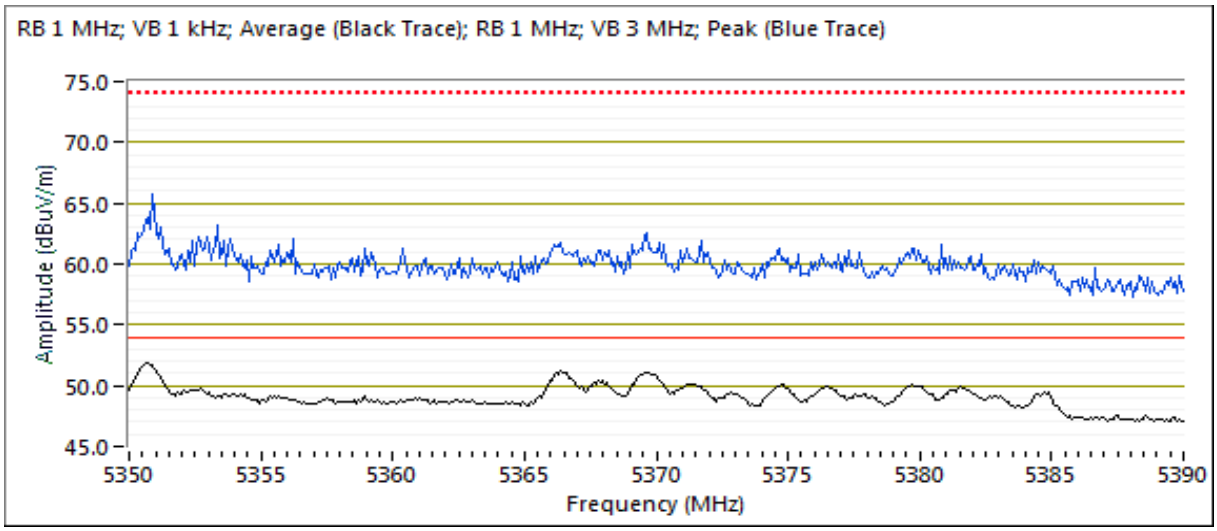
Run #4: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 02/03/20 Config. Used: 1
Test Engineer: M. Birgani Config Change: None
Test Location: Fremont Chamber #7 EUT Voltage: 120V/60Hz

Channel: 11 & 64 Mode: ax20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 8.6mbps / chain

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.720 | 51.3 | V | 54.0 | -2.7 | AVG | 197 | 1.7 | RB 1 MHz; VB: 10 Hz |
| 5368.440 | 50.2 | H | 54.0 | -3.8 | AVG | 82 | 1.8 | RB 1 MHz; VB: 10 Hz |
| 5366.670 | 67.7 | V | 74.0 | -6.3 | PK | 197 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5368.200 | 62.6 | H | 74.0 | -11.4 | PK | 82 | 1.8 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #5: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 02/03/20
Test Engineer: M. Birgani
Test Location: Fremont Chamber #7

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

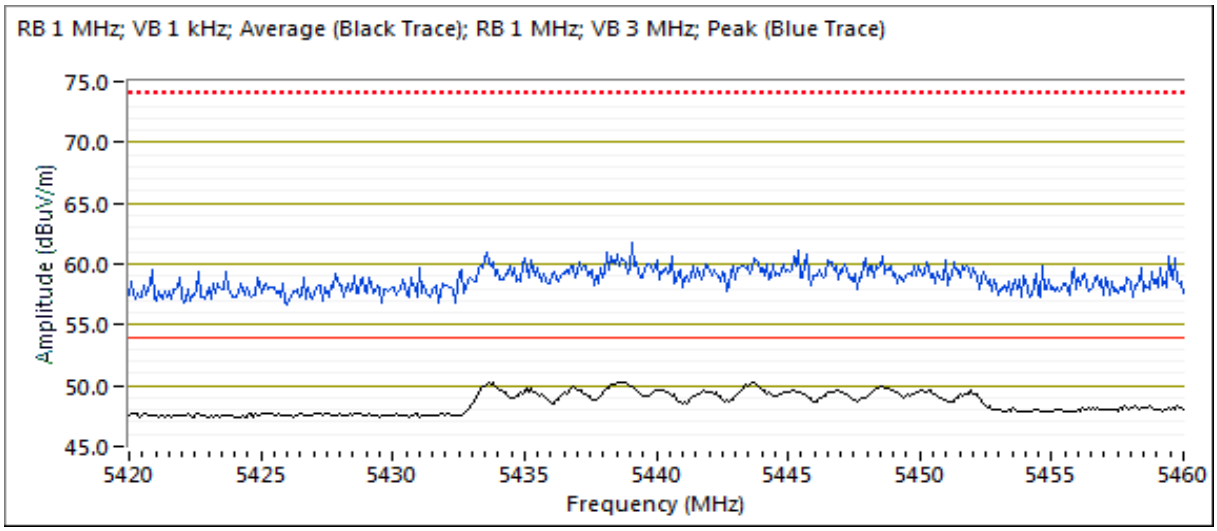
Channel: 1 & 100
Tx Chain: 4TX

Mode: ax20
Data Rate: 8.6mbps / chain

Pwr Setting: 24 (q96) & 18 (q72)

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5438.600 | 49.5 | V | 54.0 | -4.5 | AVG | 193 | 1.5 | RB 1 MHz; VB: 10 Hz |
| 5440.360 | 48.3 | H | 54.0 | -5.7 | AVG | 58 | 1.5 | RB 1 MHz; VB: 10 Hz |
| 5443.650 | 61.9 | V | 74.0 | -12.1 | PK | 193 | 1.5 | RB 1 MHz; VB: 3 MHz |
| 5435.310 | 61.1 | H | 74.0 | -12.9 | PK | 58 | 1.5 | RB 1 MHz; VB: 3 MHz |

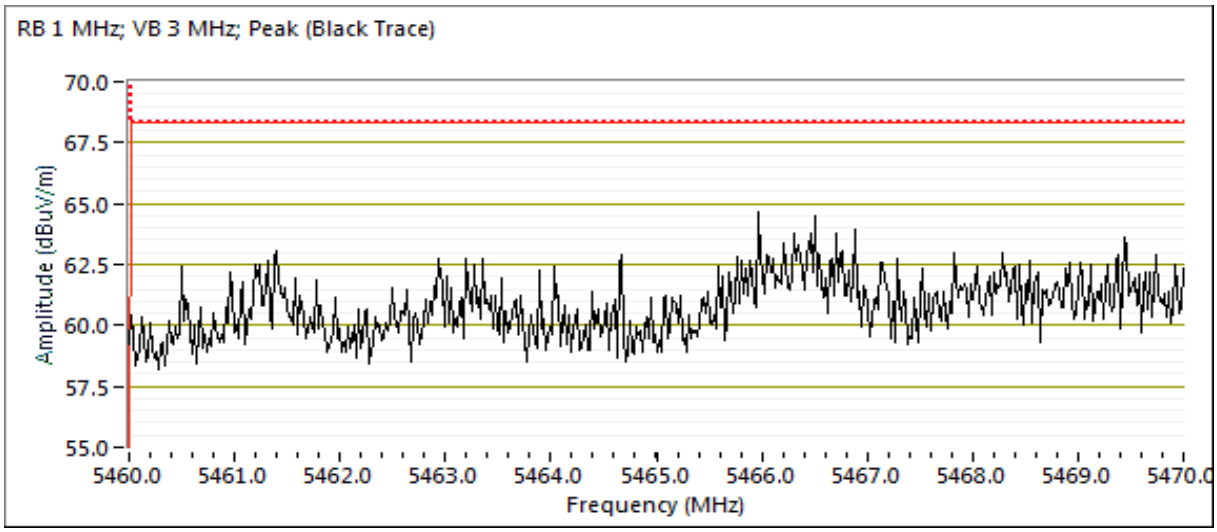


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5466.450 | 64.8 | V | 68.3 | -3.5 | PK | 193 | 1.5 | POS; RB 1 MHz; VB: 3 MHz |
| 5469.540 | 62.0 | H | 68.3 | -6.3 | PK | 58 | 1.5 | POS; RB 1 MHz; VB: 3 MHz |



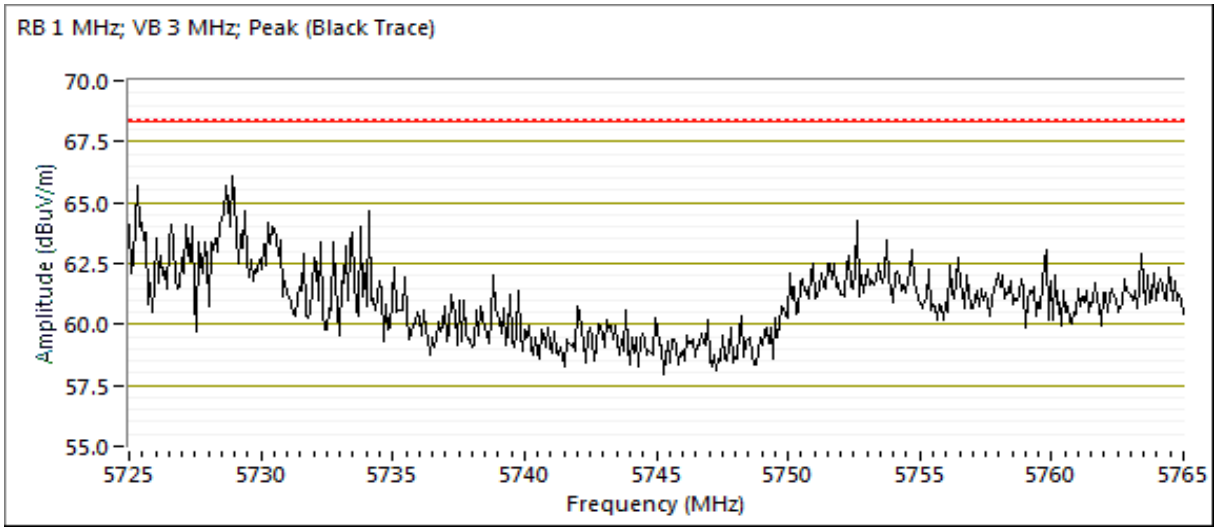
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 11 & 140 Mode: ax20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 8.6mbps / chain

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5728.850 | 66.3 | V | 68.3 | -2.0 | PK | 183 | 1.6 | RB 1 MHz; VB: 3 MHz |
| 5728.450 | 63.5 | H | 68.3 | -4.8 | PK | 112 | 1.5 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

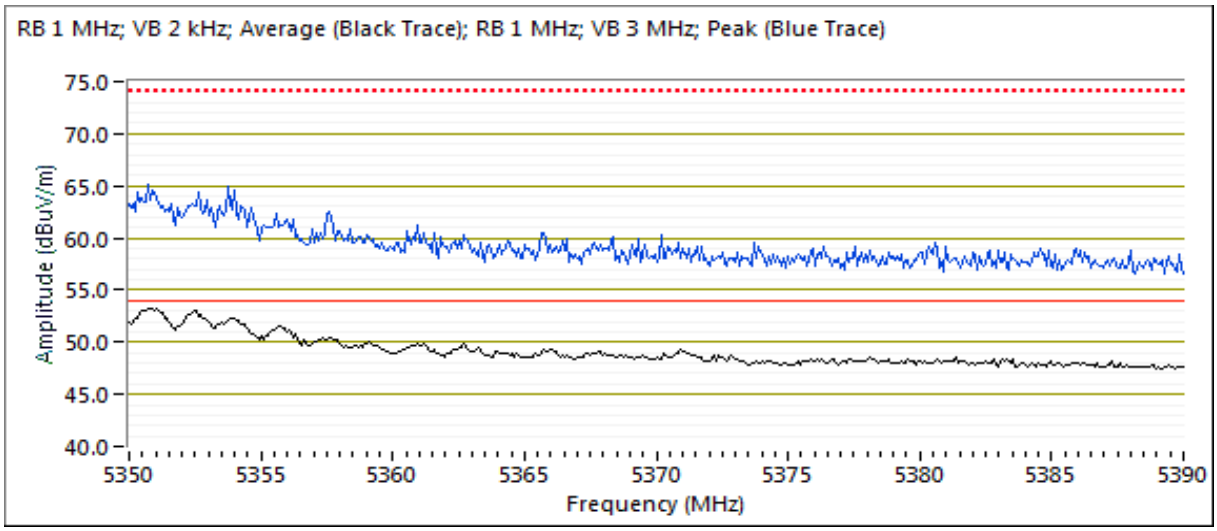
Run #6: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 02/03/20 Config. Used: 1
Test Engineer: M. Birgani Config Change: None
Test Location: Fremont Chamber #7 EUT Voltage: 120V/60Hz

Channel: 9 & 62 Mode: ax40 Pwr Setting: 24 (q96) & 16.75 (q67)
Tx Chain: 4TX Data Rate: 17.2mbps / chain

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.400 | 53.2 | V | 54.0 | -0.8 | AVG | 90 | 1.8 | RB 1 MHz; VB: 10 Hz |
| 5350.900 | 52.3 | H | 54.0 | -1.7 | AVG | 194 | 1.7 | RB 1 MHz; VB: 10 Hz |
| 5350.400 | 68.0 | V | 74.0 | -6.0 | PK | 90 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5350.900 | 66.8 | H | 74.0 | -7.2 | PK | 194 | 1.7 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

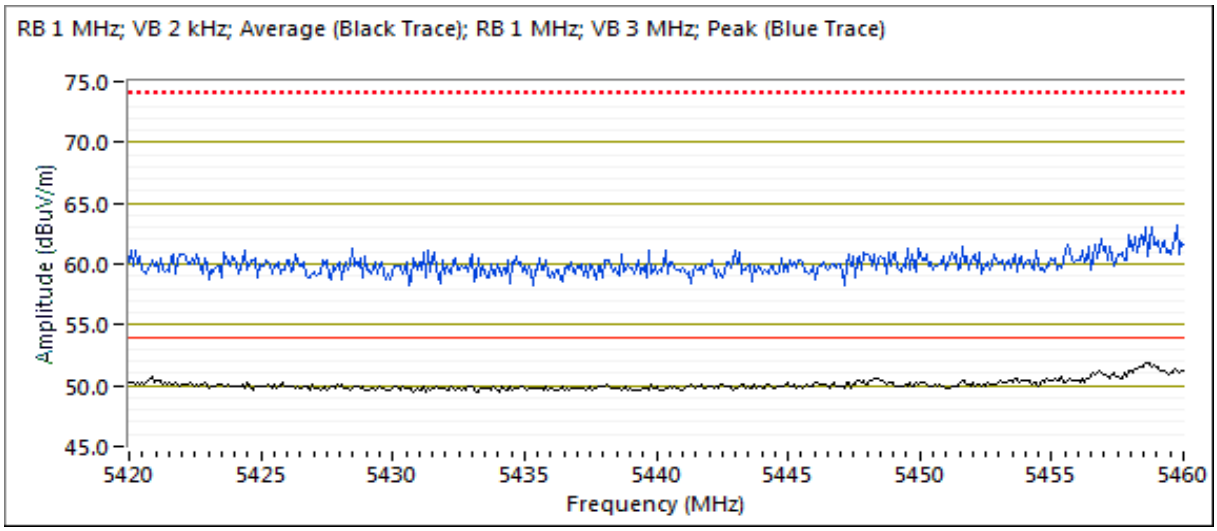
Run #7: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 02/03/20 — Config. Used: 1
Test Engineer: M. Birgani — Config Change: None
Test Location: Fremont Chamber #7 — EUT Voltage: 120V/60Hz

Channel: 3 & 102 — Mode: ax40 — Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx — Data Rate: 17.2mbps / chain

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5458.800 | 52.9 | V | 54.0 | -1.1 | AVG | 183 | 1.7 | RB 1 MHz; VB: 10 Hz |
| 5459.280 | 51.4 | H | 54.0 | -2.6 | AVG | 110 | 1.7 | RB 1 MHz; VB: 10 Hz |
| 5452.870 | 65.6 | V | 74.0 | -8.4 | PK | 183 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5450.140 | 64.5 | H | 74.0 | -9.5 | PK | 110 | 1.7 | RB 1 MHz; VB: 3 MHz |

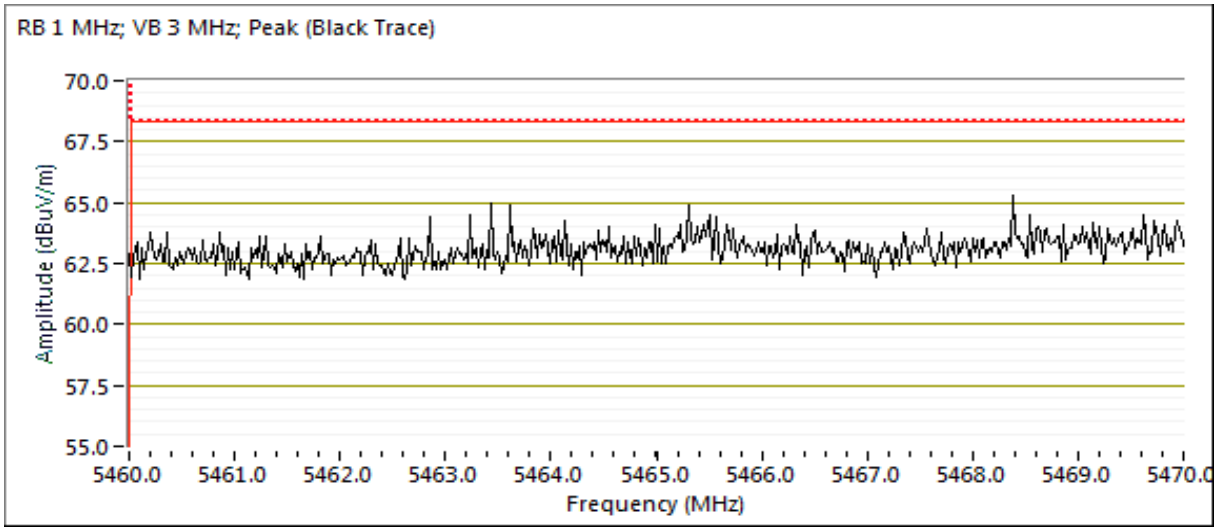


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5466.490 | 67.2 | V | 68.3 | -1.1 | PK | 183 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5464.450 | 65.3 | H | 68.3 | -3.0 | PK | 110 | 1.7 | RB 1 MHz; VB: 3 MHz |



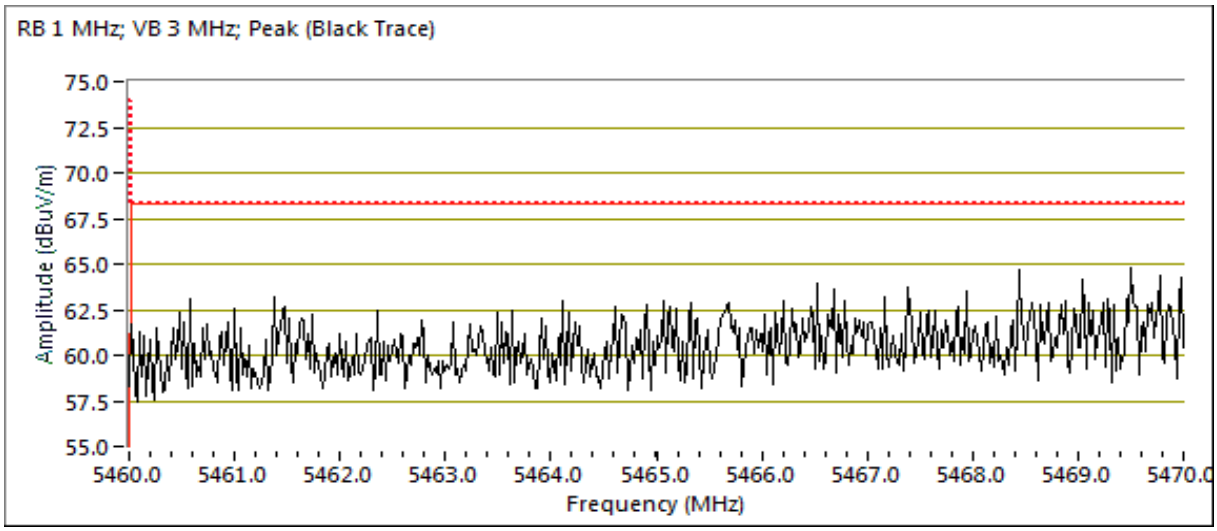
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 9 & 134 Mode: ax40 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 17.2mbps / chain

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5741.350 | 65.7 | V | 68.3 | -2.6 | PK | 183 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5727.240 | 64.7 | H | 68.3 | -3.6 | PK | 178 | 1.7 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

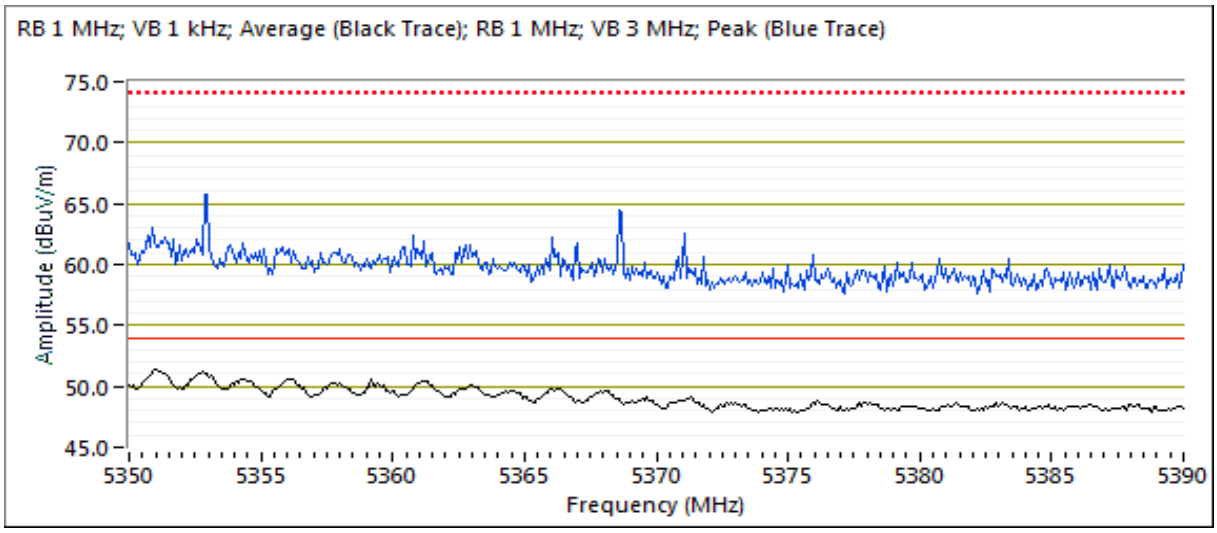
Run #8: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 02/04/20 — Config. Used: 1
Test Engineer: M. Birgani — Config Change: None
Test Location: Fremont Chamber #7 — EUT Voltage: 120V/60Hz

Channel: 6 & 58 — Mode: ax20 & ax80 — Pwr Setting: 24 (q96) & 16.5 (q66)
Tx Chain: 4Tx — Data Rate: 36mbps / chain

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5351.040 | 50.8 | V | 54.0 | -3.2 | AVG | 191 | 1.8 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5350.720 | 70.3 | V | 74.0 | -3.7 | PK | 191 | 1.8 | RB 1 MHz; VB: 3 MHz |
| 5358.260 | 69.5 | H | 74.0 | -4.5 | PK | 84 | 2.0 | RB 1 MHz; VB: 3 MHz |
| 5352.650 | 49.1 | H | 54.0 | -4.9 | AVG | 84 | 2.0 | Note 3: RB 1 MHz; VB: 1 kHz |



# EMC Test Data

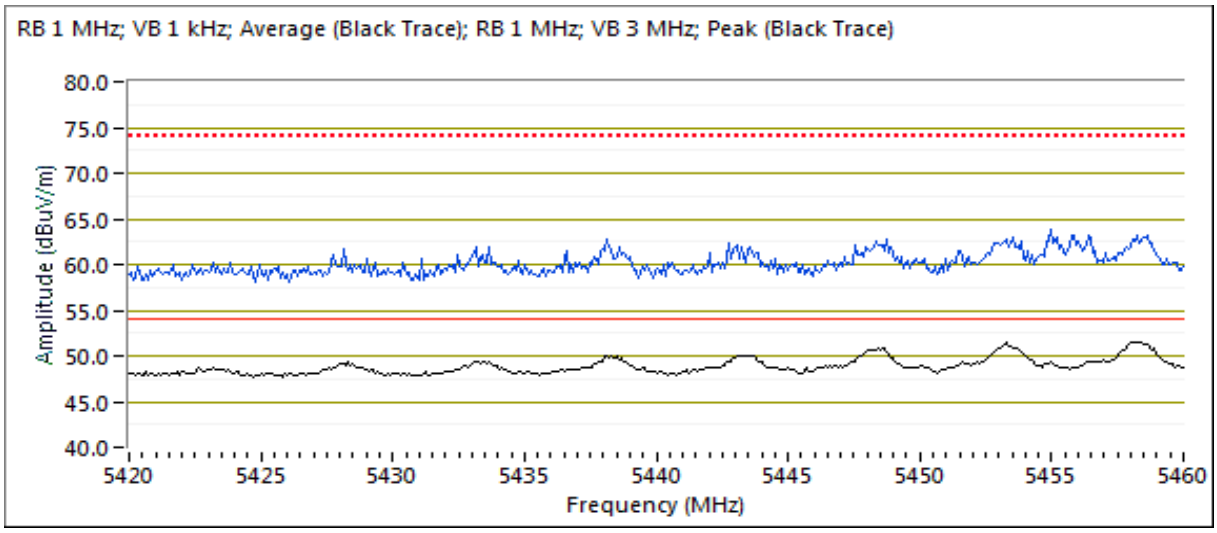
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #9: Radiated Bandedge Measurements, 5470-5725MHz

Channel: 1 & 106 Mode: ax20 & ax80 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 36mbps / chain

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5458.450 | 51.5 | V | 54.0 | -2.5 | AVG | 20 | 2.1 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5457.320 | 50.1 | H | 54.0 | -3.9 | AVG | 77 | 2.1 | Note 3: RB 1 MHz; VB: 1 kHz |
| 5455.810 | 64.9 | V | 74.0 | -9.1 | PK | 20 | 2.1 | RB 1 MHz; VB: 3 MHz |
| 5457.350 | 61.1 | H | 74.0 | -12.9 | PK | 77 | 2.1 | RB 1 MHz; VB: 3 MHz |



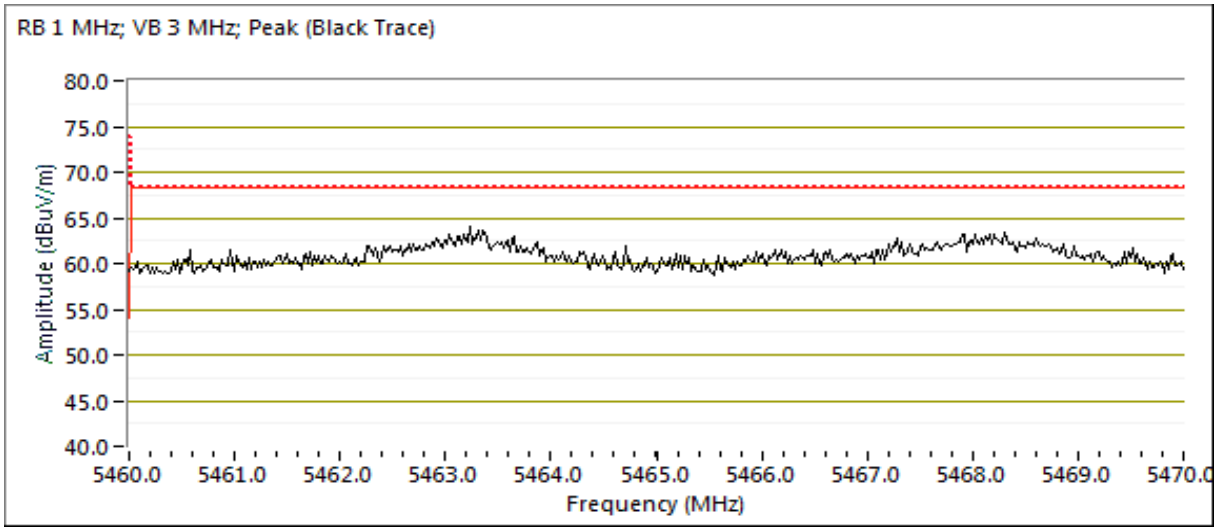
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 1 & 106 Mode: ax20 & ax80 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4Tx Data Rate: 36mbps / chain

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5463.650 | 64.0 | V | 68.3 | -4.3 | PK | 20 | 2.1 | RB 1 MHz; VB: 3 MHz |
| 5467.580 | 63.9 | H | 68.3 | -4.4 | PK | 77 | 2.1 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #10: Radiated Bandedge Measurements, 5150-5350MHz

Date of Test: 02/04/20 — Config. Used: 1

Test Engineer: M. Birgani — Config Change: None

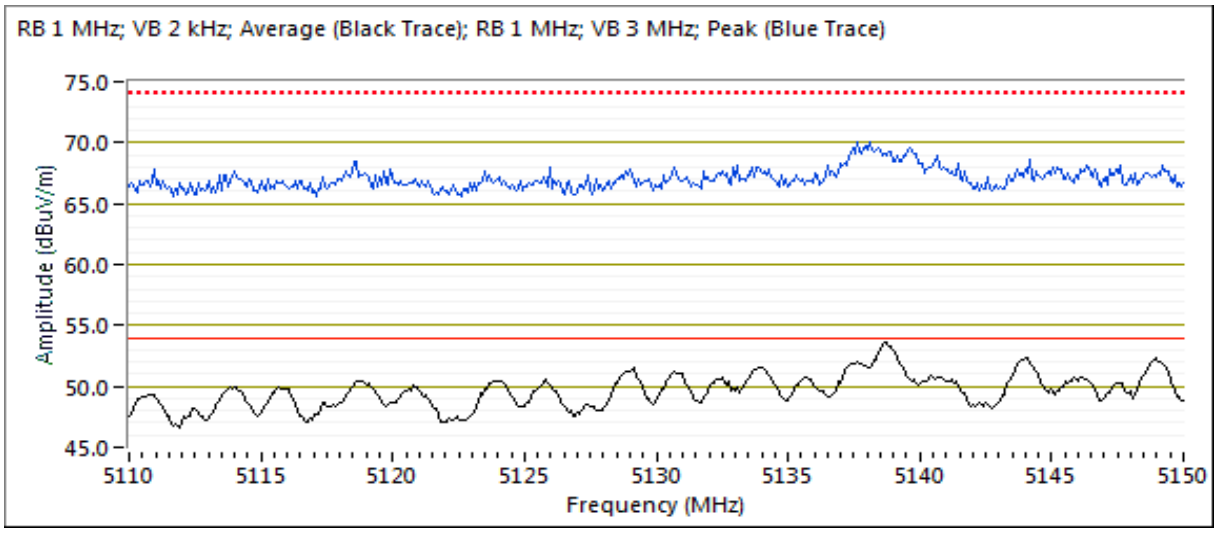
Test Location: Fremont Chamber # — EUT Voltage: 120V/60Hz

Channel: 6 & 50 — Mode: ax20 & ax160 — Pwr Setting: 24 (q96) & 17.25 (q69)

Tx Chain: 4Tx — Data Rate: 72Mbps / chain

*5150 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5149.040 | 51.3 | V | 54.0 | -2.7 | AVG | 198 | 2.0 | Note 3: RB 1 MHz; VB: 2 kHz |
| 5147.440 | 49.0 | H | 54.0 | -5.0 | AVG | 94 | 2.0 | Note 3: RB 1 MHz; VB: 2 kHz |
| 5138.300 | 66.2 | V | 74.0 | -7.8 | PK | 198 | 2.0 | RB 1 MHz; VB: 3 MHz |
| 5145.830 | 64.6 | H | 74.0 | -9.4 | PK | 94 | 2.0 | RB 1 MHz; VB: 3 MHz |

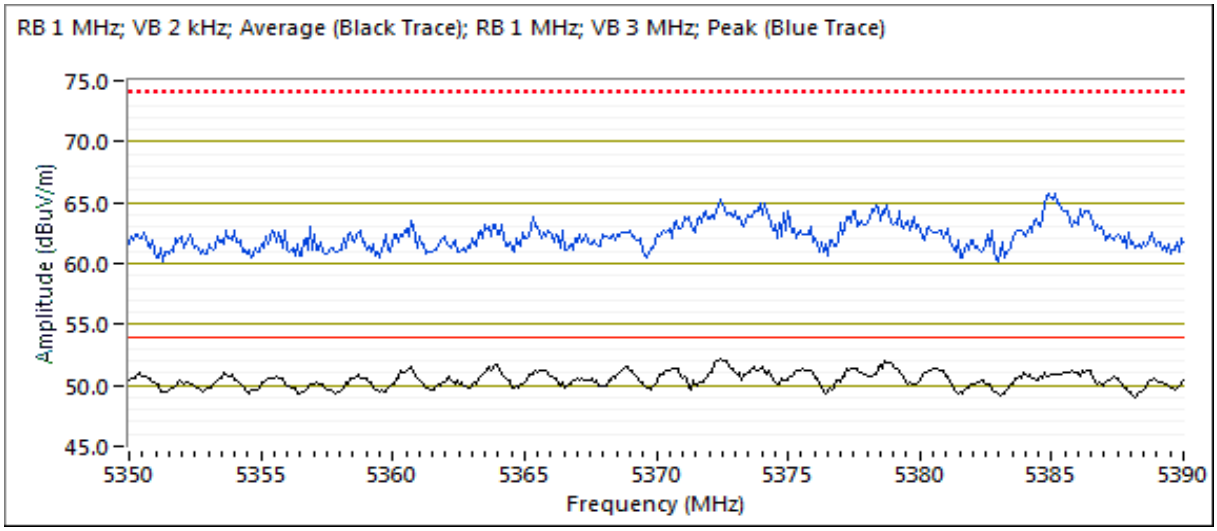


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5378.620 | 51.0 | H | 54.0 | -3.0 | AVG | 84 | 1.9 | Note 3: RB 1 MHz; VB: 2 kHz |
| 5380.620 | 50.6 | V | 54.0 | -3.4 | AVG | 198 | 2.0 | Note 3: RB 1 MHz; VB: 2 kHz |
| 5374.050 | 65.7 | H | 74.0 | -8.3 | PK | 84 | 1.9 | RB 1 MHz; VB: 3 MHz |
| 5384.630 | 65.6 | V | 74.0 | -8.4 | PK | 198 | 2.0 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

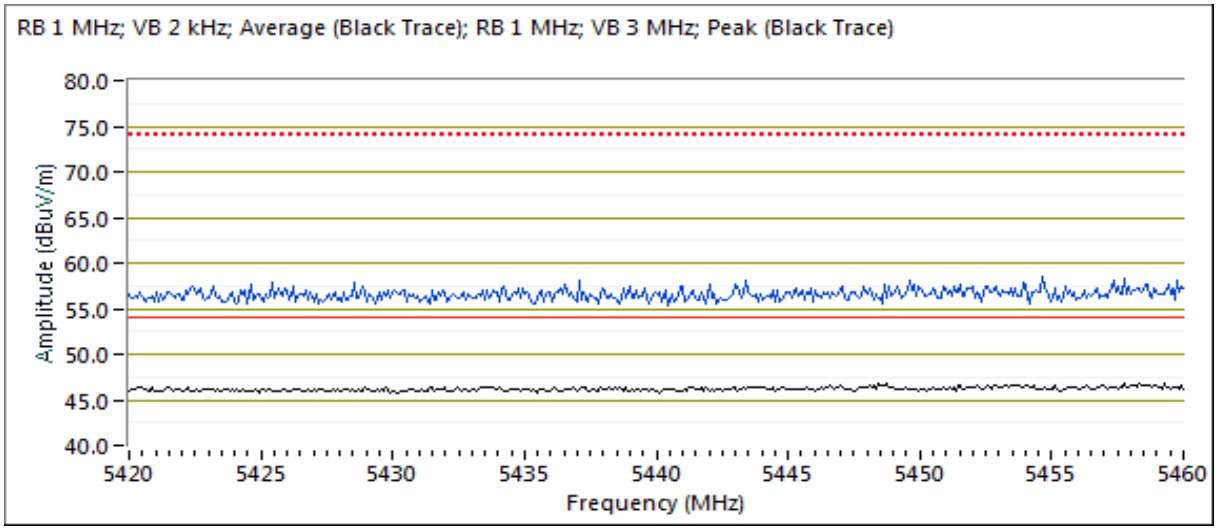
Run #11: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 02/04/20 Config. Used: 1
Test Engineer: M. Birgani Config Change: None
Test Location: Fremont Chamber #7 EUT Voltage: 120V/60Hz

Channel: 6 & 114 Mode: ax20 & ax160 Pwr Setting: 17 (q68)
Tx Chain: 4Tx Data Rate: 72Mbps / chain

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5451.420 | 46.4 | V | 54.0 | -7.6 | AVG | 20 | 2.1 | RB 1 MHz; VB: 3 MHz |
| 5450.540 | 58.8 | V | 74.0 | -15.2 | PK | 20 | 2.1 | RB 1 MHz; VB: 3 MHz |

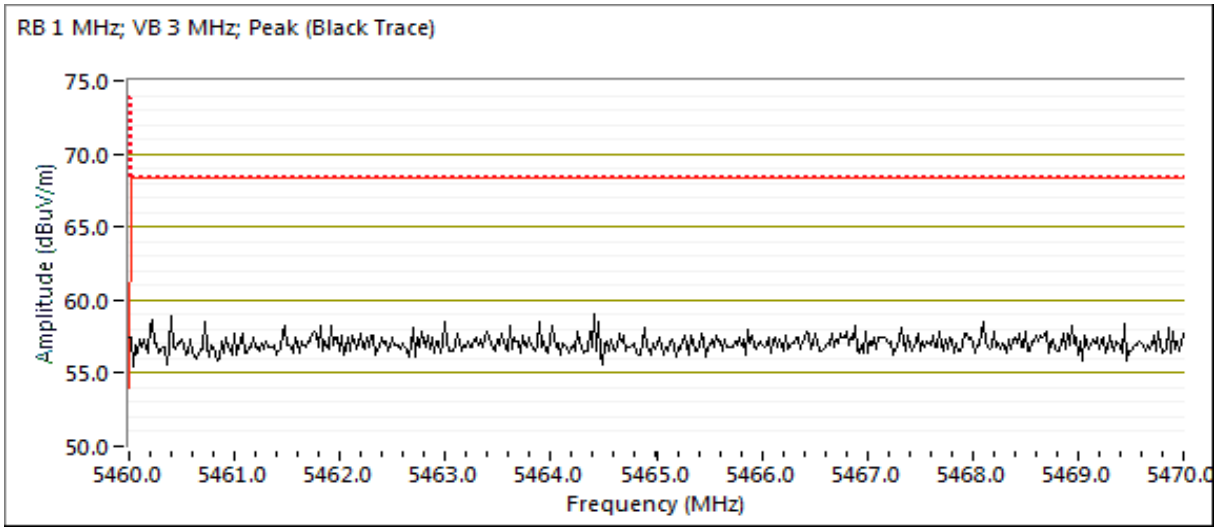


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5466.610 | 59.3 | V | 68.3 | -9.0 | PK | 20 | 2.1 | RB 1 MHz; VB: 3 MHz |
| 5464.890 | 48.5 | H | 68.3 | -19.8 | PK | 263 | 2.1 | RB 1 MHz; VB: 3 MHz |



| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, 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: 18-20 °C
Rel. Humidity: 38-40 %

## 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.

| | | | |
|---|---|---|---|
| Date of Test: | 2/5-2/7 & 3/11/2020 | Config. Used: | 1 |
| Test Engineer: | M. Birgani & David Bare | Config Change: | - |
| Test Location: | Fremont Chamber #7 | EUT Voltage: | 120V/ 60Hz |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel Frequency | Power Setting | | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| 20MHz Bandwith Mode | | | | | | | |
| 6 | ax20 | 11 & 64 | 24 / 18 | | Restricted Band Edge at 5350 MHz | 15.209 | 50.0 dBµV/m @ 5350.6 MHz (-4.0 dB) |
| 7 | ax20 | 1 & 100 | 24 / 9 | | Restricted Band Edge at 5460 MHz | 15.209 | 46.0 dBµV/m @ 5448.0 MHz (-8.0 dB) |
| | ax20 | 1 & 100 | 24 / 9 | | Band Edge 5460 - 5470 MHz | 15E | 58.7 dBµV/m @ 5468.7 MHz (-9.6 dB) |
| | ax20 | 11 & 140 | 24 / 18 | | Band Edge 5725MHz | 15E | 67.2 dBµV/m @ 5757.3 MHz (-1.1 dB) |
| 40MHz Bandwith Mode | | | | | | | |
| 10 | ax40 | 9 & 62 | 24 / 15.5 | | Restricted Band Edge at 5350 MHz | 15.209 | 51.6 dBµV/m @ 5352.6 MHz (-2.4 dB) |
| 11 | ax40 | 3 & 102 | 24 / 17 | 24 / 14 | Restricted Band Edge at 5460 MHz | 15.209 | 53.9 dBµV/m @ 5459.5 MHz (-0.1 dB) |
| | ax40 | 3 & 102 | 24 / 17 | 24 / 14 | Band Edge 5460 - 5470 MHz | 15E | 67.8 dBµV/m @ 5467.1 MHz (-0.5 dB) |
| | ax40 | 9 & 134 | 24 / 18 | | Band Edge 5725MHz | 15E | 67.8 dBµV/m @ 5727.7 MHz (-0.5 dB) |
| 80MHz Bandwith Mode | | | | | | | |
| 14 | ax20 / ax80 | 6 & 58 | 24 / 16.5 | | Restricted Band Edge at 5350 MHz | 15.209 | 51.4 dBµV/m @ 5351.6 MHz (-2.6 dB) |
| 15 | ax20 / ax80 | 1 & 106 | 24 / 17 | | Restricted Band Edge at 5460 MHz | 15.209 | 50.6 dBµV/m @ 5459.3 MHz (-3.4 dB) |
| | ax20 / ax80 | 1 & 106 | 24 / 17 | | Band Edge 5460 - 5470 MHz | 15E | 67.9 dBµV/m @ 5469.8 MHz (-0.4 dB) |
| 160MHz Bandwith Mode | | | | | | | |
| 17 | ax20 / ax160 | 6 & 50 | 24 / 17 | 24 / 14 | Restricted Band Edge at 5150 MHz | 15.209 | 50.9 dBµV/m @ 5145.1 MHz (-3.1 dB) |
| | ax20 / ax160 | 6 & 50 | 24 / 17 | 24 / 14 | Restricted Band Edge at 5350 MHz | 15.209 | 53.4 dBµV/m @ 5388.7 MHz (-0.6 dB) |
| 18 | ax20 / ax160 | 6 & 114 | 24 / 15 | | Restricted Band Edge at 5460 MHz | 15.209 | 66.3 dBµV/m @ 5456.5 MHz (-7.7 dB) |
| | ax20 / ax160 | 6 & 114 | 24 / 15 | | Band Edge 5460 - 5470 MHz | 15E | 67.7 dBµV/m @ 5465.4 MHz (-0.6 dB) |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## 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 50 traces. (method VB of KDB 789033)

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) |
|---|---|---|---|---|---|---|---|
| ax20 | MCS0 | 94.2% | Yes | 11.80 | 0.3 | 0.5 | 85 |
| ax40 | MCS0 | 84.9% | Yes | 4.37 | 0.7 | 1.4 | 229 |
| ax80 | MCS0 | 88.5% | Yes | 16.32 | 0.5 | 1.1 | 61 |
| ax160 | MCS 0 | 94.0% | Yes | 5.05 | 0.3 | 0.5 | 198 |

## Sample Notes

Sample S/N: M11917QW000T

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |
| Note 5: | 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

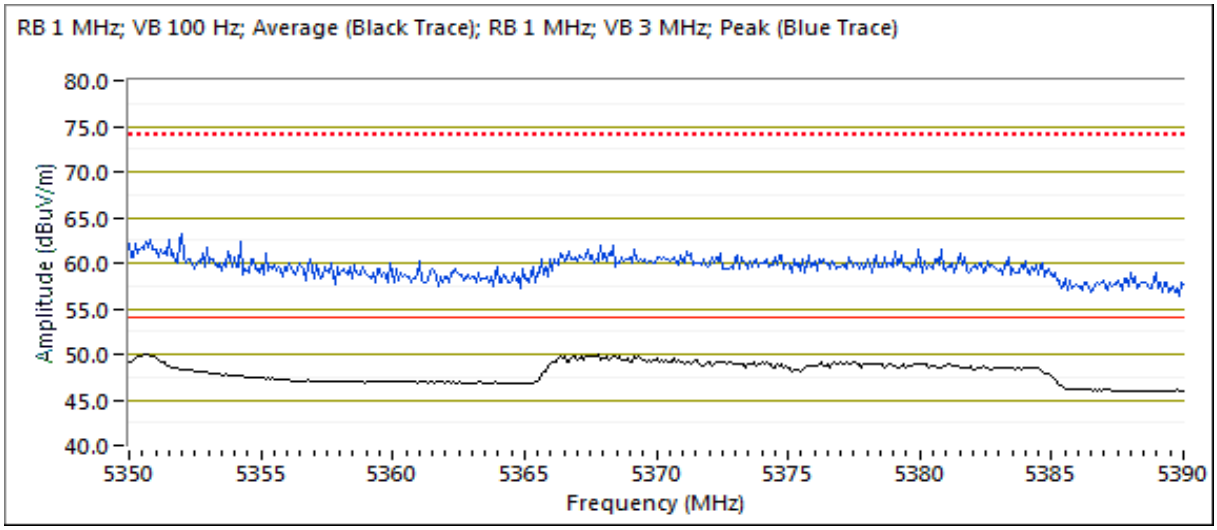
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 11 & 64 Mode: ax20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 8.6mbps / chain

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.560 | 50.0 | V | 54.0 | -4.0 | AVG | 181 | 1.7 | Note 3: RB 1 MHz; VB: 100 Hz |
| 5350.400 | 44.8 | H | 54.0 | -9.2 | AVG | 181 | 1.7 | POS; RB 1 MHz; VB: 100 Hz |
| 5350.480 | 63.9 | V | 74.0 | -10.1 | PK | 181 | 1.7 | RB 1 MHz; VB: 3 MHz |
| 5368.840 | 57.7 | H | 74.0 | -16.3 | PK | 181 | 1.7 | Note 3: RB 1 MHz; VB: 100 Hz |



# EMC Test Data

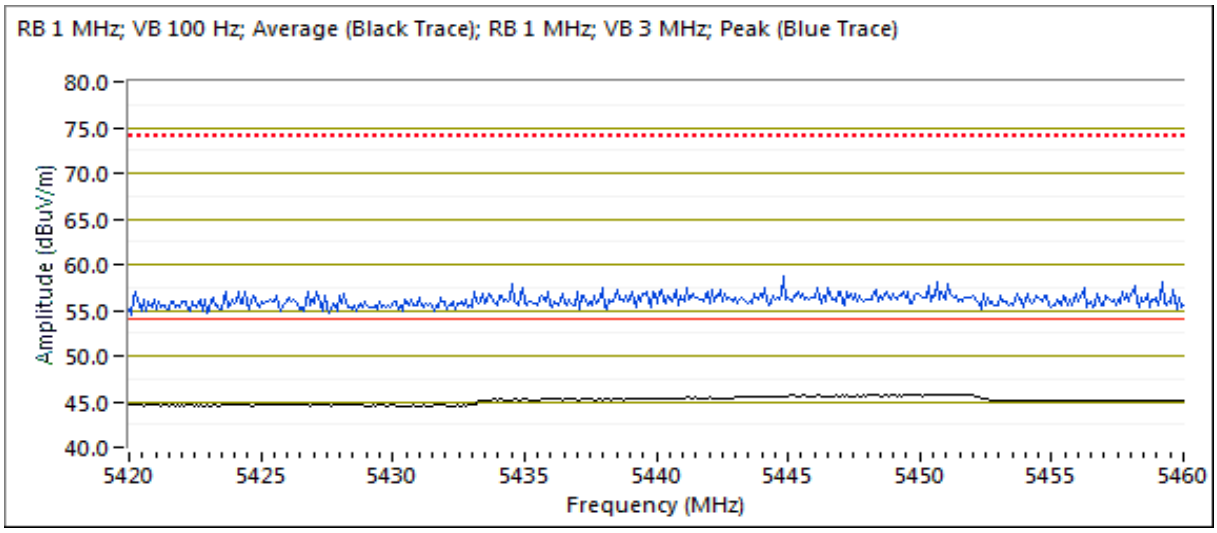
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 1 & 100 Mode: ax20 Pwr Setting: 24 (q96) & 9 (q36)
Tx Chain: 4TX Data Rate: 8.6mbps / chain

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5447.980 | 46.0 | V | 54.0 | -8.0 | AVG | 186 | 1.6 | Note 3: RB 1 MHz; VB: 100 Hz |
| 5459.840 | 58.9 | V | 74.0 | -15.1 | PK | 186 | 1.6 | RB 1 MHz; VB: 3 MHz |

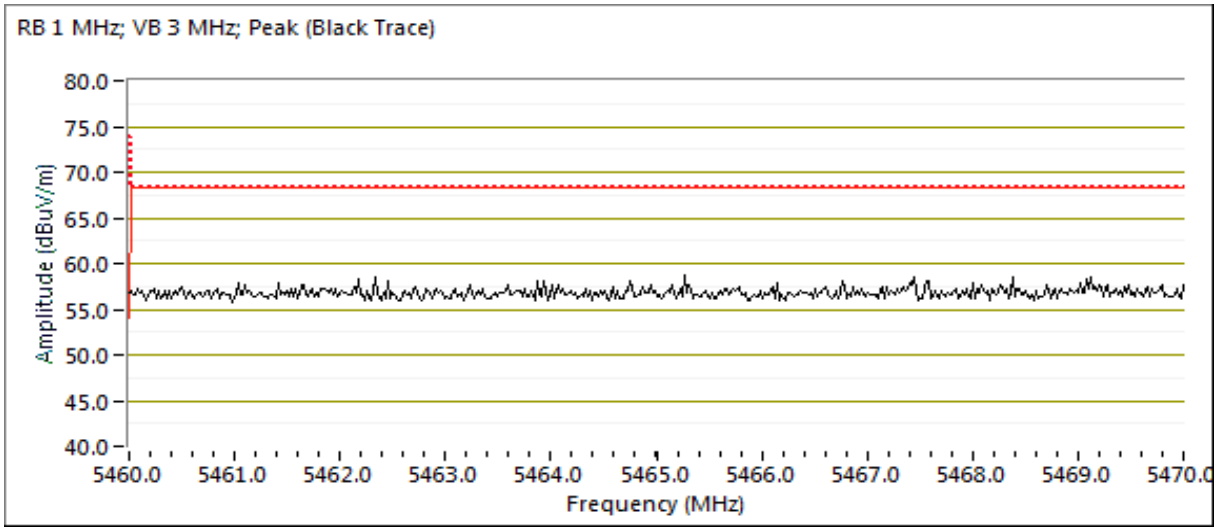


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5468.660 | 58.7 | V | 68.3 | -9.6 | PK | 186 | 1.6 | POS; RB 1 MHz; VB: 3 MHz |



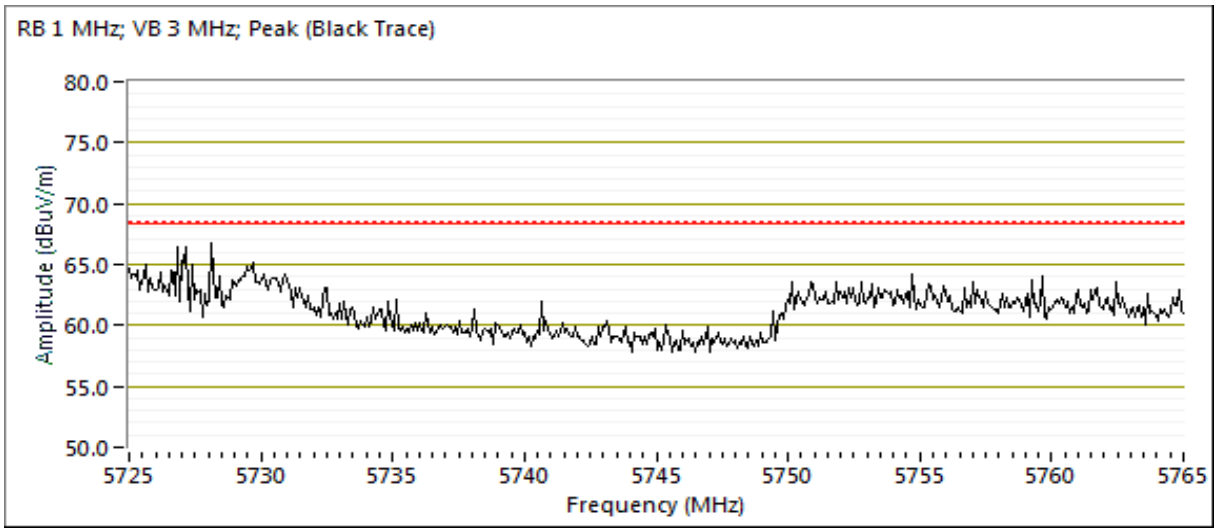
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 11 & 140 Mode: ax20 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 8.6mbps / chain

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5757.300 | 67.2 | V | 68.3 | -1.1 | PK | 187 | 1.5 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

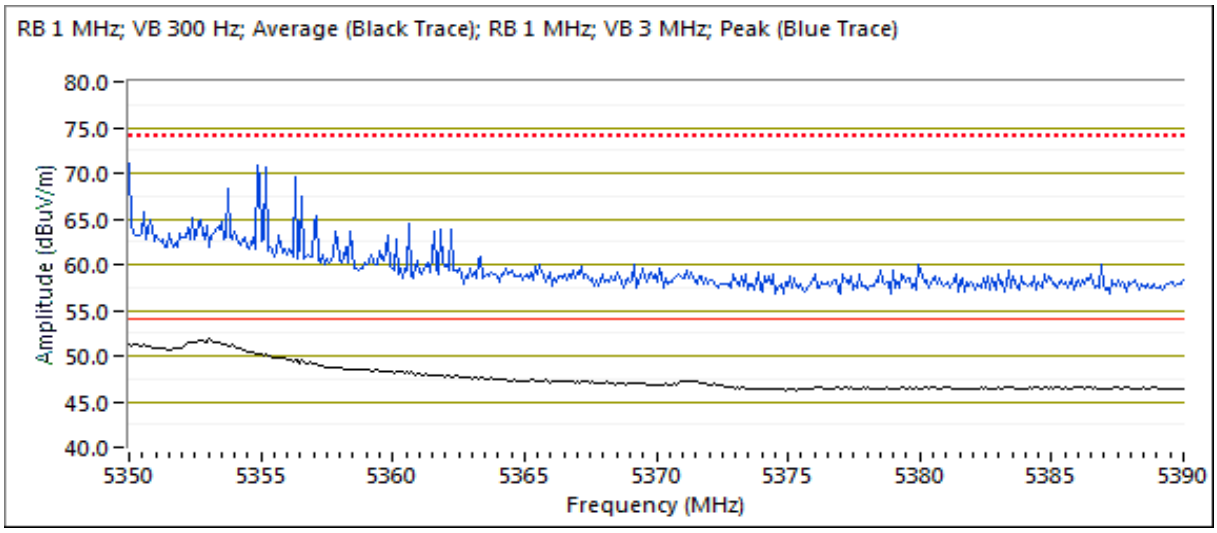
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 9 & 62 Mode: ax40 Pwr Setting: 24 (q96) & 15.5(q62)
Tx Chain: 4TX Data Rate: 17.2mbps / chain

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5352.600 | 51.6 | V | 54.0 | -2.4 | AVG | 185 | 1.7 | Note 3: RB 1 MHz; VB: 300 Hz |
| 5351.040 | 71.1 | V | 74.0 | -2.9 | PK | 185 | 1.7 | RB 1 MHz; VB: 3 MHz |



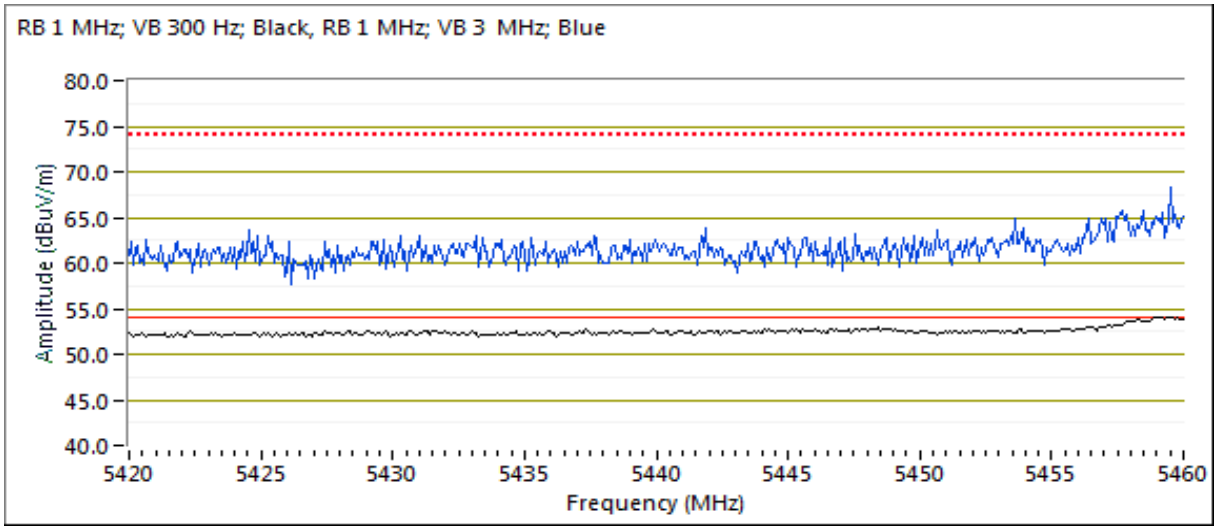
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #11: Radiated Bandedge Measurements, 5470-5725MHz
3/11/2020

Channel: 3 & 102 Mode: ax40 Pwr Setting: 24 (q96) & 14 (q56)
Tx Chain: 4TX Data Rate: 17.2mbps / chain

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.480 | 53.9 | V | 54.0 | -0.1 | AVG | 181 | 1.8 | POS; RB 1MHz; VB: 300Hz; Note 3 |
| 5457.630 | 69.2 | V | 74.0 | -4.8 | PK | 181 | 1.8 | POS; RB 1 MHz; VB: 3 MHz |

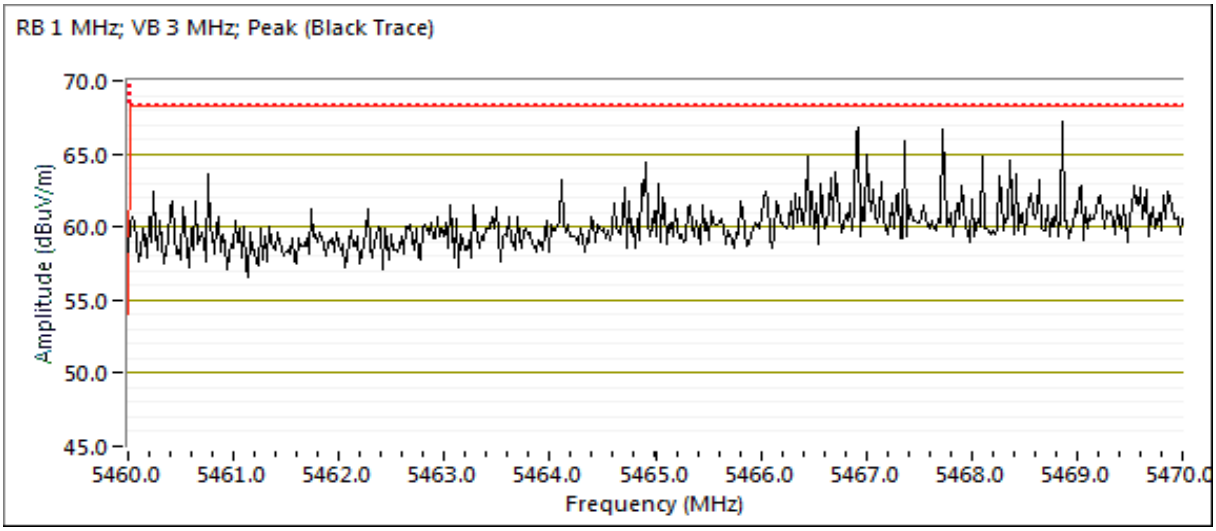


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5467.090 | 67.8 | V | 68.3 | -0.5 | PK | 225 | 1.8 | POS; RB 1 MHz; VB: 3 MHz |



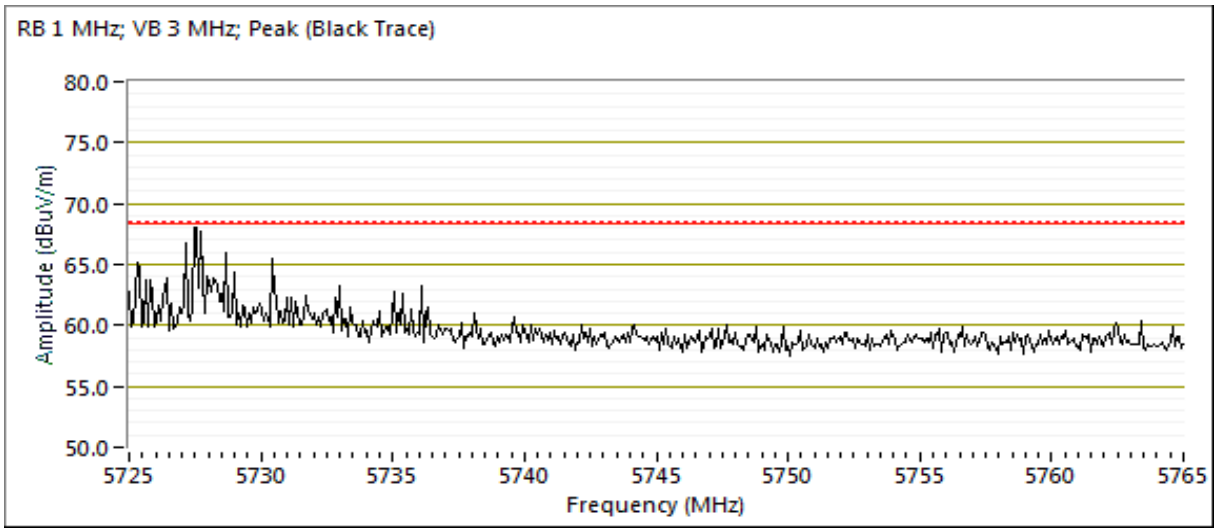
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Channel: 9 & 134 Mode: ax40 Pwr Setting: 24 (q96) & 18 (q72)
Tx Chain: 4TX Data Rate: 17.2mbps / chain

*5725 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5727.650 | 67.8 | V | 68.3 | -0.5 | PK | 187 | 1.9 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

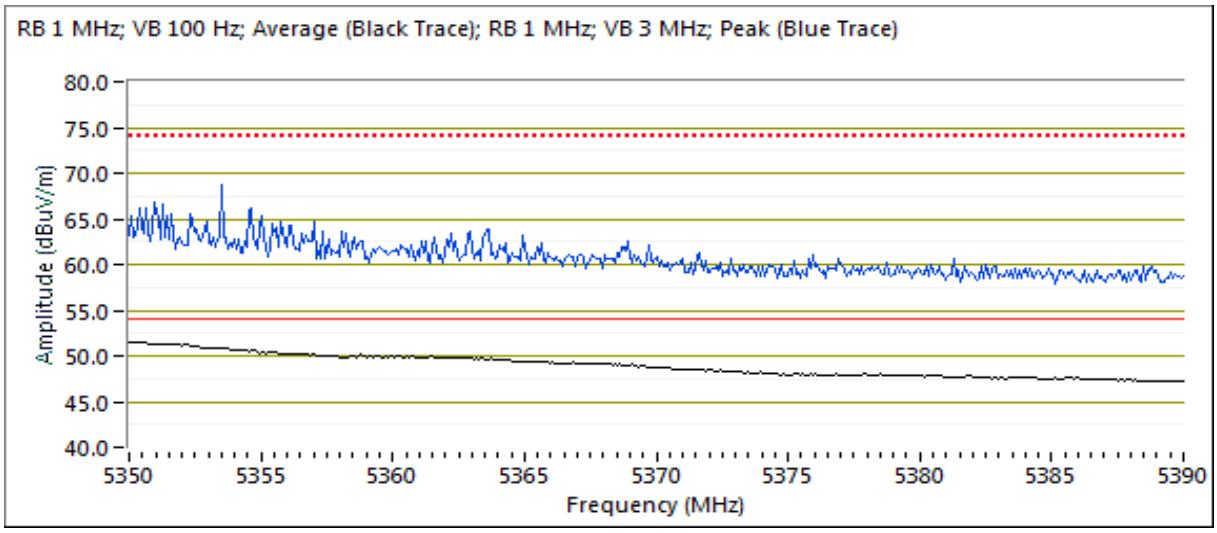
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 6 & 58 Mode: ax20 & ax80 Pwr Setting: 24 (q96) & 16.5 (q66)
Tx Chain: 4Tx Data Rate: 36mbps / chain

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5351.630 | 51.4 | V | 54.0 | -2.6 | AVG | 182 | 1.7 | Note 3: RB 1 MHz; VB: 100 Hz |
| 5351.420 | 67.9 | V | 74.0 | -6.1 | PK | 182 | 1.7 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

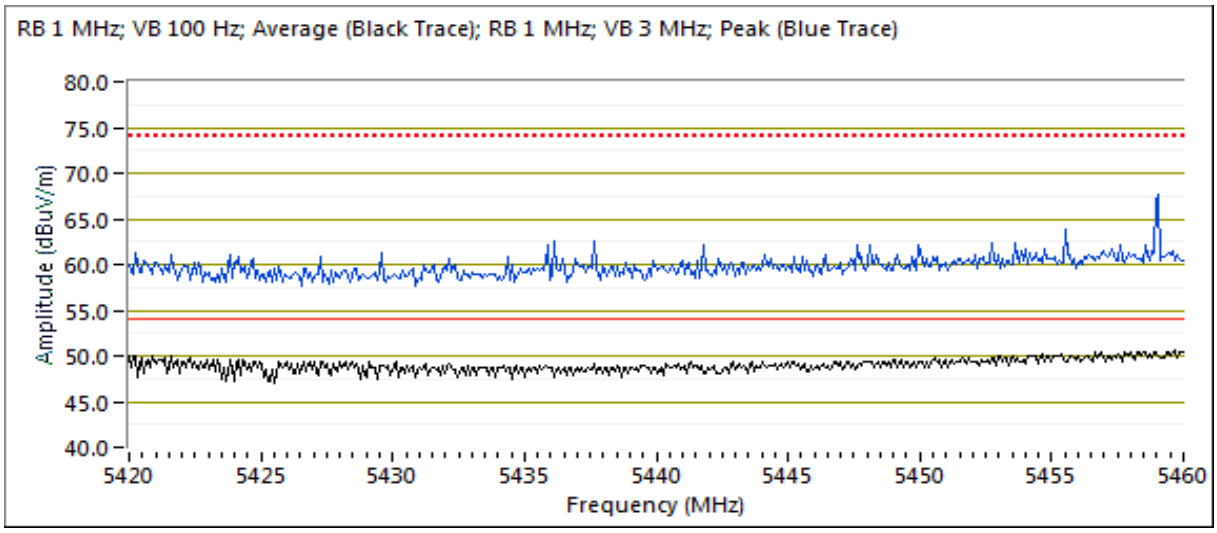
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

Channel: 1 & 106 Mode: ax20 & ax80 Pwr Setting: 24 (q96) & 17 (q68)
Tx Chain: 4Tx Data Rate: 36mbps / chain

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.280 | 50.6 | V | 54.0 | -3.4 | AVG | 182 | 1.9 | Note 3: RB 1 MHz; VB: 100 Hz |
| 5459.840 | 67.8 | V | 74.0 | -6.2 | PK | 182 | 1.9 | RB 1 MHz; VB: 3 MHz |

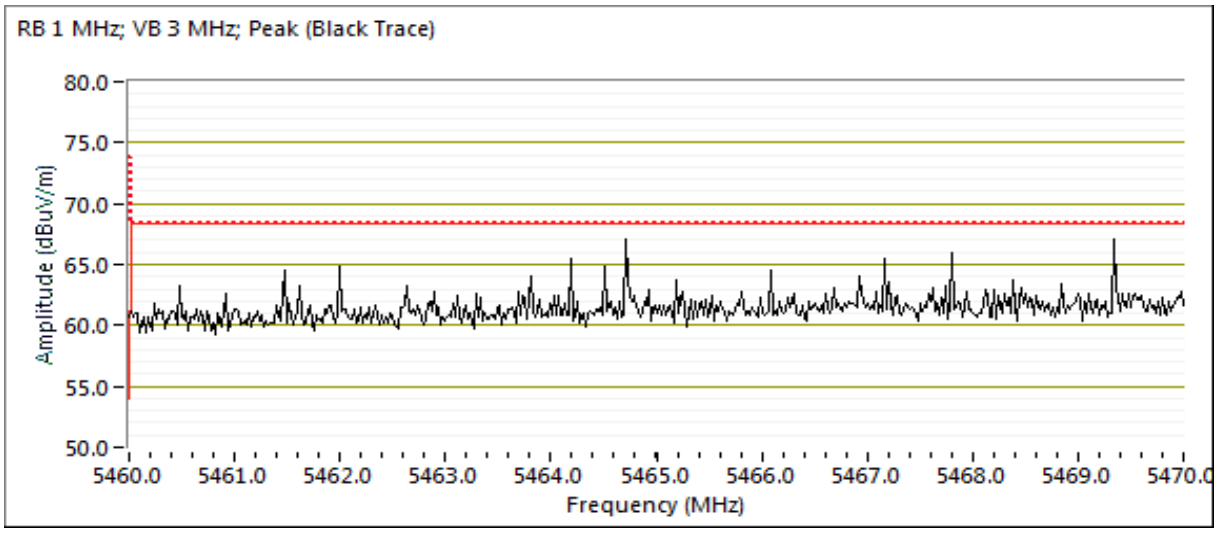


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5469.760 | 67.9 | V | 68.3 | -0.4 | PK | 182 | 1.9 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #17: Radiated Bandedge Measurements, 5150-5350MHz

Date of Test: 03/11/20
Test Engineer: M. Birgani
Test Location: Chamber 4

Config. Used: 1
Config Change: -
EUT Voltage: 120V/ 60Hz

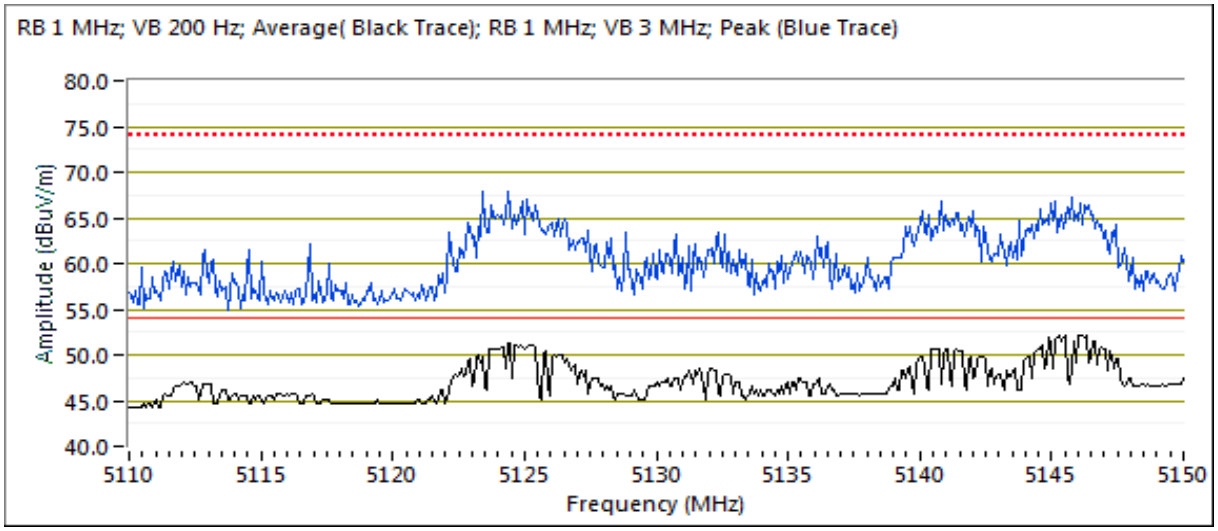
Channel: 6 & 50
Tx Chain: 4Tx

Mode: ax20 & ax160
Data Rate: 72mbps / chain

Pwr Setting: 24 (q96) & 17 (q68)

*5150 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5145.120 | 50.9 | V | 54.0 | -3.1 | AVG | 167 | 1.6 | RB 1 MHz; VB: 200 Hz; Note 3 |
| 5146.170 | 70.3 | V | 74.0 | -3.7 | PK | 167 | 1.6 | RB 1 MHz; VB: 3 MHz |

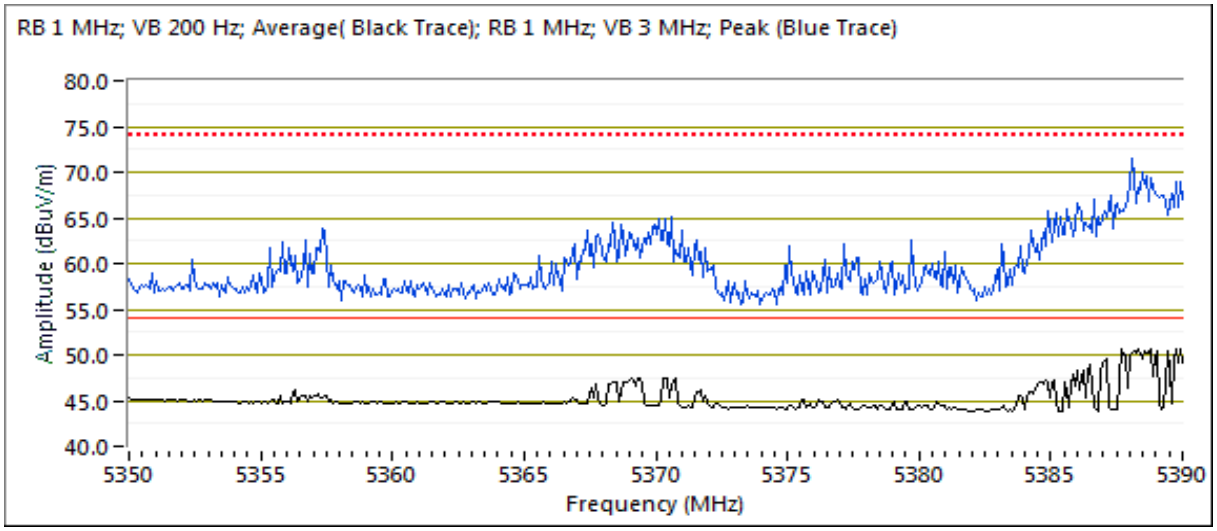


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5350 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBμV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5388.690 | 53.4 | V | 54.0 | -0.6 | AVG | 166 | 1.6 | RB 1 MHz; VB: 200 Hz; Note 3 |
| 5389.910 | 73.0 | V | 74.0 | -1.0 | PK | 166 | 1.6 | RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

Run #18: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 03/24/20
Test Engineer: M. Birgani
Test Location: Chamber 4

Config. Used: 1
Config Change: -
EUT Voltage: 120V/ 60Hz

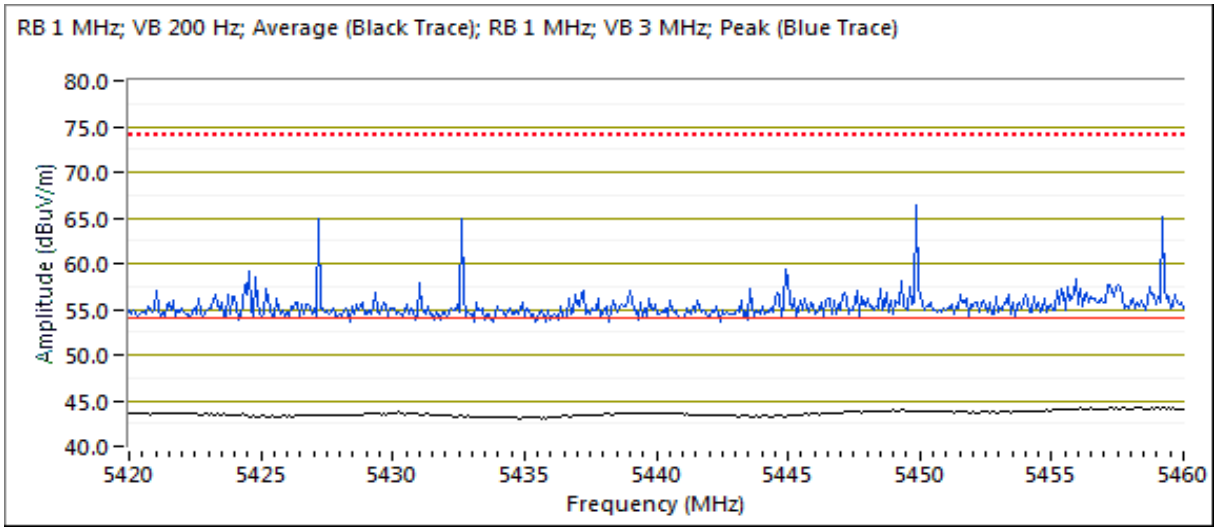
Channel: 6 & 114
Tx Chain: 4Tx

Mode: ax20 & ax160
Data Rate: 72mbps / chain

Pwr Setting: 24 (q96) & 15.0 (q60)

*5460 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | FCC 15.209 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5456.470 | 66.3 | V | 74.0 | -7.7 | PK | 360 | 1.0 | RB 1 MHz; VB: 3 MHz |
| 5457.440 | 44.2 | V | 54.0 | -9.8 | AVG | 360 | 1.0 | RB 1 MHz; VB: 200 Hz; Note 3 |

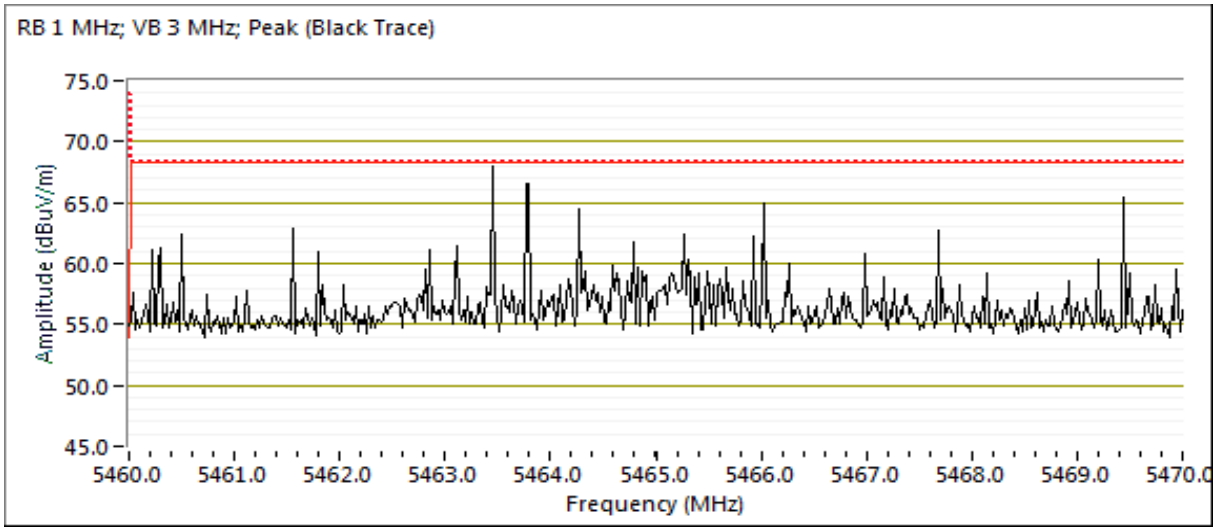


# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

*5470 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.E | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | V/H | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5465.410 | 67.7 | V | 68.3 | -0.6 | PK | 360 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | 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.

### 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: 20-22 °C
Rel. Humidity: 42-45 %

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

No deviations were made from the requirements of the standard.

### Sample Notes

Sample S/N: M11917QW000T
Driver:

Date of Test: 7/25-29/19
Test Engineer: R. Varelas; M. Birgani
Test Location: Lab 3

Config. Used: 1
Config Change: -
Host EUT Voltage: 110V/ 60Hz

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|
| 1 | Power, 5250 - 5350MHz | 15.407(a) (1), (2), (3) RSS-247 6.2 | Pass | a: 95.5 mW<br>ac20: 97.3 mW<br>ac40: 178.1 mW<br>ac80: 136.6 mW<br>ac160: 87.5 mW |
| 1 | PSD, 5250 - 5350MHz | 15.407(a) (1), (2), (3) RSS-247 6.2 | Pass | a: 7.1 mW/MHz<br>ac20: 6.9 mW/MHz<br>ac40: 6.3 mW/MHz<br>ac80: 2.5 mW/MHz<br>ac160: 1.6 mW/MHz |
| 1 | Max EIRP 5250 - 5350MHz | TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm. | Pass | EIRP = 28.2 dBm (657.8 mW) |
| 1 | 26dB Bandwidth | 15.407 (Information only) | - | > 20MHz for all modes |
| 1 | 99% Bandwidth | RSS-247 (Information only) | N/A | a: 16.8 MHz<br>ac20: 17.9 MHz<br>ac40: 36.6 MHz<br>ac80: 76.1 MHz<br>ac160: 155.0 MHz |
| 2 | Antenna Conducted - Out of Band Spurious | 15.407(b) -27dBm/MHz | | All emissions below the -27dBm/MHz limit |

## Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet | pkt duty |
|---|---|---|---|---|---|---|---|---|---|
| 11a | 6 | 99.0% | Yes | 5.06 | 0.0 | 0.0 | 10 | 7974 | -1 |
| ac20 | 6.5 | 97.6% | Yes | 5.271 | 0.1 | 0.2 | 190 | 4324 | -1 |
| ac40 | 13.5 | 97.3% | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 | -1 |
| ac80 | 29.3 | 96.0% | Yes | 1.432 | 0.2 | 0.4 | 698 | 5159 | -1 |
| ac160 | 58.5 | 95.6% | Yes | 1.439 | 0.2 | 0.4 | 695 | 10443 | -1 |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

| | |
|---|---|
| Note 1: | Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, auto sweep, RMS detector, power averaging on (transmitted signal was continuous, duty cycle ≥ 98%) and power integration over the OBW (method SA-1 of ANSI C63.10). |
| Note 1: | Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, RMS detector, trace average 100 traces (at least 100 traces, increase the number to get true average), power averaging on and power integration over the OBW. Tthe measurements were adjusted by adding YY dB. This is based on 10log(1/x), where x is the duty cycle. (method SA-2 of ANSI C63.10) |
| Note 2: | Measured using the same analyzer settings used for output power. |
| Note 3: | 99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and VB ≥ 3*RB, Span between 1.5 and 5 times OBW. |
| Note 4: | 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

| Freq | Antenna Gain (dBi) / Chain | | | | BF | MultiChain Legacy | CDD | Sectorized / Xpol | Dir G (dBi) (PWR) | Dir G (dBi) (PSD) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | | | | | | |
| 5250-5350 | 4.8 | 4.4 | 4.3 | 4.7 | Yes | Yes | Yes | Yes | 2.5 | 8.3 |

For devices that support CDD modes

| | | | |
|---|---|---|---|
| Min # of spatial streams: | 1 | Chain 1 = Blue antenna cable | Chain 3 = Grey antenna cable |
| Max # of spatial streams: | 4 | Chain 2 = White antenna cable | Chain 4 = Black antenna cable |

| | |
|---|---|
| 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:<br>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.<br>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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC  Single chain mode uses Ant 1

Mode: 11a  Antenna Gain: 4.8 dBi  Ant 1  Max EIRP (mW): 288.4

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 2 | 21.5 | 21.4 | 99 | | 87.1 | 19.4 | 24.0 | 0.096 | Pass |
| | 1 | | | | 19.4 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5300 | 2 | 21.5 | 21.1 | 99 | | 95.5 | 19.8 | 24.0 | | Pass |
| | 1 | | | | 19.8 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5320 | 2 | 20.0 | 21.2 | 99 | | 69.2 | 18.4 | 24.0 | | Pass |
| | 1 | | | | 18.4 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: 11a  Max EIRP (mW): 288.4

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 2 | 21.5 | 16.8 | 99 | | 87.1 | 19.4 | 23.3 | 0.096 | Pass |
| | 1 | | | | 19.4 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5300 | 2 | 21.5 | 16.8 | 99 | | 95.5 | 19.8 | 23.3 | | Pass |
| | 1 | | | | 19.8 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5320 | 2 | 20.0 | 16.8 | 99 | | 69.2 | 18.4 | 23.3 | | Pass |
| | 1 | | | | 18.4 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |

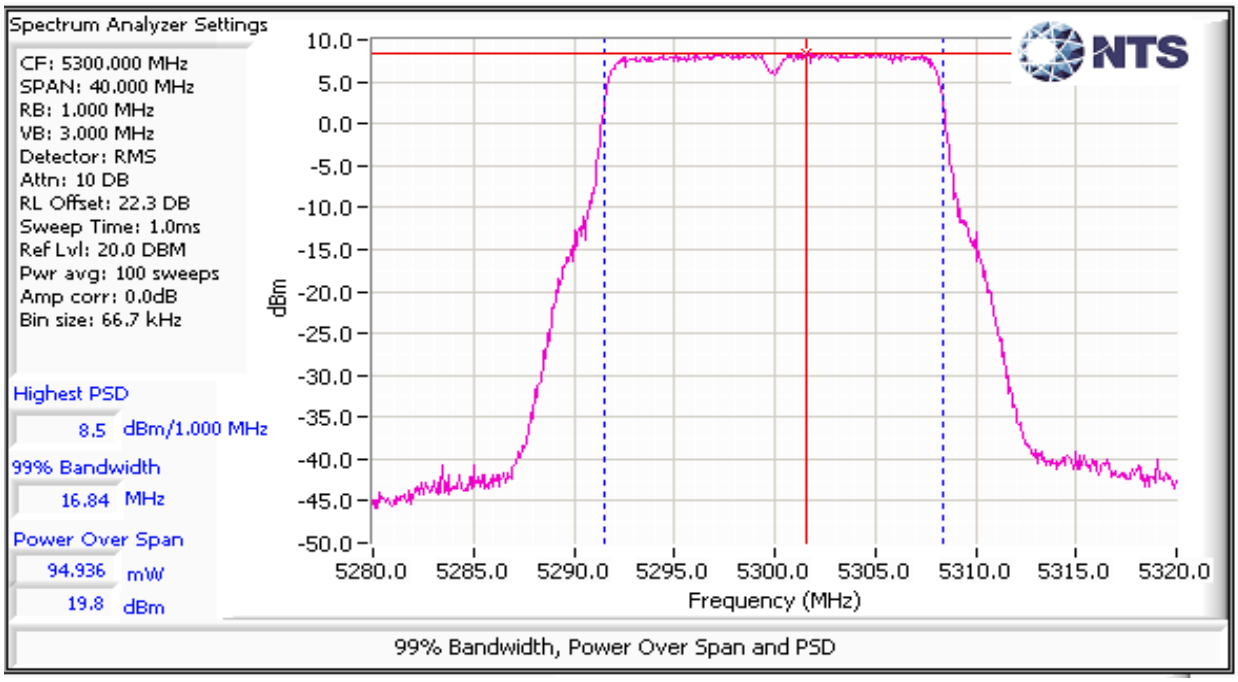
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

5250-5350 PSD - FCC/ISED

Mode: 11a

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 2 | 21.5 | | 99 | | 6.5 | 8.1 | 11.0 | 11.0 | Pass |
| | 1 | | | | 8.1 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5300 | 2 | 21.5 | | 99 | | 7.1 | 8.5 | 11.0 | 11.0 | Pass |
| | 1 | | | | 8.5 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5320 | 2 | 21.0 | | 99 | | 5.1 | 7.1 | 11.0 | 11.0 | Pass |
| | 1 | | | | 7.1 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ac20 Max EIRP (mW): 173.0

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 1 | 15 | 21.1 | 98 | 13.4 | 94.0 | 19.7 | 24.0 | 0.097 | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.5 | | | | | |
| | 2 | | | | 13.9 | | | | | |
| 5300 | 1 | 15 | 21.4 | 98 | 13.8 | 97.3 | 19.9 | 24.0 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.6 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5320 | 1 | 14.5 | 21.5 | 98 | 13.6 | 96.7 | 19.9 | 24.0 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: ac20 Max EIRP (mW): 173.0

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 1 | 15 | 17.9 | 98 | 13.4 | 94.0 | 19.7 | 23.5 | 0.097 | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.5 | | | | | |
| | 2 | | | | 13.9 | | | | | |
| 5300 | 1 | 15 | 17.9 | 98 | 13.8 | 97.3 | 19.9 | 23.5 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.6 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5320 | 1 | 14.5 | 17.9 | 98 | 13.6 | 96.7 | 19.9 | 23.5 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ac20 w /BF — Max EIRP (mW): 657.8

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 1 | 15 | 21.1 | 98 | 13.4 | 94.0 | 19.7 | 21.7 | 0.097 | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.5 | | | | | |
| | 2 | | | | 13.9 | | | | | |
| 5300 | 1 | 15 | 21.4 | 98 | 13.8 | 97.3 | 19.9 | 21.7 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.6 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5320 | 1 | 14.5 | 21.5 | 98 | 13.6 | 96.7 | 19.9 | 21.7 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: ac20 w /BF — Max EIRP (mW): 657.8

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 1 | 15 | 17.9 | 98 | 13.4 | 94.0 | 19.7 | 21.2 | 0.097 | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.5 | | | | | |
| | 2 | | | | 13.9 | | | | | |
| 5300 | 1 | 15 | 17.9 | 98 | 13.8 | 97.3 | 19.9 | 21.2 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.6 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5320 | 1 | 14.5 | 17.9 | 98 | 13.6 | 96.7 | 19.9 | 21.2 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |

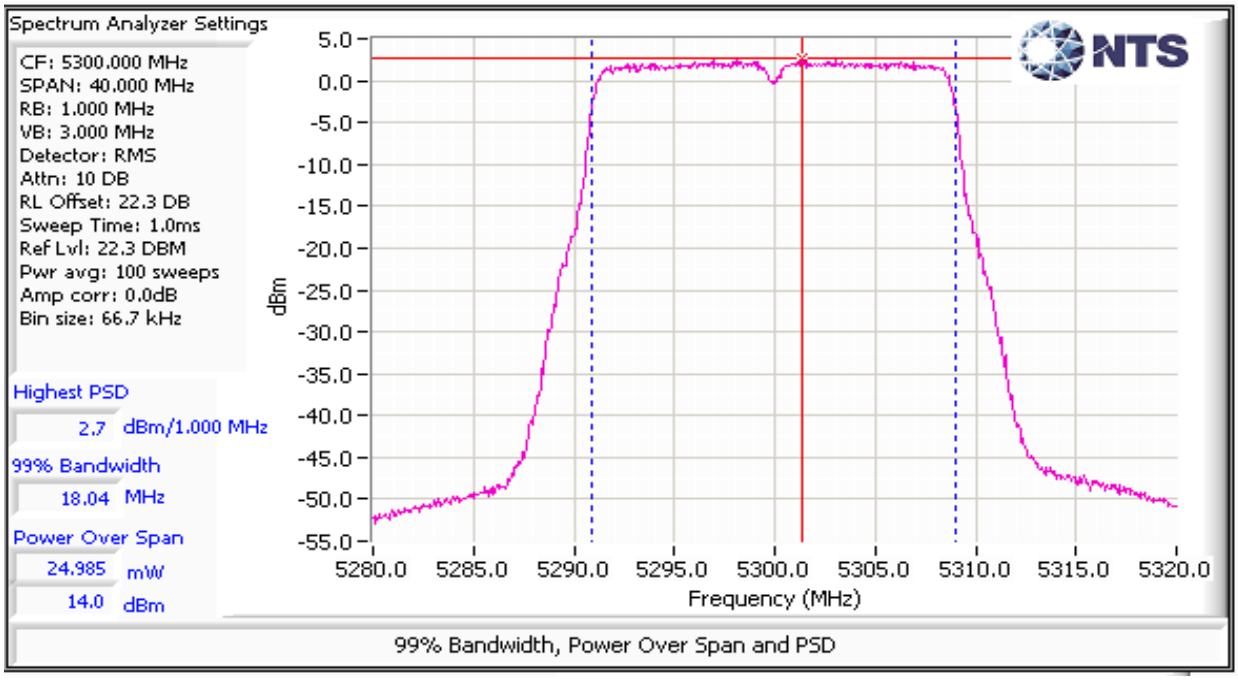
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

5250-5350 PSD - FCC/ISED

Mode: ac20

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 1 | 15 | | 97.6 | 1.8 | 6.6 | 8.2 | 8.7 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 2.0 | | | | | |
| | 2 | | | | 2.5 | | | | | |
| 5300 | 1 | 15 | | 97.6 | 2.2 | 6.9 | 8.4 | 8.7 | 11.0 | Pass |
| | 3 | | | | 2.2 | | | | | |
| | 4 | | | | 2.0 | | | | | |
| | 2 | | | | 2.7 | | | | | |
| 5320 | 1 | 14.5 | | 97.6 | 2.0 | 6.8 | 8.3 | 8.7 | 11.0 | Pass |
| | 3 | | | | 2.1 | | | | | |
| | 4 | | | | 2.3 | | | | | |
| | 2 | | | | 2.4 | | | | | |




99% Bandwidth, Power Over Span and PSD

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ac40 Max EIRP (mW): 316.7

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5270 | 1 | 18 | 40.3 | 97 | 16.1 | 178.1 | 22.5 | 24.0 | 0.178 | Pass |
| | 3 | | | | 16.2 | | | | | |
| | 4 | | | | 16.1 | | | | | |
| | 2 | | | | 17.0 | | | | | |
| 5310 | 1 | 16.75 | 39.6 | 97 | 15.4 | 148.6 | 21.7 | 24.0 | | Pass |
| | 3 | | | | 15.4 | | | | | |
| | 4 | | | | 15.9 | | | | | |
| | 2 | | | | 15.6 | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: ac40 Max EIRP (mW): 316.7

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5270 | 1 | 18 | 36.6 | 97 | 16.1 | 178.1 | 22.5 | 24.0 | 0.178 | Pass |
| | 3 | | | | 16.2 | | | | | |
| | 4 | | | | 16.1 | | | | | |
| | 2 | | | | 17.0 | | | | | |
| 5310 | 1 | 16.75 | 36.6 | 97 | 15.4 | 148.6 | 21.7 | 24.0 | | Pass |
| | 3 | | | | 15.4 | | | | | |
| | 4 | | | | 15.9 | | | | | |
| | 2 | | | | 15.6 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ac40 w/ BF — Max EIRP (mW): 256.8

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5270 | 1 | 16.5 | 38.0 | 97 | 15.5 | 144.4 | 21.6 | 21.7 | 0.144 | Pass |
| | 3 | | | | 14.2 | | | | | |
| | 4 | | | | 16.0 | | | | | |
| | 2 | | | | 15.9 | | | | | |
| 5310 | 1 | 15.5 | 38.0 | 97 | 14.6 | 115.7 | 20.6 | 21.7 | | Pass |
| | 3 | | | | 13.1 | | | | | |
| | 4 | | | | 15.2 | | | | | |
| | 2 | | | | 14.8 | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: ac40 w/ BF — Max EIRP (mW): 256.8

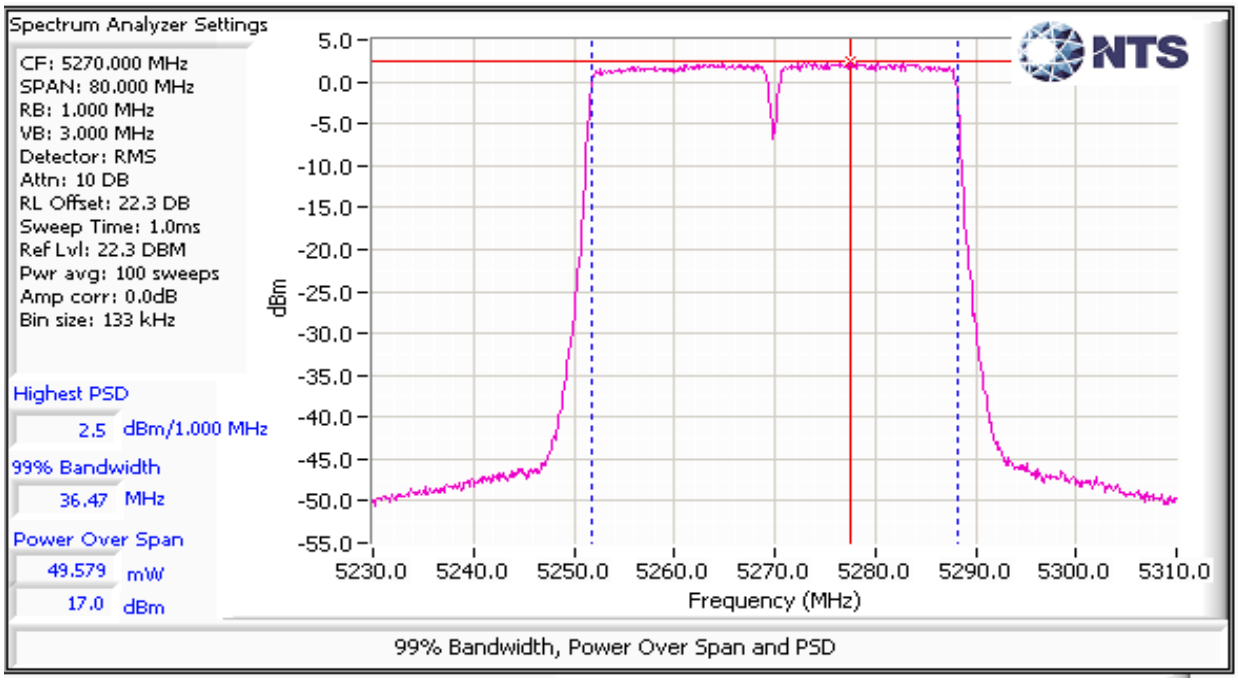
| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5270 | 1 | 16.5 | 36.6 | 97 | 15.5 | 144.4 | 21.6 | 21.7 | 0.144 | Pass |
| | 3 | | | | 14.2 | | | | | |
| | 4 | | | | 16.0 | | | | | |
| | 2 | | | | 15.9 | | | | | |
| 5310 | 1 | 15.5 | 36.6 | 97 | 14.6 | 115.7 | 20.6 | 21.7 | | Pass |
| | 3 | | | | 13.1 | | | | | |
| | 4 | | | | 15.2 | | | | | |
| | 2 | | | | 14.8 | | | | | |

MIMO Device 5250-5350 PSD - FCC/ISED

Mode: ac40

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5270 | 1 | 18 | | 97 | 1.5 | 6.3 | 8.0 | 8.7 | 11.0 | Pass |
| | 3 | | | | 1.8 | | | | | |
| | 4 | | | | 1.5 | | | | | |
| | 2 | | | | 2.5 | | | | | |
| 5310 | 1 | 16.75 | | 97 | 0.8 | 5.2 | 7.2 | 8.7 | 11.0 | Pass |
| | 3 | | | | 0.9 | | | | | |
| | 4 | | | | 1.3 | | | | | |
| | 2 | | | | 1.2 | | | | | |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



99% Bandwidth, Power Over Span and PSD

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ac80 Max EIRP (mW): 242.9

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5290 | 1 | 16.5 | 81.9 | 96 | 14.8 | 136.6 | 21.4 | 24.0 | 0.137 | Pass |
| | 3 | | | | 15.2 | | | | | |
| | 4 | | | | 15.4 | | | | | |
| | 2 | | | | 15.2 | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: ac80 Max EIRP (mW): 242.9

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5290 | 1 | 16.5 | 76.1 | 96 | 14.8 | 136.6 | 21.4 | 24.0 | 0.137 | Pass |
| | 3 | | | | 15.2 | | | | | |
| | 4 | | | | 15.4 | | | | | |
| | 2 | | | | 15.2 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ac80 w/ BF — Max EIRP (mW): 242.9

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5290 | 1 | 16.5 | 81.9 | 96 | 14.8 | 136.6 | 21.4 | 21.7 | 0.137 | Pass |
| | 3 | | | | 15.2 | | | | | |
| | 4 | | | | 15.4 | | | | | |
| | 2 | | | | 15.2 | | | | | |

MIMO Device - 5250-5350 MHz Band - ISED

Mode: ac80 w/ BF — Max EIRP (mW): 242.9

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5290 | 1 | 16.5 | 76.1 | 96 | 14.8 | 136.6 | 21.4 | 21.7 | 0.137 | Pass |
| | 3 | | | | 15.2 | | | | | |
| | 4 | | | | 15.4 | | | | | |
| | 2 | | | | 15.2 | | | | | |

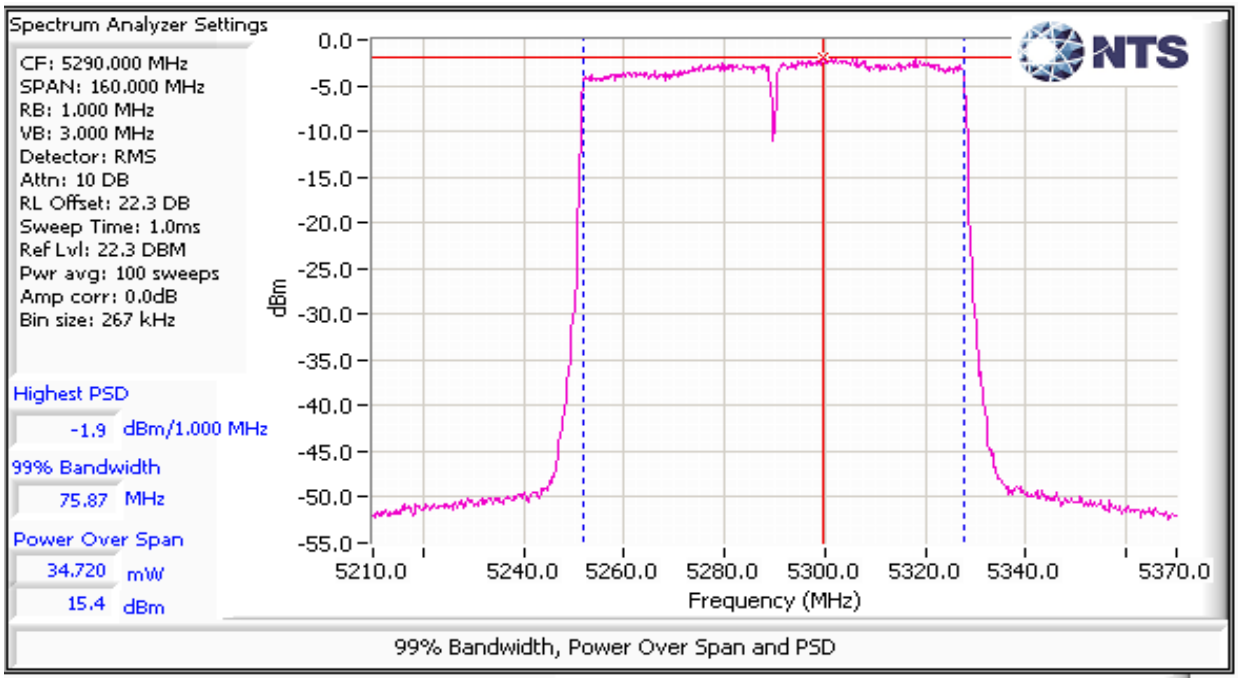
MIMO Device 5250-5350 PSD - FCC/ISED

Mode: ac80

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5290 | 1 | 16.5 | | 96 | -2.6 | 2.5 | 4.0 | 8.7 | 11.0 | Pass |
| | 3 | | | | -2.2 | | | | | |
| | 4 | | | | -1.9 | | | | | |
| | 2 | | | | -2.1 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - Portion within 5250-5350 MHz Band (UNII-2A) - FCC

Mode: ac160 Max EIRP (mW): 155.6

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | | 96 | 12.9 | 87.5 | 19.4 | 24.0 | 0.088 | Pass |
| | 3 | | | | 13.3 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |

Portion within 5150-5250 MHz band (UNII-1)

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | 82.14 | 96 | 12.8 | 82.6 | 19.2 | 30.0 | 0.083 | Pass |
| | 3 | | | | 13.1 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 12.8 | | | | | |

MIMO Device - Portion within 5250-5350 MHz Band (UNII-2A) - ISED

Mode: ac160 Max EIRP (mW): 155.6

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | 77.47 | 96 | 12.9 | 87.5 | 19.4 | 24.0 | 0.088 | Pass |
| | 3 | | | | 13.3 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |

Portion within 5150-5250 MHz band (UNII-1)

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power dBm | Total Power dBm (eirp) | ISED Limit dBm (eirp) | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | 77.47 | 96 | 12.8 | 19.2 | 19.2 | 23.0 | 0.019 | Pass |
| | 3 | | | | 13.1 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 12.8 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - Portion within 5250-5350 MHz Band (UNII-2A) - FCC

Mode: ac160 w/ BF — Max EIRP (mW): 155.6

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | | 96 | 12.9 | 87.5 | 19.4 | 21.7 | 0.088 | Pass |
| | 3 | | | | 13.3 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |

Portion within 5150-5250 MHz band (UNII-1)

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power[1] mW | Total Power[1] dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | 82.1 | 96 | 12.8 | 82.6 | 19.2 | 27.9 | 0.083 | Pass |
| | 3 | | | | 13.1 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 12.8 | | | | | |

MIMO Device - Portion within 5250-5350 MHz Band (UNII-2A) - ISED

Mode: ac160 w/ BF — Max EIRP (mW): 69.5

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power[1] mW | Total Power[1] dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 13.5 | 77.3 | 96 | 9.8 | 39.1 | 15.9 | 21.7 | 0.039 | Pass |
| | 3 | | | | 8.8 | | | | | |
| | 4 | | | | 10.1 | | | | | |
| | 2 | | | | 10.0 | | | | | |

Portion within 5150-5250 MHz band (UNII-1)

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power dBm | Total Power dBm (eirp) | ISED Limit dBm (eirp) | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 13.5 | 77.3 | 96 | 9.0 | 14.9 | 23.0 | 23.0 | 0.015 | Pass |
| | 3 | | | | 7.4 | | | | | |
| | 4 | | | | 8.8 | | | | | |
| | 2 | | | | 9.2 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - Portion within 5250-5350 MHz Band (UNII-2A) PSD - FCC
Mode: ac160

| 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 | Result |
|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | | 96 | -4.3 | 1.6 | 2.0 | 8.7 | Pass |
| | 3 | | | | -4.3 | | | | |
| | 4 | | | | -4.4 | | | | |
| | 2 | | | | -4.2 | | | | |

Portion within 5150-5250 MHz band (UNII-1)

| 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 | Result |
|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17.25 | | 96 | -4.6 | 1.6 | 2.0 | 14.9 | Pass |
| | 3 | | | | -4.1 | | | | |
| | 4 | | | | -4.1 | | | | |
| | 2 | | | | -4.3 | | | | |

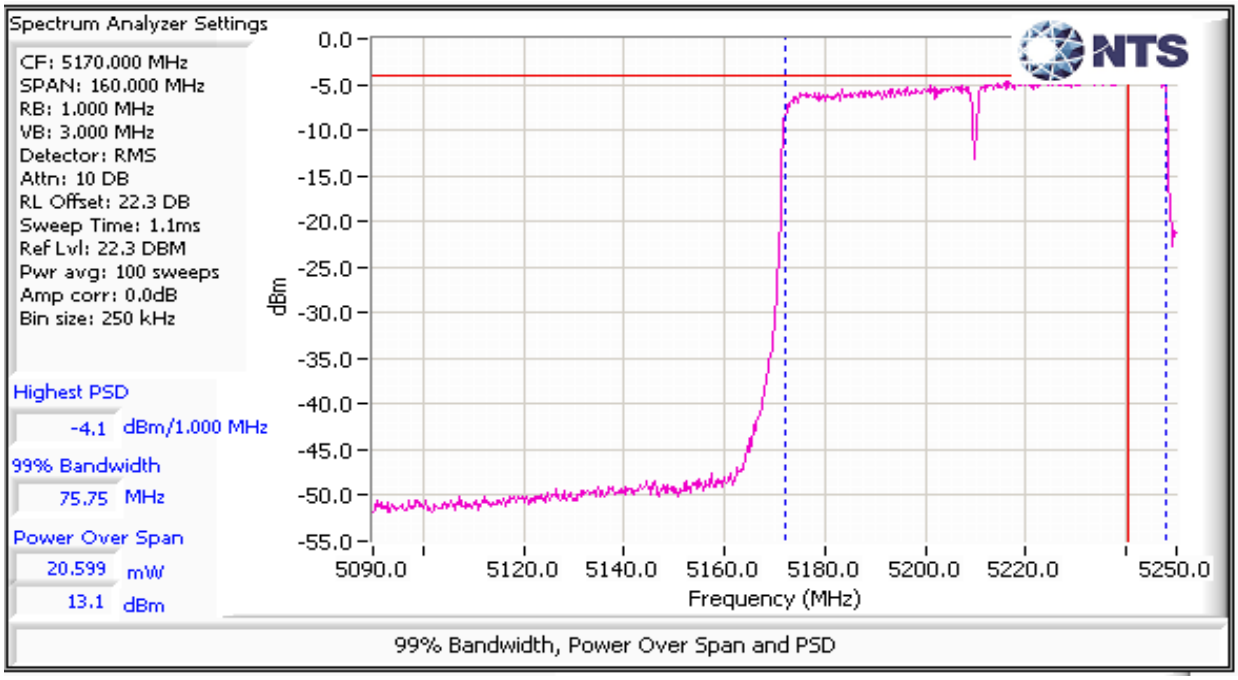
MIMO Device - Portion within 5250-5350 MHz Band (UNII-2A) PSD - ISED
Mode: ac160

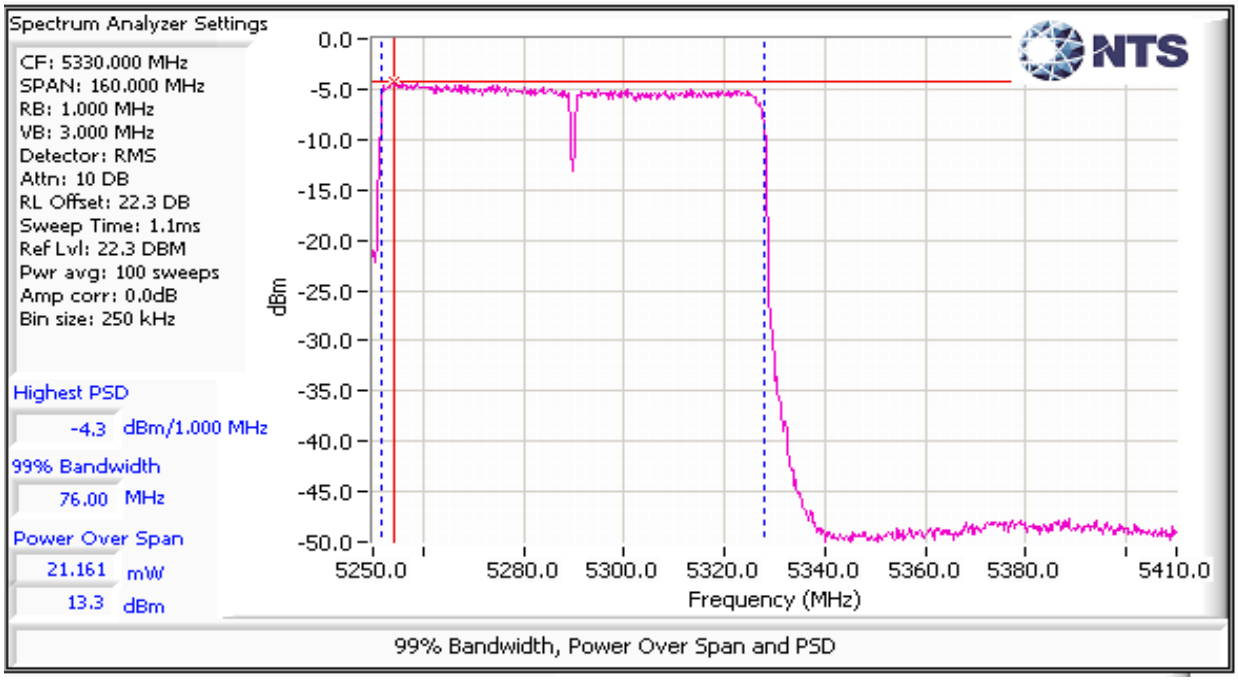
| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[1] mW/MHz | Total PSD[1] dBm/MHz | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 13.5 | | 96 | -7.9 | 0.7 | -1.5 | 11.0 | Pass |
| | 3 | | | | -8.9 | | | | |
| | 4 | | | | -7.7 | | | | |
| | 2 | | | | -7.8 | | | | |

Portion within 5150-5250 MHz band (UNII-1)

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[1] mW/MHz | Total PSD[1] dBm/MHz | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 13.5 | | 96 | -8.0 | 0.6 | -2.2 | 1.9 | Pass |
| | 3 | | | | -9.5 | | | | |
| | 4 | | | | -8.2 | | | | |
| | 2 | | | | -7.8 | | | | |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | 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.

### 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: 20 °C
Rel. Humidity: 45 %

### Summary of Results

| Run # | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|
| 1 | PSD, 5250 - 5350MHz | 15.407(a) (1), (2), (3)<br>RSS-247 6.2 | | ax20: 7.3 mW/MHz<br>ax40: 5.0 mW/MHz<br>ax80: 2.7 mW/MHz<br>ax160: 1.6 mW/MHz |
| 1 | 99% Bandwidth | RSS-247<br>(Information only) | N/A | ax20: 19.2 MHz<br>ax40: 38.0 MHz<br>ax80: 77.3 MHz<br>ax160: 155.0 MHz |

### 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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Procedure Comments:

Measurements performed in accordance with ANSI C63.10

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet |
|---|---|---|---|---|---|---|---|---|
| ac20 | 6.5 | 97.6% | Yes | 5.27 | 0.1 | 0.2 | 190 | 4324 |
| ac40 | 13.5 | 97.3% | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 |
| ac80 | 29.3 | 96.0% | Yes | 1.43 | 0.2 | 0.4 | 698 | 5159 |
| ac160 | 58.5 | 95.6% | Yes | 1.44 | 0.2 | 0.4 | 695 | 10443 |

## Sample Notes

Sample S/N: M11917QW000T

Date of Test: 03/11/20
Test Engineer: M. Birgani
Test Location: Fremont EMC Lab #3

Config. Used: 1
Config Change: None
EUT Voltage: 3.3Vdc

Antenna chain information: Chain 1: Blue Chain 2: White
Chain 3: Gray Chain 4: Black

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

| | |
|---|---|
| Note 2: | Measured using the same analyzer settings used for output power. |
| Note 3: | For RSS-247 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 C63.10 - RB between 1-5 % of OBW and VB ≥ 3*RB, Span between 1.5 and 5 times OBW. |
| 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

| Freq | Antenna Gain (dBi) / Chain | | | | BF | MultiChain Legacy | CDD | Sectorized / Xpol | Dir G (dBi) (PWR) | Dir G (dBi) (PSD) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | | | | | | |
| 5250-5350 | 4.8 | 4.4 | 4.3 | 4.7 | Yes | Yes | Yes | Yes | 2.5 | 8.3 |

For devices that support CDD modes

Min # of spatial streams:

Max # of spatial streams:

| | |
|---|---|
| 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:<br>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.<br>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) |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

5250-5350 PSD - FCC/ISED
Mode: ax20

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5260 | 1 | 15 | 19.2 | 97.6 | 2.6 | 7.1 | 8.5 | 8.7 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 2.0 | | | | | |
| | 2 | | | | 2.8 | | | | | |
| 5300 | 1 | 15 | 19.2 | 97.6 | 2.8 | 7.3 | 8.6 | 8.7 | 11.0 | Pass |
| | 3 | | | | 2.3 | | | | | |
| | 4 | | | | 2.0 | | | | | |
| | 2 | | | | 2.9 | | | | | |
| 5320 | 1 | 14.5 | 19.2 | 97.6 | 2.4 | 6.6 | 8.2 | 8.7 | 11.0 | Pass |
| | 3 | | | | 2.5 | | | | | |
| | 4 | | | | 1.3 | | | | | |
| | 2 | | | | 2.0 | | | | | |

MIMO Device 5250-5350 PSD - FCC/ISED
Mode: ax40

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5270 | 1 | 16.5 | 38.0 | 97.3 | 0.8 | 5.0 | 7.0 | 8.7 | 11.0 | Pass |
| | 3 | | | | 0.9 | | | | | |
| | 4 | | | | 0.5 | | | | | |
| | 2 | | | | 1.1 | | | | | |
| 5310 | 1 | 15.5 | 38.0 | 97.3 | 0.3 | 4.2 | 6.2 | 8.7 | 11.0 | Pass |
| | 3 | | | | 0.1 | | | | | |
| | 4 | | | | -0.7 | | | | | |
| | 2 | | | | 0.4 | | | | | |

MIMO Device 5250-5350 PSD - FCC/ISED
Mode: ax80

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5290 | 1 | 16.5 | 77.3 | 96.0 | -1.7 | 2.7 | 4.3 | 8.7 | 11.0 | Pass |
| | 3 | | | | -1.9 | | | | | |
| | 4 | | | | -2.4 | | | | | |
| | 2 | | | | -1.7 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device 5250-5350 PSD - FCC/ISED

Mode: ax160

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 17 | 155.0 | 95.6 | -4.2 | 1.6 | 2.0 | 8.7 | 11.0 | Pass |
| | 3 | | | | -4.2 | | | | | |
| | 4 | | | | -4.7 | | | | | |
| | 2 | | | | -4.0 | | | | | |

Mode: ax160 w/BF

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5250 | 1 | 14 | | 95.6 | -4.7 | 1.4 | 1.5 | 8.7 | 11.0 | Pass |
| | 3 | | | | -4.5 | | | | | |
| | 4 | | | | -5.4 | | | | | |
| | 2 | | | | -4.3 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | 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.

### 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: 20-22 °C
Rel. Humidity: 42-45 %

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

No deviations were made from the requirements of the standard.

### Sample Notes

Sample S/N: M11917QW000T
Driver:

Date of Test: 7/29-31/19
Test Engineer: R. Varelas; M. Birgani
Test Location: Lab #3

Config. Used: 1
Config Change: -
Host EUT Voltage: 110V/ 60Hz

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Summary of Results

| Run # | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|
| 1 | Power, 5470 - 5725MHz | 15.407(a) (1), (2), (3)<br>RSS-247 6.2 | Pass | a: 91.2 mW<br>ac20: 96.9 mW<br>ac40: 180.7 mW<br>ac80: 195.1 mW<br>ac160: 134.0 mW |
| 1 | PSD, 5470 - 5725MHz | 15.407(a) (1), (2), (3)<br>RSS-247 6.2 | Pass | a: 6.8 mW/MHz<br>ac20: 6.9 mW/MHz<br>ac40: 6.4 mW/MHz<br>ac80: 3.5 mW/MHz<br>ac160: 1.3 mW/MHz |
| 1 | Max EIRP<br>5470 - 5725MHz | TPC required if EIRP≥ 500mW (27dBm).<br>EIRP ≥ 200mW (23dBm) DFS threshold | Pass | EIRP = 30.0 dBm (995.4 mW) |
| 1 | 26dB Bandwidth | 15.407<br>(Information only) | - | > 20MHz for all modes |
| 1 | 99% Bandwidth | RSS-247<br>(Information only) | N/A | a: 17.0 MHz<br>ac20: 18.0 MHz<br>ac40: 36.5 MHz<br>ac80: 75.9 MHz<br>ac160: 154.0 MHz |
| 2 | Antenna Conducted - Out of Band Spurious | 15.407(b)<br>-27dBm/MHz | | All emissions below the -27dBm/MHz limit |

## Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet | pkt duty |
|---|---|---|---|---|---|---|---|---|---|
| 11a | 6 | 99.0% | Yes | 5.06 | 0.0 | 0.0 | 10 | 7974 | -1 |
| ac20 | 6.5 | 97.6% | Yes | 5.271 | 0.1 | 0.2 | 190 | 4324 | -1 |
| ac40 | 13.5 | 97.3% | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 | -1 |
| ac80 | 29.3 | 96.0% | Yes | 1.432 | 0.2 | 0.4 | 698 | 5159 | -1 |
| ac160 | 58.5 | 95.6% | Yes | 1.439 | 0.2 | 0.4 | 695 | 10443 | -1 |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

| | |
|---|---|
| Note 1: | Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, auto sweep, RMS detector, power averaging on (transmitted signal was continuous, duty cycle ≥ 98%) and power integration over the OBW (method SA-1 of ANSI C63.10). |
| Note 1: | Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, RMS detector, trace average 100 traces (at least 100 traces, increase the number to get true average), power averaging on and power integration over the OBW. Tthe measurements were adjusted by adding YY dB. This is based on 10log(1/x), where x is the duty cycle. (method SA-2 of ANSI C63.10) |
| Note 2: | Measured using the same analyzer settings used for output power. |
| Note 3: | 99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and VB ≥ 3*RB, Span between 1.5 and 5 times OBW. |
| Note 4: | 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

| Freq | Antenna Gain (dBi) / Chain | | | | BF | MultiChain Legacy | CDD | Sectorized / Xpol | Dir G (dBi) (PWR) | Dir G (dBi) (PSD) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | | | | | | |
| 5470-5725 | 4.6 | 4.9 | 5.6 | 5 | Yes | Yes | Yes | Yes | 2.6 | 8.6 |

For devices that support CDD modes

| | | | |
|---|---|---|---|
| Min # of spatial streams: | 1 | Chain 1 = Blue antenna cable | Chain 3 = Grey antenna cable |
| Max # of spatial streams: | 4 | Chain 2 = White antenna cable | Chain 4 = Black antenna cable |

| | |
|---|---|
| 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:<br>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.<br>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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz band (UNII-2C) - FCC  Single chain mode uses Ant 1

Mode: 11a  Antenna Gain: 4.6 dBi  Ant 1  Max EIRP (mW): 263.0

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power mW | Total Power dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 2 | 13.0 | 21.3 | 99.0 | | 12.3 | 10.9 | 24.0 | 0.091 | Pass |
| | 1 | | | | 10.9 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5580 | 2 | 22.0 | 21.5 | 99.0 | | 91.2 | 19.6 | 24.0 | | Pass |
| | 1 | | | | 19.6 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| 5700 | 2 | 12.0 | 21.5 | 99.0 | | 11.0 | 10.4 | 24.0 | | Pass |
| | 1 | | | | 10.4 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 2 | 21.0 | 15.8 | 99.0 | | 58.9 | 17.7 | 23.0 | | Pass |
| | 1 | | | | 17.7 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 2 | 21.0 | | 99.0 | | 14.1 | 11.5 | 30.0 | 0.0141 | Pass |
| | 1 | | | | 11.5 | | | | | |
| | 2 | | | | | | | | | |
| | 2 | | | | | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz band (UNII-2C) - ISED

Mode: 11a

Max EIRP (mW): 263.0

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 13.0 | 16.8 | 99.0 | 2<br>10.9 | 13.9 | 11.4 | 23.3 | 0.091 | Pass |
| 5580 | 1 | 22.0 | 17.0 | 99.0 | 19.6 | 91.2 | 19.6 | 23.3 | | Pass |
| 5700 | 1 | 12.0 | 16.8 | 99.0 | 10.4 | 11.0 | 10.4 | 23.3 | | Pass |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 21.0 | 13.5 | 99.0 | 17.7 | 58.9 | 17.7 | 22.3 | | Pass |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1<br>1<br>2<br>2 | 21 | 3.9 | 99.0 | 11.5 | 14.1 | 11.5 | 30.0 | 0.0141 | Pass |

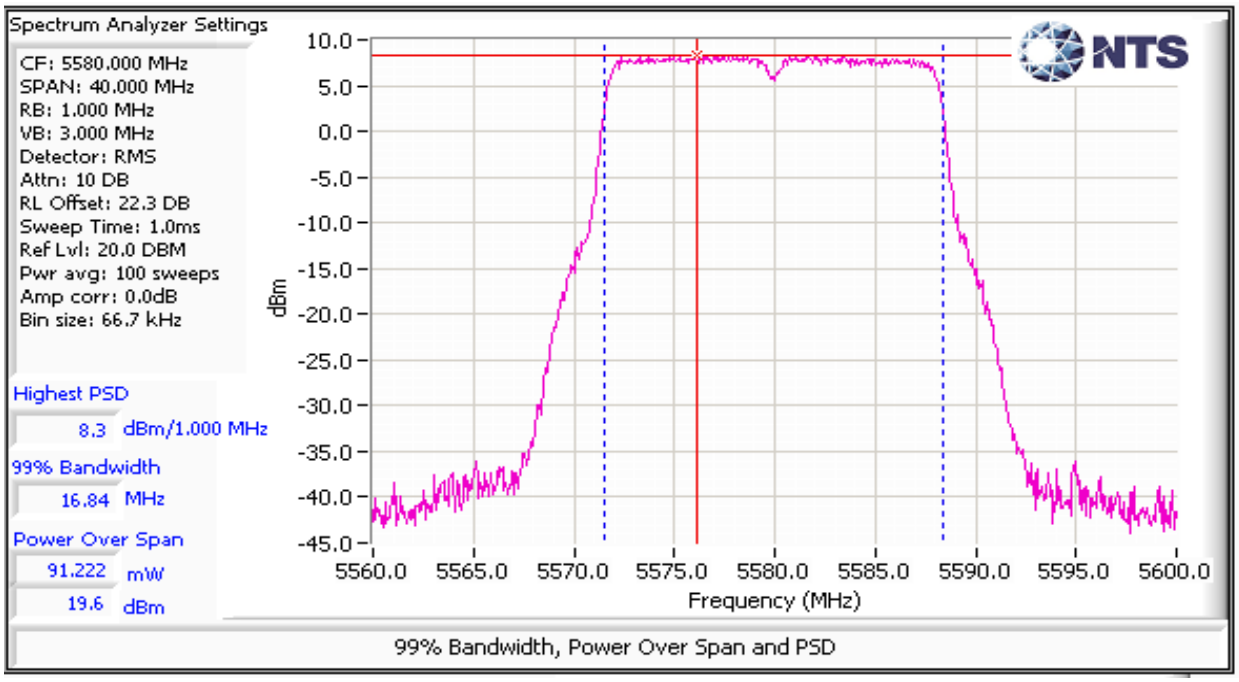
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz band PSD (UNII-2C)
Mode: 11a

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 13.0 | | 99.0 | -0.3 | 0.9 | -0.5 | 11.0 | 11.0 | Pass |
| 5580 | 1 | 22.0 | | 99.0 | 8.3 | 6.8 | 8.3 | 11.0 | 11.0 | Pass |
| 5700 | 1 | 12.0 | | 99.0 | -0.7 | 0.9 | -0.5 | 11.0 | 11.0 | Pass |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 21.0 | | 99.0 | 7.3 | 5.4 | 7.3 | 11.0 | 11.0 | Pass |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1 | 21 | | 99.0 | 7.2 | 5.2 | 7.2 | 30.0 | 27.2 | Pass |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ac20 Max EIRP (mW): 176.3

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power mW | Total Power dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 15.5 | 21.3 | 97.6 | 13.5 | 95.6 | 19.8 | 24.0 | 0.097 | Pass |
| | 3 | | | | 13.5 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5580 | 1 | 15.5 | 21.7 | 97.6 | 13.4 | 96.9 | 19.9 | 24.0 | | Pass |
| | 3 | | | | 13.4 | | | | | |
| | 4 | | | | 13.9 | | | | | |
| | 2 | | | | 14.2 | | | | | |
| 5700 | 1 | 15.5 | 21.2 | 97.6 | 13.8 | 91.9 | 19.6 | 24.0 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 15.5 | 15.9 | 97.6 | 13.0 | 74.8 | 18.7 | 23.0 | | Pass |
| | 3 | | | | 12.7 | | | | | |
| | 4 | | | | 12.1 | | | | | |
| | 2 | | | | 12.6 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1 | 15.5 | | 97.6 | 7.2 | 20.2 | 13.1 | 30.0 | 0.020 | Pass |
| | 3 | | | | 6.9 | | | | | |
| | 4 | | | | 6.5 | | | | | |
| | 2 | | | | 7.1 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - ISED

Mode: ac20 Max EIRP (mW): 176.3

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 15.5 | 18.0 | 97.6 | 13.5 | 95.6 | 19.8 | 23.6 | 0.097 | Pass |
| | 3 | | | | 13.5 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5580 | 1 | 15.5 | 18.0 | 97.6 | 13.4 | 96.9 | 19.9 | 23.6 | | Pass |
| | 3 | | | | 13.4 | | | | | |
| | 4 | | | | 13.9 | | | | | |
| | 2 | | | | 14.2 | | | | | |
| 5700 | 1 | 15.5 | 18.0 | 97.6 | 13.8 | 91.9 | 19.6 | 23.6 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 15.5 | 14.1 | 97.6 | 13.0 | 74.8 | 18.7 | 22.5 | | Pass |
| | 3 | | | | 12.7 | | | | | |
| | 4 | | | | 12.1 | | | | | |
| | 2 | | | | 12.6 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1 | 15.5 | | 97.6 | 7.2 | 20.2 | 13.1 | 30.0 | 0.020 | Pass |
| | 3 | | | | 6.9 | | | | | |
| | 4 | | | | 6.5 | | | | | |
| | 2 | | | | 7.1 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ac20 w/ BF — Max EIRP (mW): 702

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power mW | Total Power dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 15.5 | 21.3 | 97.6 | 13.5 | 95.6 | 19.8 | 21.4 | 0.097 | Pass |
| | 3 | | | | 13.5 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5580 | 1 | 15.5 | 21.7 | 97.6 | 13.4 | 96.9 | 19.9 | 21.4 | | Pass |
| | 3 | | | | 13.4 | | | | | |
| | 4 | | | | 13.9 | | | | | |
| | 2 | | | | 14.2 | | | | | |
| 5700 | 1 | 15.5 | 21.2 | 97.6 | 13.8 | 91.9 | 19.6 | 21.4 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 15.5 | 15.9 | 97.6 | 13.0 | 74.8 | 18.7 | 20.4 | | Pass |
| | 3 | | | | 12.7 | | | | | |
| | 4 | | | | 12.1 | | | | | |
| | 2 | | | | 12.6 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1 | 15.5 | | 97.6 | 7.2 | 20.2 | 13.1 | 27.2 | 0.020 | Pass |
| | 3 | | | | 6.9 | | | | | |
| | 4 | | | | 6.5 | | | | | |
| | 2 | | | | 7.1 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - ISED

Mode: ac20 w/ BF

Max EIRP (mW): 702

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 15.5 | 18.0 | 97.6 | 13.5 | 95.6 | 19.8 | 21.0 | 0.097 | Pass |
| | 3 | | | | 13.5 | | | | | |
| | 4 | | | | 13.7 | | | | | |
| | 2 | | | | 14.0 | | | | | |
| 5580 | 1 | 15.5 | 18.0 | 97.6 | 13.4 | 96.9 | 19.9 | 21.0 | | Pass |
| | 3 | | | | 13.4 | | | | | |
| | 4 | | | | 13.9 | | | | | |
| | 2 | | | | 14.2 | | | | | |
| 5700 | 1 | 15.5 | 18.0 | 97.6 | 13.8 | 91.9 | 19.6 | 21.0 | | Pass |
| | 3 | | | | 13.6 | | | | | |
| | 4 | | | | 13.1 | | | | | |
| | 2 | | | | 13.5 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 15.5 | 14.1 | 97.6 | 13.0 | 74.8 | 18.7 | 19.9 | | Pass |
| | 3 | | | | 12.7 | | | | | |
| | 4 | | | | 12.1 | | | | | |
| | 2 | | | | 12.6 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1 | 15.5 | | 97.6 | 7.2 | 20.2 | 13.1 | 27.2 | 0.020 | Pass |
| | 3 | | | | 6.9 | | | | | |
| | 4 | | | | 6.5 | | | | | |
| | 2 | | | | 7.1 | | | | | |

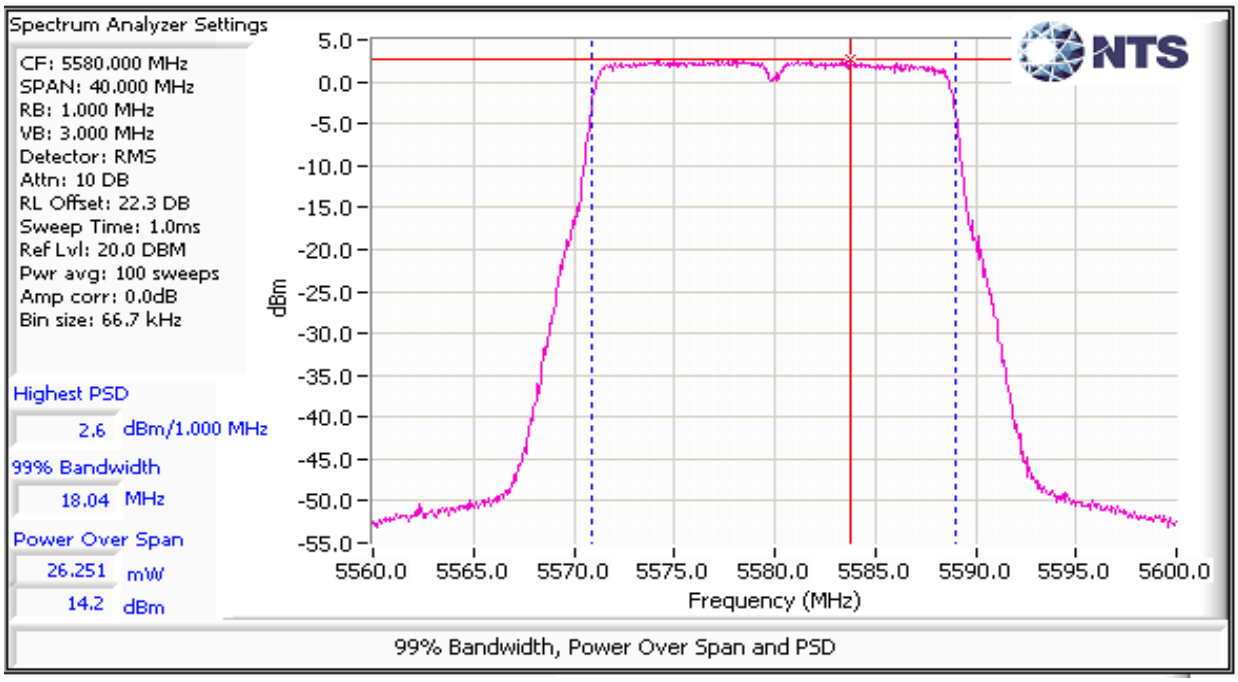
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz band PSD (UNII-2C)
Mode: ac20

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 15.5 | | 97.6 | 2.0 | 6.9 | 8.4 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.9 | | | | | |
| | 4 | | | | 2.4 | | | | | |
| | 2 | | | | 2.6 | | | | | |
| 5580 | 1 | 15.5 | | 97.6 | 2.1 | 6.9 | 8.4 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 2.3 | | | | | |
| | 2 | | | | 2.6 | | | | | |
| 5700 | 1 | 15.5 | | 97.6 | 2.3 | 6.5 | 8.1 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 1.6 | | | | | |
| | 2 | | | | 2.0 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5720 | 1 | 15.5 | | 97.6 | 2.4 | 6.7 | 8.3 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.2 | | | | | |
| | 4 | | | | 1.6 | | | | | |
| | 2 | | | | 2.2 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5720 | 1 | 15.5 | | 97.6 | 2.2 | 6.2 | 7.9 | 27.2 | 27.2 | Pass |
| | 3 | | | | 1.7 | | | | | |
| | 4 | | | | 1.4 | | | | | |
| | 2 | | | | 1.9 | | | | | |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ac40 Max EIRP (mW): 328.8

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power mW | Total Power dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5510 | 1 | 18 | 40.3 | 97.3 | 15.8 | 177.9 | 22.5 | 24.0 | 0.181 | Pass |
| | 3 | | | | 16.5 | | | | | |
| | 4 | | | | 16.6 | | | | | |
| | 2 | | | | 16.5 | | | | | |
| 5550 | 1 | 18 | 39.6 | 97.3 | 16.2 | 180.7 | 22.6 | 24.0 | | Pass |
| | 3 | | | | 16.6 | | | | | |
| | 4 | | | | 16.2 | | | | | |
| | 2 | | | | 16.7 | | | | | |
| 5670 | 1 | 18 | 39.7 | 97.3 | 16.2 | 174.5 | 22.4 | 24.0 | | Pass |
| | 3 | | | | 16.3 | | | | | |
| | 4 | | | | 16.1 | | | | | |
| | 2 | | | | 16.5 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5710 | 1 | 18 | 35.14 | 97.3 | 15.7 | 145.2 | 21.6 | 24.0 | | Pass |
| | 3 | | | | 15.5 | | | | | |
| | 4 | | | | 15.1 | | | | | |
| | 2 | | | | 15.6 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5710 | 1 | 18 | | 97.3 | 5.4 | 13.6 | 11.3 | 30.0 | 0.0136 | Pass |
| | 3 | | | | 5.2 | | | | | |
| | 4 | | | | 4.8 | | | | | |
| | 2 | | | | 5.3 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - ISED

Mode: ac40 Max EIRP (mW): 328.8

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5510 | 1 | 18 | 36.5 | 97.3 | 15.8 | 177.9 | 22.5 | 24.0 | 0.181 | Pass |
| | 3 | | | | 16.5 | | | | | |
| | 4 | | | | 16.6 | | | | | |
| | 2 | | | | 16.5 | | | | | |
| 5550 | 1 | 18 | 36.5 | 97.3 | 16.2 | 180.7 | 22.6 | 24.0 | | Pass |
| | 3 | | | | 16.6 | | | | | |
| | 4 | | | | 16.2 | | | | | |
| | 2 | | | | 16.7 | | | | | |
| 5670 | 1 | 18 | 36.5 | 97.3 | 16.2 | 174.5 | 22.4 | 24.0 | | Pass |
| | 3 | | | | 16.3 | | | | | |
| | 4 | | | | 16.1 | | | | | |
| | 2 | | | | 16.5 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5710 | 1 | 18 | 33.4 | 97.3 | 15.7 | 145.2 | 21.6 | 24.0 | | Pass |
| | 3 | | | | 15.5 | | | | | |
| | 4 | | | | 15.1 | | | | | |
| | 2 | | | | 15.6 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5710 | 1 | 18 | | 97.3 | 5.4 | 13.6 | 11.3 | 30.0 | 0.0136 | Pass |
| | 3 | | | | 5.2 | | | | | |
| | 4 | | | | 4.8 | | | | | |
| | 2 | | | | 5.3 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ac40 w/ BF

Max EIRP (mW): 995.4

| Frequency (MHz) | Chain | Software Setting | 26dB BW (MHz) | Duty Cycle % | Power dBm | Total Power mW | Total Power dBm | FCC Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5510 | 1 | 16.0 | 40.3 | 97.3 | 14.9 | 119.4 | 20.8 | 21.4 | 0.137 | Pass |
| | 3 | | | | 13.7 | | | | | |
| | 4 | | | | 15.1 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| 5550 | 1 | 16.5 | 39.6 | 97.3 | 14.7 | 115.8 | 20.6 | 21.4 | | Pass |
| | 3 | | | | 13.7 | | | | | |
| | 4 | | | | 14.8 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| 5670 | 1 | 16.5 | 39.7 | 97.3 | 15.5 | 137.4 | 21.4 | 21.4 | | Pass |
| | 3 | | | | 14.7 | | | | | |
| | 4 | | | | 15.6 | | | | | |
| | 2 | | | | 15.1 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5710 | 1 | 17.0 | 33.35 | 97.3 | 15.1 | 125.9 | 21.0 | 21.4 | | Pass |
| | 3 | | | | 14.4 | | | | | |
| | 4 | | | | 15.2 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5710 | 1 | 17.0 | | 97.3 | 4.8 | 11.9 | 10.8 | 27.2 | 0.0119 | Pass |
| | 3 | | | | 4.1 | | | | | |
| | 4 | | | | 5.1 | | | | | |
| | 2 | | | | 4.4 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - ISED

Mode: ac40 w/ BF

Max EIRP (mW): 995.4

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5510 | 1 | 16.0 | 38.0 | 97.3 | 14.9 | 119.4 | 20.8 | 21.4 | 0.137 | Pass |
| | 3 | | | | 13.7 | | | | | |
| | 4 | | | | 15.1 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| 5550 | 1 | 16.5 | 38.0 | 97.3 | 14.7 | 115.8 | 20.6 | 21.4 | | Pass |
| | 3 | | | | 13.7 | | | | | |
| | 4 | | | | 14.8 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| 5670 | 1 | 16.5 | 38.0 | 97.3 | 15.5 | 137.4 | 21.4 | 21.4 | | Pass |
| | 3 | | | | 14.7 | | | | | |
| | 4 | | | | 15.6 | | | | | |
| | 2 | | | | 15.1 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5710 | 1 | 17.0 | 33.9 | 97.3 | 15.1 | 125.9 | 21.0 | 21.4 | | Pass |
| | 3 | | | | 14.4 | | | | | |
| | 4 | | | | 15.2 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5710 | 1 | 17.0 | | 97.3 | 4.8 | 11.9 | 10.8 | 27.2 | 0.0119 | Pass |
| | 3 | | | | 4.1 | | | | | |
| | 4 | | | | 5.1 | | | | | |
| | 2 | | | | 4.4 | | | | | |

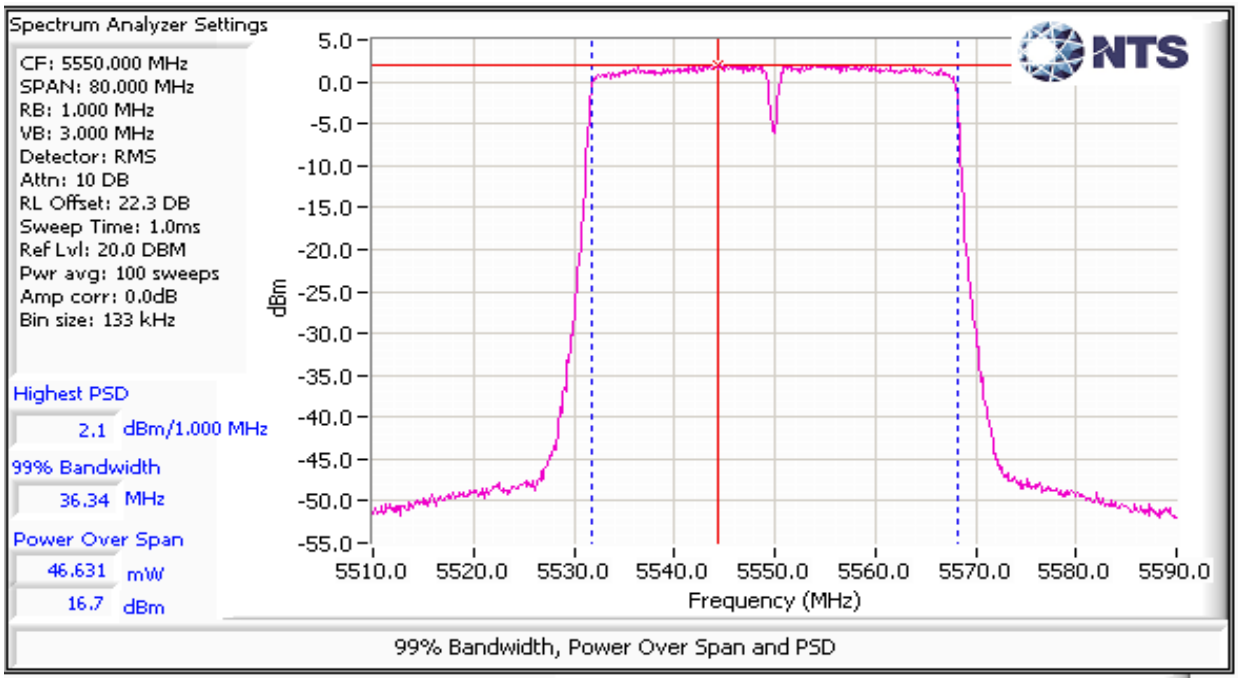
# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device 5470-5725 PSD - FCC/ISED
Mode: ac40

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5510 | 1 | 18.0 | | 97.3 | 1.2 | 6.1 | 7.9 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.9 | | | | | |
| | 4 | | | | 1.9 | | | | | |
| | 2 | | | | 1.9 | | | | | |
| 5550 | 1 | 18.0 | | 97.3 | 1.7 | 6.4 | 8.1 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.1 | | | | | |
| | 4 | | | | 1.9 | | | | | |
| | 2 | | | | 2.1 | | | | | |
| 5670 | 1 | 18.0 | | 97.3 | 1.7 | 6.3 | 8.0 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.8 | | | | | |
| | 4 | | | | 1.7 | | | | | |
| | 2 | | | | 2.1 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5710 | 1 | 18.0 | | 97.3 | 1.6 | 5.7 | 7.6 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.5 | | | | | |
| | 4 | | | | 1.1 | | | | | |
| | 2 | | | | 1.5 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5710 | 1 | 18.0 | | 97.3 | 1.1 | 4.9 | 6.9 | 27.2 | 27.2 | Pass |
| | 3 | | | | 0.7 | | | | | |
| | 4 | | | | 0.3 | | | | | |
| | 2 | | | | 0.9 | | | | | |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ac80 Max EIRP (mW): 355.0

| 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 | 18.0 | 81.9 | 96.0 | 16.4 | 190.6 | 22.8 | 24.0 | 0.195 | Pass |
| | 3 | | | | 16.7 | | | | | |
| | 4 | | | | 16.5 | | | | | |
| | 2 | | | | 16.8 | | | | | |
| 5610 | 1 | 18.0 | 81.3 | 96.0 | 16.6 | 195.1 | 22.9 | 24.0 | | Pass |
| | 3 | | | | 17.0 | | | | | |
| | 4 | | | | 16.4 | | | | | |
| | 2 | | | | 16.8 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5690 | 1 | 18.0 | 76.1 | 96.0 | 16.0 | 168.0 | 22.3 | 24.0 | | Pass |
| | 3 | | | | 16.3 | | | | | |
| | 4 | | | | 15.7 | | | | | |
| | 2 | | | | 16.2 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5690 | 1 | 18.0 | | 96.0 | 1.3 | 6.0 | 7.8 | 30.0 | 0.006 | Pass |
| | 3 | | | | 1.7 | | | | | |
| | 4 | | | | 1.3 | | | | | |
| | 2 | | | | 1.9 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - ISED

Mode: ac80 Max EIRP (mW): 346.8

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5530 | 1 | 18.0 | 75.9 | 96.0 | 16.4 | 190.6 | 22.8 | 24.0 | 0.191 | Pass |
| | 3 | | | | 16.7 | | | | | |
| | 4 | | | | 16.5 | | | | | |
| | 2 | | | | 16.8 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5690 | 1 | 18.0 | 73.2 | 96.0 | 16.0 | 168.0 | 22.3 | 24.0 | | Pass |
| | 3 | | | | 16.3 | | | | | |
| | 4 | | | | 15.7 | | | | | |
| | 2 | | | | 16.2 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5690 | 1 | 18.0 | | 96.0 | 1.3 | 6.0 | 7.8 | 30.0 | 0.006 | Pass |
| | 3 | | | | 1.7 | | | | | |
| | 4 | | | | 1.3 | | | | | |
| | 2 | | | | 1.9 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ac80 w/ BF — Max EIRP (mW): 925.1

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 5530 | 1 | 16.5 | 81.9 | 96.0 | 15.0 | 127.7 | 21.1 | 21.4 | 0.128 | Pass |
| | 3 | | | | 14.3 | | | | | |
| | 4 | | | | 15.2 | | | | | |
| | 2 | | | | 14.9 | | | | | |
| 5610 | 1 | 16.0 | 81.3 | 96.0 | 14.8 | 121.8 | 20.9 | 21.4 | | Pass |
| | 3 | | | | 14.2 | | | | | |
| | 4 | | | | 14.9 | | | | | |
| | 2 | | | | 14.7 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5690 | 1 | 16.0 | 76.1 | 96.0 | 14.6 | 115.6 | 20.6 | 21.4 | | Pass |
| | 3 | | | | 14.1 | | | | | |
| | 4 | | | | 14.7 | | | | | |
| | 2 | | | | 14.3 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5690 | 1 | 16.0 | | 96.0 | 0.2 | 4.4 | 6.4 | 27.2 | 0.0044 | Pass |
| | 3 | | | | -0.1 | | | | | |
| | 4 | | | | 0.8 | | | | | |
| | 2 | | | | 0.1 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - ISED

Mode: ac80 w/ BF — Max EIRP (mW): 925.1

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | Power[1] dBm | Total Power mW | Total Power dBm | ISED Limit dBm | Max Power (W) | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5530 | 1 | 16.5 | 77.6 | 96.0 | 15.0 | 127.7 | 21.1 | 21.4 | 0.128 | Pass |
| | 3 | | | | 14.3 | | | | | |
| | 4 | | | | 15.2 | | | | | |
| | 2 | | | | 14.9 | | | | | |
| Portion within 5470-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5690 | 1 | 16.0 | 73.4 | 96.0 | 14.6 | 115.6 | 20.6 | 21.4 | | Pass |
| | 3 | | | | 14.1 | | | | | |
| | 4 | | | | 14.7 | | | | | |
| | 2 | | | | 14.3 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5690 | 1 | 16.0 | | 96.0 | 0.2 | 4.4 | 6.4 | 27.2 | 0.0044 | Pass |
| | 3 | | | | -0.1 | | | | | |
| | 4 | | | | 0.8 | | | | | |
| | 2 | | | | 0.1 | | | | | |

# EMC Test Data

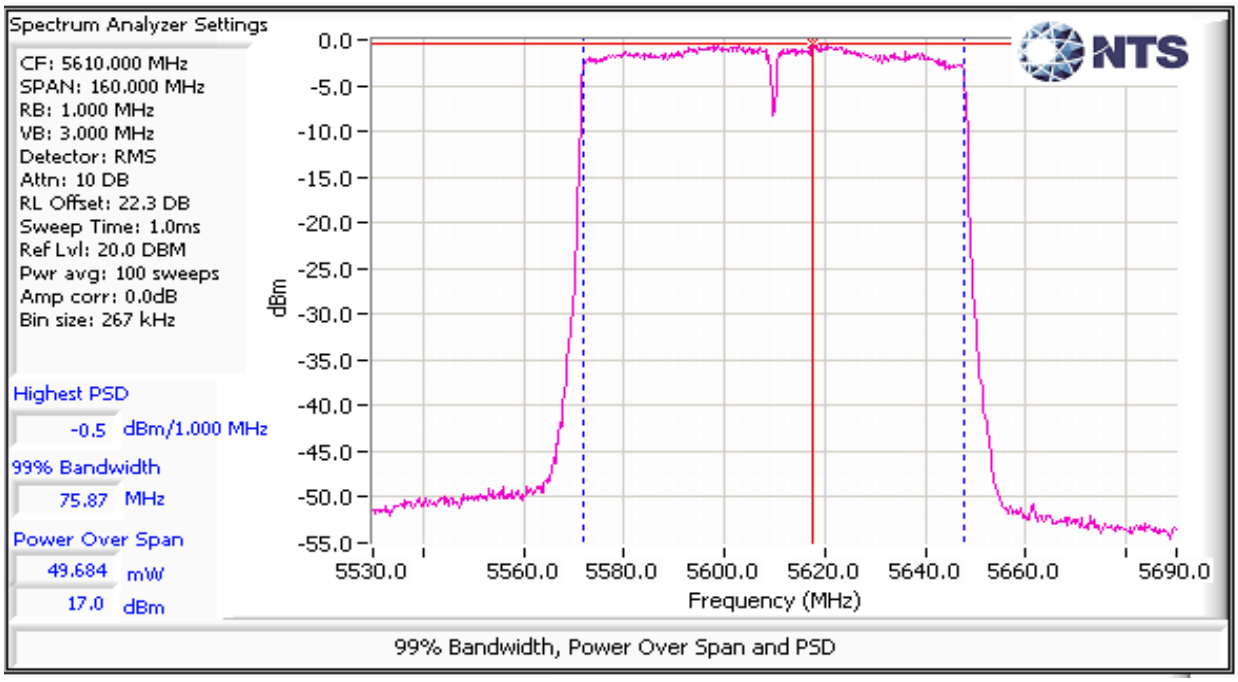
| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device 5470-5725 PSD - FCC/ISED Note: 5610 MHz channel not used for Canada

Mode: ac80

| 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 | ISED Limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5530 | 1 | 18.0 | | 96.0 | -1.0 | 3.4 | 5.3 | 8.4 | 11.0 | Pass |
| | 3 | | | | -0.8 | | | | | |
| | 4 | | | | -1.1 | | | | | |
| | 2 | | | | -0.6 | | | | | |
| 5610 | 1 | 18.0 | | 96.0 | -0.9 | 3.5 | 5.4 | 8.4 | - | Pass |
| | 3 | | | | -0.5 | | | | | |
| | 4 | | | | -1.0 | | | | | |
| | 2 | | | | -0.7 | | | | | |
| Portion within 5475-5725 MHz band (UNII-2C) | | | | | | | | | | |
| 5690 | 1 | 18.0 | | 96.0 | -1.3 | 3.0 | 4.8 | 8.4 | 11.0 | Pass |
| | 3 | | | | -1.2 | | | | | |
| | 4 | | | | -1.8 | | | | | |
| | 2 | | | | -1.2 | | | | | |
| Portion within 5725-5850 MHz band (UNII-3) | | | | | | | | | | |
| 5690 | 1 | 18.0 | | 96.0 | -3.0 | 2.2 | 3.4 | 27.2 | 27.2 | Pass |
| | 3 | | | | -2.7 | | | | | |
| | 4 | | | | -3.0 | | | | | |
| | 2 | | | | -2.6 | | | | | |

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |



99% Bandwidth, Power Over Span and PSD

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC Only

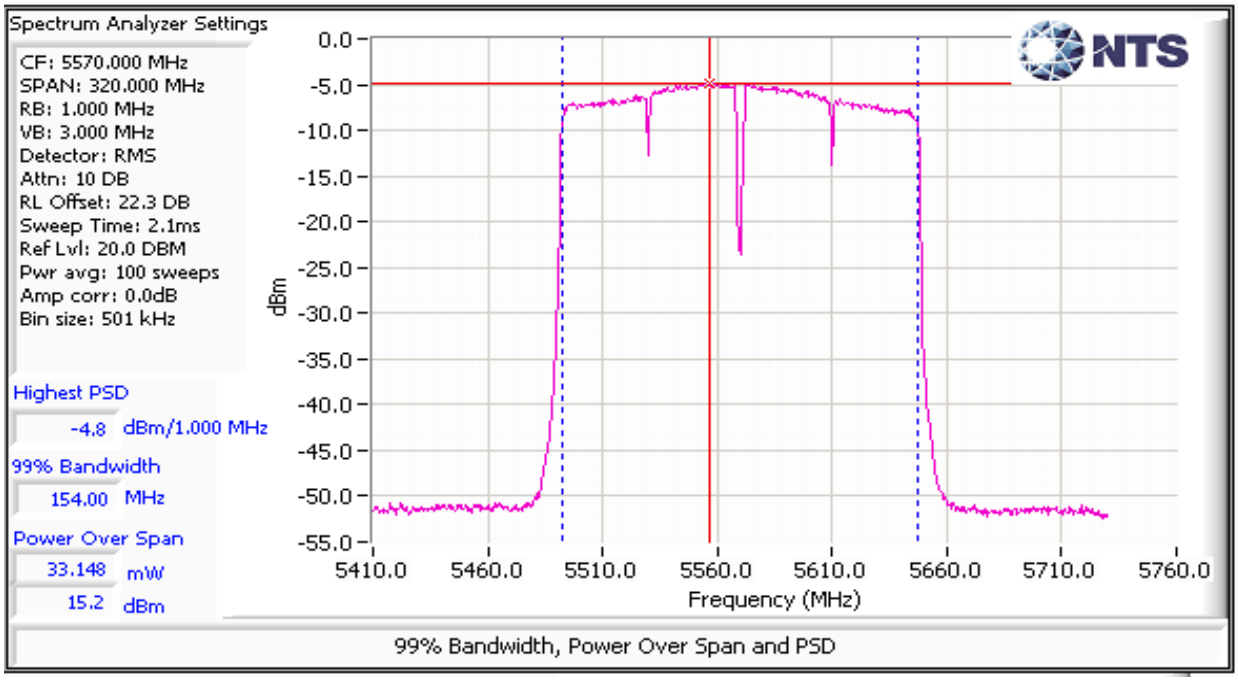
Mode: ac160 Max EIRP (mW): 243.8

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 5570 | 1 | 17 | 164.3 | 95.6 | 14.7 | 134.0 | 21.3 | 24.0 | 0.134 | Pass |
| | 3 | | | | 15.2 | | | | | |
| | 4 | | | | 15.1 | | | | | |
| | 2 | | | | 15.2 | | | | | |

MIMO Device 5470-5725 PSD - FCC only

Mode: ac160

| 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 | | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5570 | 1 | 17 | | 95.6 | -5.5 | 1.3 | 1.1 | 8.4 | - | Pass |
| | 3 | | | | -5.1 | | | | | |
| | 4 | | | | -5.1 | | | | | |
| | 2 | | | | -4.8 | | | | | |



# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device - 5470-5725 MHz Band - FCC Only

Mode: ac160 w/ BF

Max EIRP (mW): 970.7

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 5570 | 1 | 17 | 164.3 | 95.6 | 14.7 | 134.0 | 21.3 | 21.4 | 0.134 | Pass |
| | 3 | | | | 15.2 | | | | | |
| | 4 | | | | 15.1 | | | | | |
| | 2 | | | | 15.2 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | 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.

### 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: 20-22 °C
Rel. Humidity: 42-45 %

### Summary of Results

| Run # | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|
| 1 | PSD, 5470 - 5725MHz | 15.407(a) (1), (2), (3)<br>RSS-247 6.2 | | ax20: 6.8 mW/MHz<br>ax40: 6.3 mW/MHz<br>ax80: 5.2 mW/MHz<br>ax160: 1.3 mW/MHz |
| 1 | 99% Bandwidth | RSS-247<br>(Information only) | N/A | ax20: 19.7 MHz<br>ax40: 38.0 MHz<br>ax80: 77.3 MHz<br>ax160: 155.7 MHz |

### 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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

## Procedure Comments:

Measurements performed in accordance with ANSI C63.10

| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) | Packet |
|---|---|---|---|---|---|---|---|---|
| ac20 | 6.5 | 97.6% | Yes | 5.27 | 0.1 | 0.2 | 190 | 4324 |
| ac40 | 13.5 | 97.3% | Yes | 5.24 | 0.1 | 0.2 | 191 | 8811 |
| ac80 | 29.3 | 96.0% | Yes | 1.43 | 0.2 | 0.4 | 698 | 5159 |
| ac160 | 58.5 | 95.6% | Yes | 1.44 | 0.2 | 0.4 | 695 | 10443 |

## Sample Notes

Sample S/N: M11917QW000T

Date of Test: 3/24 & 3/26/2020
Test Engineer: M. Birgani
Test Location: Fremont EMC Lab #3

Config. Used: 1
Config Change: None
EUT Voltage: 3.3Vdc

Antenna chain information: Chain 1: Blue Chain 2: White
Chain 3: Gray Chain 4: Black

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

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

## 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 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative. |
| Note 2: | Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033) |
| 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 4: | Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033) |
| Note 5: | Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements. |

Antenna Gain Information

| Freq | Antenna Gain (dBi) / Chain | | | | BF | MultiChain Legacy | CDD | Sectorized / Xpol | Dir G (PWR) | Dir G (PSD) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | | | | | | |
| 5470-5725 | 4.6 | 4.9 | 5.6 | 5 | Yes | Yes | Yes | Yes | 2.6 | 8.6 |

For devices that support CDD modes

Min # of spatial streams:

Max # of spatial streams:

| | |
|---|---|
| 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:<br>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.<br>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: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

5470-5725 PSD - FCC/ISED

Mode: ax20

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | 1 | 15.5 | 19.7 | 97.6 | 2.2 | 6.8 | 8.3 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 2.3 | | | | | |
| | 2 | | | | 2.3 | | | | | |
| 5580 | 1 | 15.5 | 19.7 | 97.6 | 2.1 | 6.5 | 8.1 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.8 | | | | | |
| | 4 | | | | 2.1 | | | | | |
| | 2 | | | | 2.0 | | | | | |
| 5700 | 1 | 15.5 | 19.7 | 97.6 | 2.5 | 6.8 | 8.3 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.1 | | | | | |
| | 4 | | | | 2.1 | | | | | |
| | 2 | | | | 2.1 | | | | | |
| 5720 | 1 | 15.5 | 14.9 | 97.6 | 2.4 | 6.7 | 8.3 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 2.0 | | | | | |
| | 2 | | | | 2.0 | | | | | |

Portion within 5725-5850 MHz band (UNII-3)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5720 | 1 | 15.5 | 5.3 | 97.6 | 2.4 | 6.5 | 8.1 | 27.4 | 27.4 | Pass |
| | 3 | | | | 1.9 | | | | | |
| | 4 | | | | 1.8 | | | | | |
| | 2 | | | | 1.9 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

MIMO Device 5470-5725 PSD - FCC/ISED

Mode: ax40

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5510 | 1 | 18 | 38.0 | 97.3 | 1.8 | 6.3 | 8.0 | 8.4 | 11.0 | Pass |
| | 3 | | | | 2.0 | | | | | |
| | 4 | | | | 1.8 | | | | | |
| | 2 | | | | 1.7 | | | | | |
| 5550 | 1 | 18 | 38.0 | 97.3 | 1.4 | 5.8 | 7.6 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.7 | | | | | |
| | 4 | | | | 1.5 | | | | | |
| | 2 | | | | 1.5 | | | | | |
| 5670 | 1 | 18 | 38.0 | 97.3 | 1.9 | 6.2 | 7.9 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.6 | | | | | |
| | 4 | | | | 1.7 | | | | | |
| | 2 | | | | 1.8 | | | | | |
| 5710 | 1 | 18 | 33.9 | 97.3 | 2.0 | 6.0 | 7.8 | 8.4 | 11.0 | Pass |
| | 3 | | | | 1.4 | | | | | |
| | 4 | | | | 1.5 | | | | | |
| | 2 | | | | 1.5 | | | | | |

Portion within 5725-5850 MHz band (UNII-3)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5710 | 1 | 18 | 4.7 | 97.3 | 1.0 | 5.0 | 7.0 | 27.4 | 27.4 | Pass |
| | 3 | | | | 0.8 | | | | | |
| | 4 | | | | 0.7 | | | | | |
| | 2 | | | | 0.9 | | | | | |

# EMC Test Data

| | | | |
|---|---|---|---|
| Client: | Arris | PR Number: | PR101106 |
| Model: | NVG5X8AX | T-Log Number: | TL-101106-RANA |
| | | Project Manager: | Deepa Shetty |
| Contact: | Mark Rieger | Project Engineer: | David Bare |
| Standard: | FCC Part 15, RSS-247 | Class: | N/A |

5470-5725 PSD - FCC/ISED Note: 5610 MHz channel not used for Canada

Mode: ax80

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | IC limit dBm/MHz | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5530 | 1 | 18 | 77.3 | 96.0 | -1.2 | 3.3 | 5.2 | 8.4 | 11.0 | Pass |
| | 3 | | | | -0.8 | | | | | |
| | 4 | | | | -1.0 | | | | | |
| | 2 | | | | -1.1 | | | | | |
| 5610 | 1 | 18 | 77.3 | 96.0 | -1.0 | 3.2 | 5.1 | 8.4 | - | Pass |
| | 3 | | | | -1.1 | | | | | |
| | 4 | | | | -1.0 | | | | | |
| | 2 | | | | -1.3 | | | | | |
| 5690 | 1 | 18 | 73.4 | 96.0 | -1.1 | 3.2 | 5.1 | 8.4 | 11.0 | Pass |
| | 3 | | | | -0.9 | | | | | |
| | 4 | | | | -1.2 | | | | | |
| | 2 | | | | -1.3 | | | | | |

Portion within 5725-5850 MHz band (UNII-3)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5690 | 1 | 18 | 4.8 | 96.0 | -2.8 | 2.5 | 4.0 | 27.4 | 27.4 | Pass |
| | 3 | | | | -2.5 | | | | | |
| | 4 | | | | -2.8 | | | | | |
| | 2 | | | | -1.3 | | | | | |

5470-5725 PSD - FCC Only

Mode: ax160

| Frequency (MHz) | Chain | Software Setting | 99% BW (MHz) | Duty Cycle % | PSD dBm/MHz | Total PSD[2] mW/MHz | Total PSD[2] dBm/MHz | FCC Limit dBm/MHz | | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 5570 | 1 | 17 | 155.7 | 95.6 | -5.0 | 1.3 | 1.1 | 8.4 | | Pass |
| | 3 | | | | -4.8 | | | | | |
| | 4 | | | | -4.8 | | | | | |
| | 2 | | | | -5.2 | | | | | |

***End of Report***

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marks the last page of this test report.