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EMC Test Report

Application for FCC Grant of Equipment Authorization
Canada Certification

Innovation, Science and Economic Development Canada
RSS-Gen Issue 4 / RSS 247 Issue 1
FCC Part 15 Subpart C

Model: BGW210-700

FCC ID:	PGRBGW210
APPLICANT:	Arris 310 Providence Mine Road Nevada City, CA 95959
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-7
REPORT DATE:	November 10, 2016
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ACCREDITED
Testing Cert #0214.26

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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	November 10, 2016	First release	
1.0	November 14, 2016	Updated company name to Arris	MEH
2.0	November 18, 2016	Clarified 2.4GHz beamforming. Removed results applicable to NII report. Corrected calculation error for VBW for measurements with duty cycle >98%. Corrected a rounding error in the power settings used for radiated spurious emissions. Clarified detector used for n40 TxBF measurement.	MEH

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SCOPE

An electromagnetic emissions test has been performed on the Arris model BGW210-700, pursuant to the following rules:

RSS-Gen Issue 4 " General Requirements for Compliance of Radio Apparatus"
RSS 247 Issue 1 "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices"
FCC Part 15 Subpart C

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

ANSI C63.10-2013
FCC DTS Measurement Guidance KDB558074

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

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

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

OBJECTIVE

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

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

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

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label

indicating compliance must be attached to all identical units, which are subsequently manufactured.

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

STATEMENT OF COMPLIANCE

The tested sample of Arris model BGW210-700 complied with the requirements of the following regulations:

RSS-Gen Issue 4 " General Requirements for Compliance of Radio Apparatus"
RSS 247 Issue 1 "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices"
FCC Part 15 Subpart C

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 BGW210-700 and therefore apply only to the tested sample. The sample was selected and prepared by Mark Rieger of Arris.

DEVIATIONS FROM THE STANDARDS

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

TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 247 5.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 247 5.2 (1)	6dB Bandwidth	11b: 8.59 MHz 11g: 16.07 MHz n20: 16.98 MHz n40: 35.64 MHz	>500kHz	Complies
15.247 (b) (3)	RSS 247 5.4 (4)	Output Power (multipoint systems)	11b: 28.1dBm (0.644W) 11g: 29.4dBm (0.870W) n20: 27.5dBm (0.565W) n40:19.8dBm (0.095W)	1Watt, EIRP limited to 4 Watts.	Complies
15.247 (b) (3)	RSS 247 5.4 (4)	Output Power (multipoint systems)	Beamforming: n20: 27.7dBm (0.585W) n40: 20.4dBm (0.111W)	1Watt, EIRP limited to 4 Watts.	Complies
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	11b: 7.0 dBm/3kHz 11g: 6.4 dBm/3kHz n20: 4.9 dBm/3kHz n40: -5.6 dBm/3kHz	8dBm/3kHz	Complies
15.247(d)	RSS 247 5.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All emissions < -30 dBc	< -30dBc Note 2	Complies
15.247(d) / 15.209	RSS 247 5.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.9 dBµV/m @ 2484.7 MHz (-0.1 dB)	Refer to the limits section (p18) for restricted bands, all others <-30dBc Note 2	Complies
Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst).					

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Antennas are internal to the device	Unique or integral antenna required	Complies
15.407 (b) (6)	RSS-Gen Table 3	AC Conducted Emissions	44.8 dBµV @ 0.151 MHz (-21.1 dB)	Refer to page 19	Complies
15.247 (i) 15.407 (f)	-	RF Exposure Requirements	Refer to MPE calculations in separate exhibit	Refer to OET 65, FCC Part 1 and RSS 102	Complies

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 BGW210-700 is a uDSL Wireless Residential Gateway that is designed to connect to a PSTN Telecommunications network supporting a bonded VDSL2 connection. The electrical rating of the EUT is 12 Volts, 3 Amps DC. It is supplied by an external AC/DC power supply.

The sample was received on September 14, 2016 and tested on September 14, 15, 16, 19, 20, 21, and October 4 and 5, and November 2, and 3, 2016. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
ARRIS	BGW210-700	uDSL Wireless Residential Gateway	184795205922976	PGRBGW210
ARRIS	BGW210-700	uDSL Wireless Residential Gateway	184795206016480	PGRBGW210

OTHER EUT DETAILS

2.4GHz radio –802.11bgn (20/40MHz)
- Only transmits in 3Tx mode, supports 1 to 3 spatial streams
- Beamforming is supported for 11n 20 and 40MHz operation

5GHz radio – 802.11abgn/ac (20/40/80MHz)
- Only transmits in 4Tx mode, supports 1 to 4 spatial streams
- Beamforming supported for 11n/ac 20, 40, 80MHz operation

Simultaneous transmission of 2.4 and 5GHz supported.

ANTENNA SYSTEM

2.4GHz – three stamped metal antennas. Two are mounted on the interior of the enclosure and one is mounted directly to the motherboard. Peak Gains: 3.11dBi, 3.665dBi, 3.653dBi.

5GHz – four stamped metal antennas. One is mounted on the interior of the enclosure and three are mounted directly to the motherboard.

ENCLOSURE

The EUT enclosure measures approximately 25cm by 20cm by 6cm. It is primarily constructed of uncoated plastic.

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
	-	None	-	-

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

Company	Model	Description	Serial Number	FCC ID
Dell	Latitude 1311	Laptop	-	-

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Ethernet 1	Laptop	RJ45	Unshielded	10.0
Ethernet 2,3,4	Unterminated	RJ45	Unshielded	2.0
USB 1,2	Unterminated	USB	Shielded	2.0
Broadband	Unterminated	RJ11	Unshielded	2.0
Phone Lines 1&2	Unterminated	RJ11	Unshielded	2.0
DC In	Power Supply DC out	2-wire	Unshielded	1.0
Power Supply AC in	AC mains	2-wire	Unshielded	1.5

EUT OPERATION

During testing, the EUT was configured to continuously transmit at the maximum output power. Channel, data rate, and mode is detailed in the test results.

For radiated beamforming testing, the EUT was configured to establish a connection with a remote client located behind the measurement antenna and data was streamed from the EUT to the client.

Note, antenna port measurements for beamforming operation were performed using the test mode commands since the rf spectrum emissions are identical to non-beamforming transmissions.

TEST SITE

GENERAL INFORMATION

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

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

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

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

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

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

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

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

INSTRUMENT CONTROL COMPUTER

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. 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.

CONDUCTED EMISSIONS

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

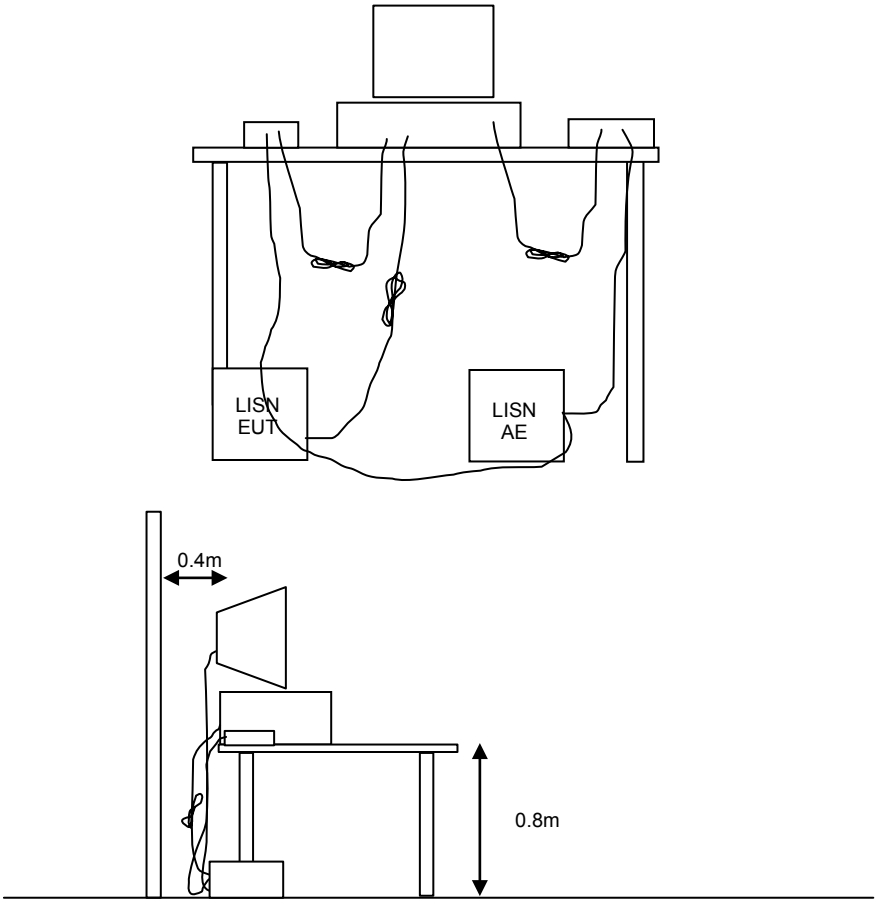


Figure 1 Typical Conducted Emissions Test Configuration

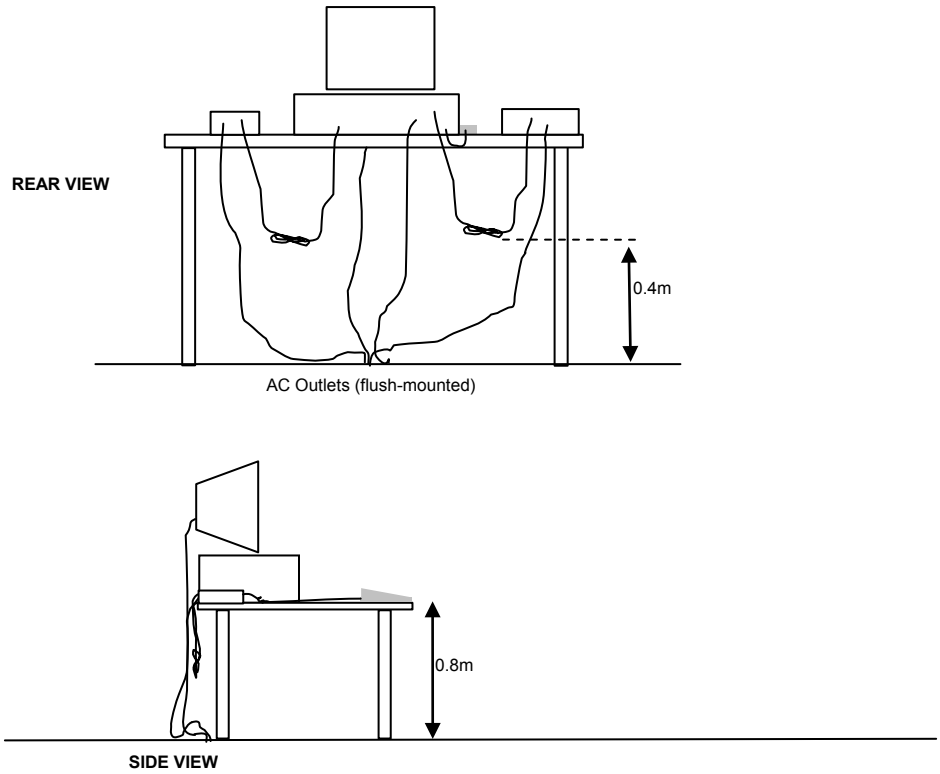
RADIATED EMISSIONS

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

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

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

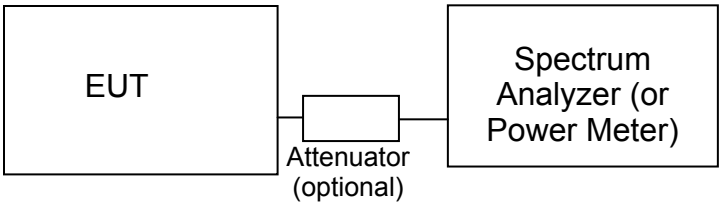
When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



Typical Test Configuration for Radiated Field Strength Measurements

CONDUCTED EMISSIONS FROM ANTENNA PORT

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



Test Configuration for Antenna Port Measurements

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

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

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

BANDWIDTH MEASUREMENTS

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

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

The table below shows the limits for output power and output power density.

Operating Frequency (MHz)	Output Power	Power Spectral Density
2400 – 2483.5	1 Watt (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

[1] The restricted bands are detailed in FCC 15.205 and RSS-Gen Table 6

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, Band Edge Wifi, 14-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	2733	11/18/2014	11/18/2016
Radiated Emissions, 1 - 12 GHz, 15-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	1/21/2016	1/21/2017
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	6/29/2016	6/29/2017
EMCO	Antenna, Horn, 1-18 GHz	3115	2733	11/18/2014	11/18/2016
Radiated Emissions, 1000 - 25,000 MHz, 16-Sep-16					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	1/21/2016	1/21/2017
HP / Miteq	SA40 Head (Red)	TTA1840-45-5P-HG-S	1145	8/24/2016	8/24/2017
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	6/29/2016	6/29/2017
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
EMCO	Antenna, Horn, 1-18 GHz	3115	2733	11/18/2014	11/18/2016
Radiated Emissions, 1 - 18 GHz, 19-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	1/21/2016	1/21/2017
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	6/29/2016	6/29/2017
EMCO	Antenna, Horn, 1-18 GHz	3115	2733	11/18/2014	11/18/2016
Radio Antenna Port (Power and Spurious Emissions), 19-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/24/2016	6/24/2017
Radio Antenna Port (Power and Spurious Emissions), 20-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/24/2016	6/24/2017

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radio Antenna Port (Power and Spurious Emissions), 21-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/24/2016	6/24/2017
Radiated Emissions, 1 - 6 GHz, 28-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/29/2016	6/29/2017
Radiated Spurious Emissions, 1,000 - 40,000 MHz, 30-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	10/12/2015	10/12/2016
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	3/28/2016	3/28/2017
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/29/2016	6/29/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/19/2016	9/19/2017
Radiated Emissions, 1,000 - 40,000 MHz, 30-Sep-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	9/20/2016	9/20/2017
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	10/12/2015	10/12/2016
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	3/28/2016	3/28/2017
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/29/2016	6/29/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/19/2016	9/19/2017
Radiated Emissions, 1,000 - 40,000 MHz, 03-Oct-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	9/20/2016	9/20/2017
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	10/12/2015	10/12/2016
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	3/28/2016	3/28/2017
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/29/2016	6/29/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/19/2016	9/19/2017
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1152	6/28/2016	6/28/2017
HP / Miteq	SA40 Head (Blue)	TTA1840-45-5P-HG-S	1620	3/8/2016	3/8/2017
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	5/9/2016	5/9/2017

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
A. H. Systems	Red System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	7/16/2015	7/16/2017
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	9/20/2016	9/20/2017
Radiated Emissions, 1,000 - 18,000 MHz, 04-Oct-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	10/12/2015	11/12/2016
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1152	6/28/2016	6/28/2017
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	3/28/2016	3/28/2017
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	5/9/2016	5/9/2017
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/29/2016	6/29/2017
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	9/20/2016	9/20/2017
Radiated Emissions, 30 - 1,000 MHz, 04-Oct-16					
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2197	9/9/2015	9/9/2017
Com-Power	Preamplifier, 30-1000 MHz	PA-103	2465	9/16/2016	9/16/2017
Radiated Emissions, 1000 - 40,000 MHz, 04-Oct-16					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	10/12/2015	11/12/2016
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1152	6/28/2016	6/28/2017
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	3/28/2016	3/28/2017
HP / Miteq	SA40 Head (Blue)	TTA1840-45-5P-HG-S	1620	3/8/2016	3/8/2017
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	5/9/2016	5/9/2017
A. H. Systems	Red System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	7/16/2015	7/16/2017
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2238	9/19/2016	9/19/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/19/2016	9/19/2017
Conducted Emissions - AC Power Ports, 05-Oct-16					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	LISN, 10 kHz-100 MHz	3825/2	1292	8/1/2016	8/1/2017
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/19/2015	12/19/2016
Com-Power	Comb Gen, Cond, 50-250/250-500 kHz	CG-510	1551	3/4/2016	3/4/2017
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	8/31/2016	8/31/2017

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radio Antenna Port (Power and Spurious Emissions), 12-Oct-16					
NTS	NTS UNII Power Software (rev 3.8)	N/A	0		N/A
NTS	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/24/2016	6/24/2017
Radiated Spurious Emissions and Antenna Port Power, 2, 3-Nov-16					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	05-Oct-16	05-Oct-17
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	28-Mar-16	28-Mar-17
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	22-Sep-16	22-Sep-17
EMCO	Antenna, Horn, 1-18 GHz	3115	2870	31-Aug-15	31-Aug-17
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	9482	28-Oct-16	28-Oct-17
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	06-May-16	06-May-17

Appendix B Test Data

T102846 Pages 26 – 149

Client:	Arris	Job Number:	JD102271
Product	BGW210-700	T-Log Number:	T102846
System Configuration:	-	Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Emissions Standard(s):	FCC 15.B, 15.247, 15.407	Class:	B
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Arris

Product

BGW210-700

Date of Last Test: 11/4/2016

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Power vs. Data Rate

In normal operating modes the card uses power settings stored on EEPROM to set the output power. For a given nominal output power the actual transmit power normally is reduced as the data rate increases, therefore testing was performed at the data rate in the mode with highest power to determine compliance with the requirements.
The following power measurements were made using a **GATED** average power meter and with the device configured in a continuous transmit mode on Chain 1 at the various data rates in each mode to verify the highest power mode:

Sample Notes

Sample S/N: 184795205923792
Driver (2.4GHz): 7.35 RC177.0

Date of Test: 9/14/2016
Test Engineer: Mark Hill
Test Location: FT Lab #4

2.4GHz Radio - measured on LB2

Mode	Data Rate	Power (dBm)	Power setting
802.11b	1	26.9	27.0
	2	26.9	
	5.5	26.9	
	11	26.9	
802.11g	6	26.3	27.0
	9	26.3	
	12	26.3	
	18	26.3	
	24	26.3	
	36	26.3	
	48	26.3	
	54	26.3	

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Mode	Data Rate	Power (dBm)	Power setting
802.11n 20MHz	6.5	**24.9**	25.0
	13	24.9	
	19.5	24.9	
	26	24.9	
	39	24.7	
	52	24.4	
	58.5	24.9	
	65	24.6	
	-	-	
802.11n 40MHz	13.5	**23.7**	24.5
	27	23.7	
	40.5	23.7	
	54	23.7	
	81	23.7	
	108	23.0	
	121.5	23.0	
	135	23.0	
	-	-	
	-	-	

Note : Power setting - the software power setting used during testing, included for reference only.

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Duty Cycle

Sample Notes

Sample S/N: 184795205923792
Driver (2.4GHz): 7.35 RC177.0

Date of Test: 9/14/2016
Test Engineer: Mark Hill
Test Location: FT Lab #4

Duty cycle measurements performed on the worse case data rate for power.
Notes: Measurements taken with maximum RBW/VBW settings allowed.

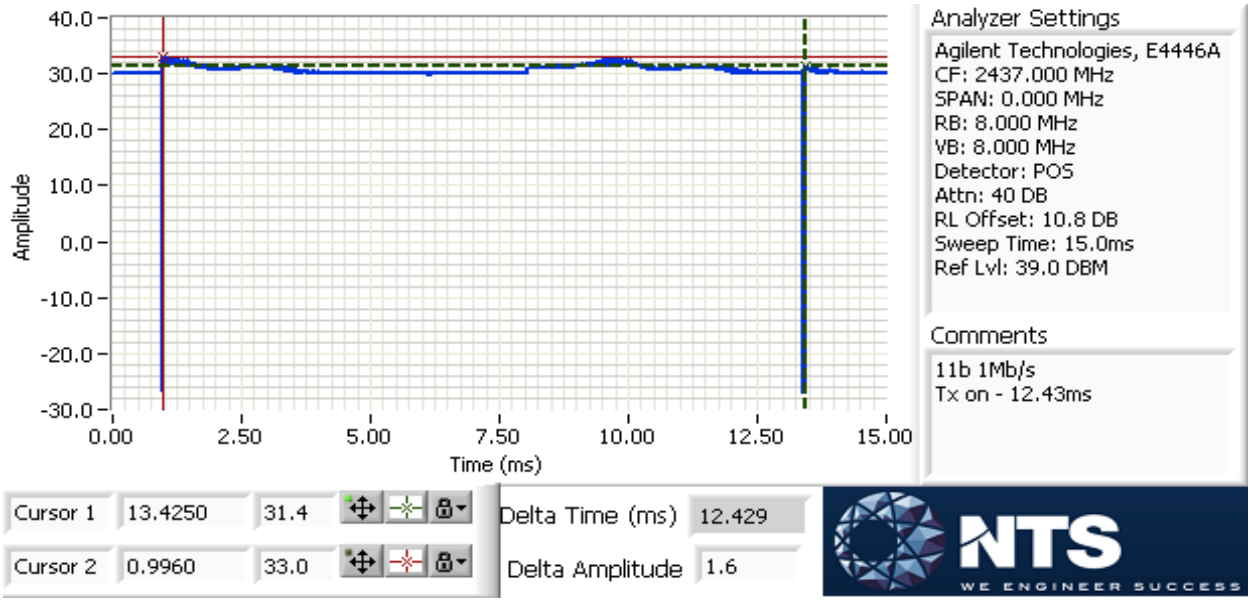
2.4GHz Radio

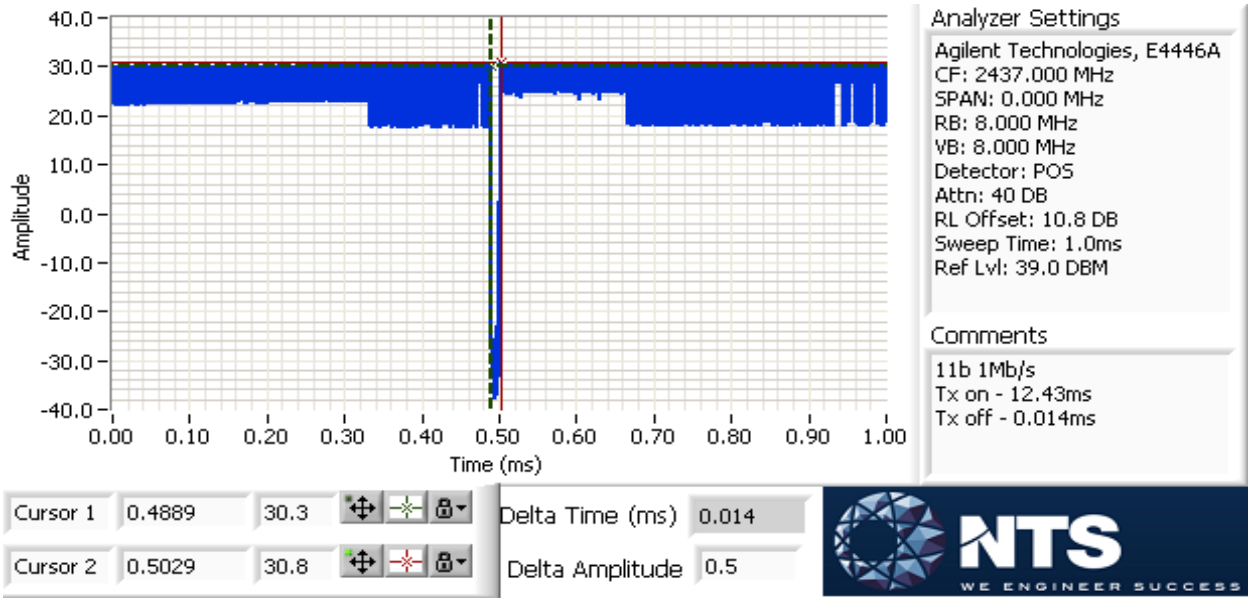
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	1Mbs	1.00	Yes	12.43	0	0	10
11g	6Mbs	0.99	Yes	2.06	0	0	10
n20	MSC0	0.98	Yes	1.917	0	0	10
n40	MSC0	0.977	Yes	1.24	0.1	0.2	806

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Mode: 11b

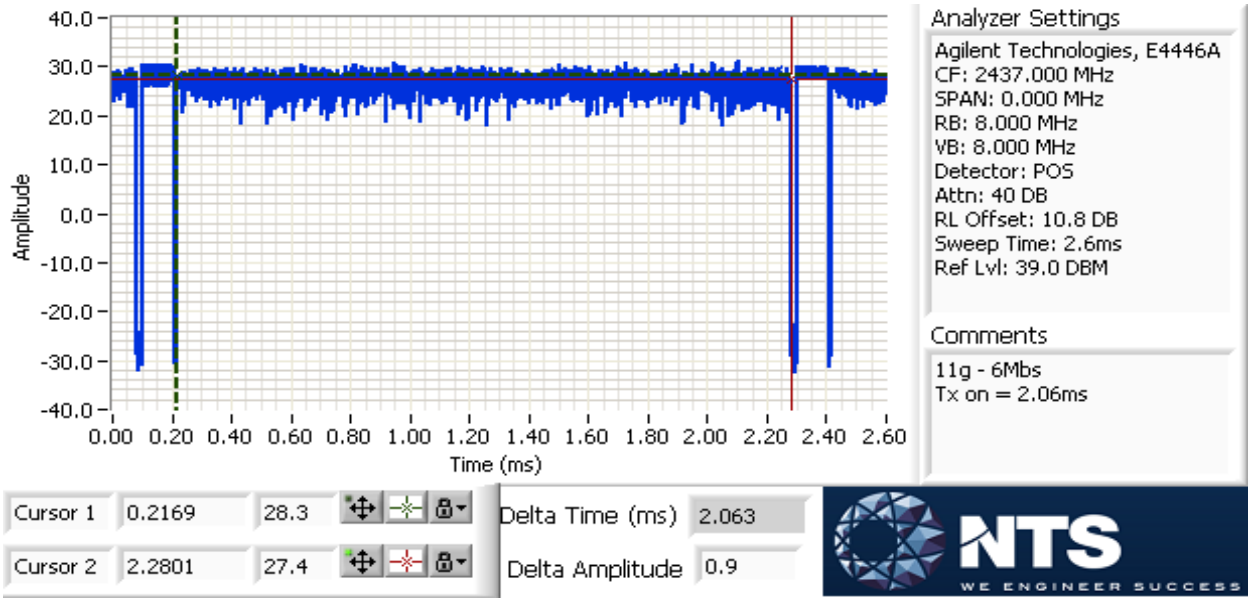


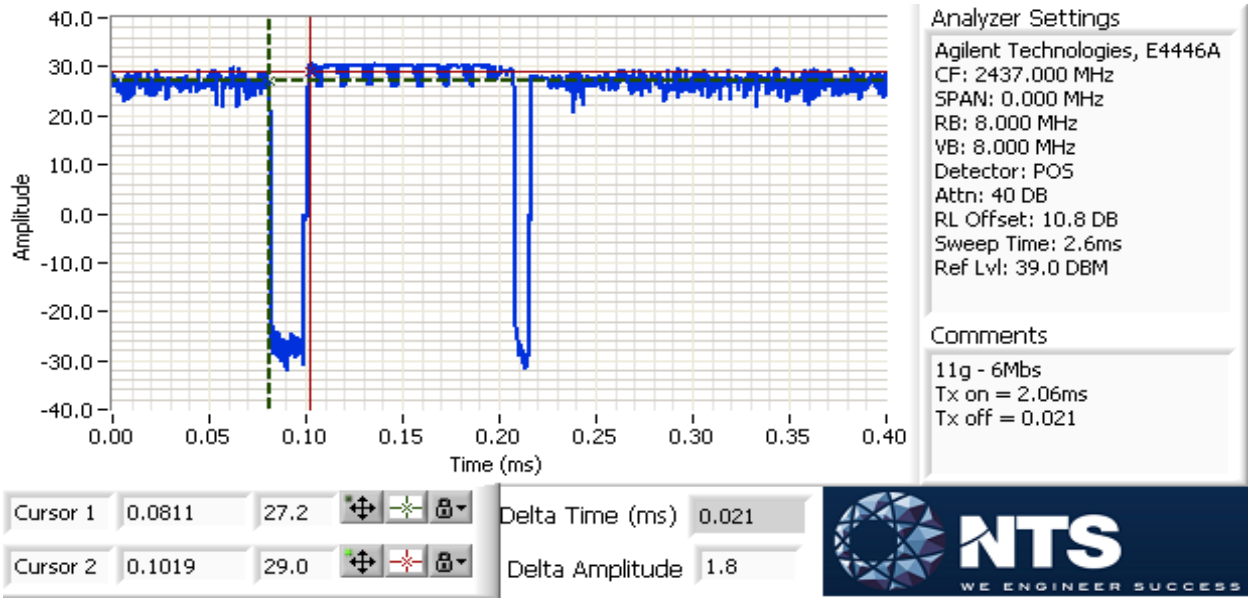


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

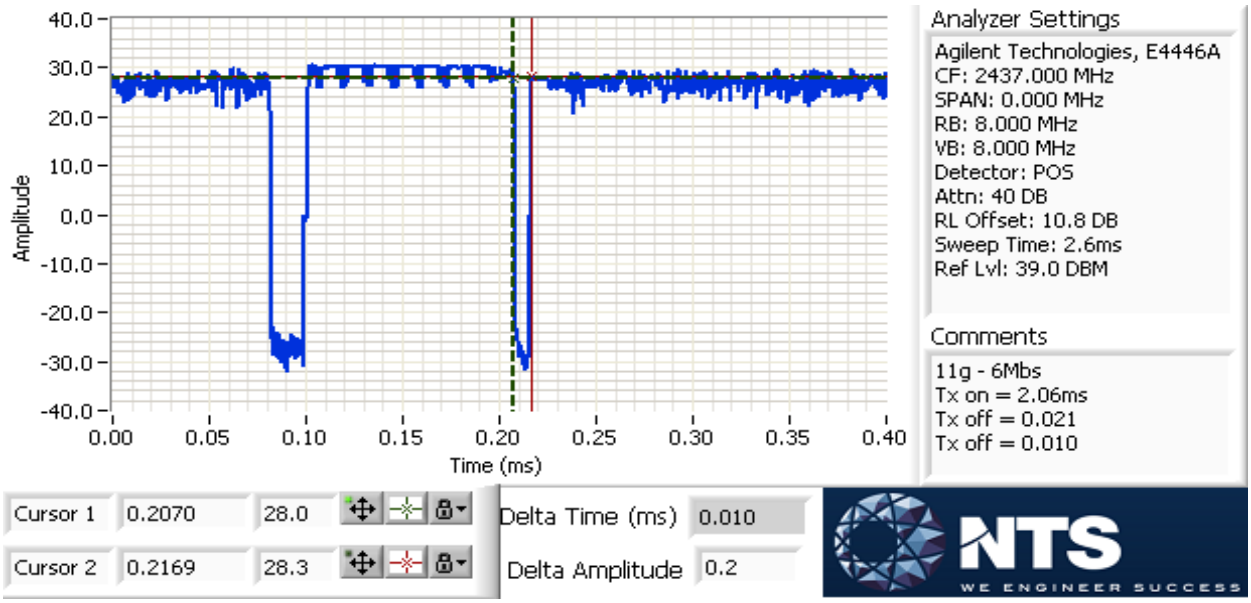
Mode: 11g





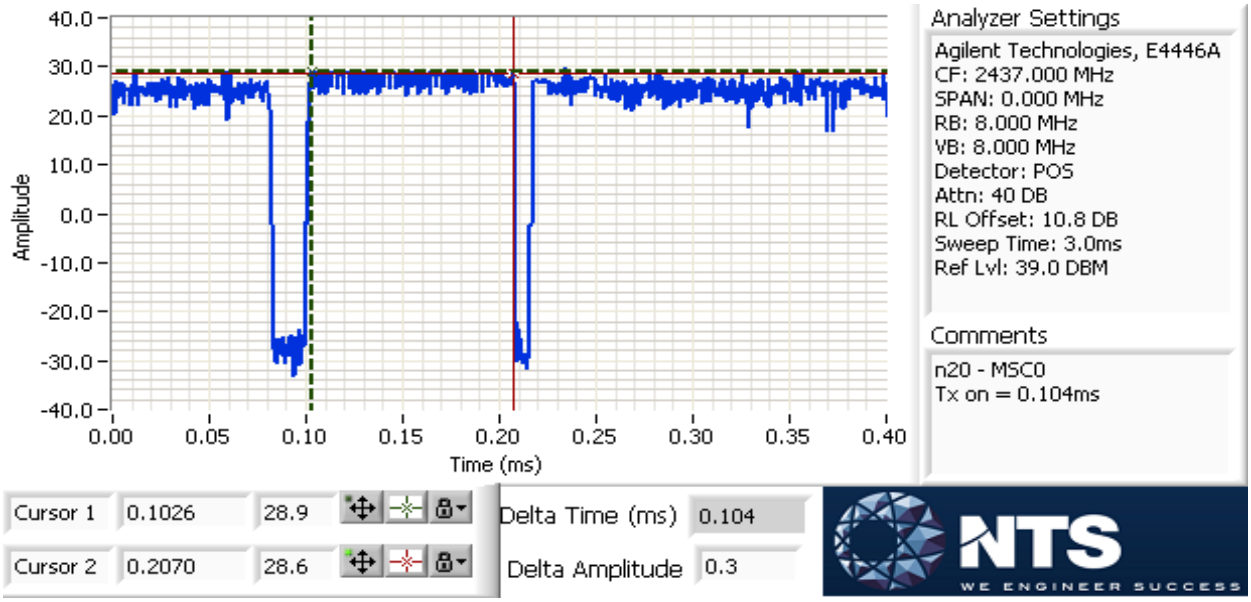
EMC Test Data

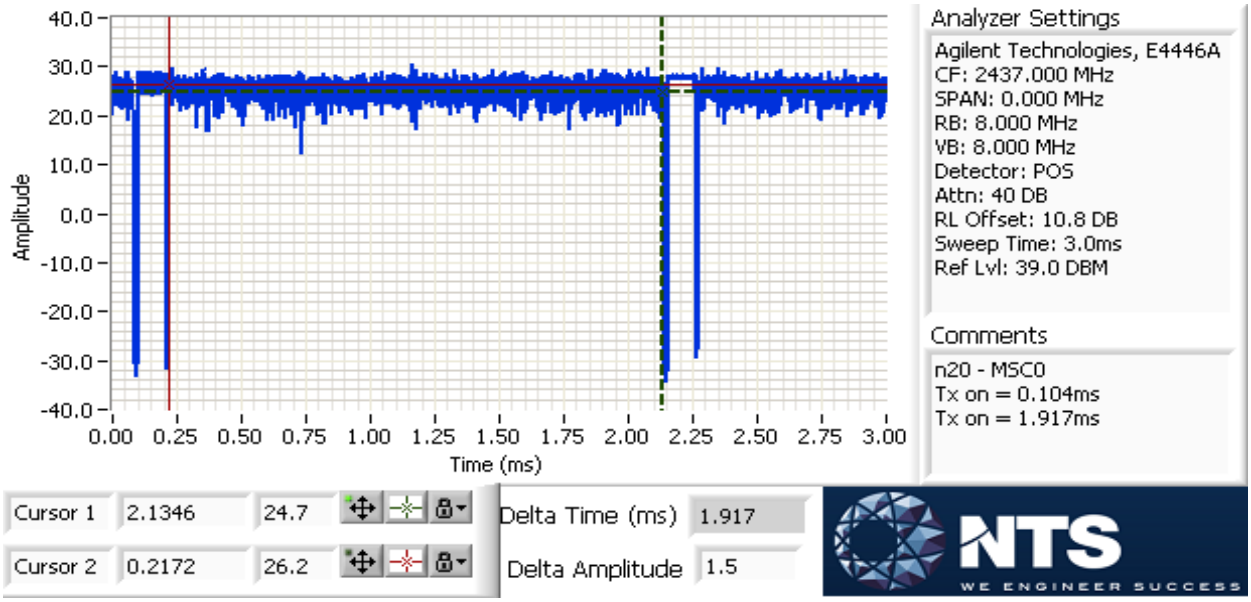
Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

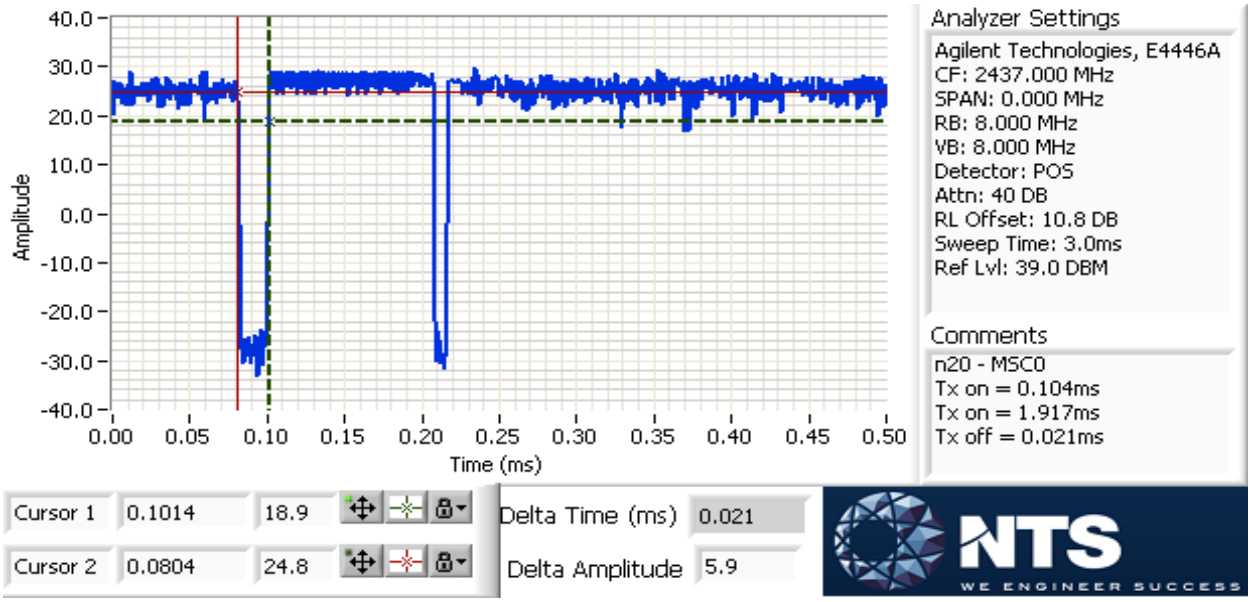
Mode: n20

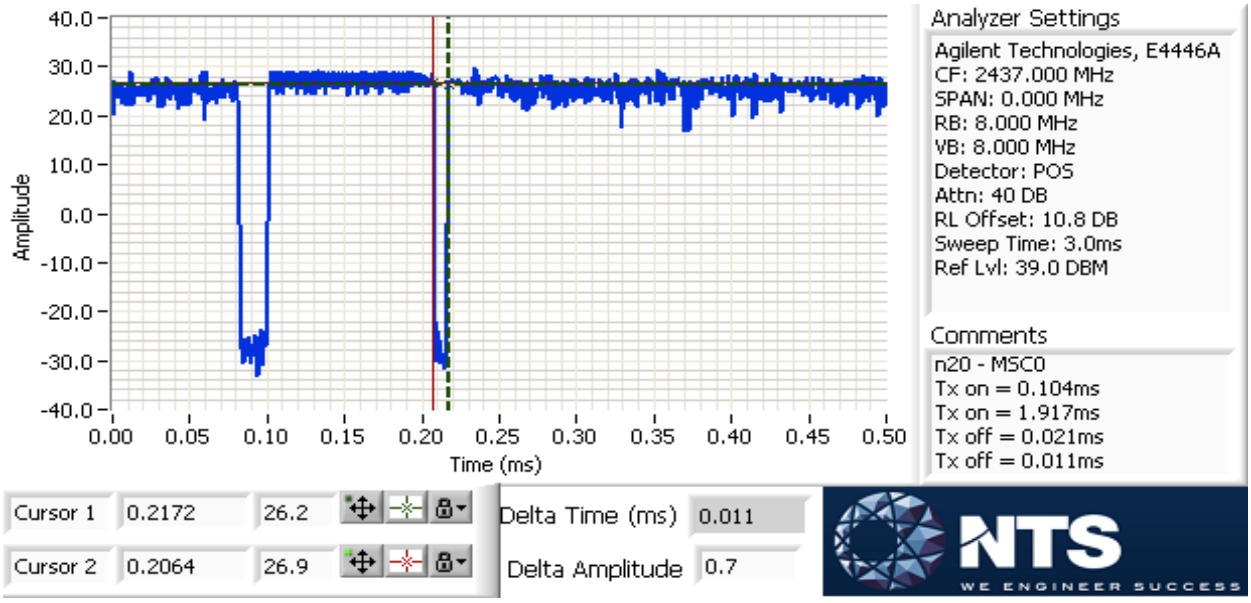




EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

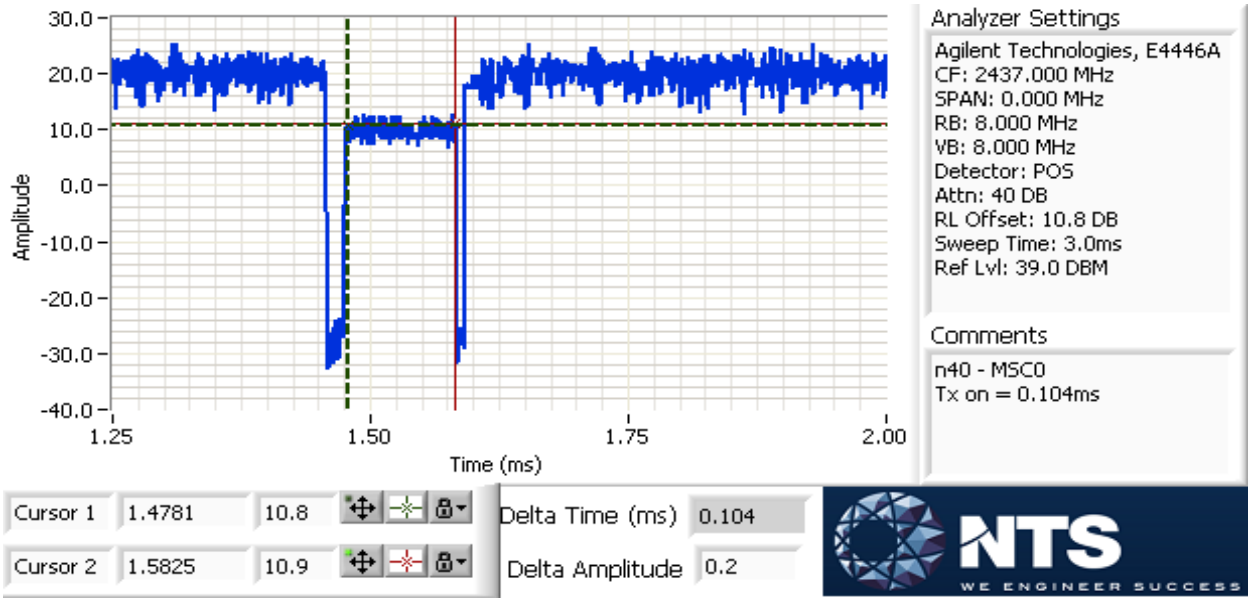


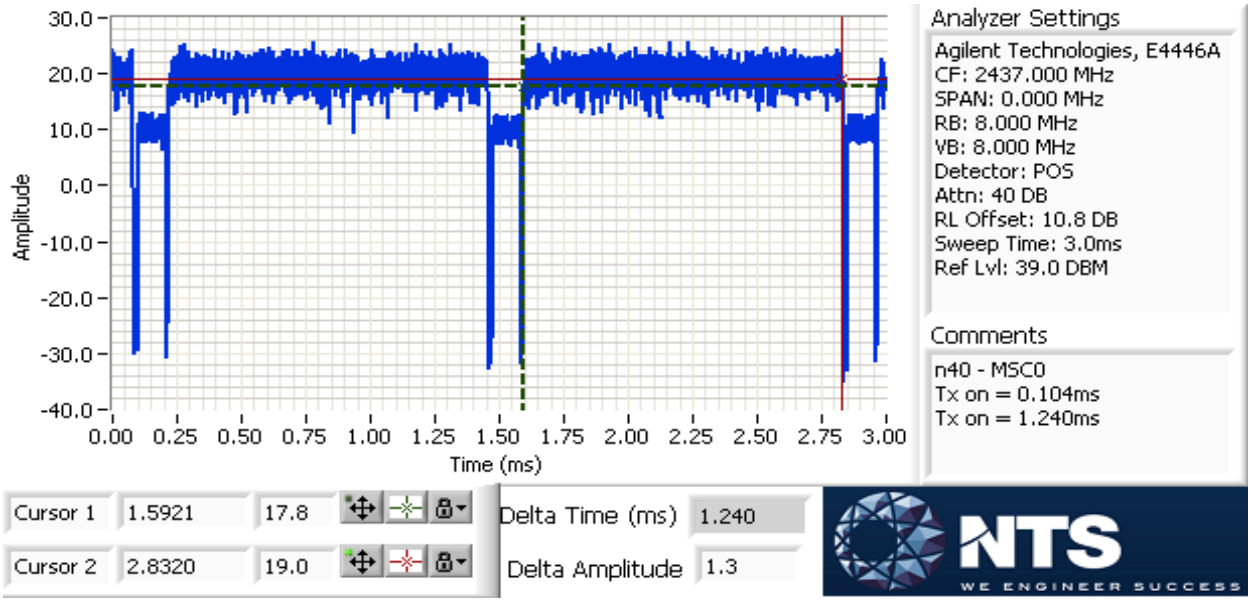


EMC Test Data

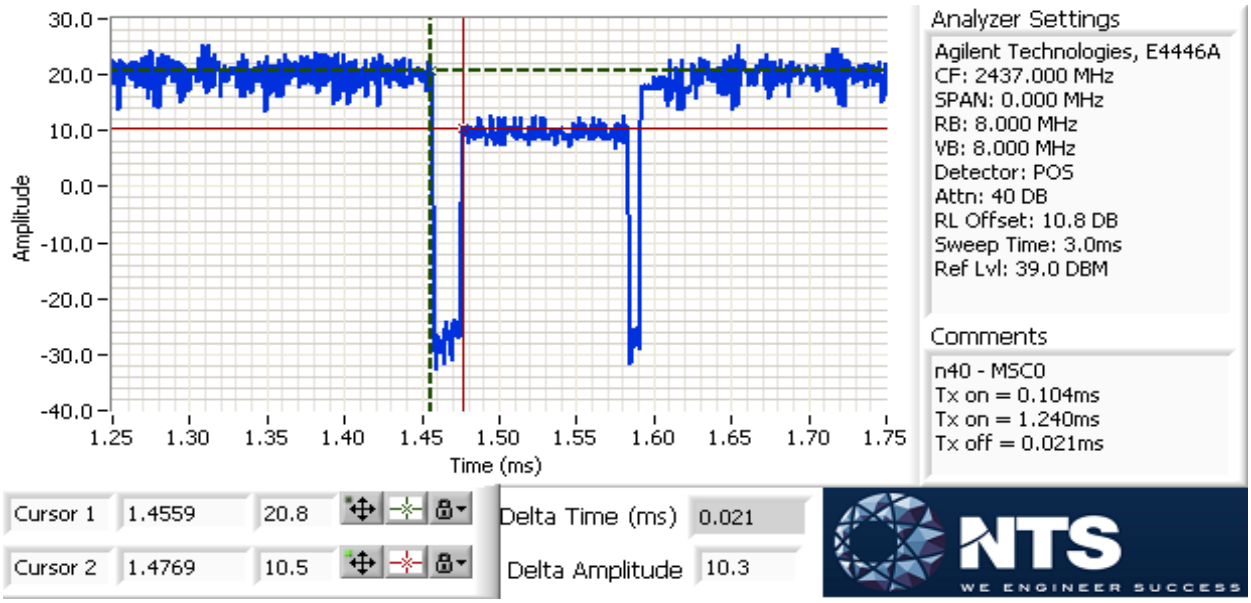
Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

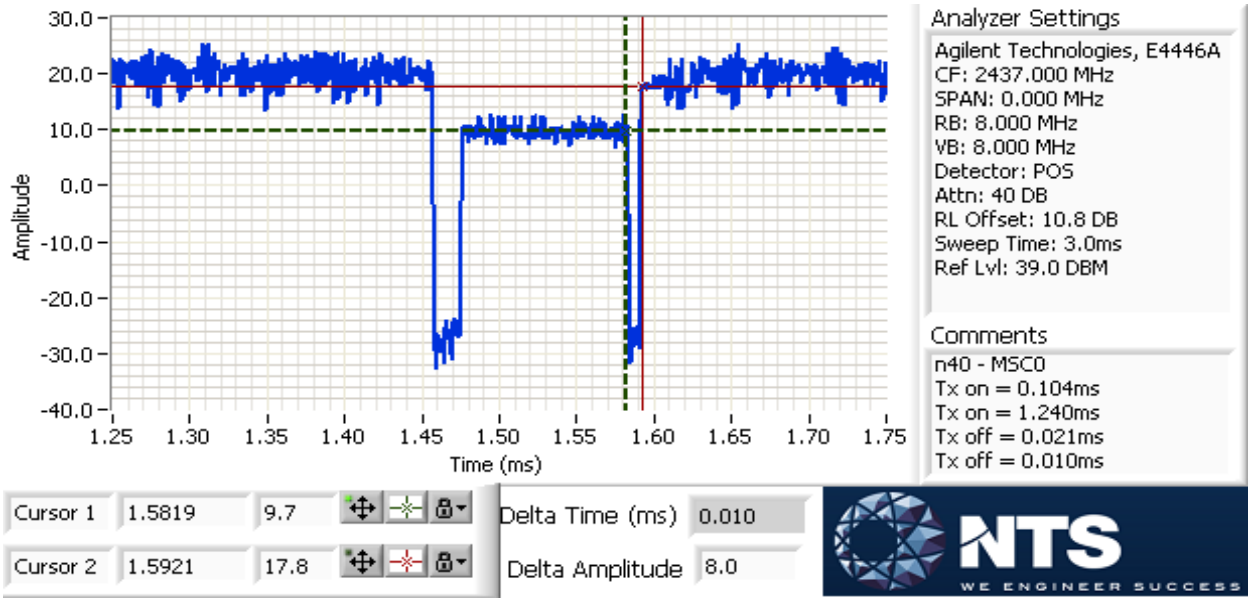
Mode: n40





Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A





Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

RSS-247 and FCC 15.247 (DTS) 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: 25.2 °C
Rel. Humidity: 45 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
1	b	1 - 2412MHz	-	24.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.4 dBµV/m @ 2390.0 MHz (-1.6 dB)
	b	2 - 2417MHz	-	25.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	49.0 dBµV/m @ 2388.1 MHz (-5.0 dB)
	b	10 - 2457MHz	-	24.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	48.2 dBµV/m @ 2483.9 MHz (-5.8 dB)
	b	11 - 2462MHz	-	24.0	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	50.3 dBµV/m @ 2483.5 MHz (-3.7 dB)

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
2	g	1 - 2412MHz	-	20.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	72.8 dBµV/m @ 2389.3 MHz (-1.2 dB)
	g	2 - 2417MHz	-	22.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.0 dBµV/m @ 2390.0 MHz (-2.0 dB)
	g	3 - 2422MHz	-	24.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.1 dBµV/m @ 2389.9 MHz (-0.9 dB)
	g	4 - 2427MHz	-	25.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.0 dBµV/m @ 2389.5 MHz (-1.0 dB)
	g	8 - 2447MHz	-	25.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	53.6 dBµV/m @ 2483.9 MHz (-0.4 dB)
	g	9 - 2452MHz	-	24.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	52.8 dBµV/m @ 2485.8 MHz (-1.2 dB)
	g	10 - 2457MHz	-	23.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	51.5 dBµV/m @ 2483.7 MHz (-2.5 dB)
	g	11 - 2462MHz	-	19.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	52.8 dBµV/m @ 2484.0 MHz (-1.2 dB)
3	n20	1 - 2412MHz	-	19.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.5 dBµV/m @ 2389.9 MHz (-0.5 dB)
	n20	2 - 2417MHz	-	22.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.3 dBµV/m @ 2390.0 MHz (-1.7 dB)
	n20	3 - 2422MHz	-	23.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	51.2 dBµV/m @ 2389.9 MHz (-2.8 dB)
	n20	9 - 2457MHz	-	23.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	53.0 dBµV/m @ 2483.8 MHz (-1.0 dB)
	n20	10 - 2457MHz	-	22.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	52.8 dBµV/m @ 2483.7 MHz (-1.2 dB)
	n20	11 - 2462MHz	-	17.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	51.6 dBµV/m @ 2483.8 MHz (-2.4 dB)

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
5	n40	3 - 2422MHz	-	17.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.4 dBµV/m @ 2389.9 MHz (-0.6 dB)
	n40	4 - 2427MHz	-	17.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	50.8 dBµV/m @ 2390.0 MHz (-3.2 dB)
	n40	5 - 2432MHz	-	19.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	71.9 dBµV/m @ 2384.8 MHz (-2.1 dB)
	n40	6 - 2437MHz	-	19.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	71.6 dBµV/m @ 2388.9 MHz (-2.4 dB)
	n40	6 - 2437MHz	-	17.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	52.2 dBµV/m @ 2483.9 MHz (-1.8 dB)
	n40	7 - 2442MHz	-	16.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	53.0 dBµV/m @ 2484.1 MHz (-1.0 dB)
	n40	8 - 2447MHz	-	15.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	53.2 dBµV/m @ 2483.9 MHz (-0.8 dB)
	n40	9 - 2452MHz -	-	14.5	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	51.7 dBµV/m @ 2483.8 MHz (-2.3 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: 184795205922976
Driver: 7.35.177.0

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	1Mbs	99.9%	Yes	12.43	0	0	10
11g	6Mbs	98.6%	Yes	2.06	0	0	10
n20	MSC0	98.4%	Yes	1.917	0	0	10
n40	MSC0	97.7%	Yes	1.24	0.1	0.2	806

Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 4:	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, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 6:	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, peak detector, linear average mode, sweep time auto, max hold. Max hold for 50*(1/DC) traces
Note 8:	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	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Date of Test: 9/14/2016
Test Engineer: Kevin Wen
Test Location: FT Ch #7

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

Radiated Bandedge Measurements (Orientation Evaluation)

Channel: 1 Mode: b Power: 27dBm
Tx Chain: 3Tx Data Rate: 1Mbs Orientation: Flat

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2387.520	55.7	V	-	-	AVG	322	1.8	POS; RB 1 MHz; VB: 10 Hz
2387.030	63.2	V	-	-	PK	322	1.8	POS; RB 1 MHz; VB: 3 MHz
2387.330	58.9	H	-	-	AVG	360	1.2	POS; RB 1 MHz; VB: 10 Hz
2388.810	68.7	H	-	-	PK	360	1.2	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Power: 27dBm
Tx Chain: 3Tx Data Rate: 1Mbs Orientation: Upright

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2387.090	58.3	V	-	-	AVG	66	1.2	POS; RB 1 MHz; VB: 10 Hz
2388.870	67.9	V	-	-	PK	66	1.2	POS; RB 1 MHz; VB: 3 MHz
2387.270	55.6	H	-	-	AVG	345	3.0	POS; RB 1 MHz; VB: 10 Hz
2385.980	62.1	H	-	-	PK	345	3.0	POS; RB 1 MHz; VB: 3 MHz

Note:	The unit was evaluated in 2 orientations. The evolution showed that flat orientation was worse case for bandedge measurment. All tests were performed with the unit in that orientation.

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1: Radiated Bandedge Measurements

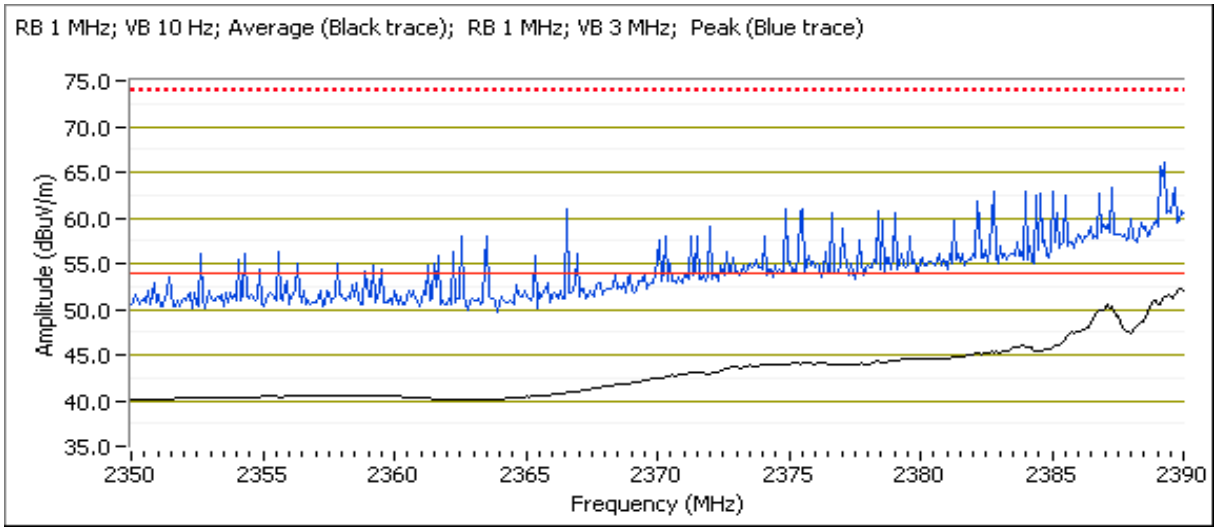
Date of Test: 9/14/2016
Test Engineer: Kevin Wen
Test Location: FT Ch #7

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

Channel: 1 Mode: b Power: 24.5 dBm
Tx Chain: 3Tx Data Rate: 1Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.950	**52.4**	H	54.0	**-1.6**	AVG	360	1.2	POS; RB 1 MHz; VB: 10 Hz, 24.5
2389.720	70.8	H	74.0	-3.2	PK	360	1.2	POS; RB 1 MHz; VB: 3 MHz, 24.5



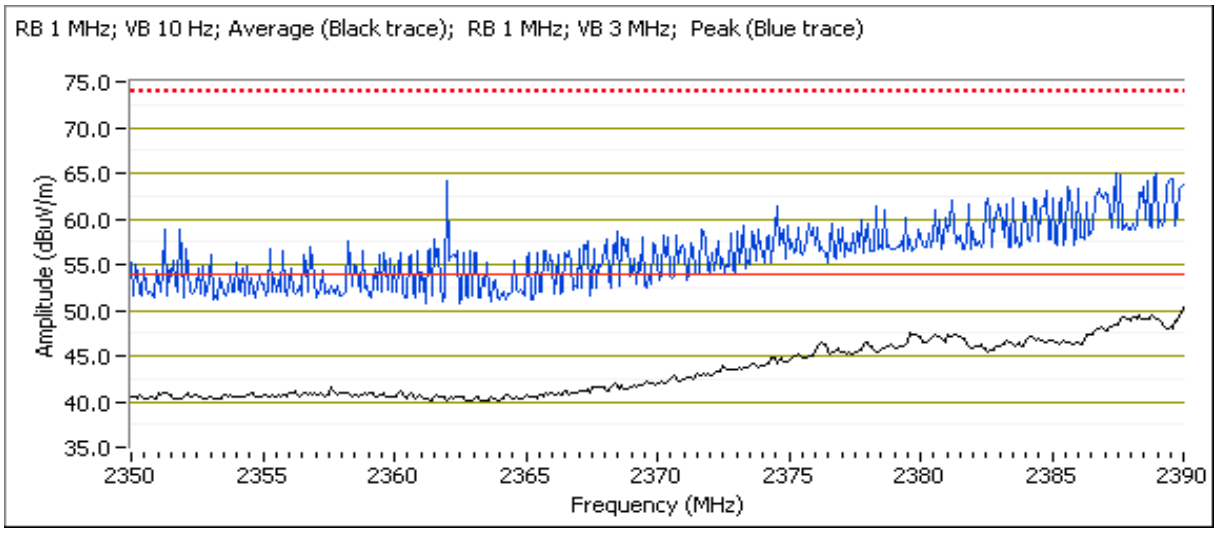
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 2 Mode: b Power: 25.5 dBm
Tx Chain: 3Tx Data Rate: 1Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2388.080	**49.0**	H	54.0	**-5.0**	AVG	357	1.0	POS; RB 1 MHz; VB: 10 Hz 25.5
2383.750	64.1	H	74.0	-9.9	PK	357	1.0	POS; RB 1 MHz; VB: 3 MHz 25.5



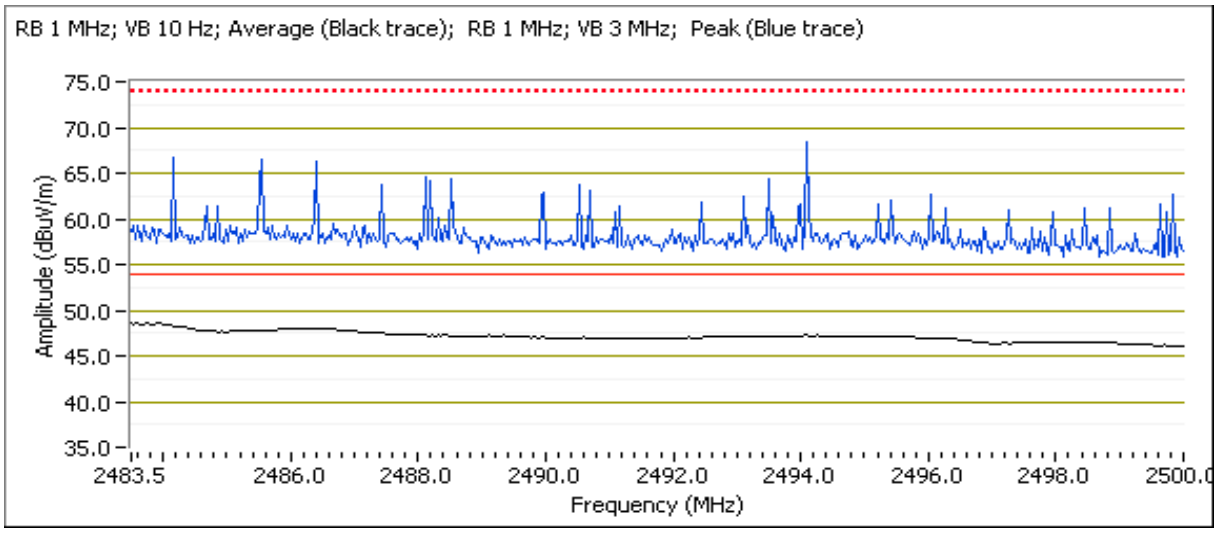
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 10 Mode: b Power: 24.5 dBm
Tx Chain: 3Tx Data Rate: 1Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.880	**48.2**	H	54.0	**-5.8**	AVG	357	1.1	POS; RB 1 MHz; VB: 10 Hz, 24.5
2483.640	68.1	H	74.0	-5.9	PK	357	1.1	POS; RB 1 MHz; VB: 3 MHz, 24.5



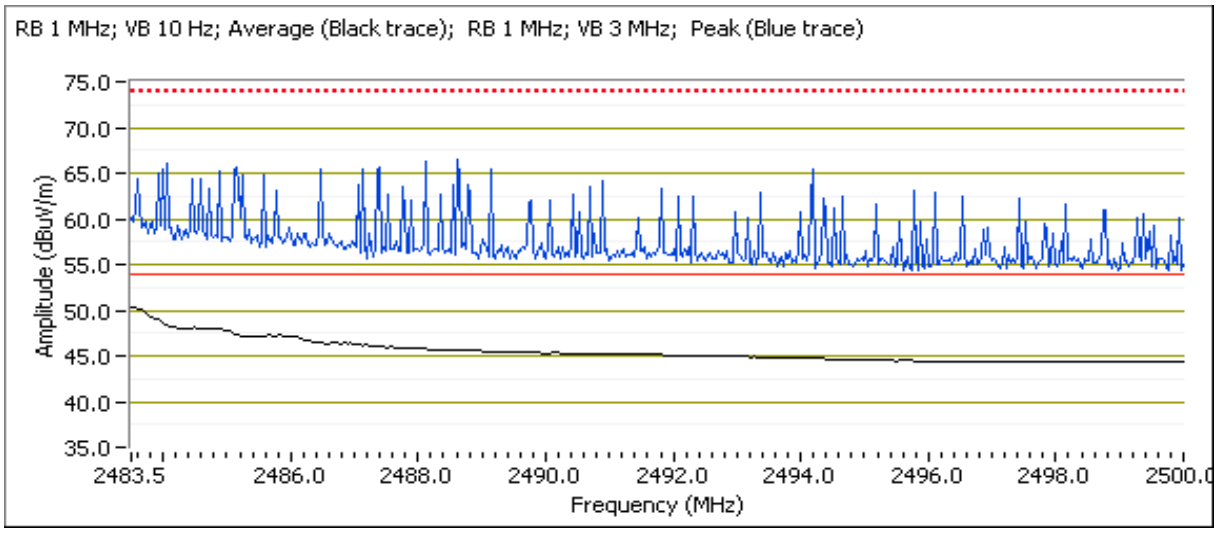
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 11 Mode: b Power: 24 dBm
Tx Chain: 3Tx Data Rate: 1Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	**50.3**	H	54.0	**-3.7**	AVG	354	1.6	POS; RB 1 MHz; VB: 10 Hz, 24
2487.770	68.0	H	74.0	-6.0	PK	354	1.6	POS; RB 1 MHz; VB: 3 MHz, 24



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2: Radiated Bandedge Measurements

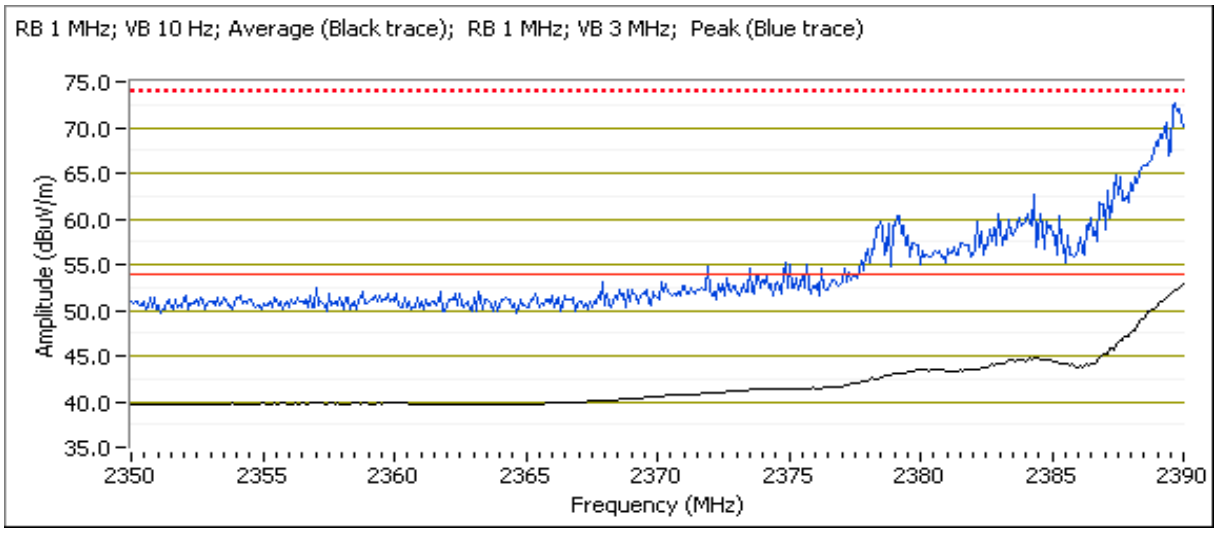
Date of Test: 9/14/2016
Test Engineer: Rafael Varelas
Test Location: FT CH #7

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

Channel: 1 Mode: g Power: 20.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.340	**72.8**	H	74.0	**-1.2**	PK	344	1.0	POS; RB 1 MHz; VB: 3 MHz, 20.5
2390.000	52.7	H	54.0	-1.3	AVG	344	1.0	POS; RB 1 MHz; VB: 10 Hz, 20.5



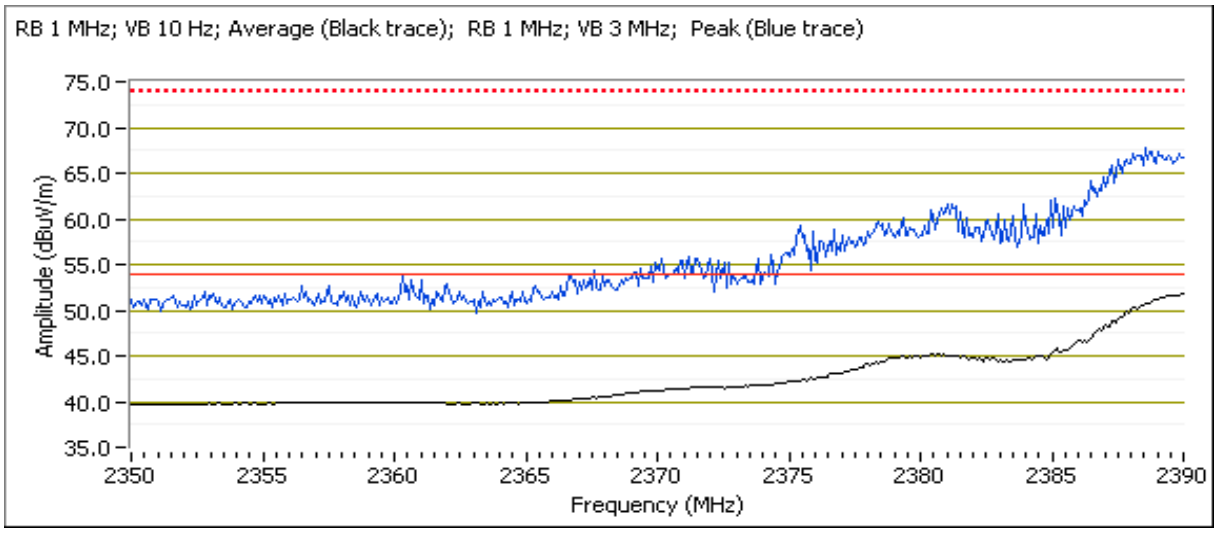
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 2 Mode: g Power: 22.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	**52.0**	H	54.0	**-2.0**	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz, 22.5
2389.520	68.0	H	74.0	-6.0	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz, 22.5



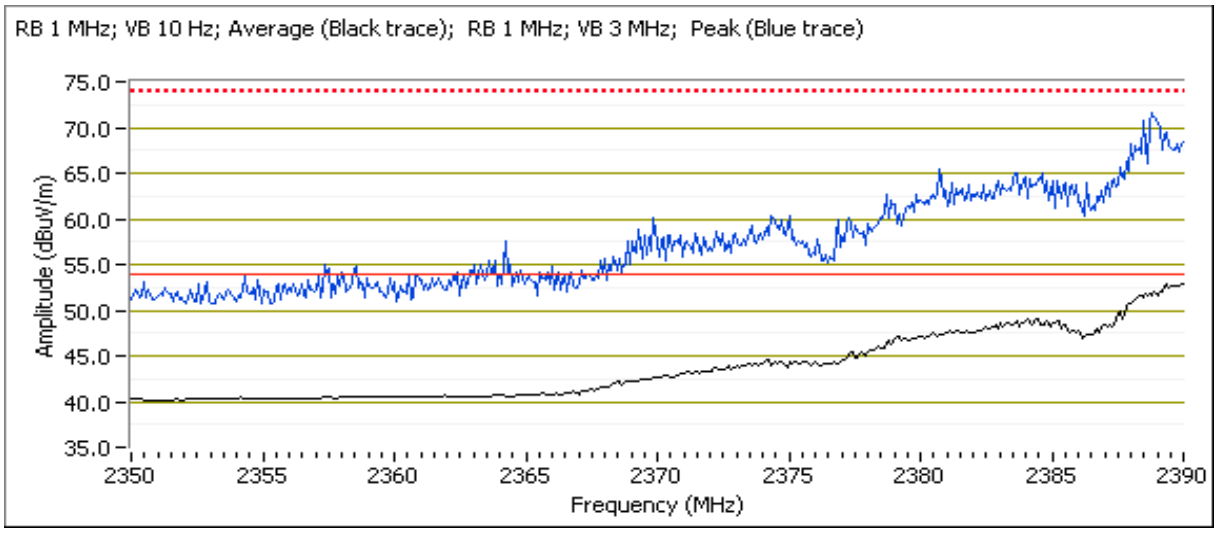
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 3 Mode: g Power: 24.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.920	**53.1**	H	54.0	**-0.9**	AVG	346	1.0	POS; RB 1 MHz; VB: 10 Hz, 24.5
2388.880	71.9	H	74.0	-2.1	PK	346	1.0	POS; RB 1 MHz; VB: 3 MHz, 24.5



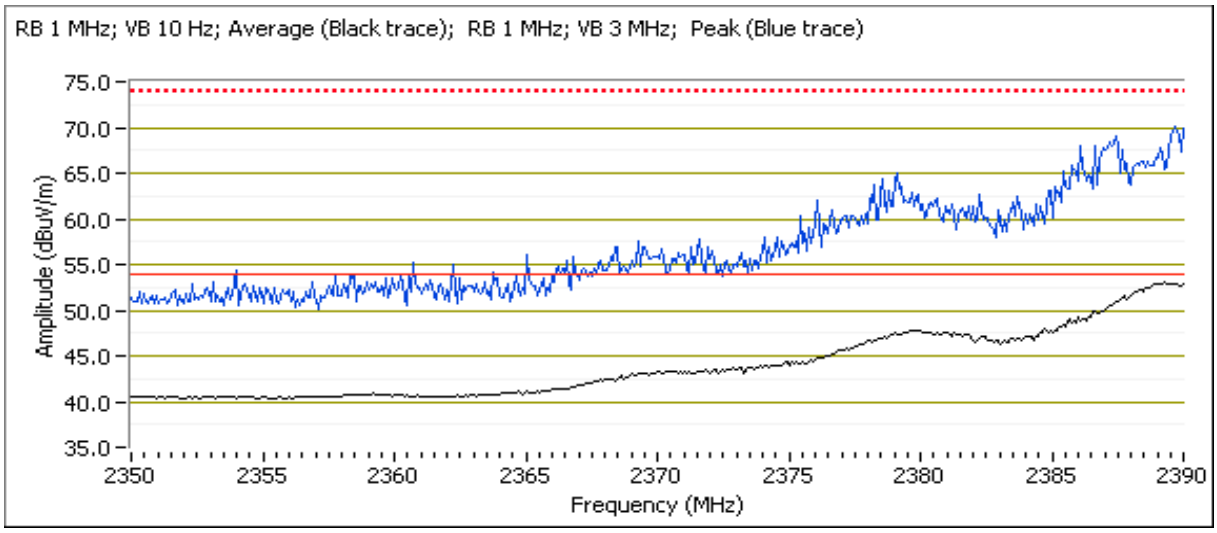
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 4 Mode: g Power: 25.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.520	**53.0**	H	54.0	**-1.0**	AVG	360	1.0	POS; RB 1 MHz; VB: 10 Hz, 25.5
2389.760	70.6	H	74.0	-3.4	PK	360	1.0	POS; RB 1 MHz; VB: 3 MHz, 25.5



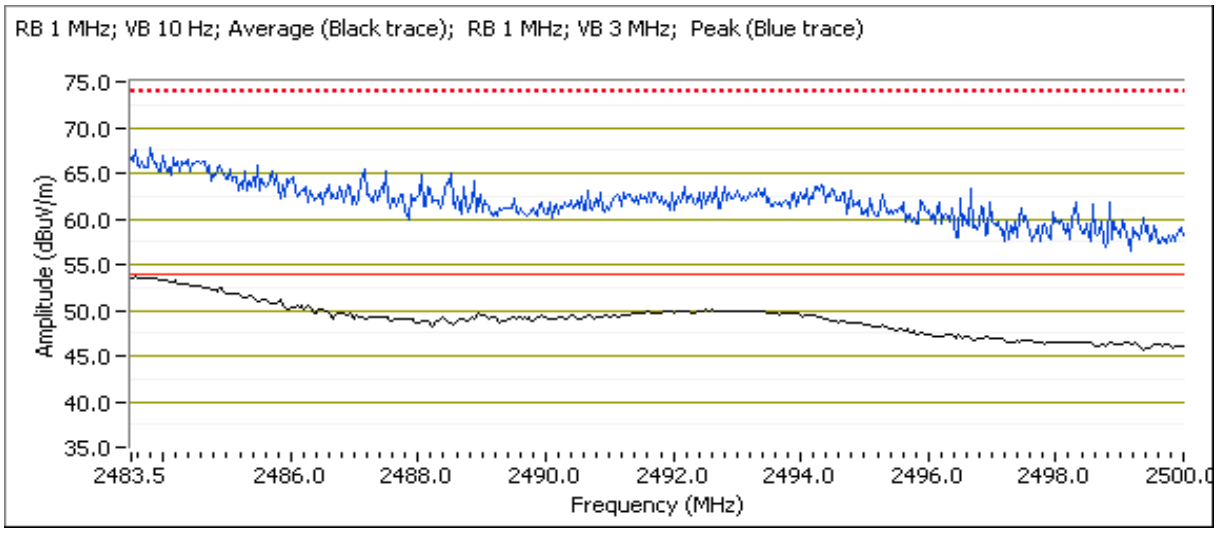
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 8 Mode: g Power: 25.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.860	**53.6**	H	54.0	**-0.4**	AVG	9	1.0	POS; RB 1 MHz; VB: 10 Hz, 25.5
2484.160	67.1	H	74.0	-6.9	PK	9	1.0	POS; RB 1 MHz; VB: 3 MHz, 25.5



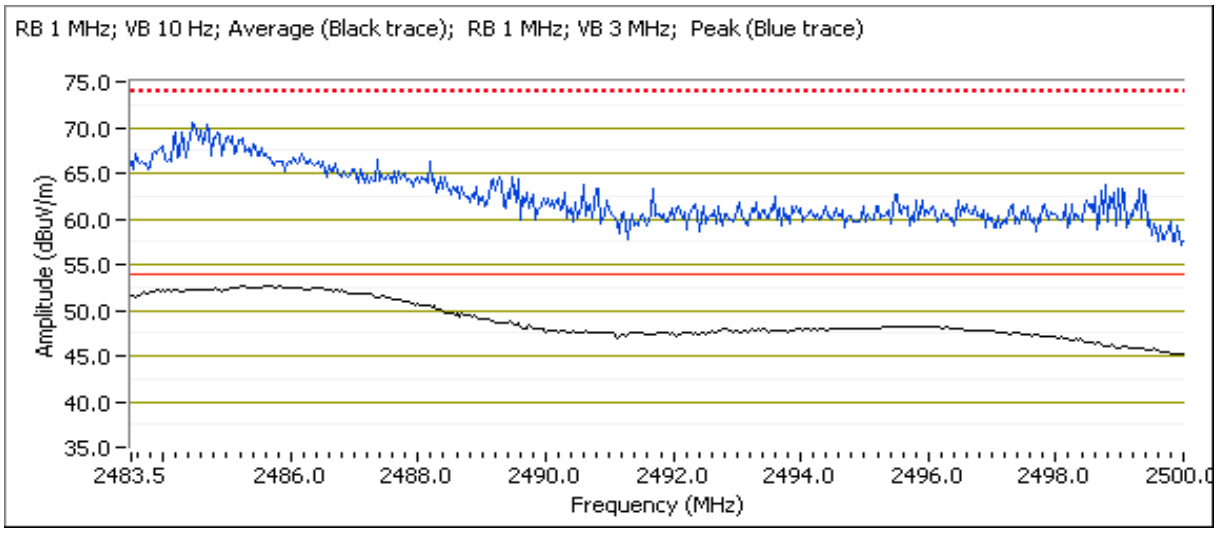
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 9 Mode: g Power: 24.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2485.810	**52.8**	H	54.0	**-1.2**	AVG	0	1.0	POS; RB 1 MHz; VB: 10 Hz, 24.5
2485.350	70.5	H	74.0	-3.5	PK	0	1.0	POS; RB 1 MHz; VB: 3 MHz, 24.5



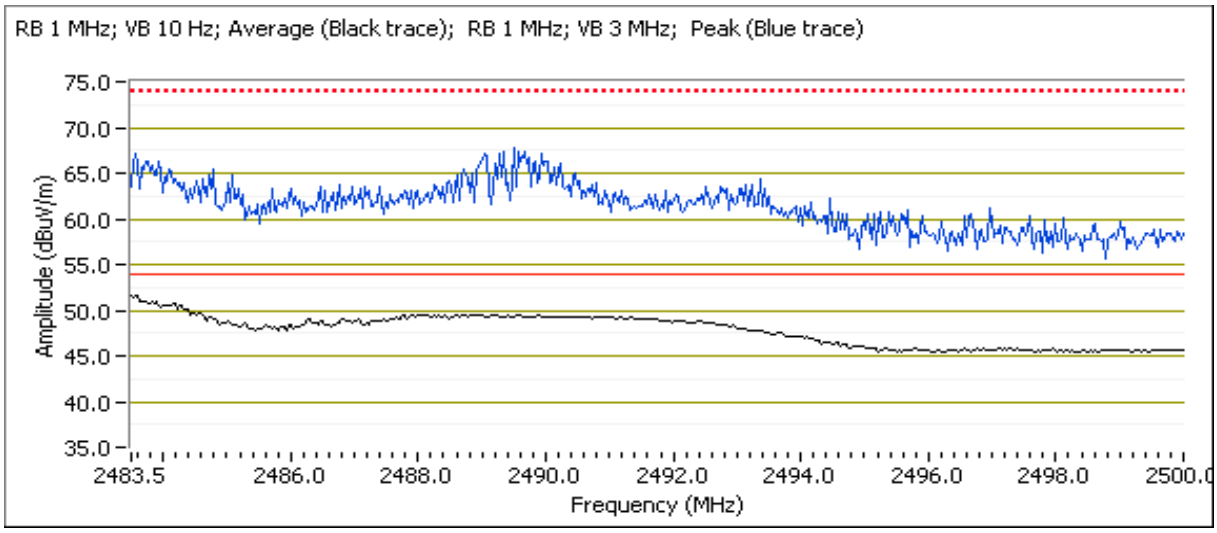
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 10 Mode: g Power: 23.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.670	**51.5**	H	54.0	**-2.5**	AVG	0	1.0	POS; RB 1 MHz; VB: 10 Hz, 23.5
2489.690	67.5	H	74.0	-6.5	PK	0	1.0	POS; RB 1 MHz; VB: 3 MHz, 23.5



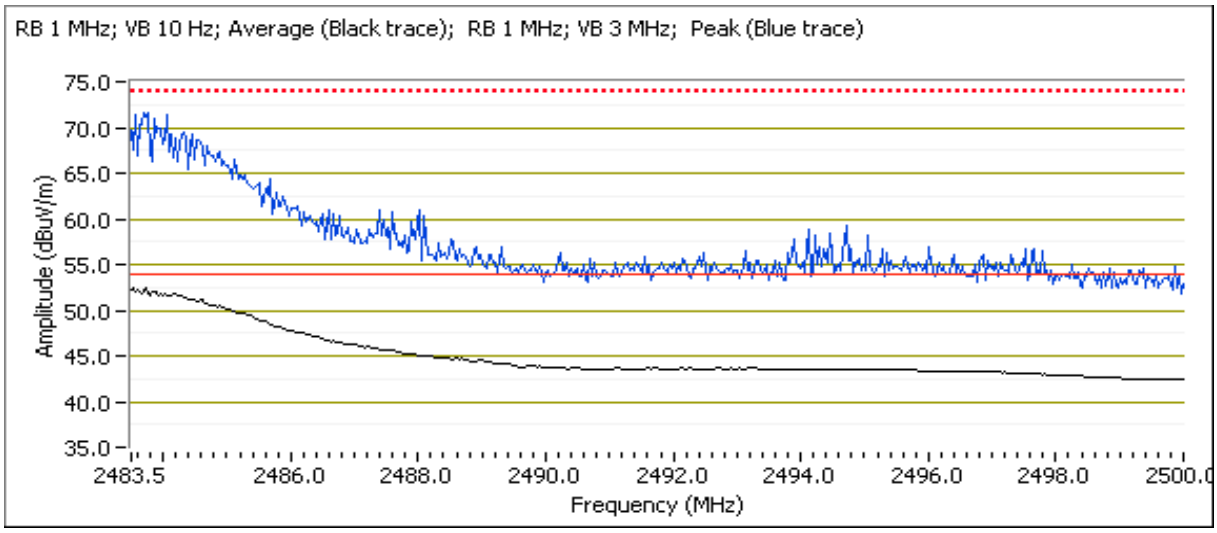
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 11 Mode: g Power: 19.5 dBm
Tx Chain: 3Tx Data Rate: 6Mbs

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.020	52.8	H	54.0	-1.2	AVG	0	1.0	POS; RB 1 MHz; VB: 10 Hz
2483.850	72.3	H	74.0	-1.7	PK	0	1.0	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #3: Radiated Bandedge Measurements

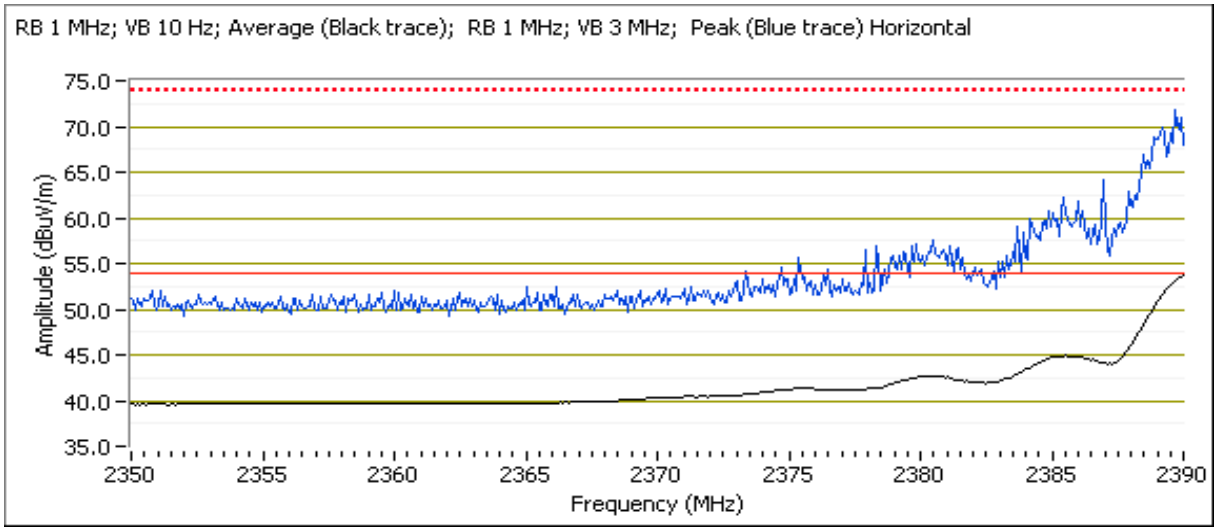
Date of Test: 9/14/2016, 9/15/2016
Test Engineer: Rafael Varelas
Test Location: FT CH #7

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

Channel: 1 Mode: n20 Power: 19.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.940	**53.5**	H	54.0	**-0.5**	AVG	4	1.0	POS; RB 1 MHz; VB: 10 Hz, 19.5
2389.490	72.3	H	74.0	-1.7	PK	4	1.0	POS; RB 1 MHz; VB: 3 MHz, 19.5
2389.940	49.8	V	54.0	-4.2	AVG	160	1.0	POS; RB 1 MHz; VB: 10 Hz, 19.5
2388.800	68.1	V	74.0	-5.9	PK	160	1.0	POS; RB 1 MHz; VB: 3 MHz, 19.5



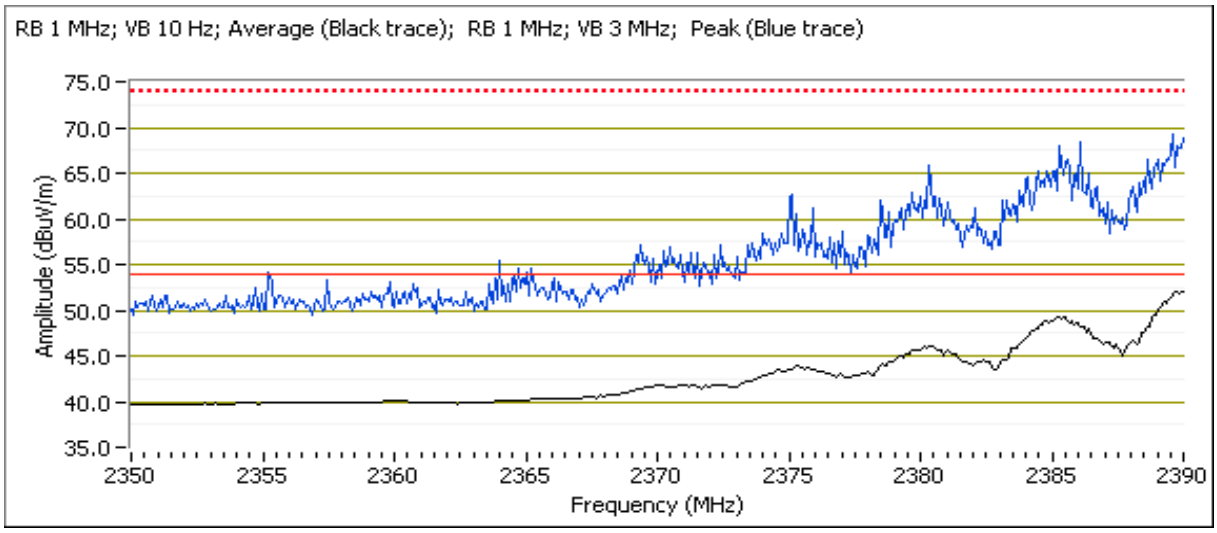
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 2 Mode: n20 Power: 22.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	**52.3**	H	54.0	**-1.7**	AVG	4	1.0	POS; RB 1 MHz; VB: 10 Hz, 22.5
2389.520	68.7	H	74.0	-5.3	PK	4	1.0	POS; RB 1 MHz; VB: 3 MHz, 22.5



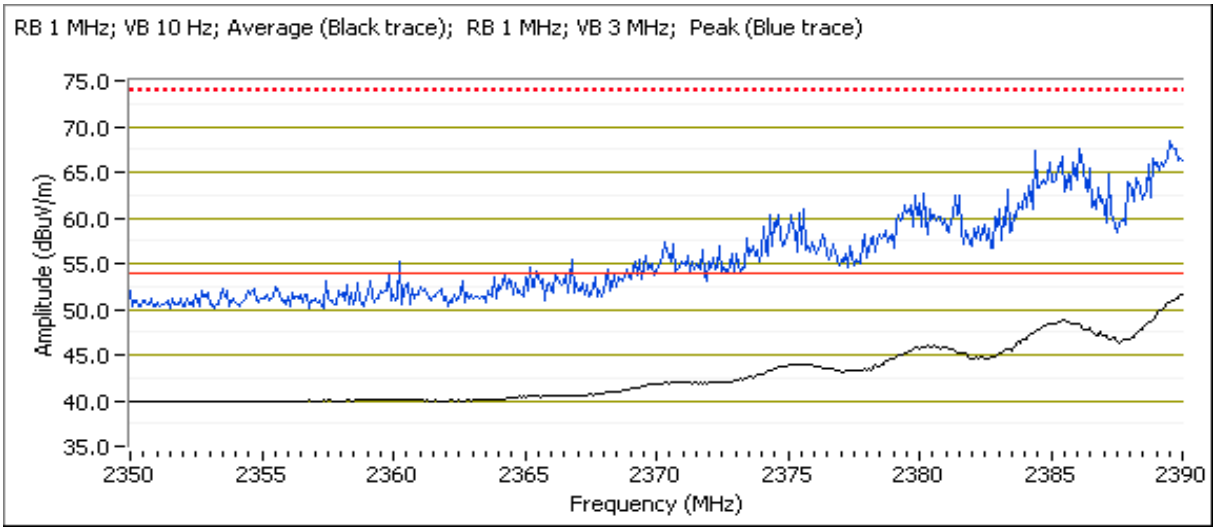
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 3 Mode: n20 Power: 23.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.920	**51.2**	H	54.0	**-2.8**	AVG	3	1.0	POS; RB 1 MHz; VB: 10 Hz, 23.5
2386.430	68.8	H	74.0	-5.2	PK	3	1.0	POS; RB 1 MHz; VB: 3 MHz, 23.5



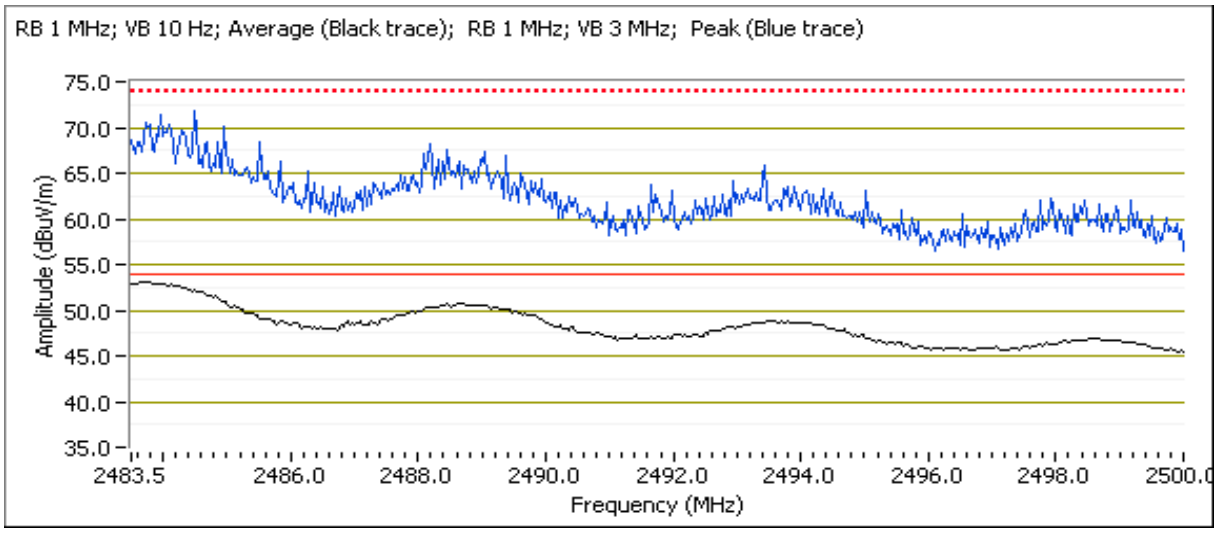
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 9 Mode: n20 Power: 23.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.760	**53.0**	H	54.0	**-1.0**	AVG	13	1.0	POS; RB 1 MHz; VB: 10 Hz, 23.5
2484.100	71.9	H	74.0	-2.1	PK	13	1.0	POS; RB 1 MHz; VB: 3 MHz, 23.5



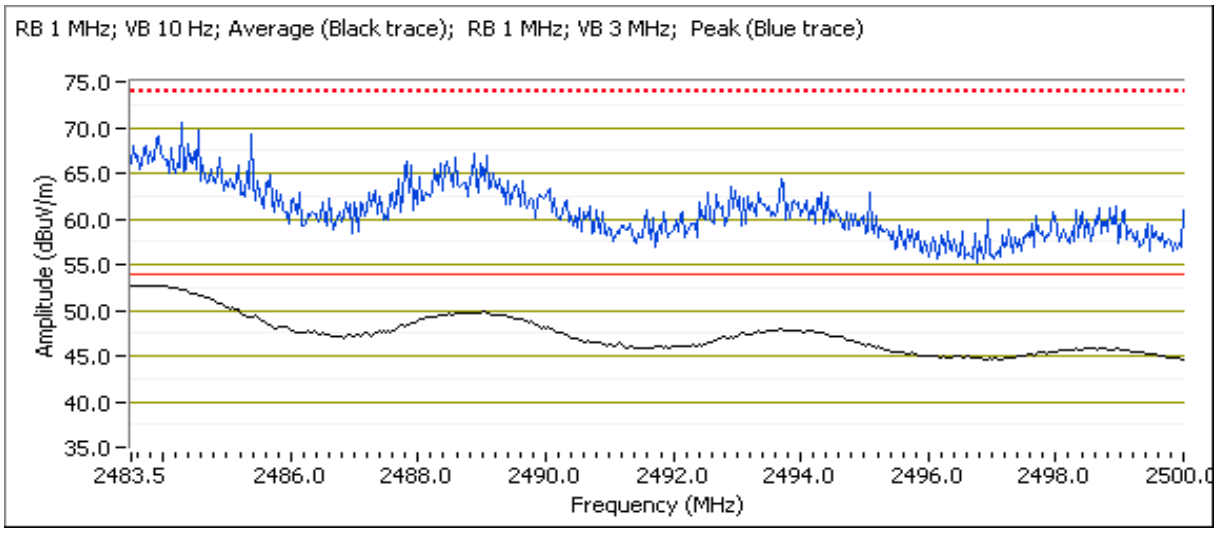
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 10 Mode: n20 Power: 22.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.700	**52.8**	H	54.0	**-1.2**	AVG	13	1.0	POS; RB 1 MHz; VB: 10 Hz, 22.5
2489.290	71.3	H	74.0	-2.7	PK	13	1.0	POS; RB 1 MHz; VB: 3 MHz, 22.5



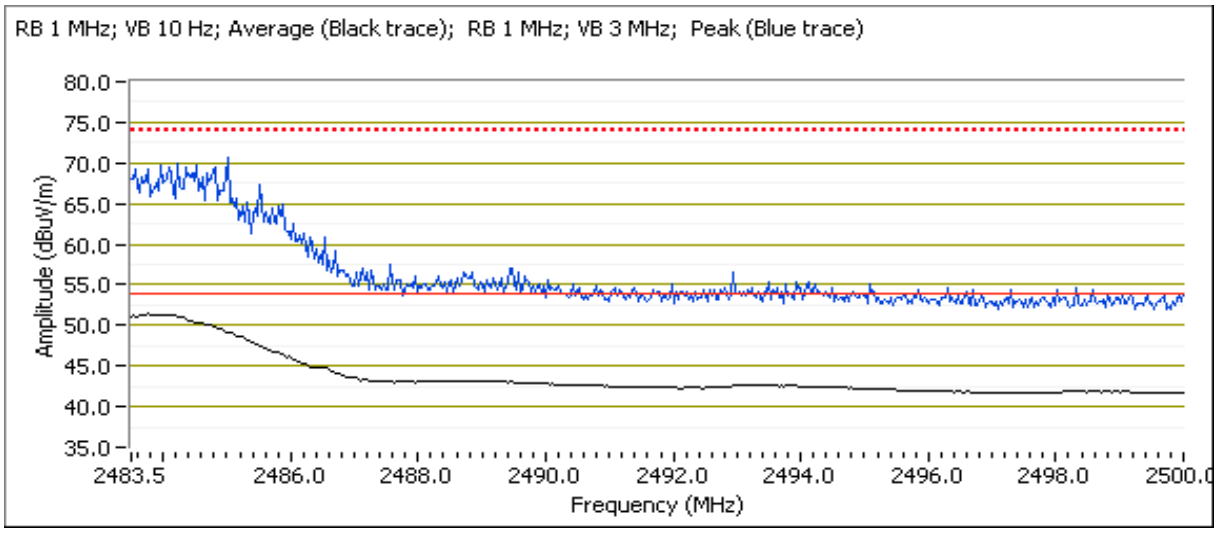
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 11 Mode: n20 Power: 17.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.750	**51.6**	H	54.0	**-2.4**	AVG	9	1.0	POS; RB 1 MHz; VB: 10 Hz, 17.5
2483.760	71.3	H	74.0	-2.7	PK	9	1.0	POS; RB 1 MHz; VB: 3 MHz, 17.5



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #5: Radiated Bandedge Measurements

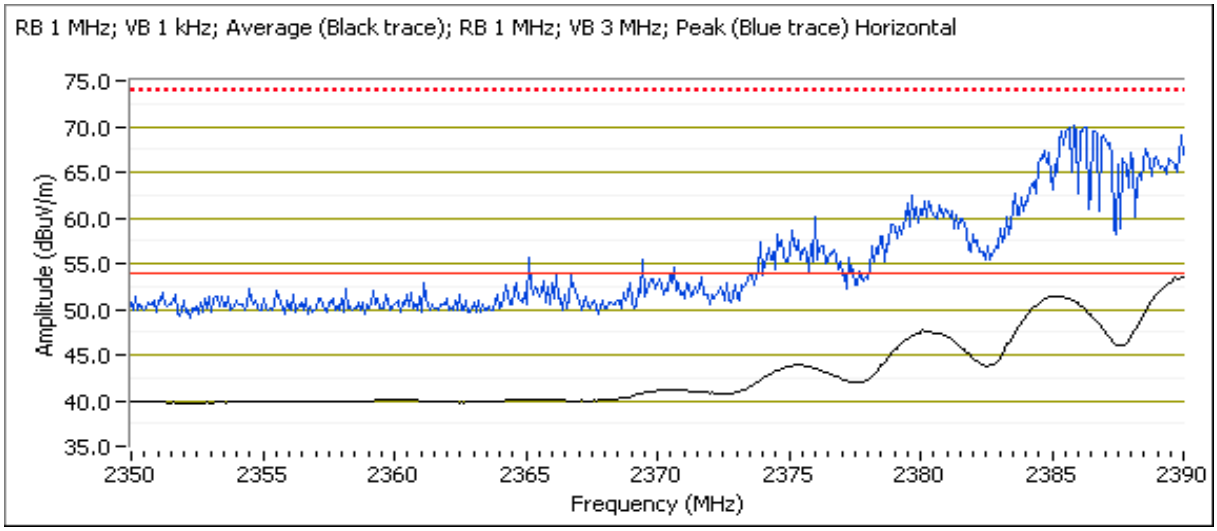
Date of Test: 9/15/2016
Test Engineer: Rafael Varelas
Test Location: FT CH #7

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

Channel: 3 Mode: n40 Power: 17.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.940	**53.4**	H	54.0	**-0.6**	Avg	2	1.4	POS Vavg:100; VB: 1 kHz, Note 4
2385.610	70.0	H	74.0	-4.0	PK	2	1.4	POS; RB 1 MHz; VB: 3 MHz
2388.620	50.3	V	54.0	-3.7	Avg	163	1.0	POS Vavg:100; VB: 1 kHz, Note 4
2386.480	69.3	V	74.0	-4.7	PK	163	1.0	POS; RB 1 MHz; VB: 3 MHz



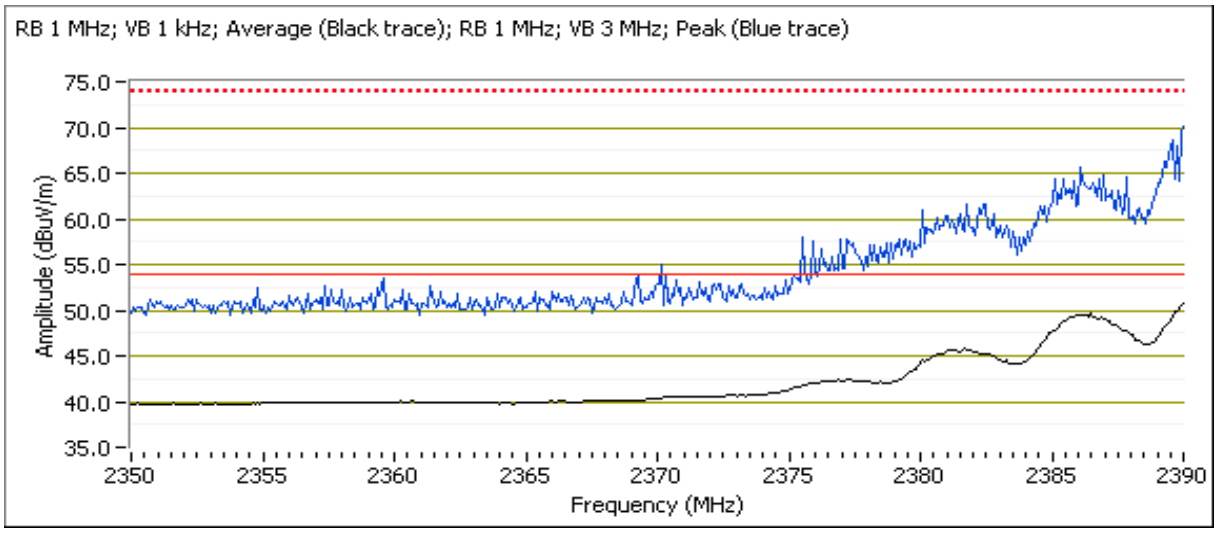
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 4 Mode: n40 Power: 17.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.980	**50.8**	H	54.0	**-3.2**	Avg	359	1.0	POS Vavg:100; VB: 1 kHz, Note 4
2390.000	69.5	H	74.0	-4.5	PK	359	1.0	POS; RB 1 MHz; VB: 3 MHz



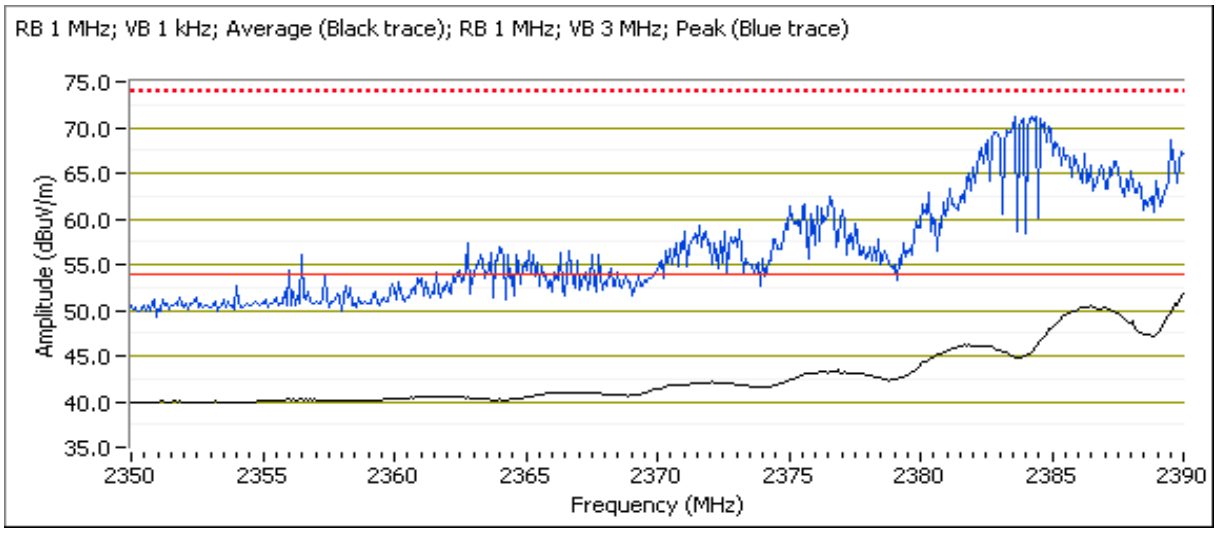
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 5 Mode: n40 Power: 19.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2384.750	**71.9**	H	74.0	**-2.1**	PK	359	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	51.8	H	54.0	-2.2	Avg	359	1.0	POS Vavg:100; VB: 1 kHz, Note 4



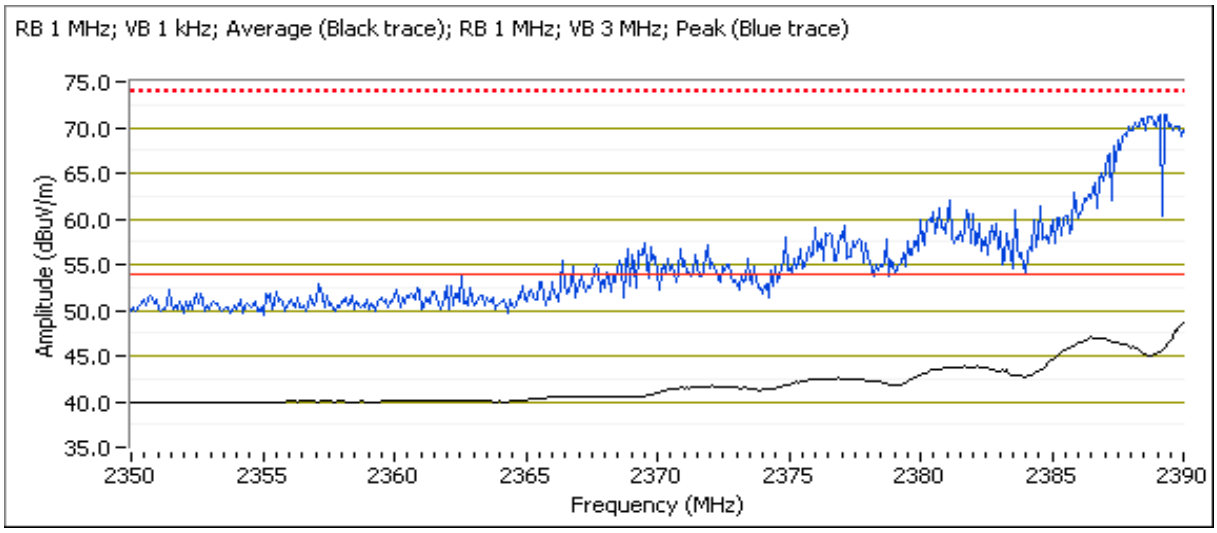
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 6 Mode: n40 Power: 19.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2388.900	**71.6**	H	74.0	**-2.4**	PK	359	1.0	POS; RB 1 MHz; VB: 3 MHz
2390.000	48.4	H	54.0	-5.6	Avg	359	1.0	POS Vavg:100; VB: 1 kHz, Note 4



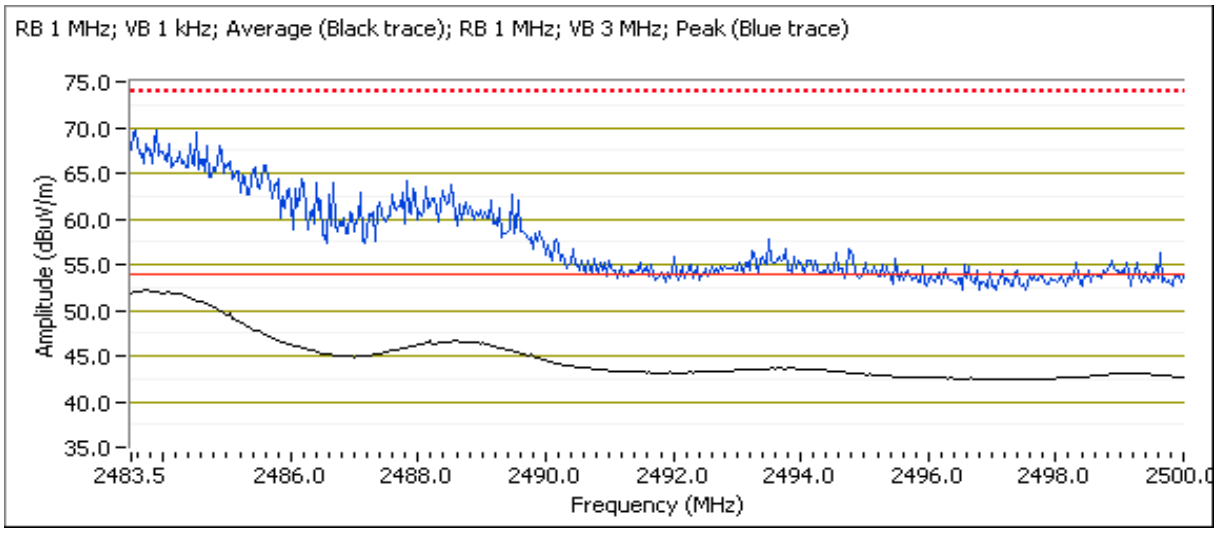
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 6 Mode: n40 Power: 17.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.860	**52.2**	H	54.0	**-1.8**	Avg	10	1.0	POS Vavg:100; VB: 1 kHz, Note 4
2488.060	70.8	H	74.0	-3.2	PK	10	1.0	POS; RB 1 MHz; VB: 3 MHz



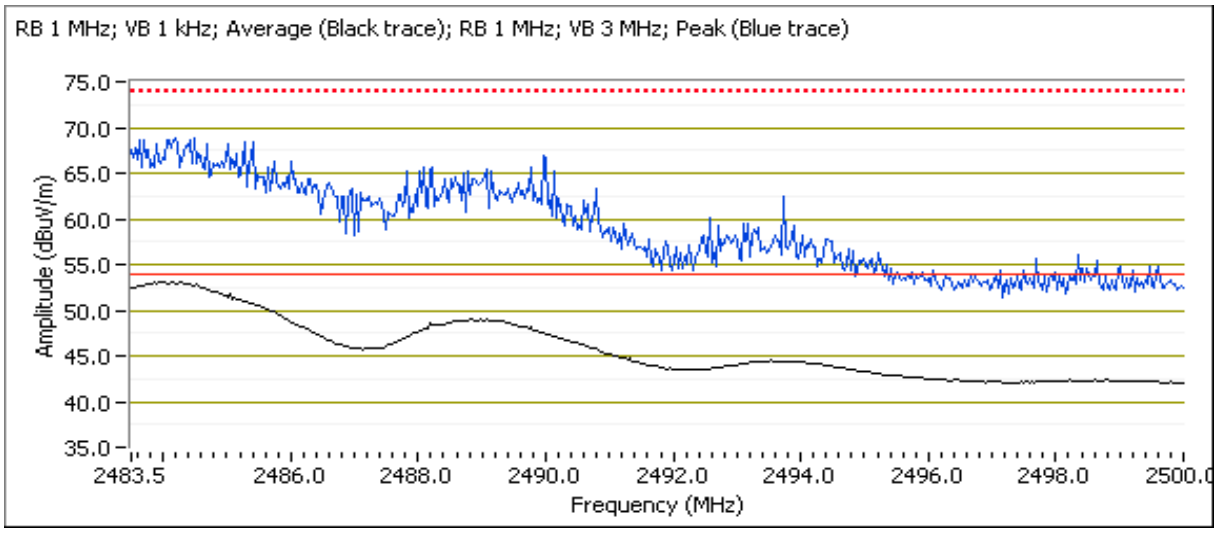
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 7 Mode: n40 Power: 16.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.070	**53.0**	H	54.0	**-1.0**	Avg	6	1.0	POS Vavg:100; VB: 1 kHz, Note 4
2485.250	69.5	H	74.0	-4.5	PK	6	1.0	POS; RB 1 MHz; VB: 3 MHz



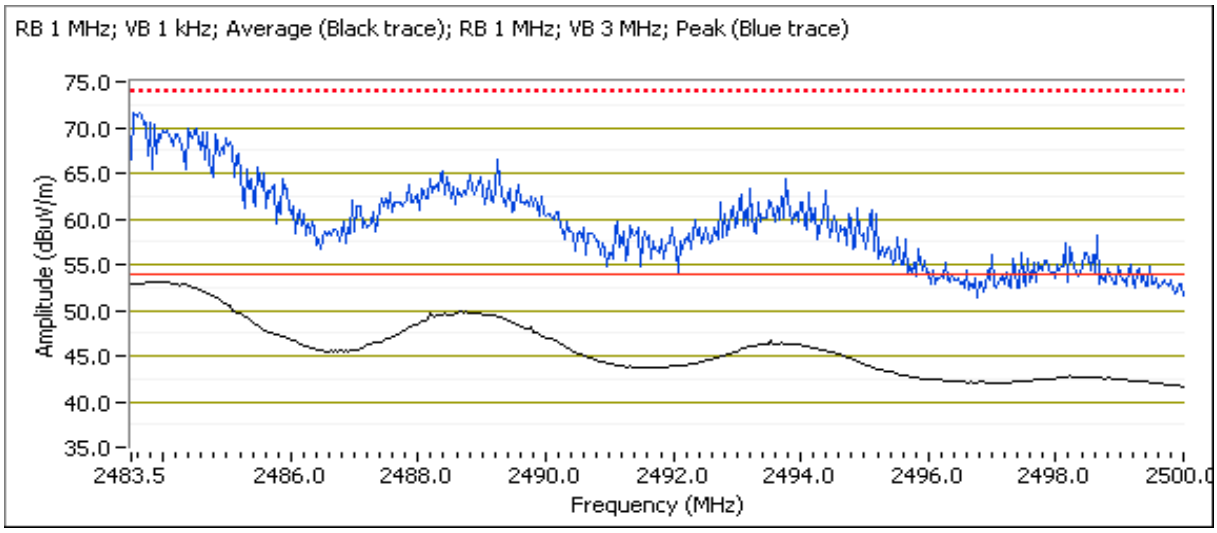
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 8 Mode: n40 Power: 15.5 dBm
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.890	**53.2**	H	54.0	**-0.8**	Avg	12	1.0	POS Vavg:100; VB: 1 kHz, Note 4
2483.620	71.2	H	74.0	-2.8	PK	12	1.0	POS; RB 1 MHz; VB: 3 MHz



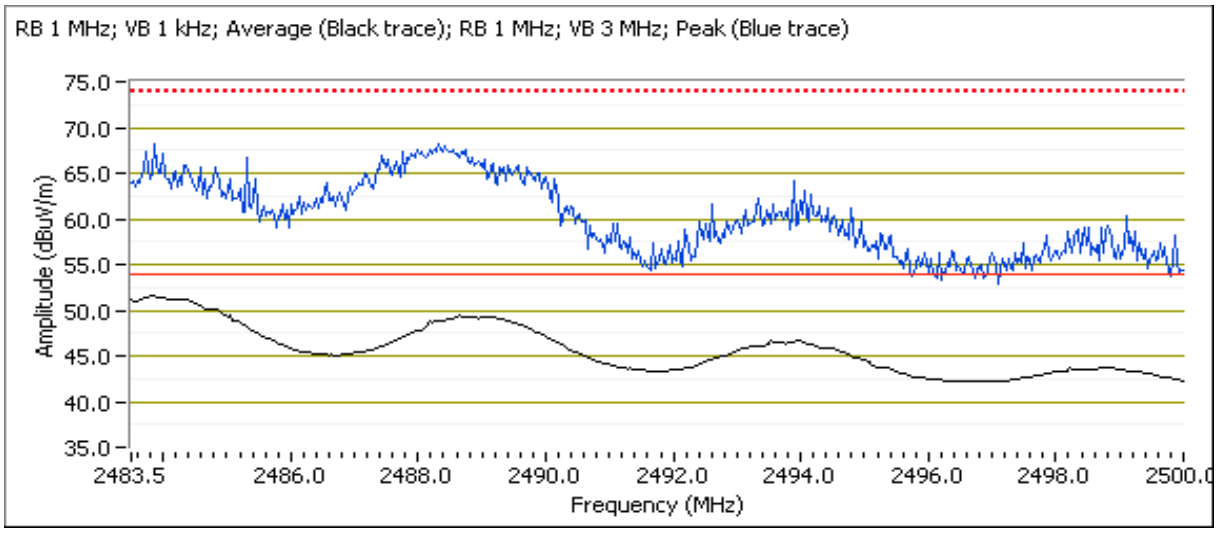
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 9 Mode: n40
Tx Chain: 3Tx Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.800	**51.7**	H	54.0	**-2.3**	Avg	12	1.0	POS Vavg:100; VB: 1 kHz, Note 4
2487.990	67.7	H	74.0	-6.3	PK	12	1.0	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

RSS-247 and FCC 15.247 (DTS) 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: 25 °C
Rel. Humidity: 45 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
1	b	1 - 2412MHz	-	27	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	40.8 dBµV/m @ 1240.1 MHz (-13.2 dB)
	b	6 - 2437MHz	-	25.0	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	52.2 dBµV/m @ 7311.8 MHz (-1.8 dB)
	b	11 - 2462MHz	-	27	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	53.6 dBµV/m @ 7386.8 MHz (-0.4 dB)
Scans on center channel in OFDM modes to determine the worst case mode.							
2	g	6 - 2437MHz	-	27	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	48.2 dBµV/m @ 7308.8 MHz (-5.8 dB)
	n20	6 - 2437MHz	-	25	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	45.1 dBµV/m @ 7313.0 MHz (-8.9 dB)
	n40	6 - 2437MHz	-	24.0	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	40.8 dBµV/m @ 7318.1 MHz (-13.2 dB)
Measurements on low and high channels in worst-case OFDM mode.							
3	g	1 - 2412MHz	-	27	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	51.1 dBµV/m @ 7234.9 MHz (-2.9 dB)
	g	11 - 2462MHz	-	27	Radiated Emissions, 1 - 25 GHz	FCC Part 15.209 / 15.247(c)	47.8 dBµV/m @ 7383.4 MHz (-6.2 dB)

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: 184795205922976
Driver: 7.35.177.0

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
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.
2.4GHz band reject filter used

2.4GHz radio

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	1Mbs	1.00	Yes	12.43	0	0	10
11g	6Mbs	0.99	Yes	2.06	0	0	10
n20	MSC0	0.98	Yes	1.917	0	0	10
n40	MSC0	0.977	Yes	1.24	0.1	0.2	806

Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, refer to antenna port measurements
Note 4:	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, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 6:	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, peak detector, linear average mode, sweep time auto, max hold. Max hold for 50*(1/DC) traces

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

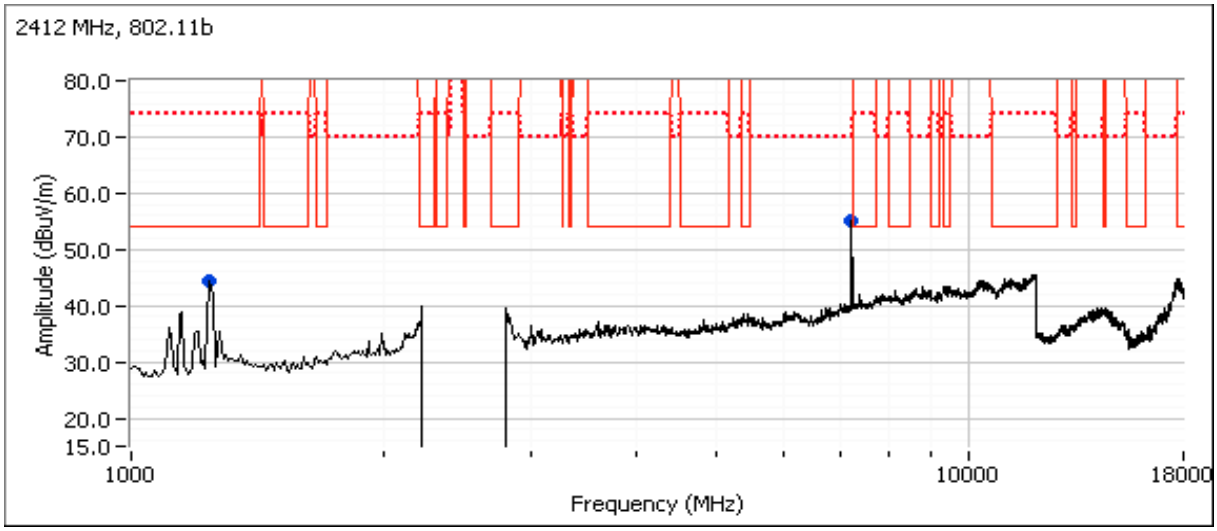
Run #1: Radiated Spurious Emissions, 1,000 - 25000 MHz. Operating Mode: 802.11b

Date of Test: 9/15/2016 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT CH #7 EUT Voltage: 120V/60Hz

Run #1a: Low Channel

Channel: 1 Mode: b Power setting = 27.0
Tx Chain: 3Tx Data Rate: 1Mbs

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1240.130	**40.8**	H	54.0	**-13.2**	AVG	28	1.5	RB 1 MHz;VB 10 Hz;Peak
1238.000	48.0	H	74.0	-26.0	PK	28	1.5	RB 1 MHz;VB 3 MHz;Peak
7237.080	55.6	H	-	-	PK	351	1.3	Note 2



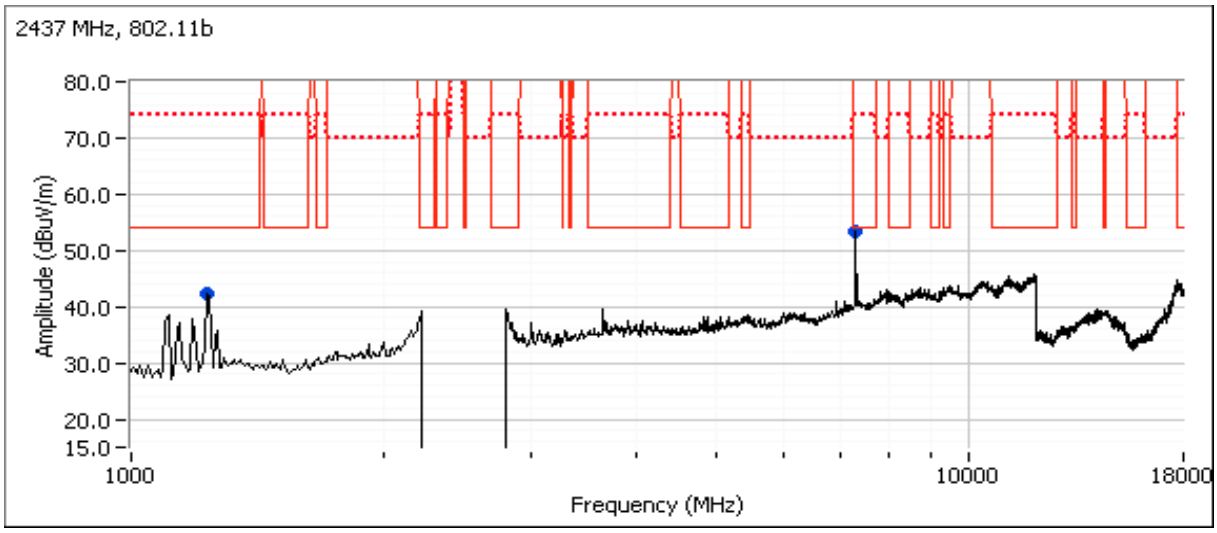
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1b: Center Channel

Channel: 6 Mode: b Power setting = 25.5
Tx Chain: 3Tx Data Rate: 1Mbs

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7311.830	**52.2**	H	54.0	**-1.8**	AVG	352	1.0	RB 1 MHz;VB 10 Hz;Peak
7312.170	58.1	H	74.0	-15.9	PK	352	1.0	RB 1 MHz;VB 3 MHz;Peak
1217.000	33.4	H	54.0	-20.6	AVG	177	1.5	RB 1 MHz;VB 10 Hz;Peak
1215.370	42.9	H	74.0	-31.1	PK	177	1.5	RB 1 MHz;VB 3 MHz;Peak



Note:	Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

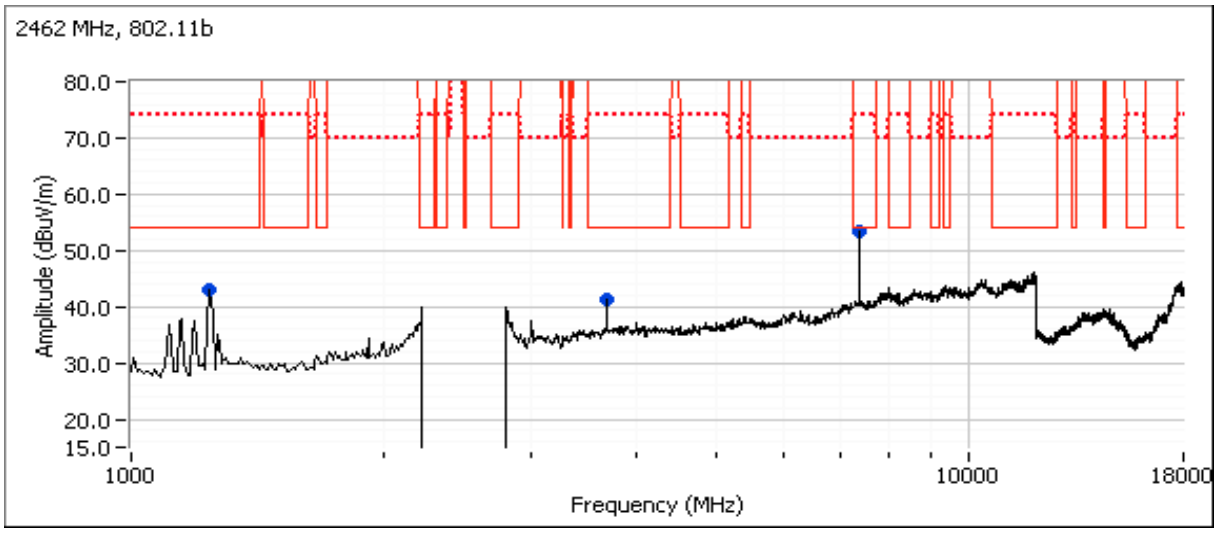
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1c: High Channel

Channel: 11 Mode: b Power setting = 27.0
Tx Chain: 3Tx Data Rate: 1Mbs

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7386.810	**53.6**	H	54.0	**-0.4**	AVG	353	1.3	RB 1 MHz;VB 10 Hz;Peak
1239.330	40.5	H	54.0	-13.5	AVG	196	1.5	RB 1 MHz;VB 10 Hz;Peak
3693.060	39.8	V	54.0	-14.2	AVG	0	2.1	RB 1 MHz;VB 10 Hz;Peak
7387.130	59.6	H	74.0	-14.4	PK	353	1.3	RB 1 MHz;VB 3 MHz;Peak
1239.330	48.3	H	74.0	-25.7	PK	196	1.5	RB 1 MHz;VB 3 MHz;Peak
3692.990	46.7	V	74.0	-27.3	PK	0	2.1	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

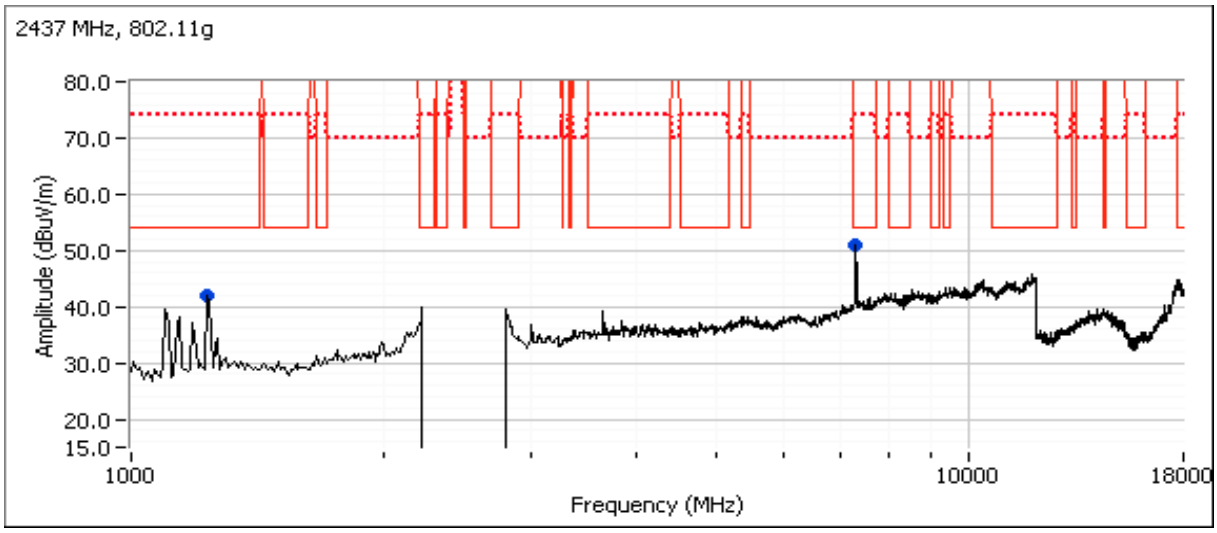
Run #2: Radiated Spurious Emissions, 1,000 - 25000 MHz. Operating Mode: OFDM

Date of Test: 9/16/2016 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT CH #7 EUT Voltage: 120V/60Hz

Run #2a: Center Channel

Channel: 6 Mode: g Power setting = 27.0
Tx Chain: 3Tx Data Rate: 6Mbs

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7308.830	**48.2**	H	54.0	**-5.8**	AVG	348	1.2	RB 1 MHz;VB 10 Hz;Peak
1238.570	40.4	H	54.0	-13.6	AVG	194	1.5	RB 1 MHz;VB 10 Hz;Peak
7317.910	60.3	H	74.0	-13.7	PK	348	1.2	RB 1 MHz;VB 3 MHz;Peak
1239.070	47.9	H	74.0	-26.1	PK	194	1.5	RB 1 MHz;VB 3 MHz;Peak



Note:	Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

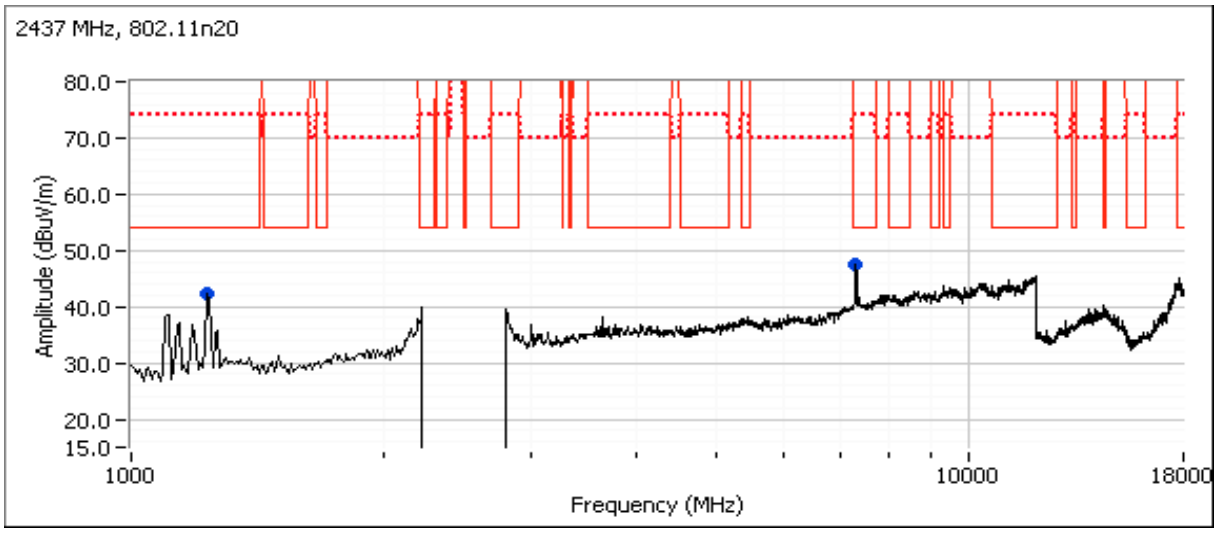
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2b: Center Channel

Channel: 6 Mode: n20 Power setting = 25.0
Tx Chain: 3Tx Data Rate: MSC0

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7313.030	**45.1**	H	54.0	**-8.9**	AVG	344	1.0	RB 1 MHz;VB 10 Hz;Peak
1237.900	39.5	H	54.0	-14.5	AVG	30	1.5	RB 1 MHz;VB 10 Hz;Peak
7308.070	57.6	H	74.0	-16.4	PK	344	1.0	RB 1 MHz;VB 3 MHz;Peak
1238.500	46.9	H	74.0	-27.1	PK	30	1.5	RB 1 MHz;VB 3 MHz;Peak



Note:	Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

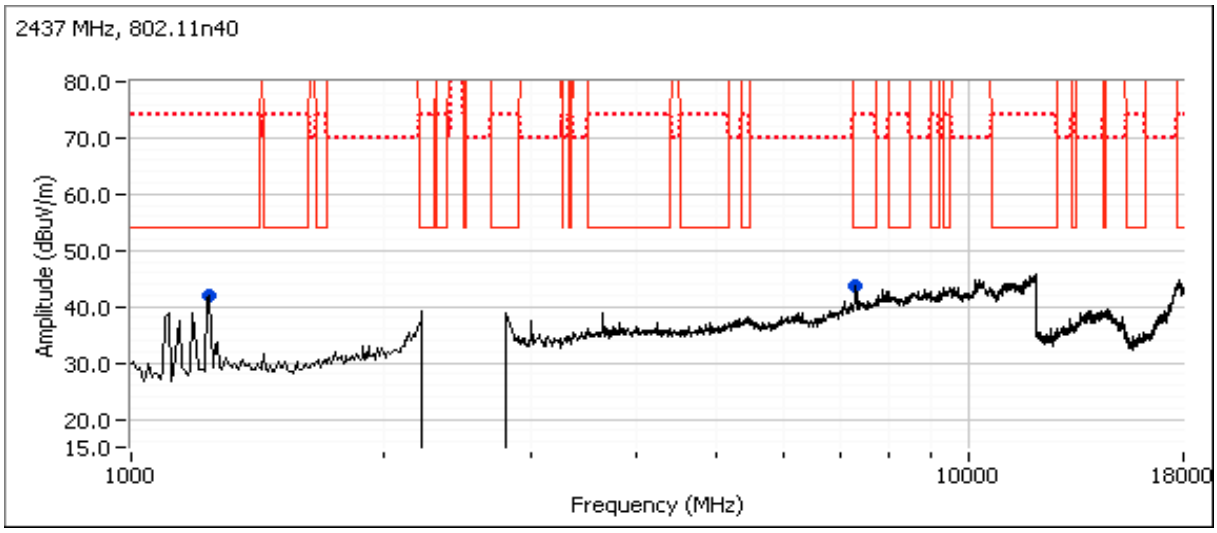
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2c: Center Channel

Channel: 6 Mode: n40 Power setting = 24.5
Tx Chain: 3Tx Data Rate: MSC0

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7318.130	**40.8**	H	54.0	**-13.2**	AVG	343	1.1	RB 1 MHz;VB 10 Hz;Peak
1241.110	40.6	H	54.0	-13.4	AVG	193	1.5	RB 1 MHz;VB 10 Hz;Peak
7318.260	54.2	H	74.0	-19.8	PK	343	1.1	RB 1 MHz;VB 3 MHz;Peak
1242.480	48.0	H	74.0	-26.0	PK	193	1.5	RB 1 MHz;VB 3 MHz;Peak



Note:	Scans made between 18 - 25 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

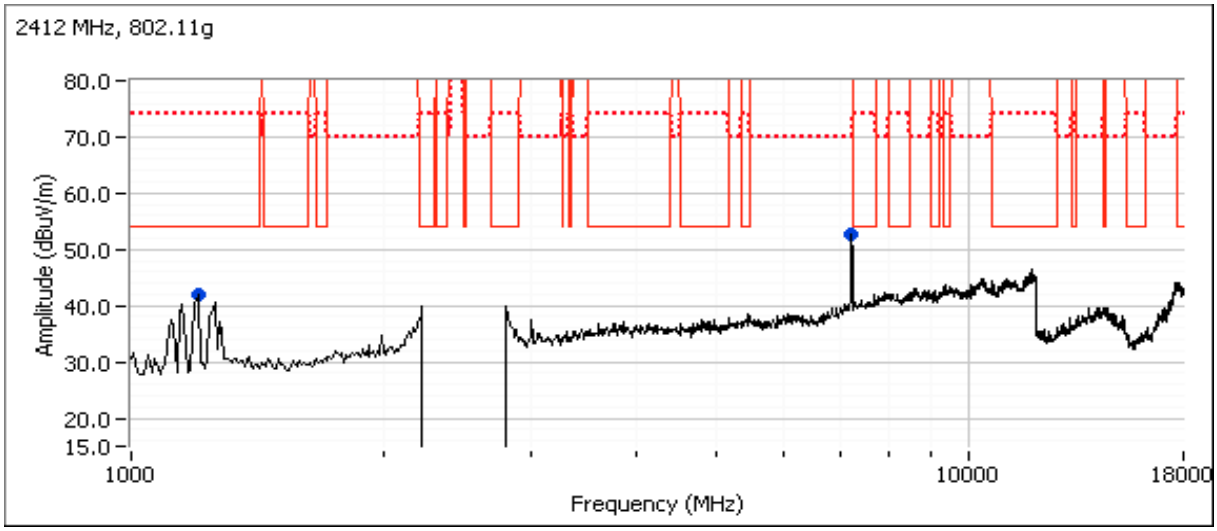
Run #3: Radiated Spurious Emissions, 1,000 - 25000 MHz. Operating Mode: Worse case from Run #2

Date of Test: 9/19/2016 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT CH #7 EUT Voltage: 120V/60Hz

Run #3a: Low Channel

Channel: 1 Mode: g Power setting = 27.0
Tx Chain: 3Tx Data Rate: 6Mbs

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7234.900	**51.1**	H	54.0	**-2.9**	AVG	352	1.3	RB 1 MHz;VB 10 Hz;Peak, Note 1
7235.300	63.0	H	74.0	-11.0	PK	352	1.3	RB 1 MHz;VB 3 MHz;Peak, Note 1
1188.640	38.8	H	54.0	-15.2	AVG	109	1.0	RB 1 MHz;VB 10 Hz;Peak
1190.100	46.3	H	74.0	-27.7	PK	109	1.0	RB 1 MHz;VB 3 MHz;Peak



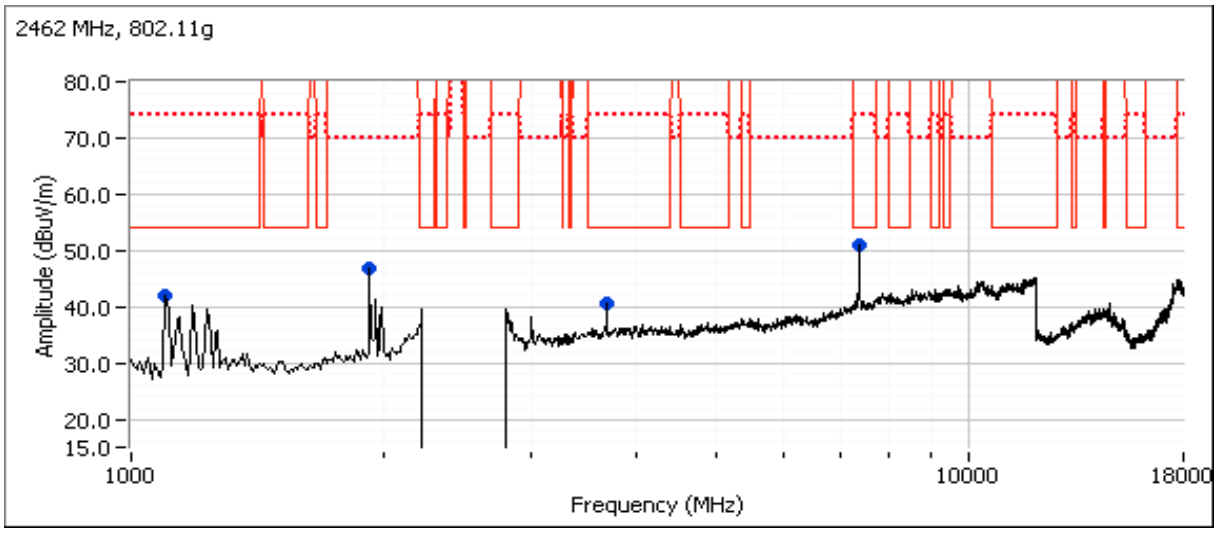
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #3b: High Channel

Channel: 11 Mode: g Power setting = 27.0
Tx Chain: 3Tx Data Rate: 6Mbs

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7383.430	**47.8**	H	54.0	**-6.2**	AVG	351	1.3	RB 1 MHz;VB 10 Hz;Peak
7385.820	59.6	H	74.0	-14.4	PK	351	1.3	RB 1 MHz;VB 3 MHz;Peak
3693.020	39.4	V	54.0	-14.6	AVG	2	2.0	RB 1 MHz;VB 10 Hz;Peak
1103.840	39.3	H	54.0	-14.7	AVG	118	1.0	RB 1 MHz;VB 10 Hz;Peak
1923.500	46.7	H	-	-	Peak	329	2.0	Ambient signal.
1106.400	46.7	H	74.0	-27.3	PK	118	1.0	RB 1 MHz;VB 3 MHz;Peak
3692.850	46.7	V	74.0	-27.3	PK	2	2.0	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

RSS-247 and FCC 15.247 (DTS) Antenna Port Measurements
MIMO and Smart Antenna Systems
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.

Date of Test: 9/19/16, 9/20/16, 9/21/16
Test Engineer: Rafael Varelas
Test Location: FT Lab #4A

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

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 24.9 °C
Rel. Humidity: 44.3 %

Summary of Results

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
3Tx Modes						
1			Output Power	15.247(b)	Pass	11b: 28.1dBm (0.644W) 11g: 29.4dBm (0.870W) n20: 27.5dBm (0.565W) n40:19.8dBm (0.095W)
2			Power spectral Density (PSD)	15.247(d)	Pass	11b: 7.0 dBm/3kHz 11g: 6.4 dBm/3kHz n20: 4.9 dBm/3kHz n40: -5.6 dBm/3kHz

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
3Tx Modes						
3			Minimum 6dB Bandwidth	15.247(a)	Pass	11b: 8.59 MHz 11g: 16.07 MHz n20: 16.98 MHz n40: 35.64 MHz
3			99% Bandwidth	RSS GEN	Pass	11b: 12.44 MHz 11g: 20.02 MHz n20: 17.79 MHz n40: 36.43 MHz
4			Spurious emissions	15.247(b)	Pass	All emissions < -30 dBc

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	1Mbs	99.9%	Yes	12.43	0	0	10
11g	6Mbs	98.6%	Yes	2.06	0	0	10
n20	MSC0	98.4%	Yes	1.917	0	0	10
n40	MSC0	97.7%	Yes	1.24	0.1	0.2	806

Sample Notes

Sample S/N: 184795205923792
Driver: 7.35.177.0

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
2400-2483.5	3.11	3.665	3.653		No	Yes	Yes	No	3.5	8.3

For devices that support CDD modes

Min # of spatial streams: 1
Max # of spatial streams: 3

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; Dir G (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, v01r02.

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

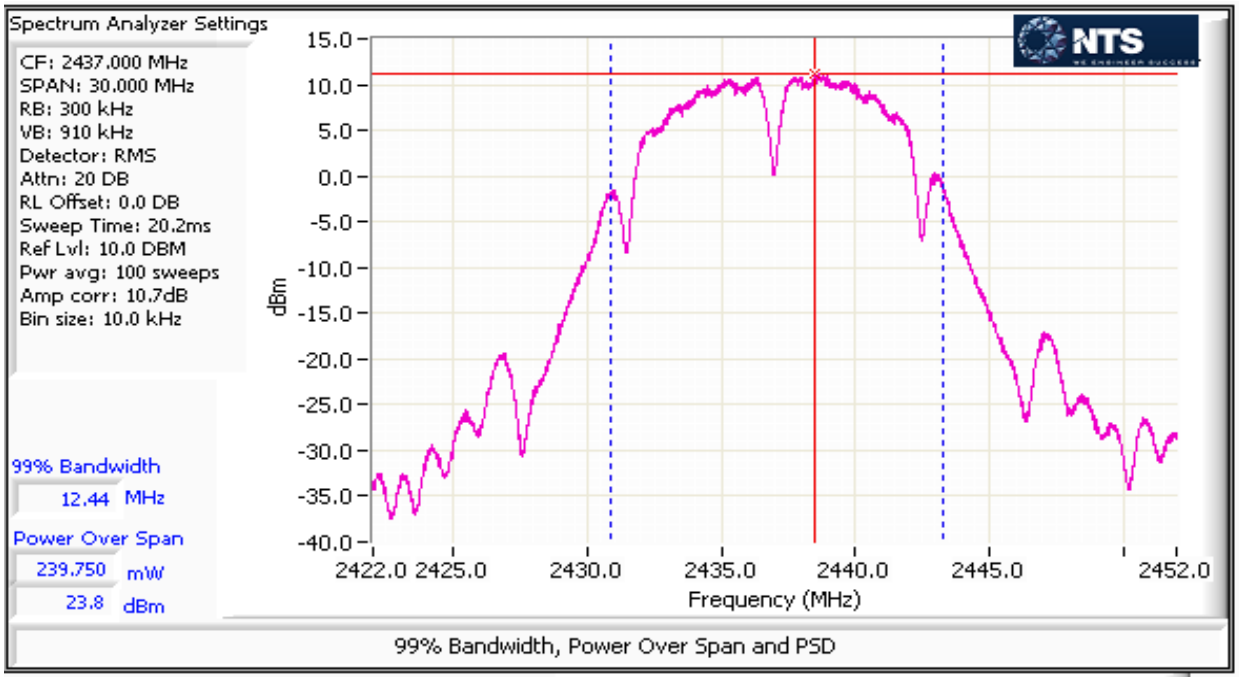
Run #1: Output Power

Operating Mode: 11b
Directional Gain (dBi): 3.5

Max EIRP (mW): 1435.8512

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2412	1	24.5	21.8	151.4	511.7	27.1	0.644	30.0	Pass	
	3		22.8	190.5						
	4									
	2		22.3	169.8						
2437	1	25.5	22.9	195.0	643.8	28.1		30.0	Pass	
	3		23.8	239.9						
	4									
	2		23.2	208.9						
2462	1	23.0	20.7	117.5	397.2	26.0		30.0	Pass	
	3		21.7	147.9						
	4									
	2		21.2	131.8						

Note 1:	Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, auto sweep time, RMS detector, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-1 in ANSI C63.10). Spurious limit becomes -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.


Spectrum Analyzer Settings
CF: 2437.000 MHz
SPAN: 30.000 MHz
RB: 300 kHz
VB: 910 kHz
Detector: RMS
Attn: 20 DB
RL Offset: 0.0 DB
Sweep Time: 20.2ms
Ref Lvl: 10.0 DBM
Pwr avg: 100 sweeps
Amp corr: 10.7dB
Bin size: 10.0 kHz
99% Bandwidth
12.44 MHz
Power Over Span
239.750 mW
23.8 dBm
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
dBm
2422.0 2425.0 2430.0 2435.0 2440.0 2445.0 2452.0
Frequency (MHz)
NTS
99% Bandwidth, Power Over Span and PSD

EMC Test Data

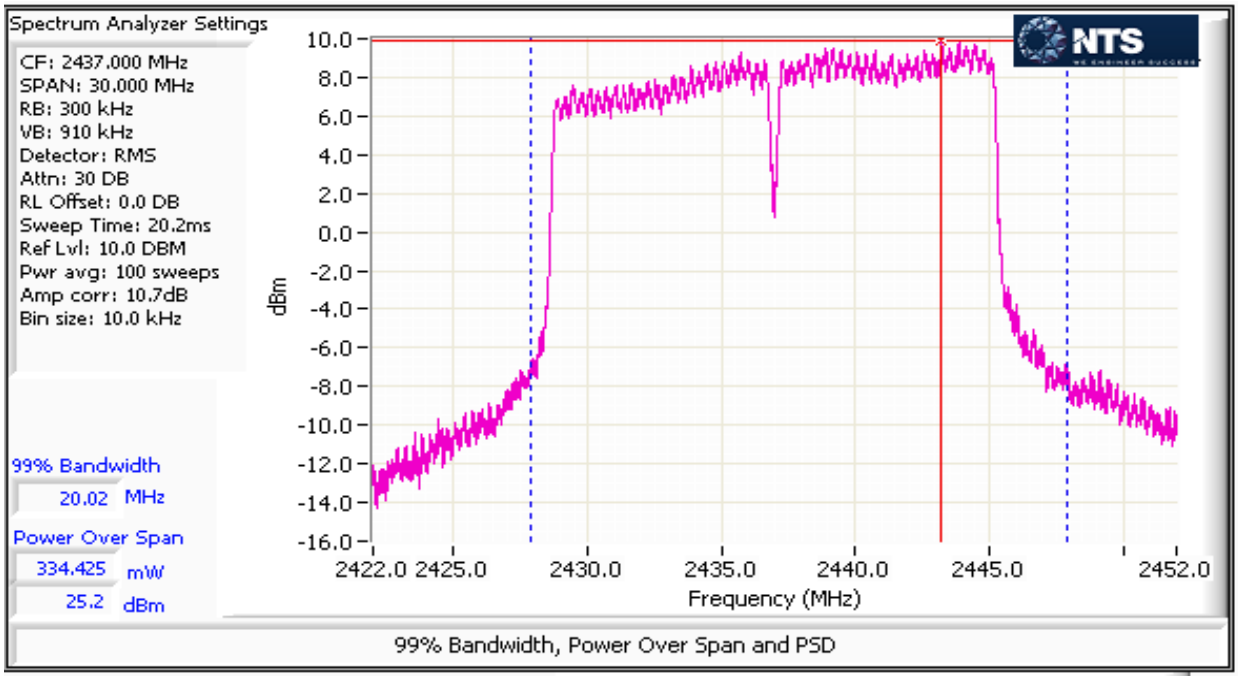
Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Operating Mode: 11g
Directional Gain (dBi): 3.5

Max EIRP (mW): 1939.4125

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2412	1	20.5	17.4	55.0	184.2	22.7	0.870	30.0	Pass	
	3		18.3	67.6						
	4									
	2		17.9	61.7						
2437	1	27.0	24.2	263.0	869.6	29.4		30.0	Pass	
	3		25.2	331.1						
	4									
	2		24.4	275.4						
2462	1	19.5	16.3	42.7	139.6	21.4		30.0	Pass	
	3		17.0	50.1						
	4									
	2		16.7	46.8						

Note 1:	Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, auto sweep time, RMS detector, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-1 in ANSI C63.10). Spurious limit becomes -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.


Spectrum Analyzer Settings
CF: 2437.000 MHz
SPAN: 30.000 MHz
RB: 300 kHz
VB: 910 kHz
Detector: RMS
Attn: 30 DB
RL Offset: 0.0 DB
Sweep Time: 20.2ms
Ref Lvl: 10.0 DBM
Pwr avg: 100 sweeps
Amp corr: 10.7dB
Bin size: 10.0 kHz
99% Bandwidth
20.02 MHz
Power Over Span
334.425 mW
25.2 dBm
10.0
8.0
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
-8.0
-10.0
-12.0
-14.0
-16.0
dBm
2422.0 2425.0 2430.0 2435.0 2440.0 2445.0 2452.0
Frequency (MHz)
NTS
99% Bandwidth, Power Over Span and PSD

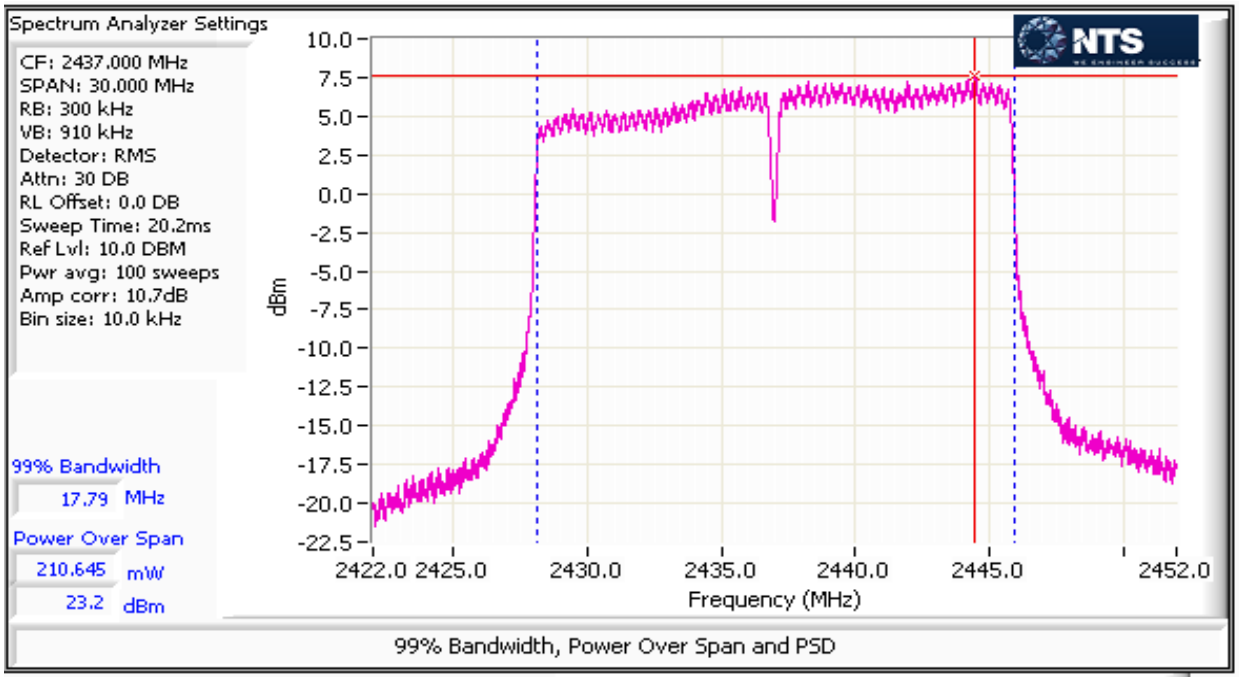
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Operating Mode: n20
Directional Gain (dBi): 3.5
Max EIRP (mW): 1259.3965

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2412	1	19.5	16.5	44.7	143.9	21.6	0.565	30.0	Pass	
	3		17.2	52.5						
	4									
	2		16.7	46.8						
2437	1	25	22.4	173.8	564.7	27.5		30.0	Pass	
	3		23.2	208.9						
	4									
	2		22.6	182.0						
2462	1	17.5	14.2	26.3	87.4	19.4		30.0	Pass	
	3		14.9	30.9						
	4									
	2		14.8	30.2						

Note 1:	Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, auto sweep time, RMS detector, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-1 in ANSI C63.10). Spurious limit becomes -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.



99% Bandwidth, Power Over Span and PSD

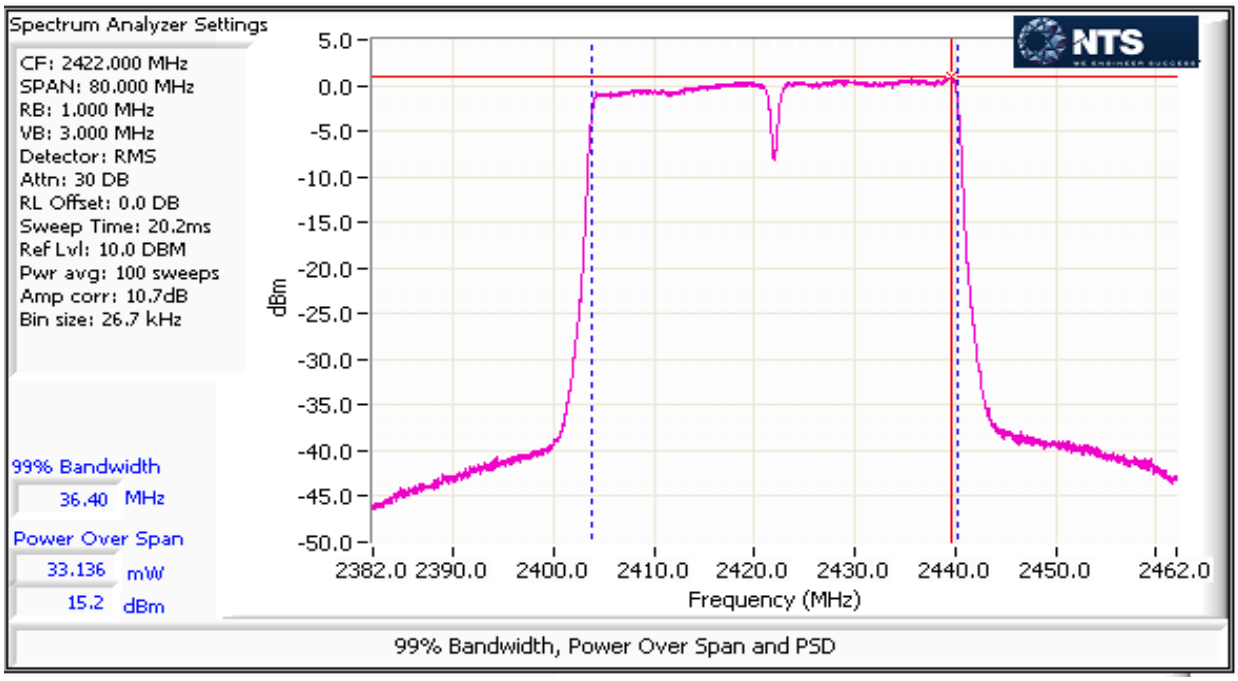
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Operating Mode: n40
Directional Gain (dBi): 3.5
Max EIRP (mW): 211.8426

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2422	1	17.5	14.5	28.2	93.7	19.7	0.095	30.0	Pass	
	3		15.3	33.9						
	4									
	2		15.0	31.6						
2437	1	17.5	14.7	29.5	95.0	19.8		30.0	Pass	
	3		15.2	33.1						
	4									
	2		15.1	32.4						
2452	1	14.5	11.5	14.1	45.5	16.6		30.0	Pass	
	3		12.1	16.2						
	4									
	2		11.8	15.1						

Note 1:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, RMS detector, auto sweep time, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-2 in ANSI C63.10). Measurement corrected by Pwr Cor Factor. Spurious limit becomes -30dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.


Spectrum Analyzer Settings
CF: 2422.000 MHz
SPAN: 80.000 MHz
RB: 1.000 MHz
VB: 3.000 MHz
Detector: RMS
Attn: 30 DB
RL Offset: 0.0 DB
Sweep Time: 20.2ms
Ref Lvl: 10.0 DBM
Pwr avg: 100 sweeps
Amp corr: 10.7dB
Bin size: 26.7 kHz
99% Bandwidth
36.40 MHz
Power Over Span
33.136 mW
15.2 dBm
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
dBm
2382.0 2390.0 2400.0 2410.0 2420.0 2430.0 2440.0 2450.0 2462.0
Frequency (MHz)
NTS
99% Bandwidth, Power Over Span and PSD

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2: Power spectral Density

Mode: 11b

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1 Chain 1	Chain 2	Chain 3	Chain 4	Total	Limit dBm/3kHz	Result
24.5	2412	1.0	1.1	1.2		5.9	8.0	Pass
25.5	2437	1.8	1.8	3.1		7.0	8.0	Pass
23.0	2462	-0.9	0.4	2.2		5.5	8.0	Pass

Mode: 11g (or 11a)

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1 Chain 1	Chain 2	Chain 3	Chain 4	Total	Limit dBm/3kHz	Result
20.5	2412	-5.8	-5.5	-5.1		-0.7	8.0	Pass
27.0	2437	1.5	1.2	2.1		6.4	8.0	Pass
19.5	2462	-6.2	-6.0	-6.3		-1.4	8.0	Pass

Mode: n20

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1 Chain 1	Chain 2	Chain 3	Chain 4	Total	Limit dBm/3kHz	Result
19.5	2412	-6.3	-6.7	-6.6		-1.8	8.0	Pass
25	2437	-0.8	0.6	0.5		4.9	8.0	Pass
17.5	2462	-8.7	-7.5	-8.1		-3.3	8.0	Pass

Mode: n40

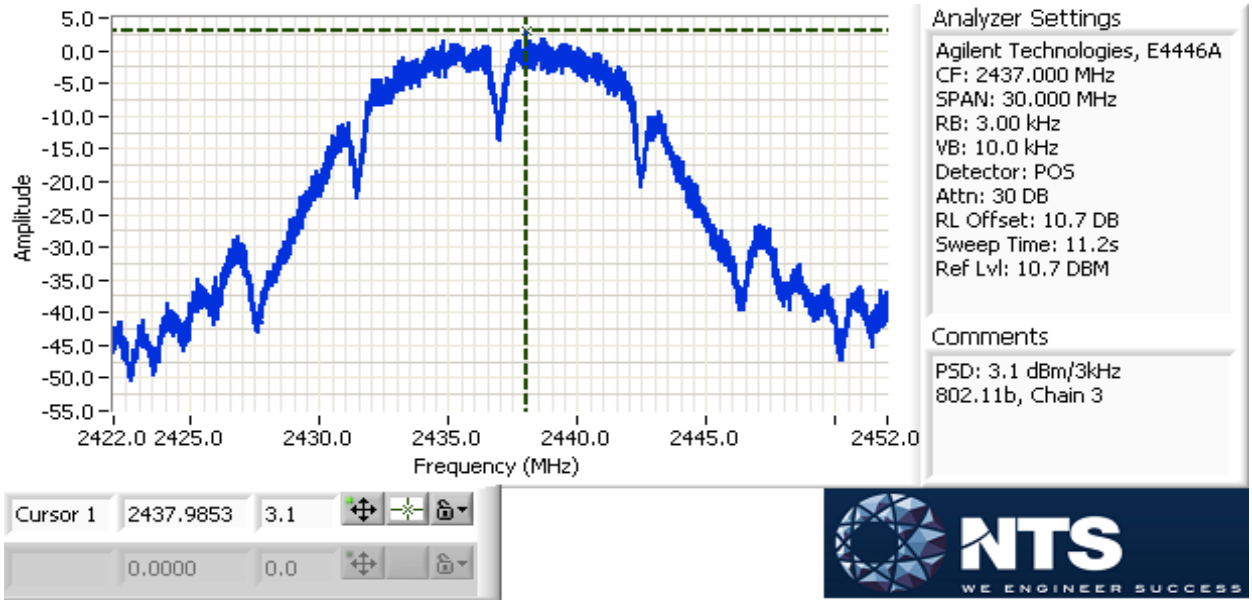
Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1 Chain 1	Chain 2	Chain 3	Chain 4	Total	Limit dBm/3kHz	Result
17.5	2422	-10.5	-10.8	-10.3		-5.8	8.0	Pass
17.5	2437	-10.0	-11.0	-10.2		-5.6	8.0	Pass
14.5	2452	-13.2	-13.5	-13.8		-8.7	8.0	Pass

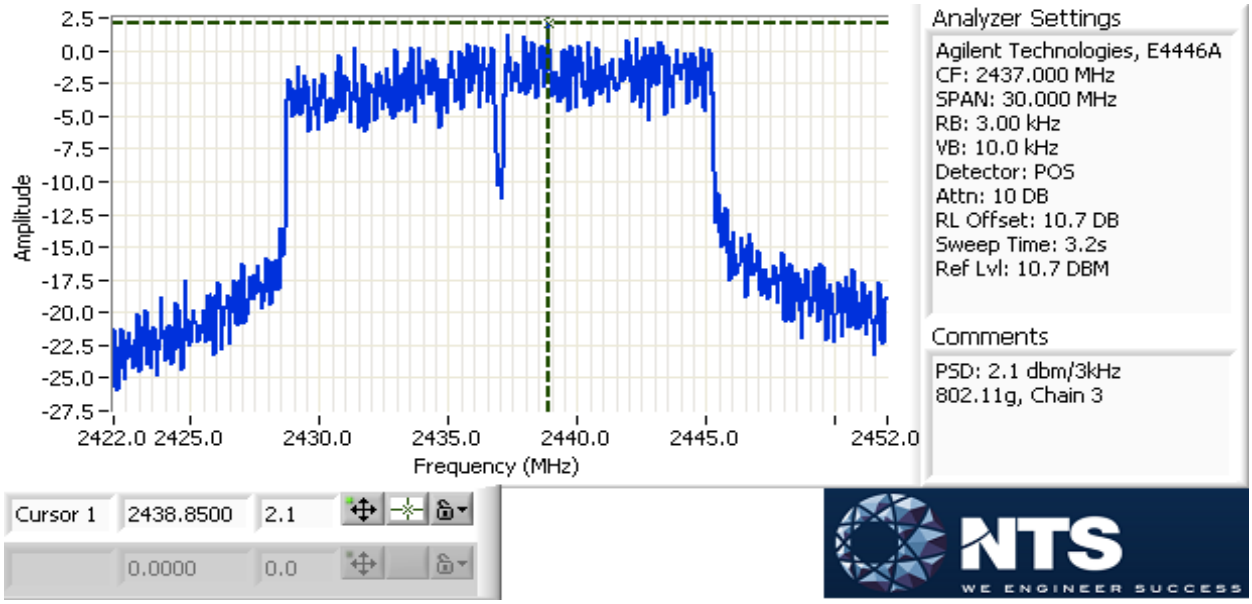
Note 1:	Test performed per method PKSPD, in KDB 558074. Power spectral density measured using: 3kHz ≤ RBW ≤ 100kHz, VBW=3*RBW, peak detector, span = 1.5*DTS BW, auto sweep time, max hold.

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2: Power spectral Density

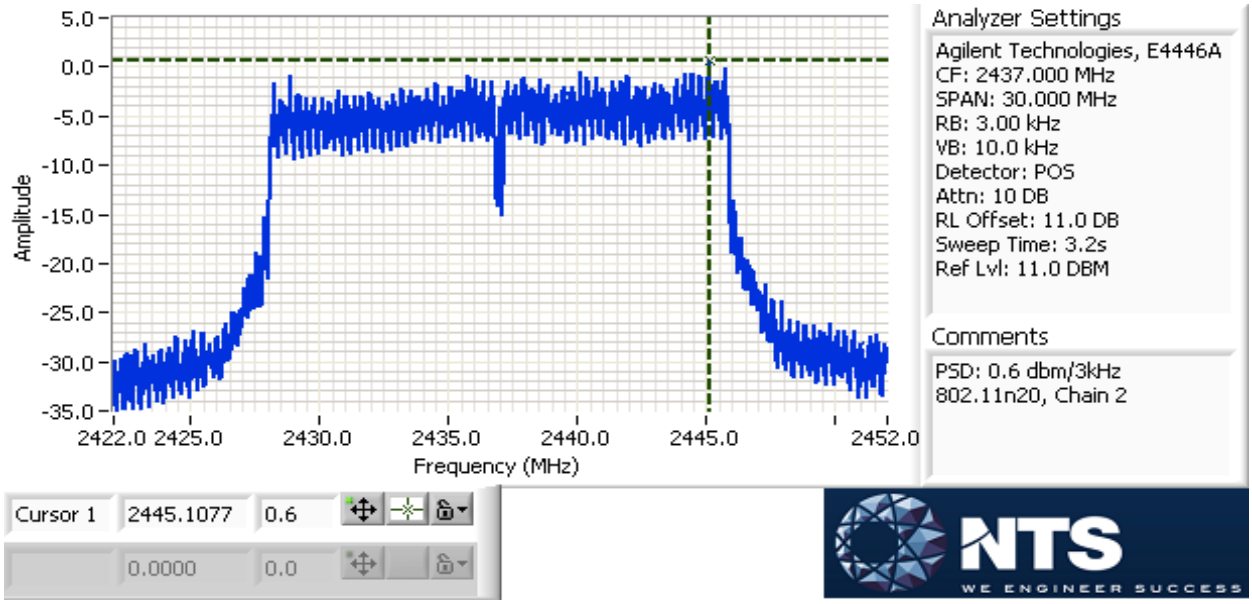


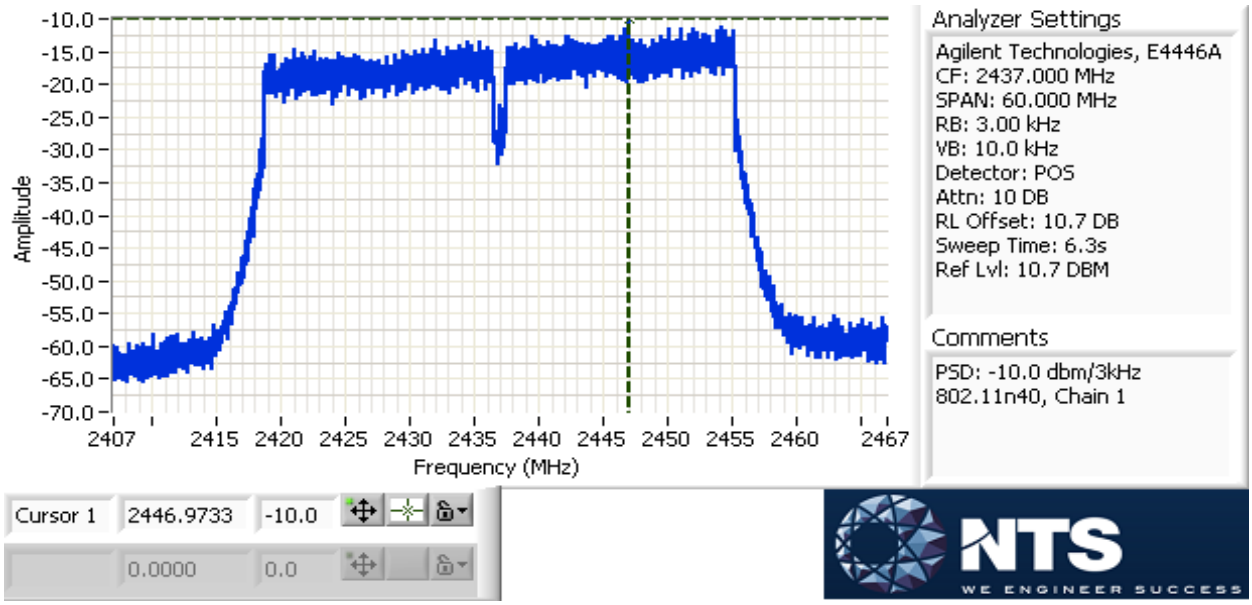


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2: Power spectral Density





EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #3: Signal Bandwidth

Mode: 11b

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
24.5	2412	9.07	12.17	0.1	0.3
25.5	2437	9.54	12.44	0.1	0.3
23.0	2462	8.59	11.87	0.1	0.3

Mode: 11g (or 11a)

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20.5	2412	16.37	16.49	0.1	0.3
27.0	2437	16.07	20.02	0.1	0.3
19.5	2462	16.35	16.48	0.1	0.3

Mode: n20

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
19.5	2412	17.57	17.68	0.1	0.3
25	2437	16.98	17.79	0.1	0.3
17.5	2462	17.57	17.68	0.1	0.3

Mode: n40

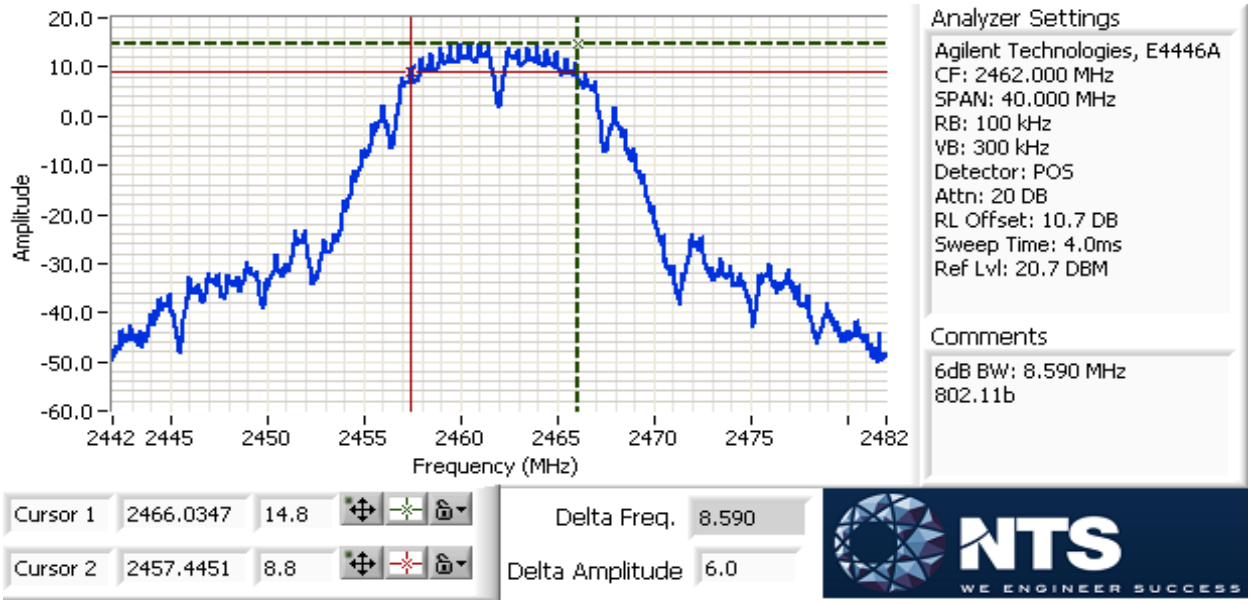
Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
17.5	2422	35.75	36.40	0.1	1
17.5	2437	35.72	36.43	0.1	1
14.5	2452	35.64	36.27	0.1	1

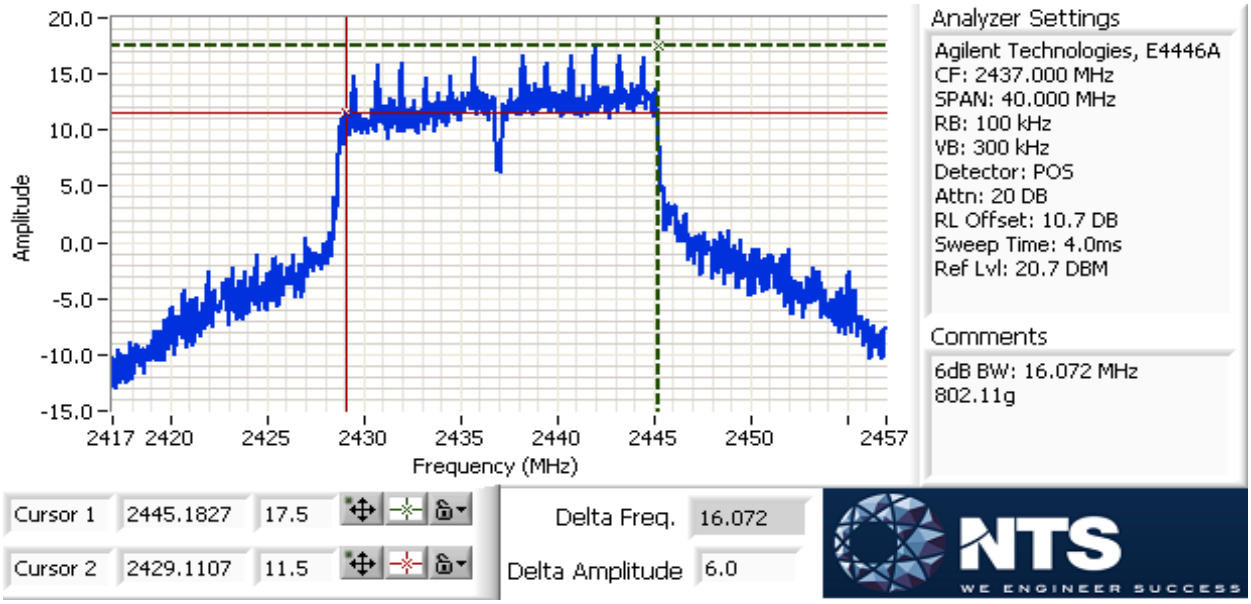
Note 1:	DTS BW: RBW=100kHz, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time, Span 2-5 times measured BW. 99% BW: RBW=1-5% of 99%BW, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time. Span 1.5-5 times OBW.
Note 2:	Measurements performed on chain 3

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #3: Signal Bandwidth

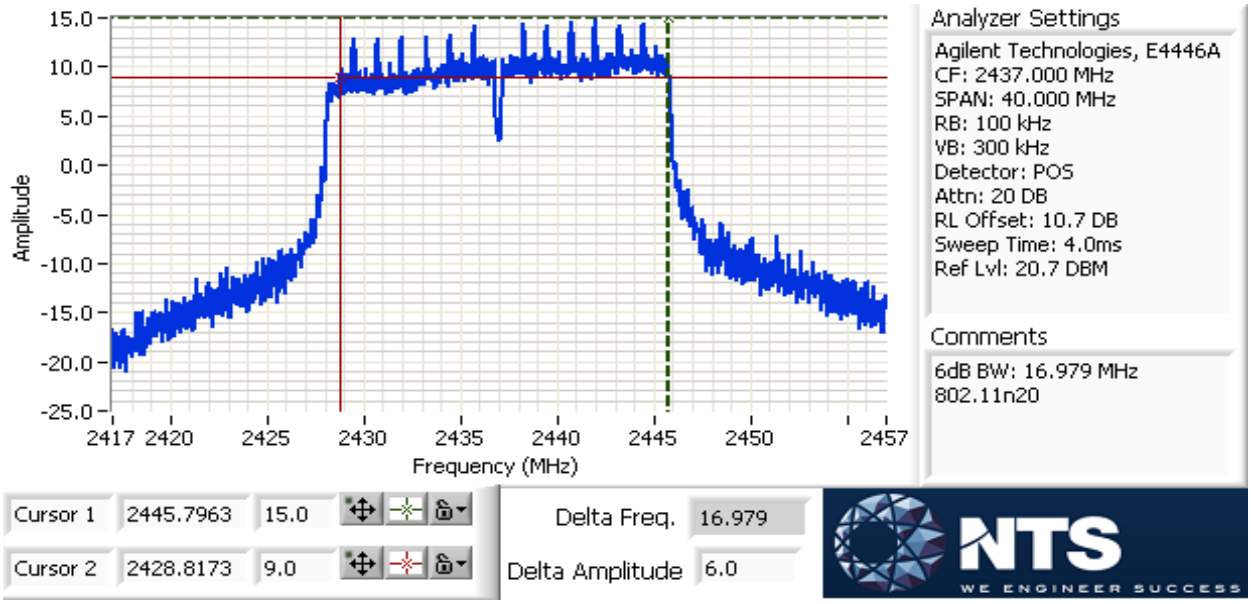


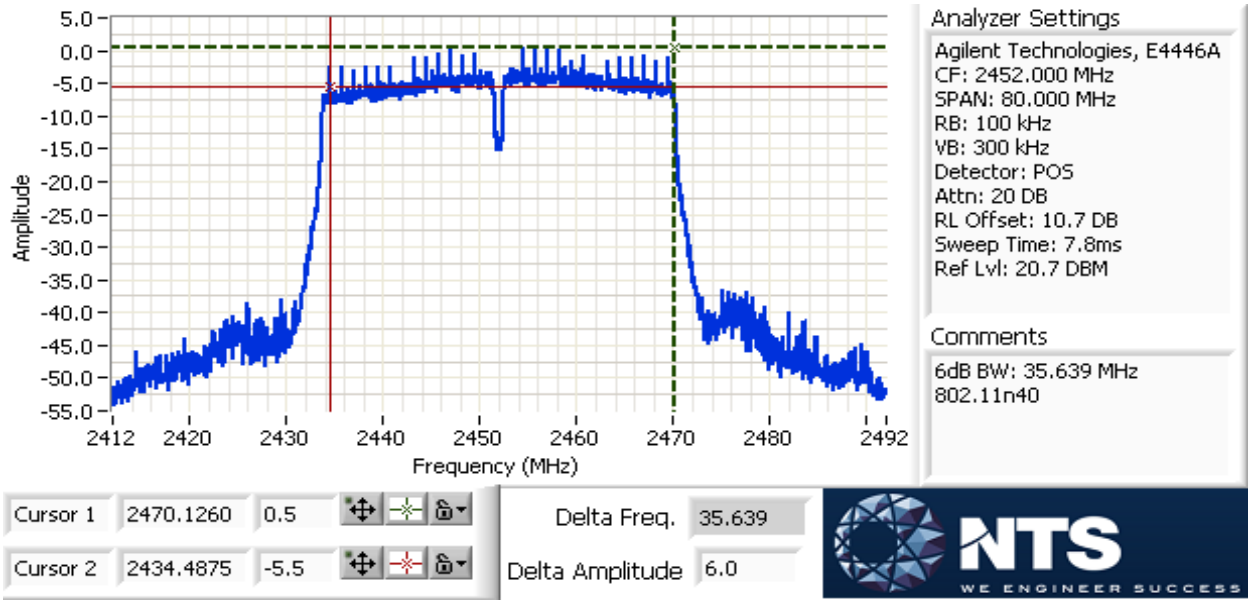


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #3: Signal Bandwidth





EMC Test Data

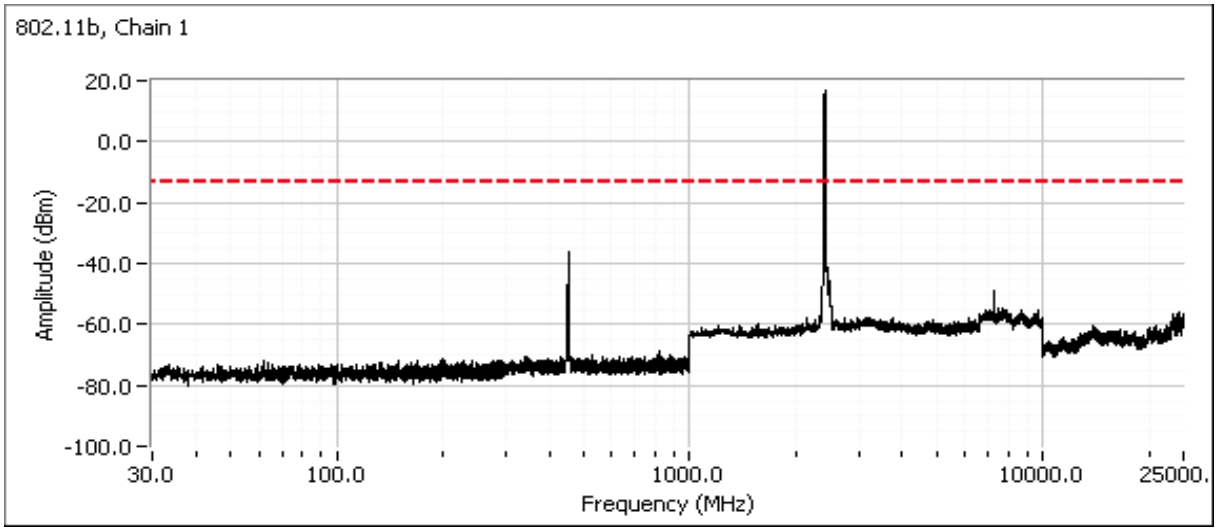
Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #4a: Out of Band Spurious Emissions

Power Setting Per Chain				Mode	Frequency (MHz)	Limit	Result
#1	#2	#3	#4				
27	27	27		b	2412	-30dBc	Pass
27	27	27		b	2437	-30dBc	Pass
27	27	27		b	2462	-30dBc	Pass
20.5	20.5	20.5		g	2412	-30dBc	Pass
27	27	27		g	2437	-30dBc	Pass
27	27	27		g	2462	-30dBc	Pass
19.5	19.5	19.5		n20	2412	-30dBc	Pass
25	25	25		n20	2437	-30dBc	Pass
25	25	25		n20	2462	-30dBc	Pass
17.5	17.5	17.5		n40	2422	-30dBc	Pass
24.5	24.5	24.5		n40	2437	-30dBc	Pass
24.5	24.5	24.5		n40	2452	-30dBc	Pass

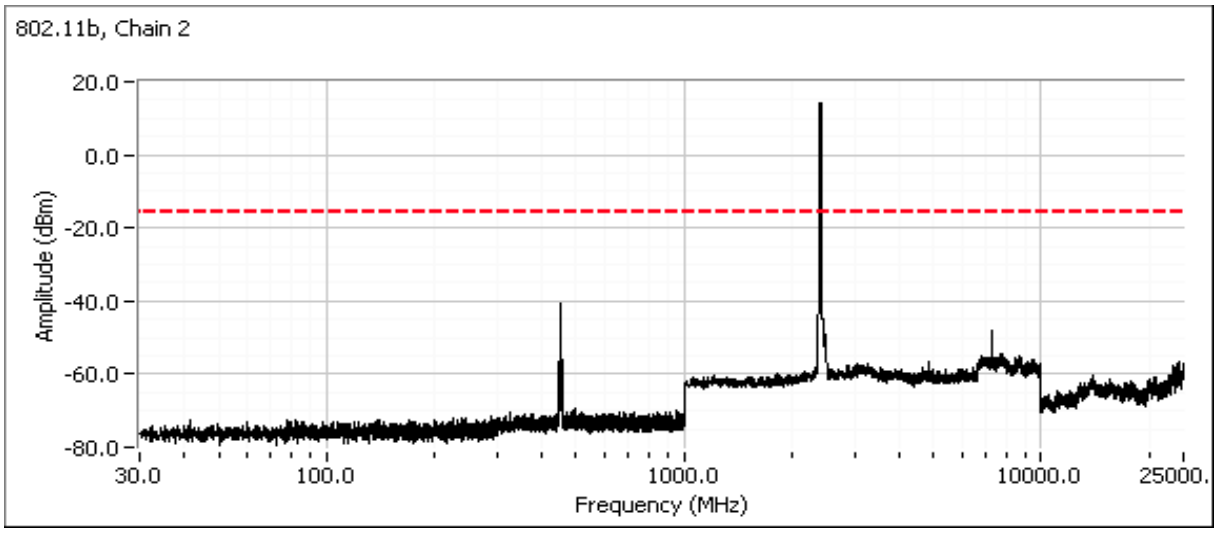
Note:	All measurements performed RBW=100kHz, VBW=300kHz, peak detector, max hold.
Note 1:	Measured on each chain individually

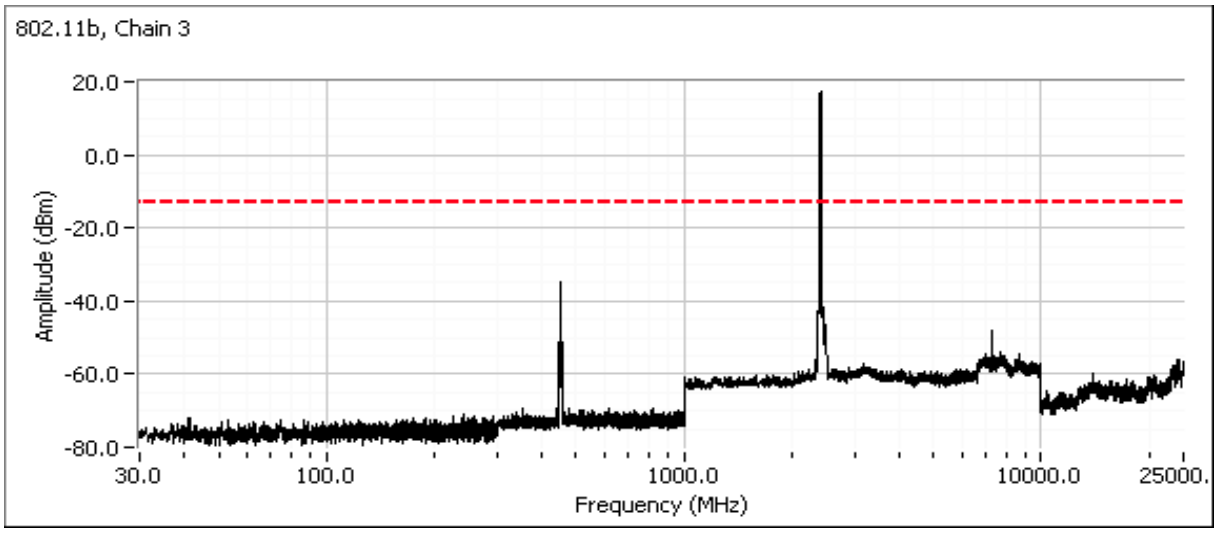
Plots for low channel



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for low channel

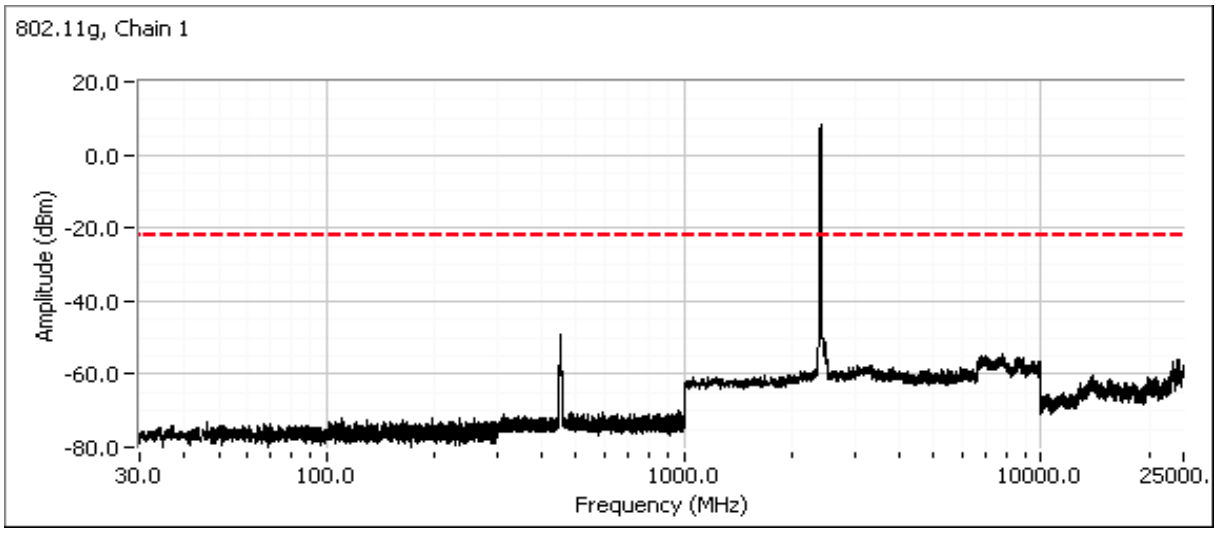


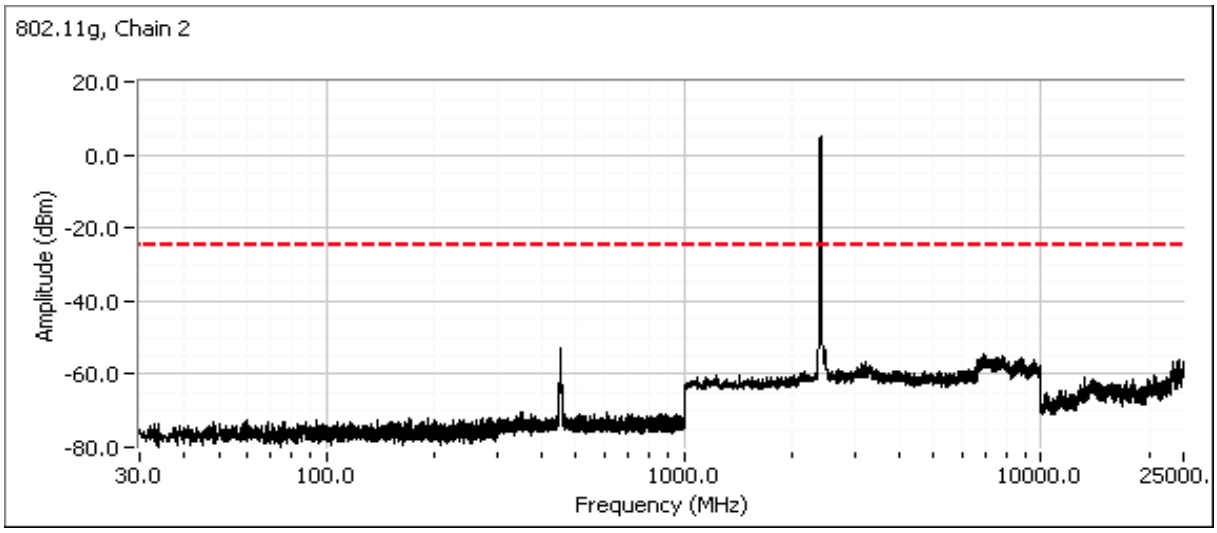


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

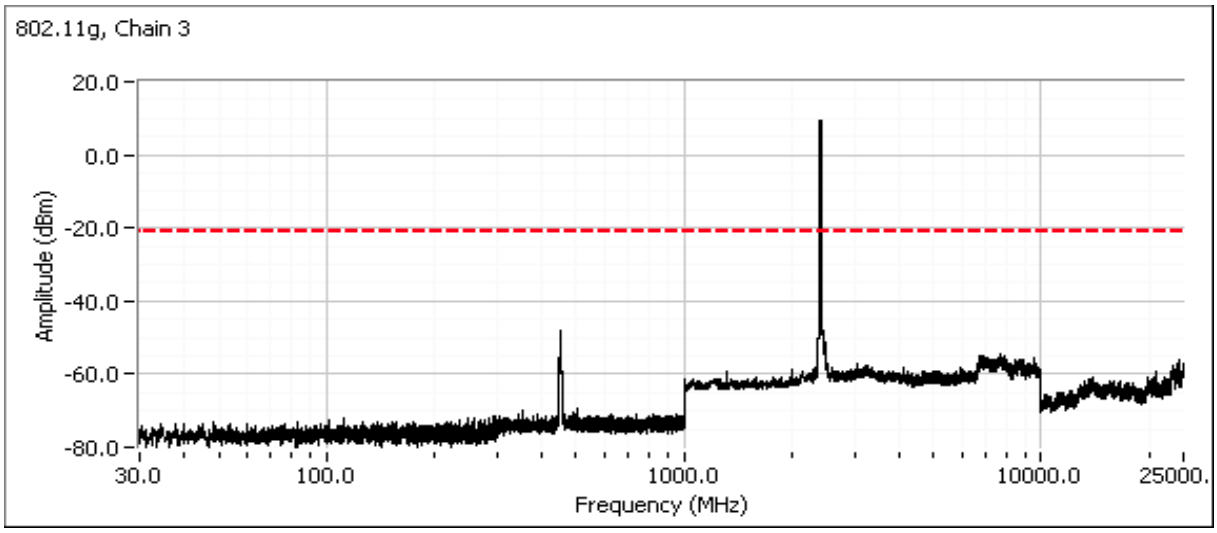
Plots for low channel

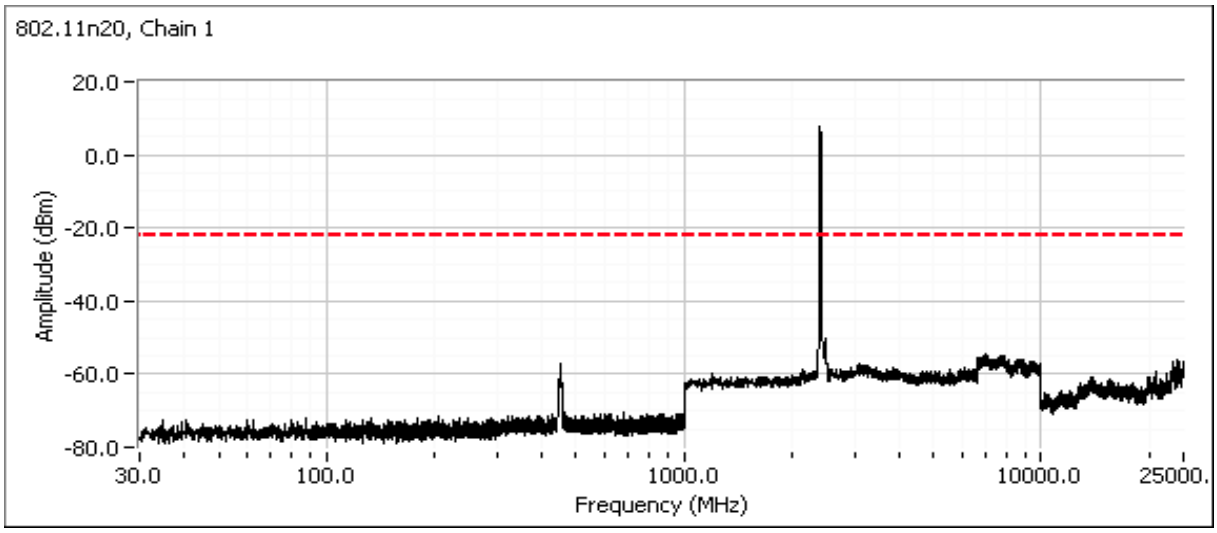




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for low channel

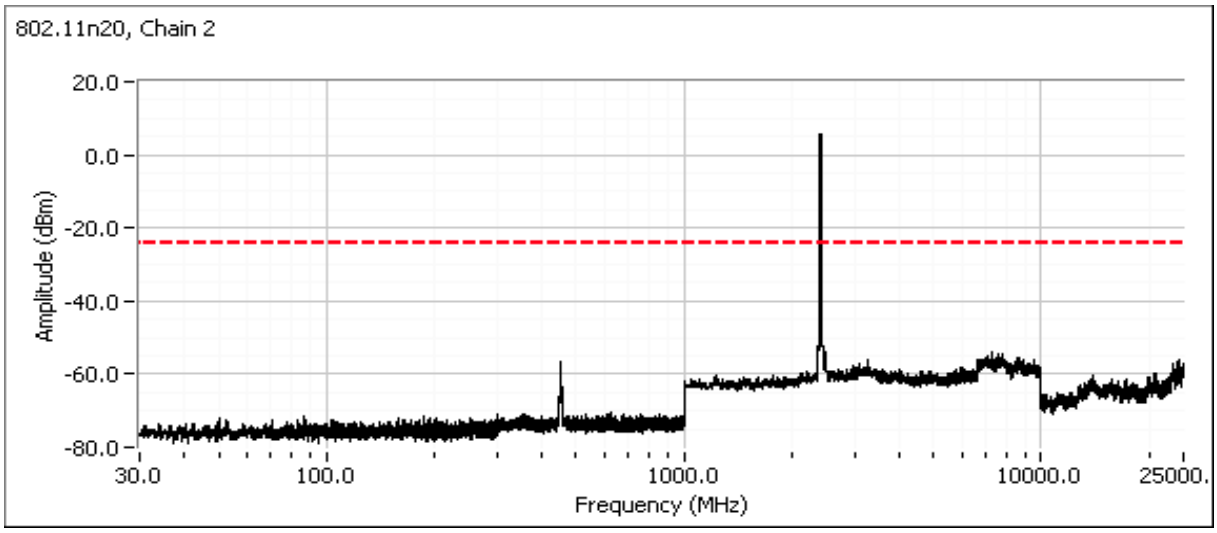


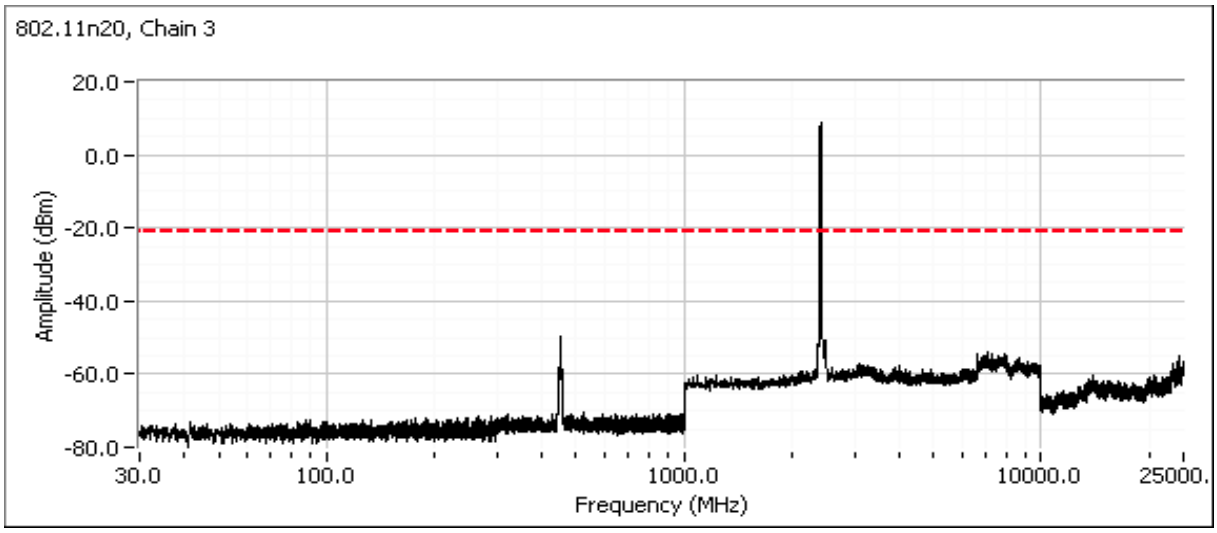


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

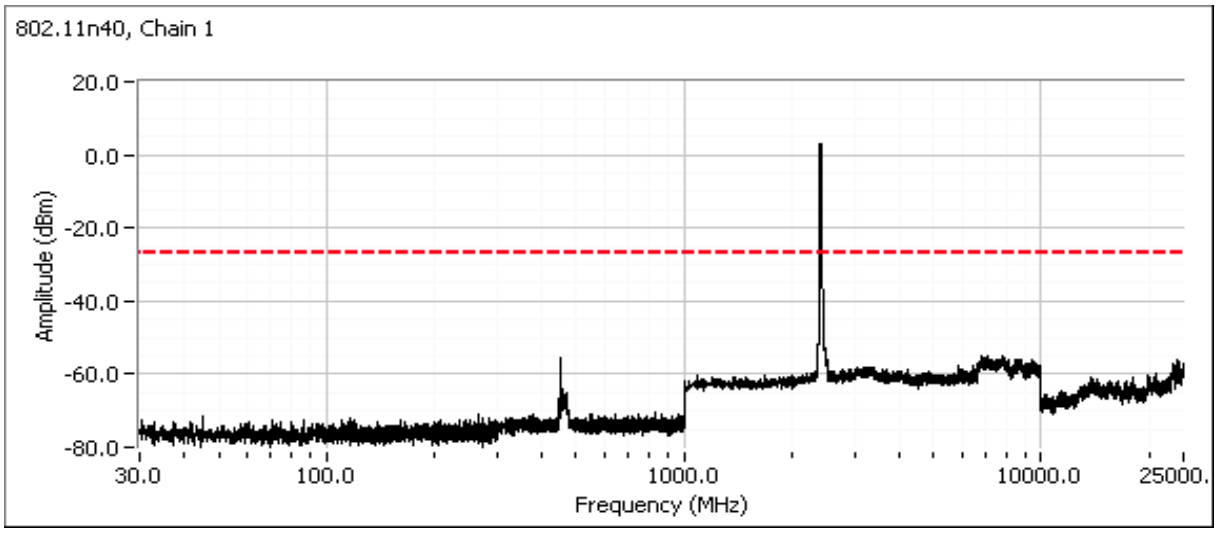
Plots for low channel

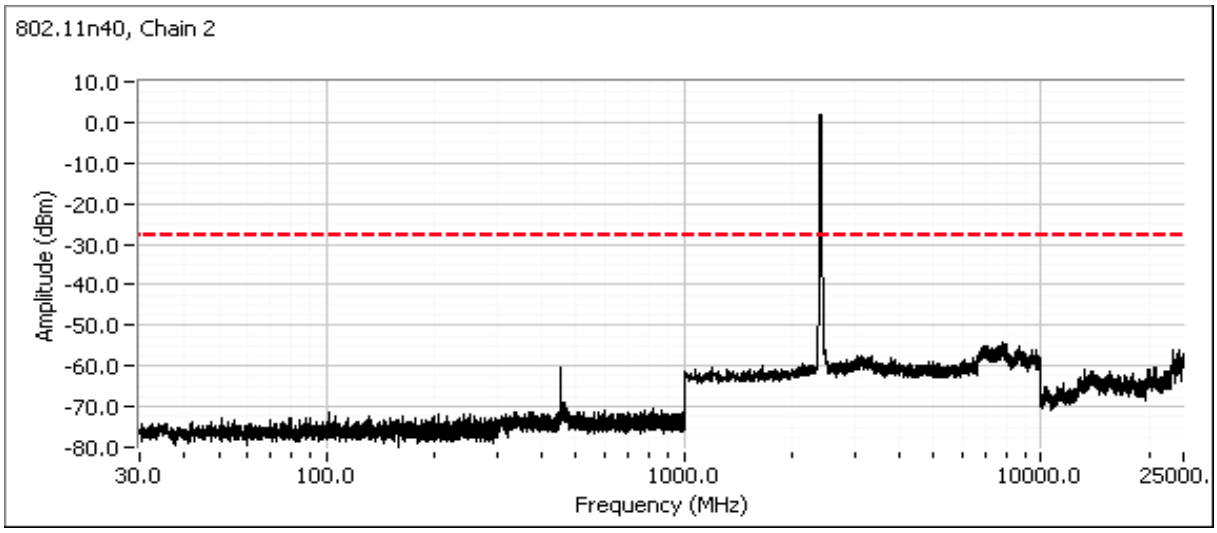




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

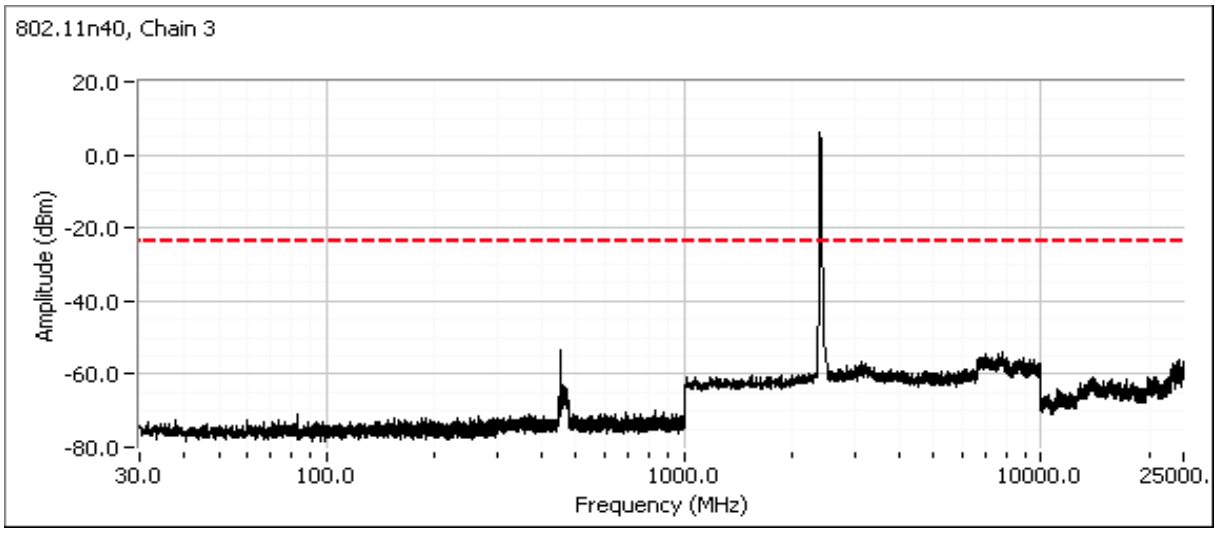
Plots for low channel



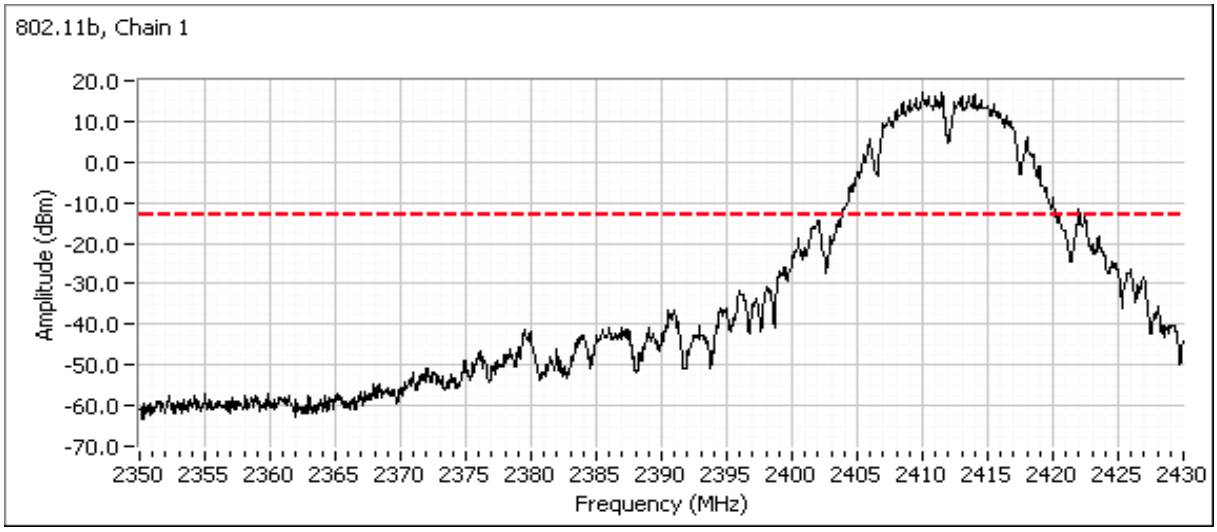


Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for low channel

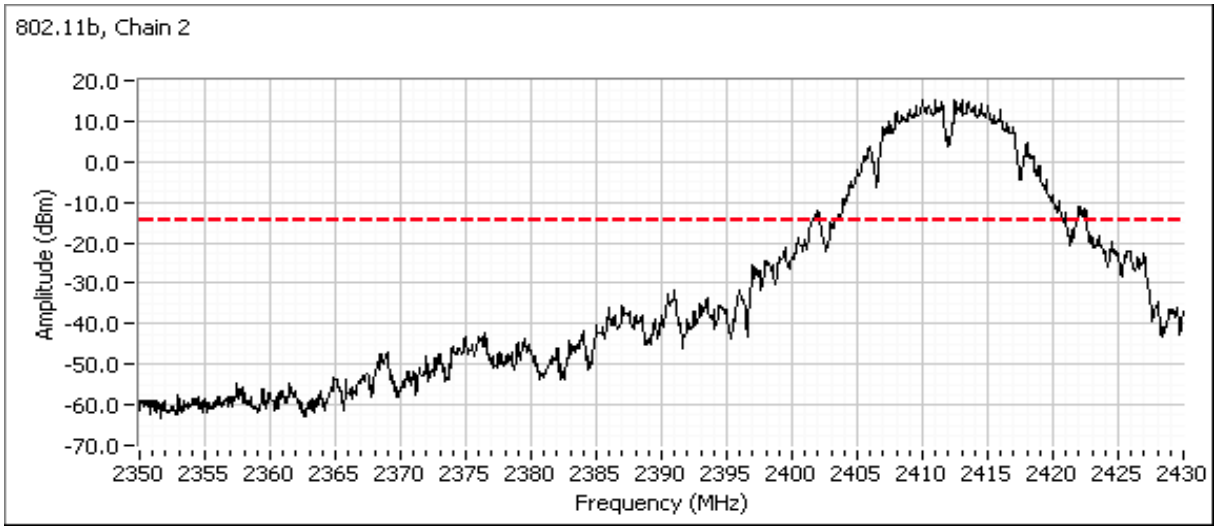


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



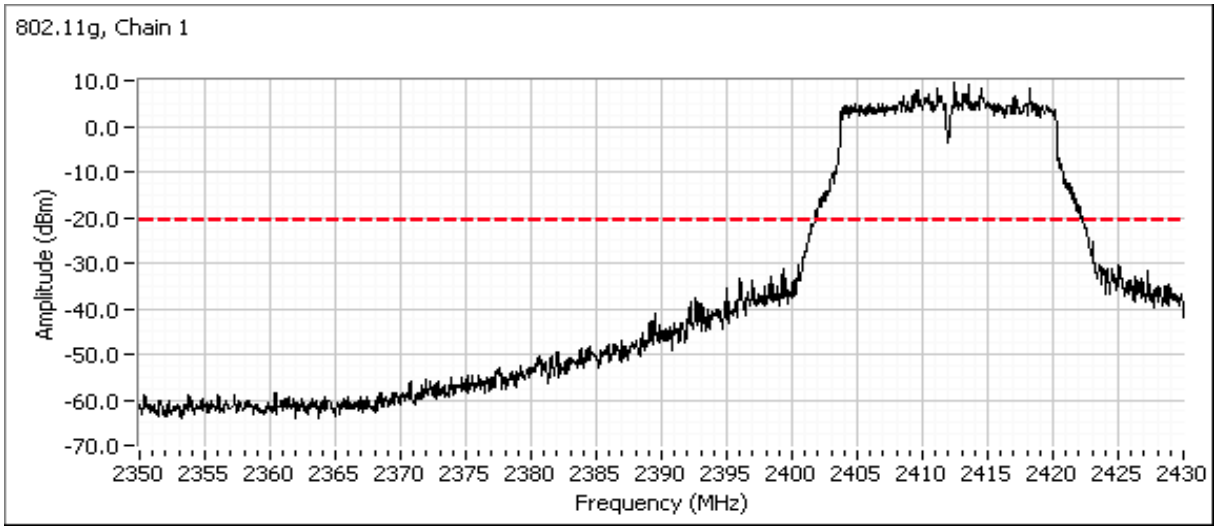
Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

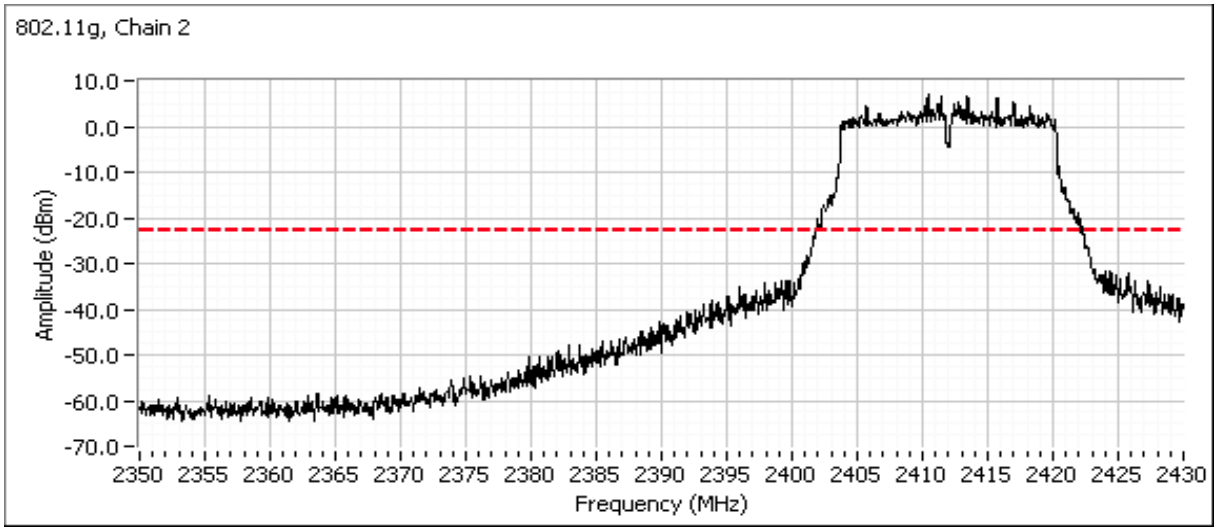
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

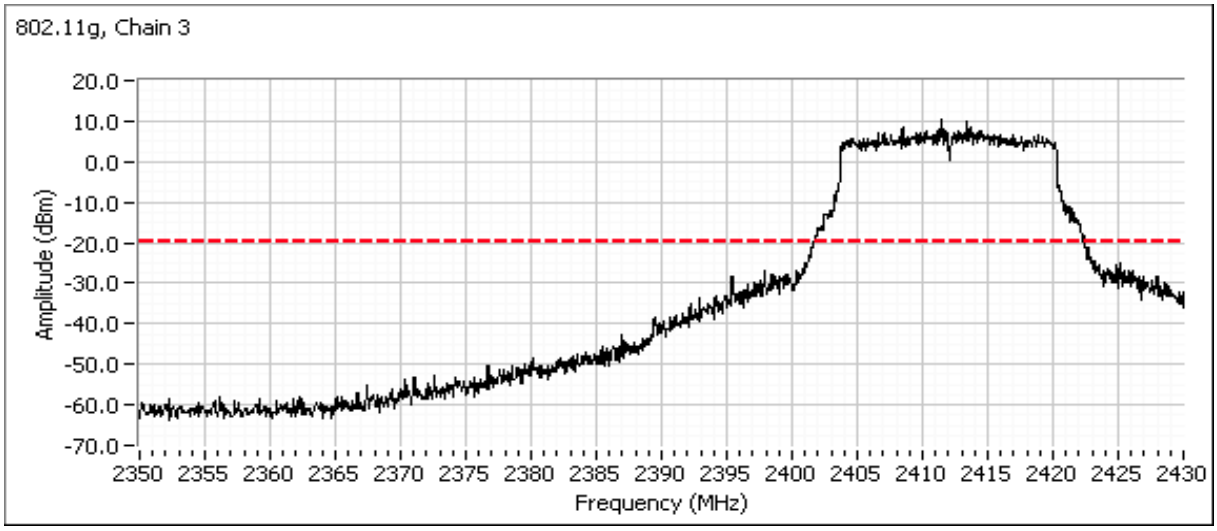
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

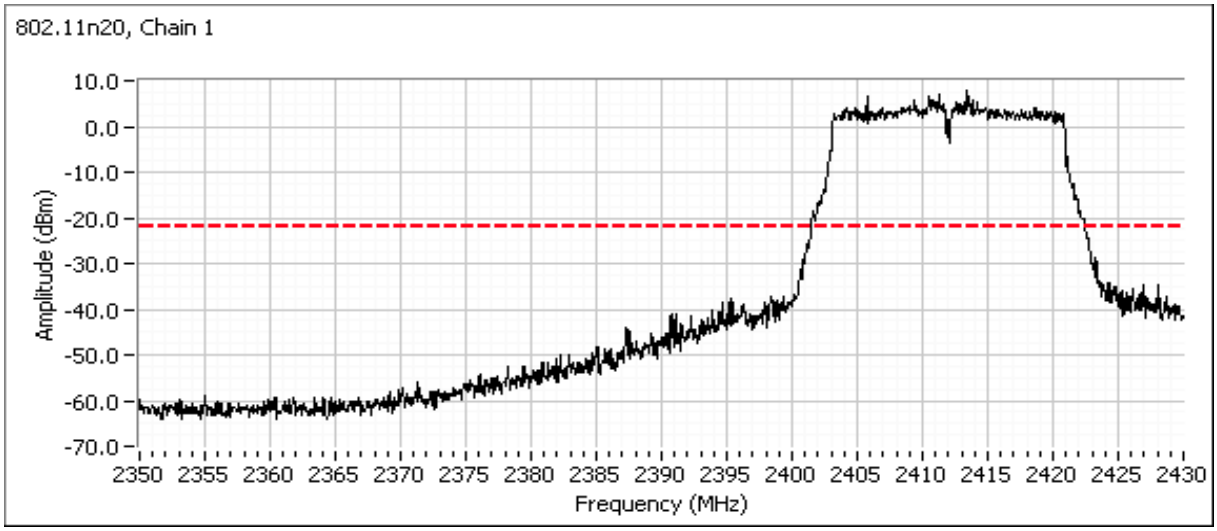




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

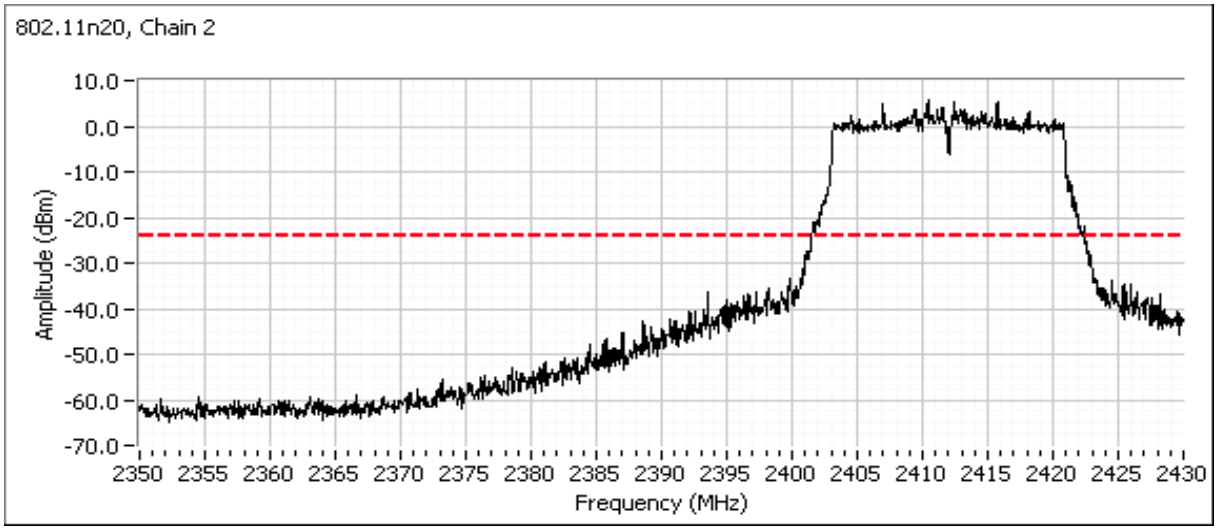
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

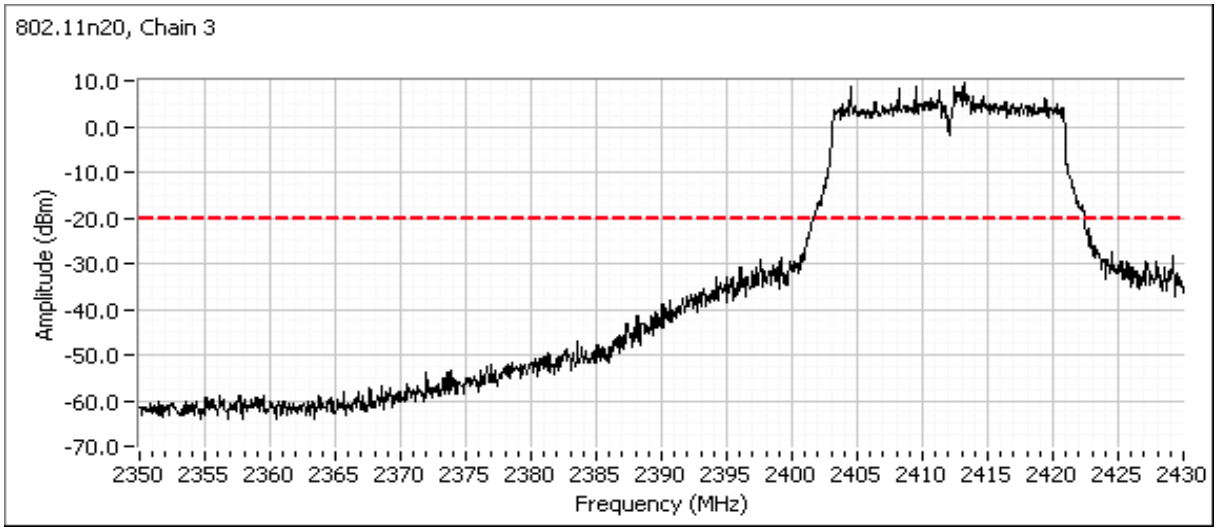




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

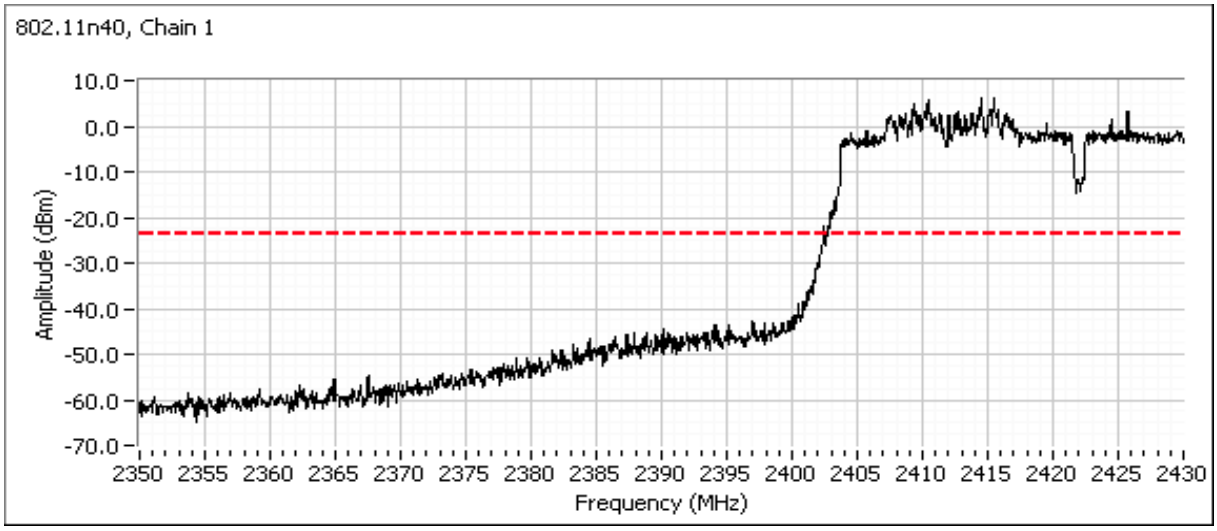


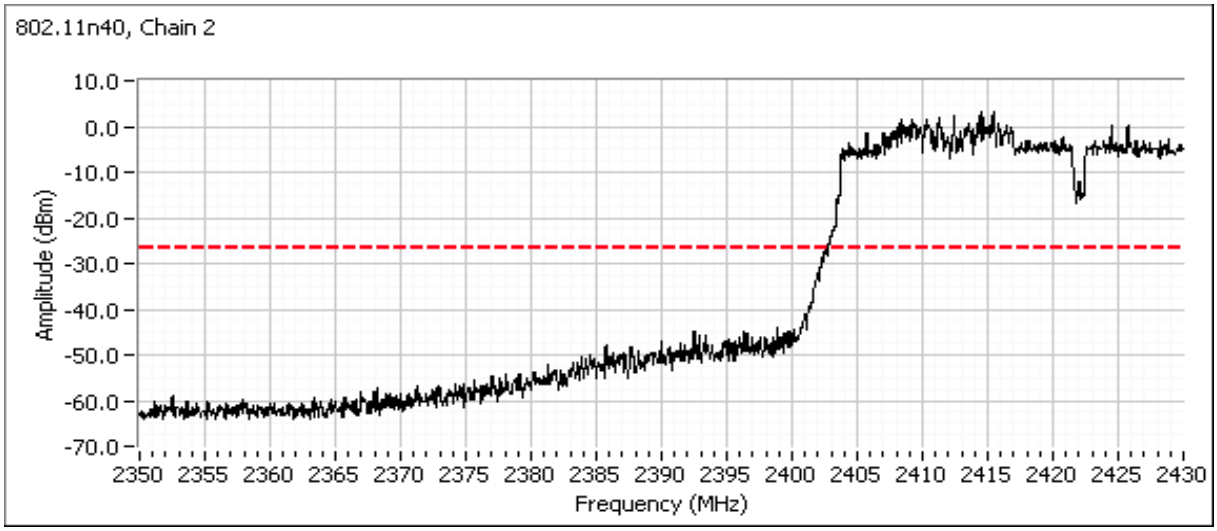


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

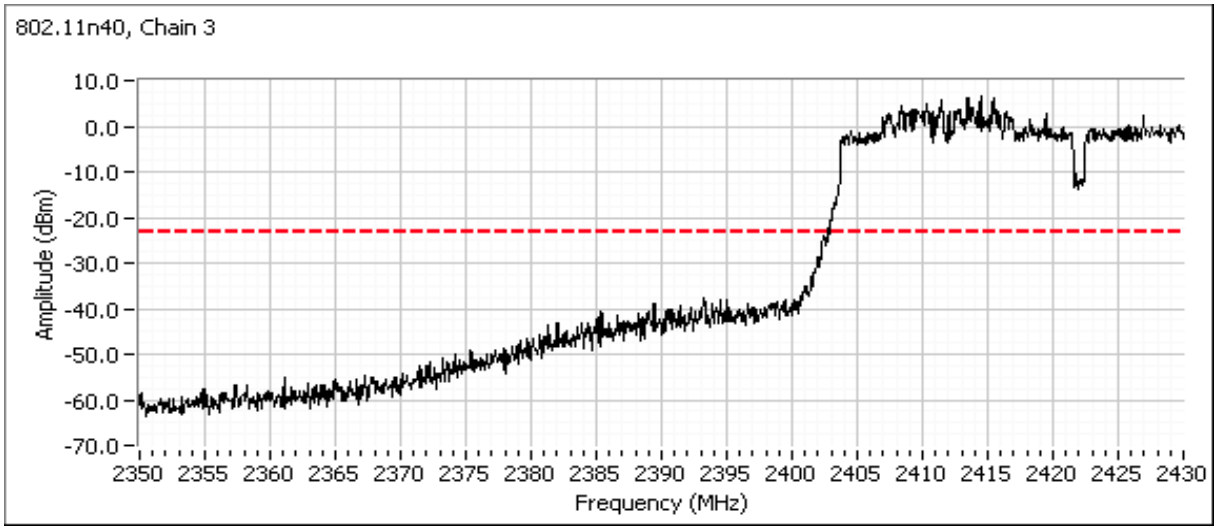
Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



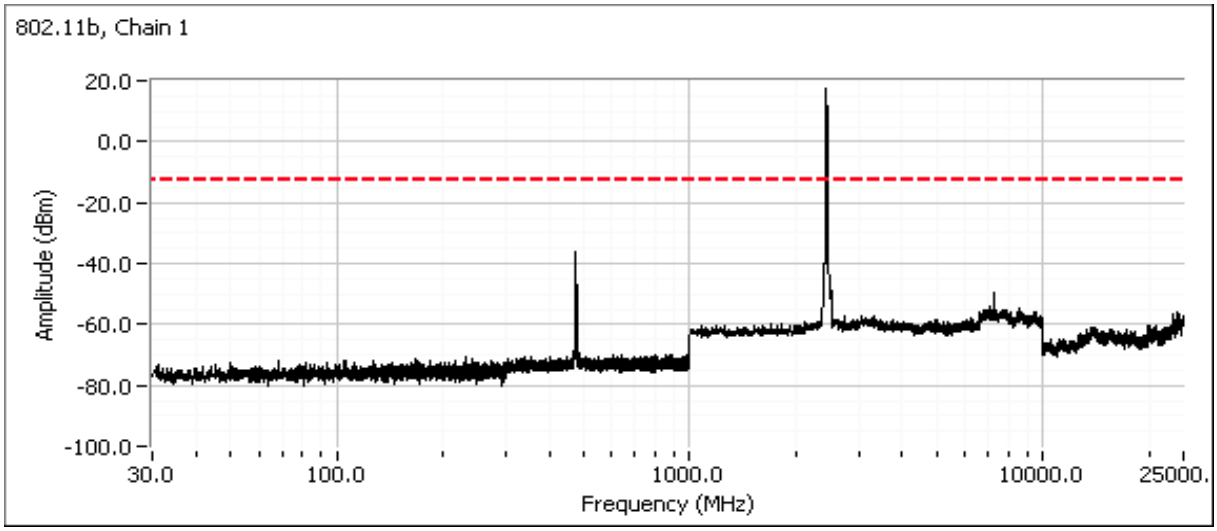


Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

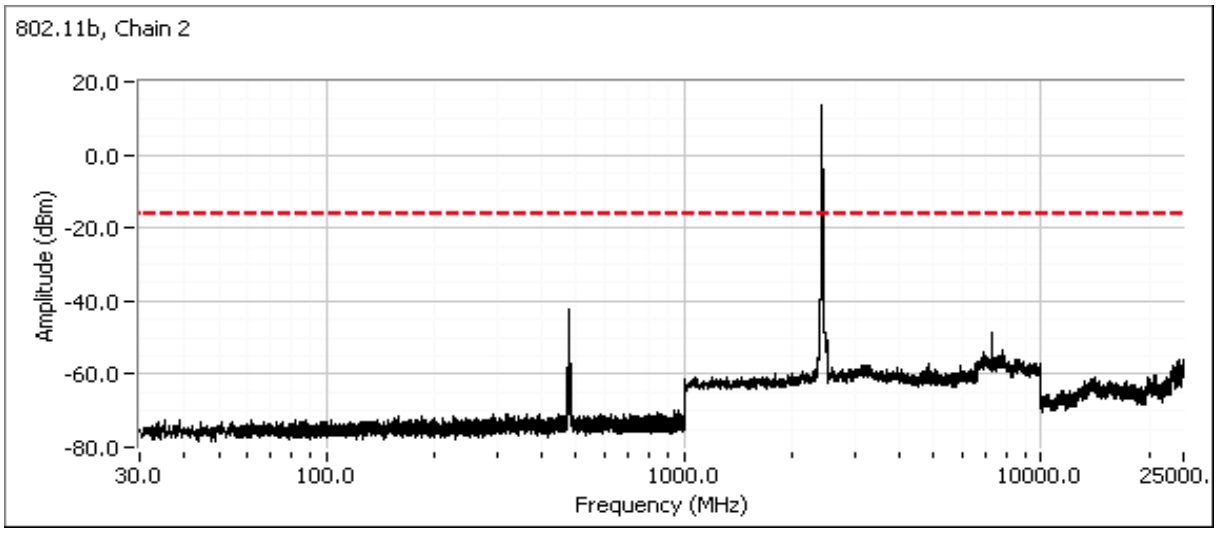


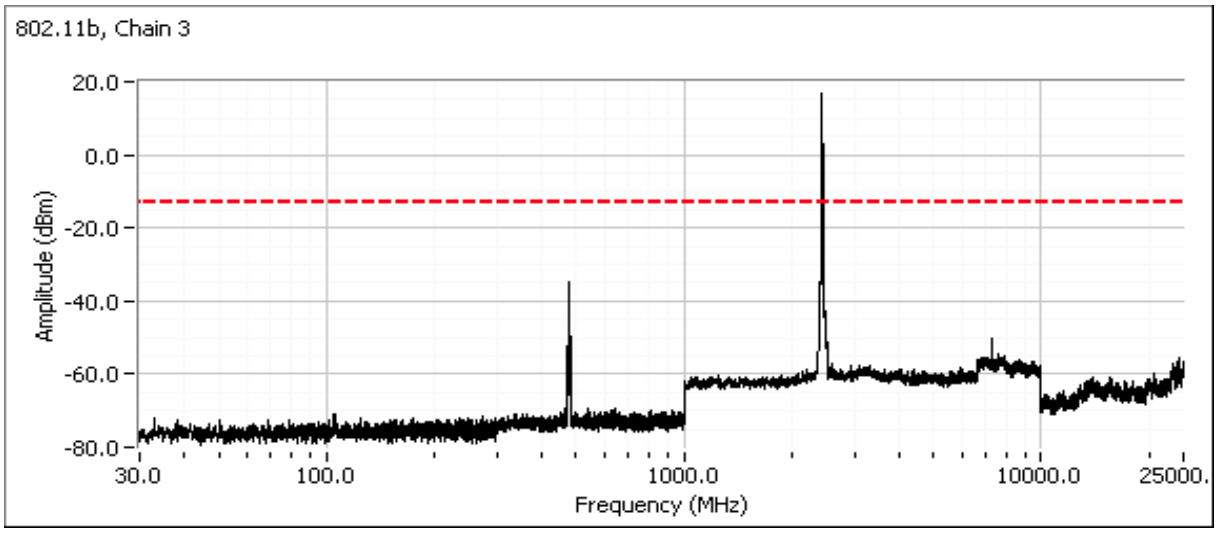
Plots for center channel



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

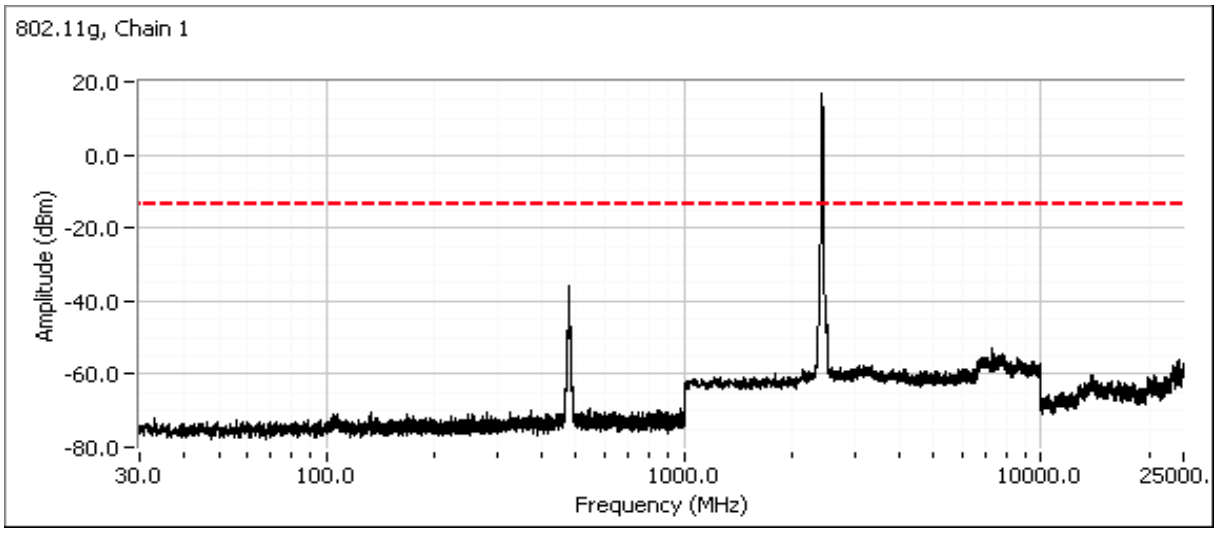
Plots for center channel

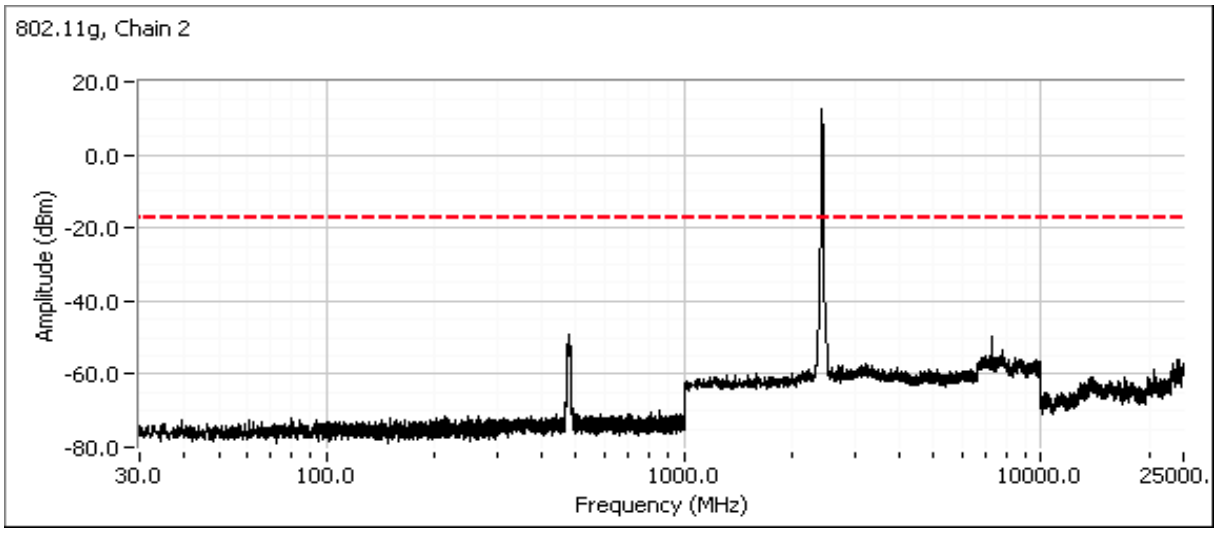




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

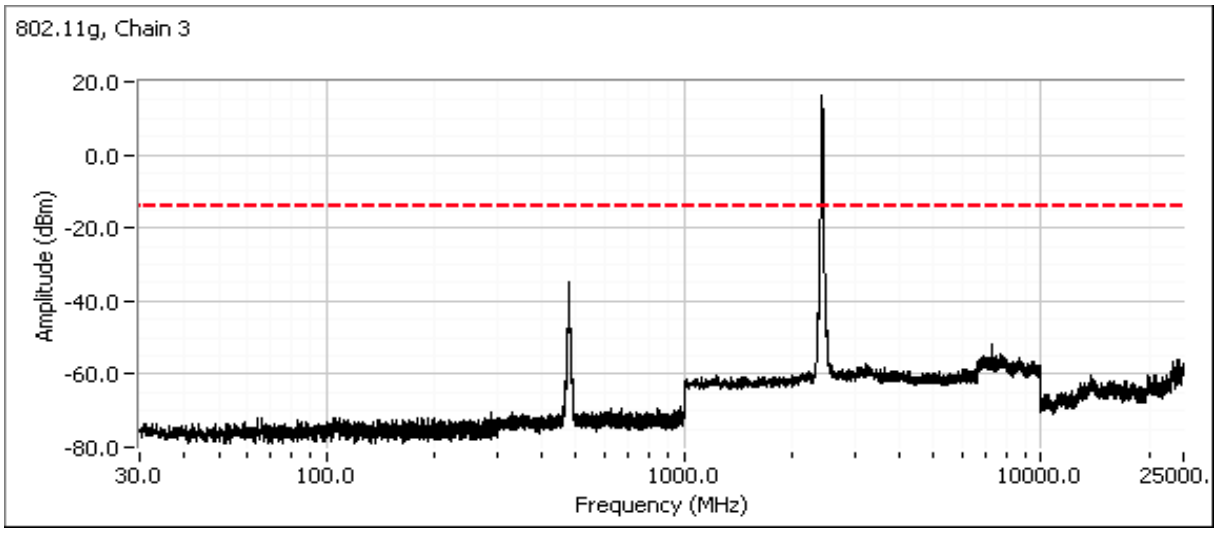
Plots for center channel

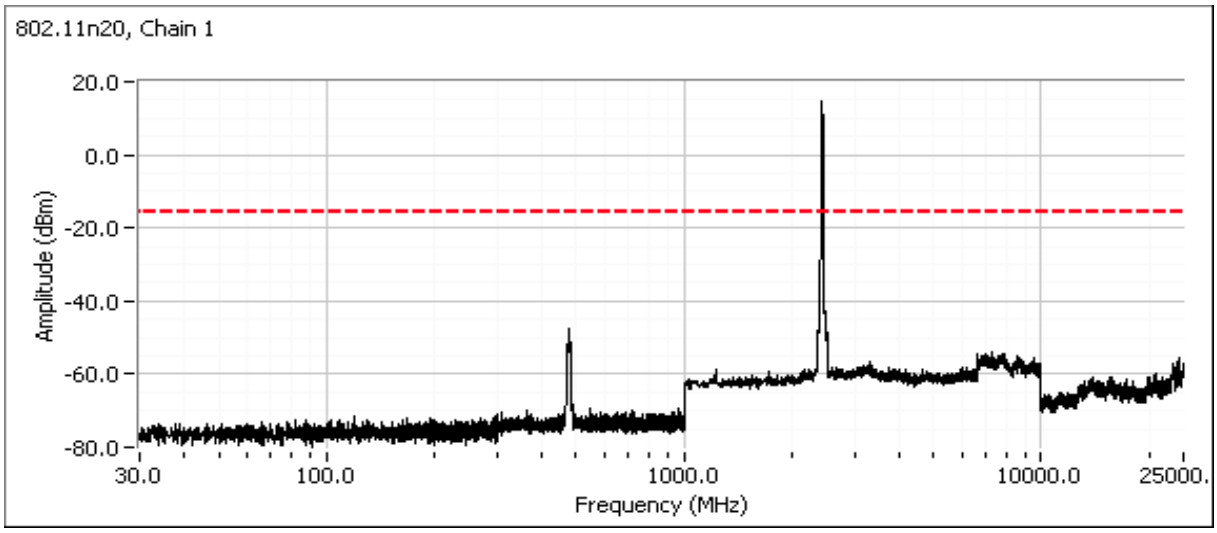




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

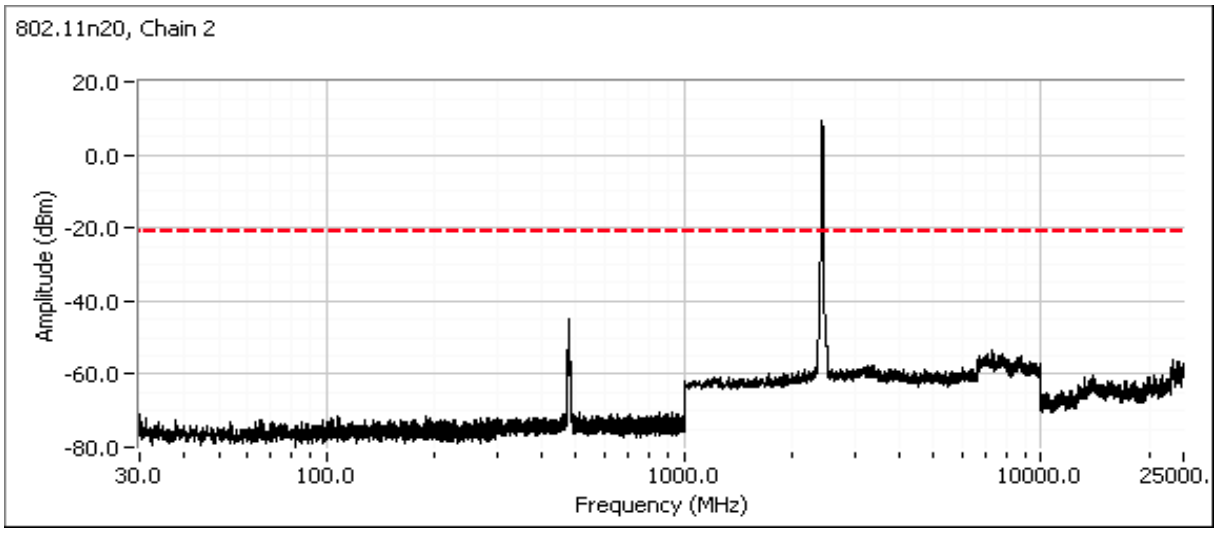
Plots for center channel

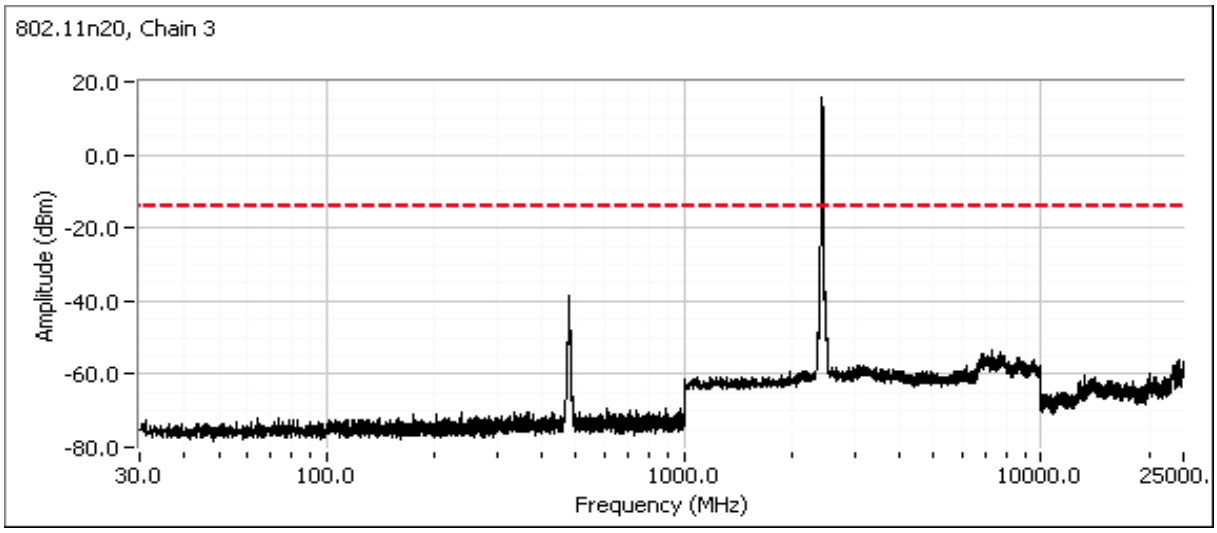




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for center channel

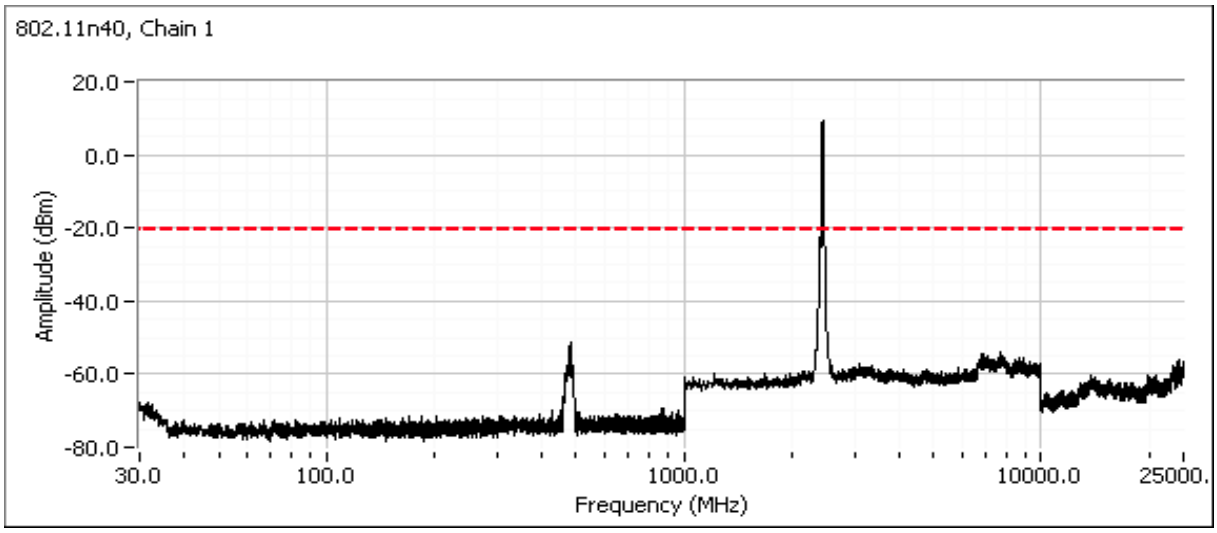


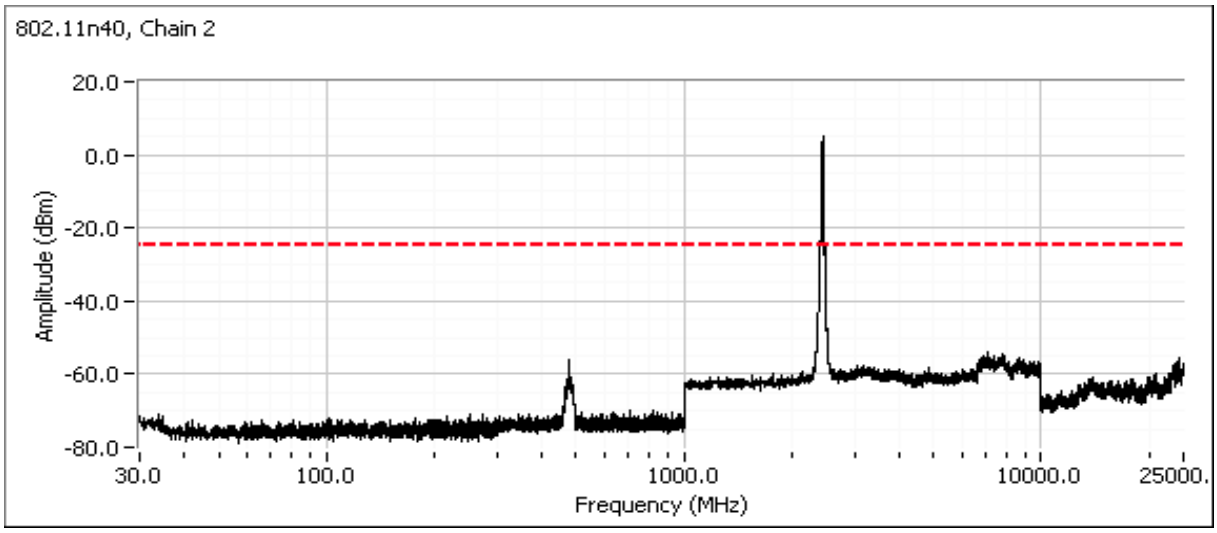


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for center channel





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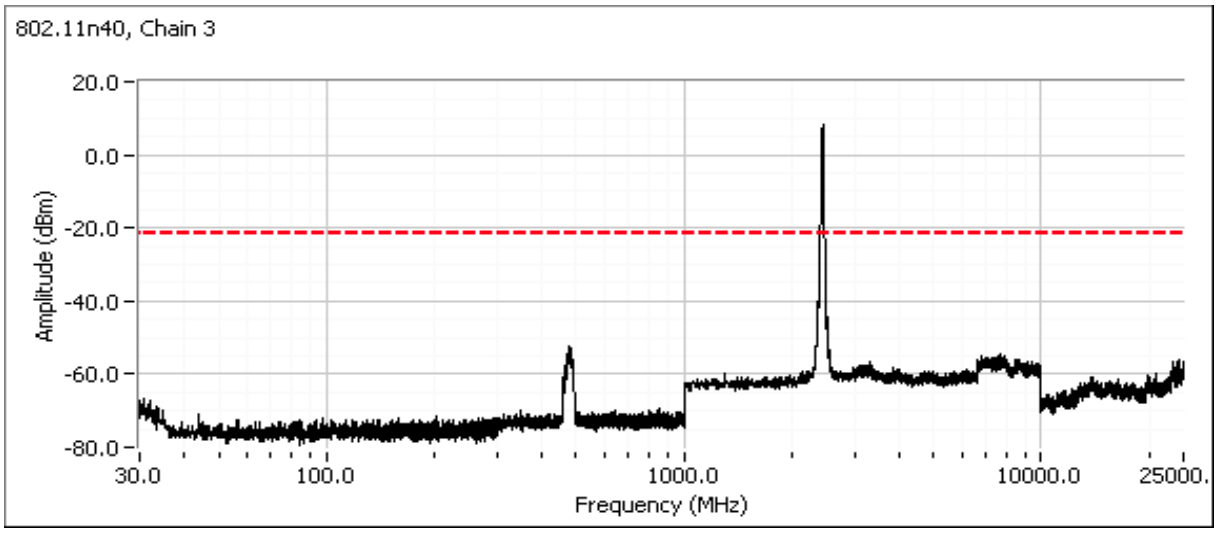
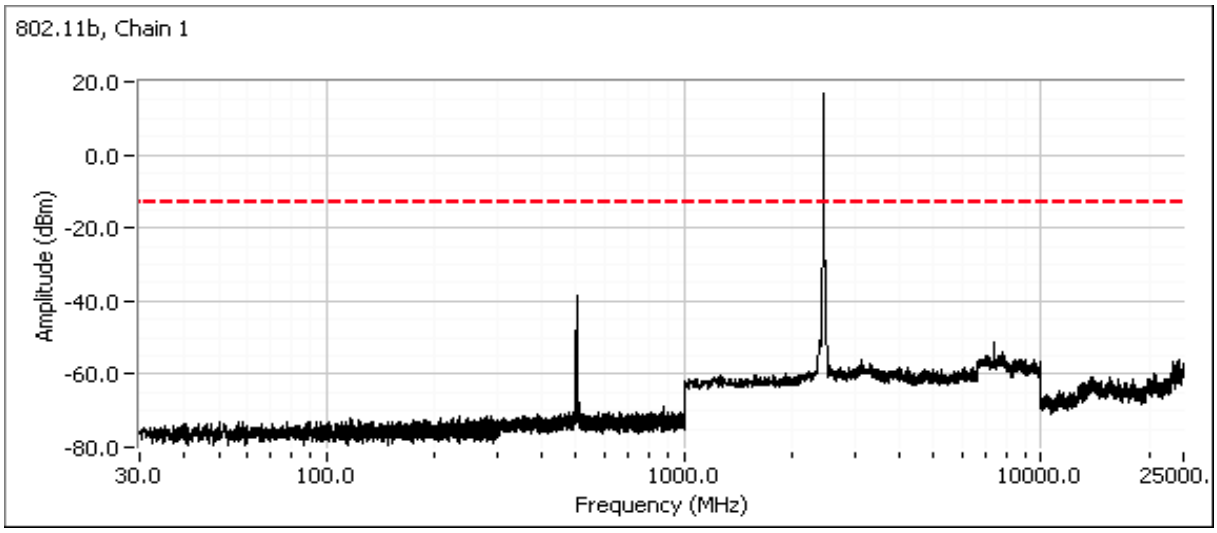
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for center channel

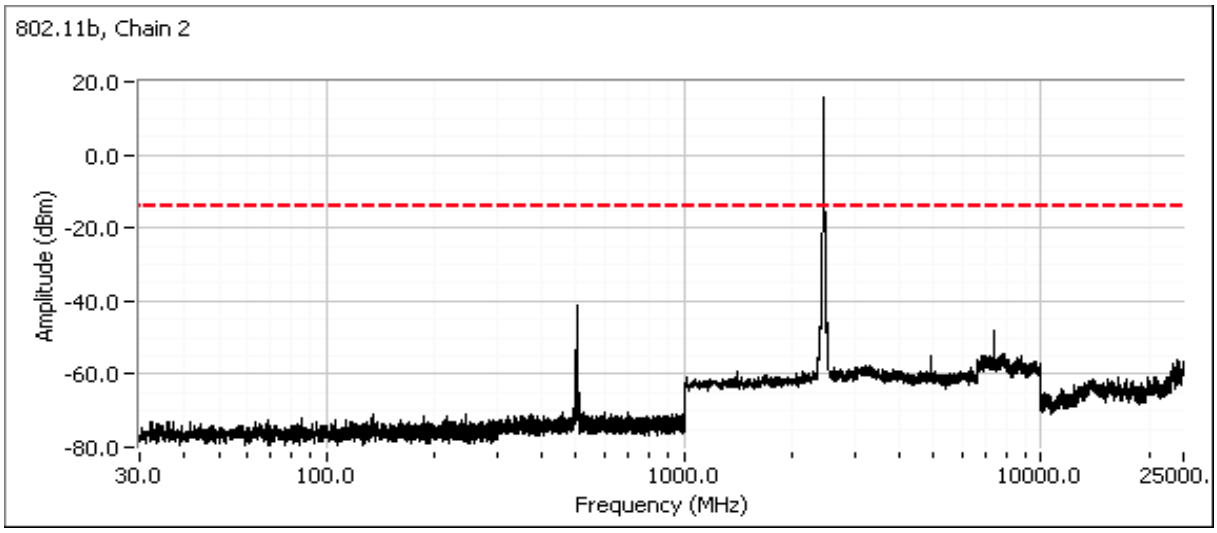


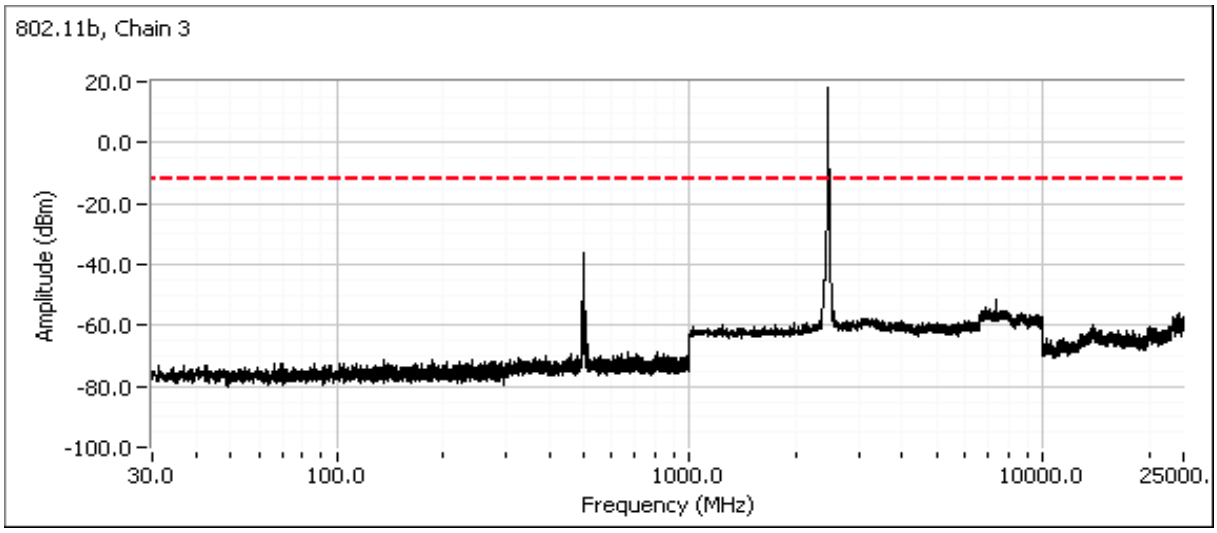
Plots for high channel



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for high channel





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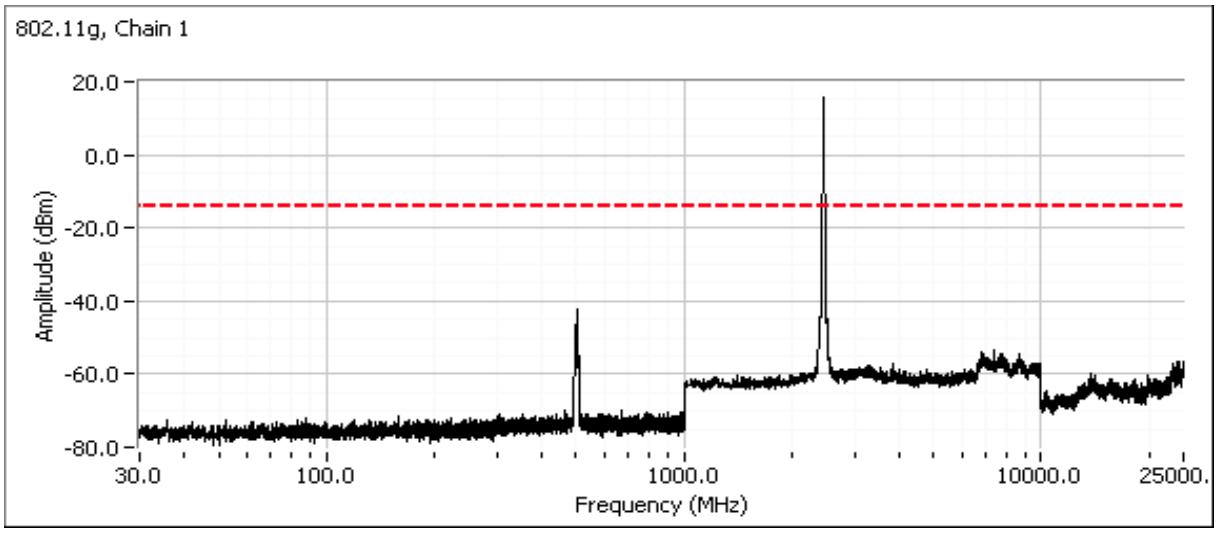
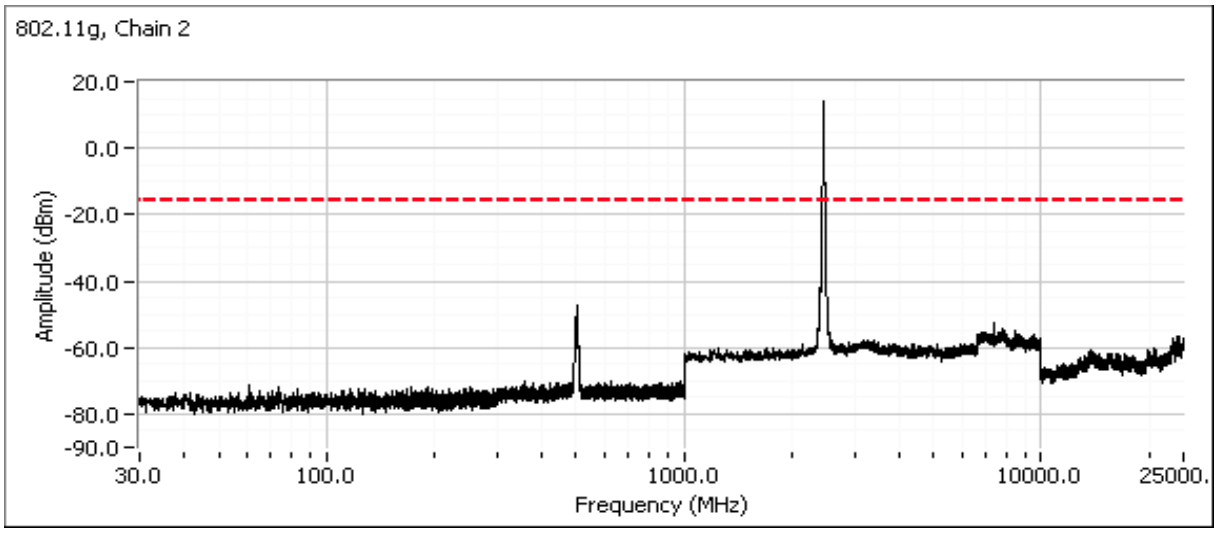
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

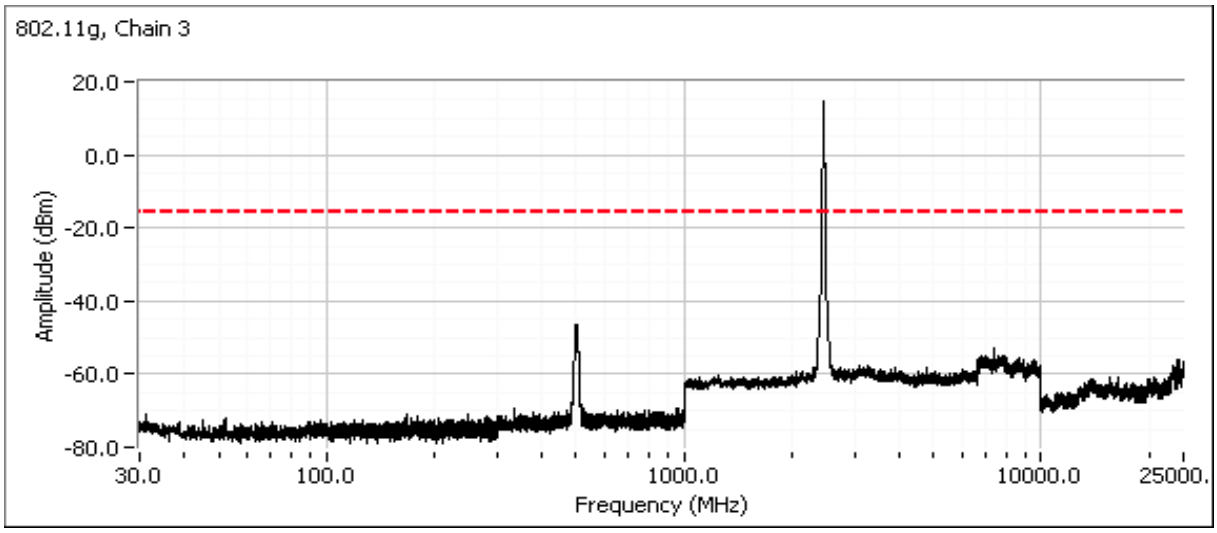
Plots for high channel

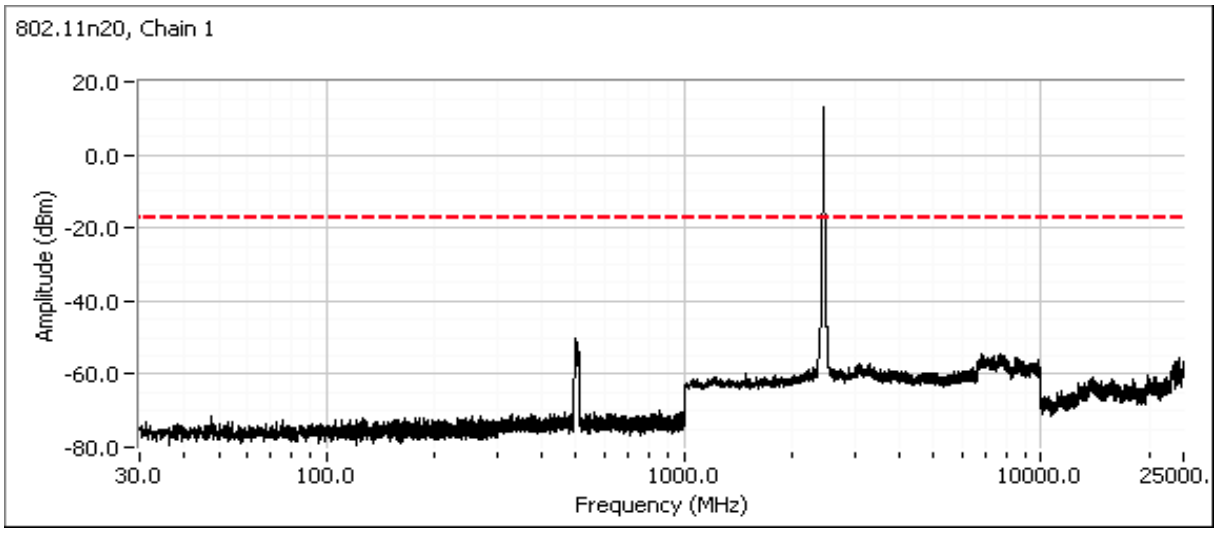




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

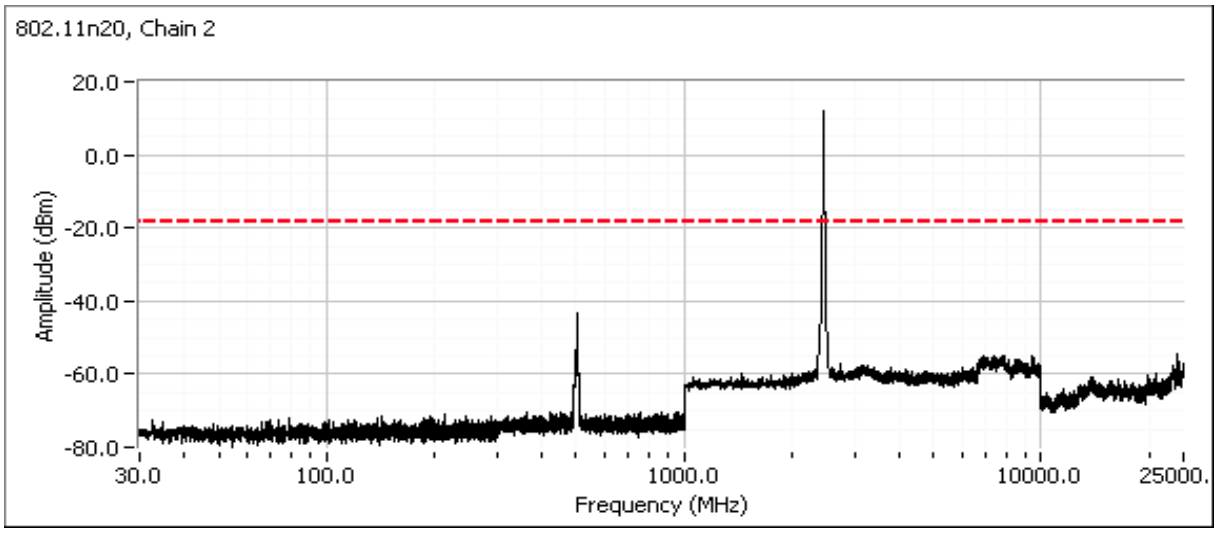
Plots for high channel

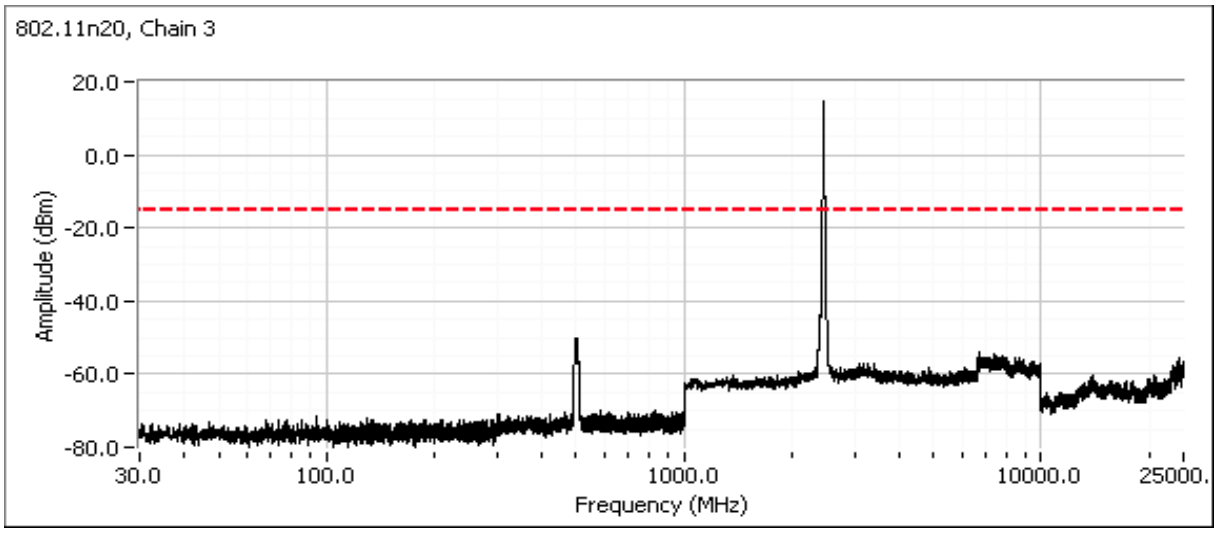




Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for high channel





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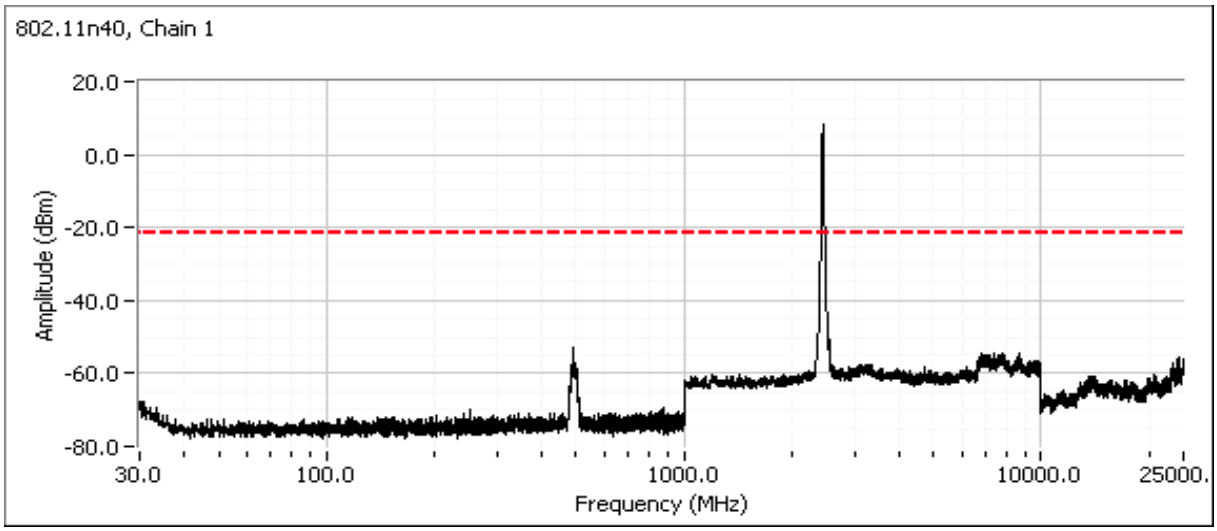
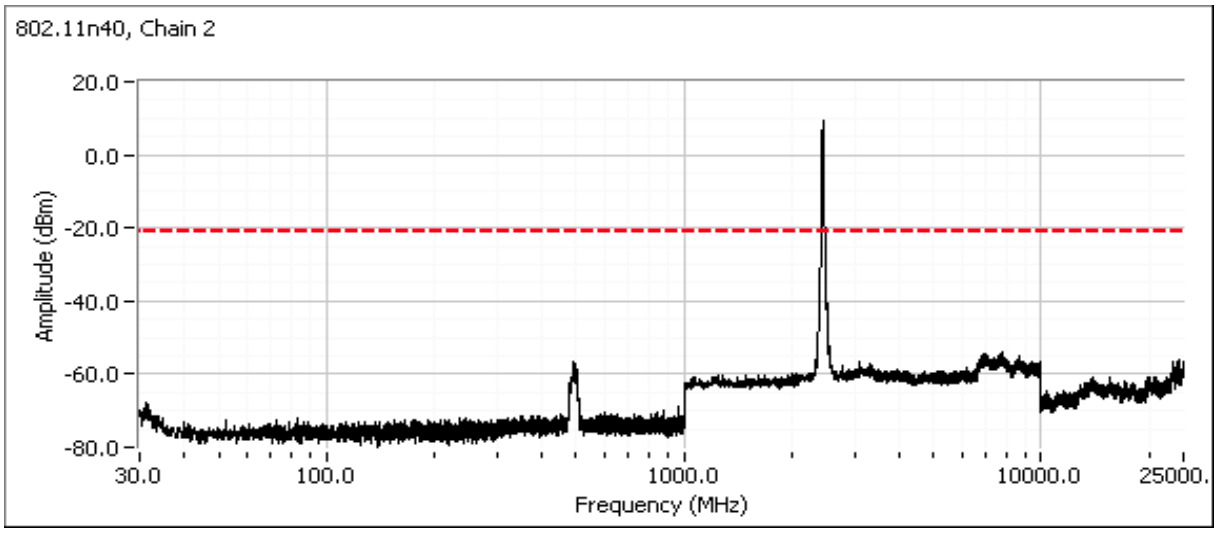
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for high channel





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Model:	BGW210-700	T-Log Number:	T102846
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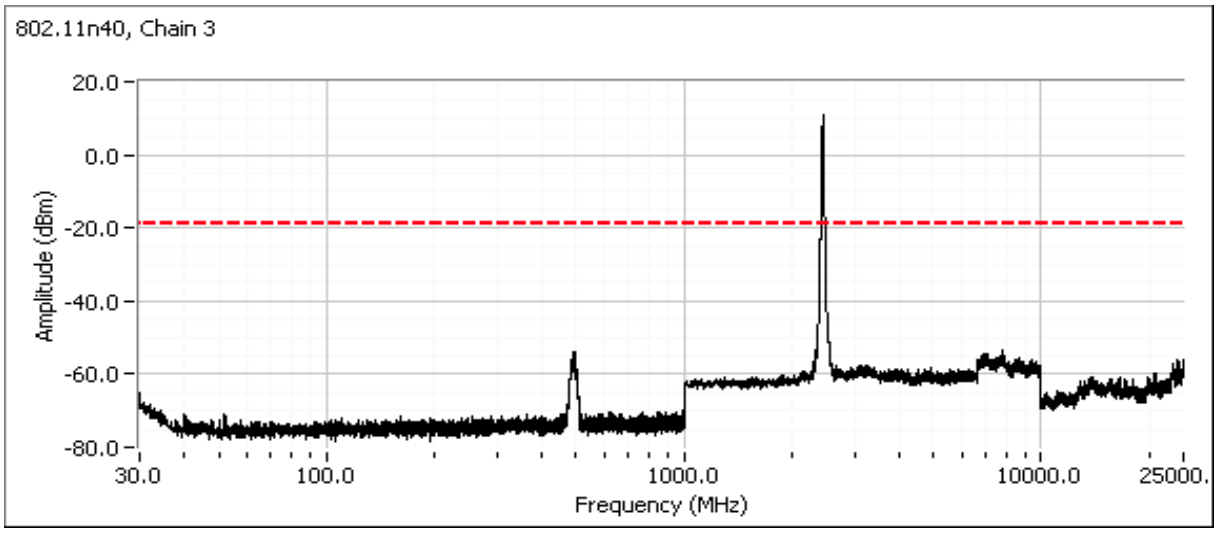
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Plots for high channel



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

RSS-247 and FCC 15.247 (DTS) 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: 23.4 °C
Rel. Humidity: 41 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
3	n20	1 - 2412MHz	-	q68	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.1 dBµV/m @ 2390.0 MHz (-0.9 dB)
		2 - 2417MHz	-	q90			53.3 dBµV/m @ 2389.6 MHz (-0.7 dB)
		3 - 2422MHz	-	q96			53.2 dBµV/m @ 2388.8 MHz (-0.8 dB)
		11 - 2462MHz	-	q74	Restricted Band Edge (2483.5 MHz)		53.0 dBµV/m @ 2483.7 MHz (-1.0 dB)
		10 - 2457MHz	-	q86			53.0 dBµV/m @ 2483.5 MHz (-1.0 dB)
		9 - 2452MHz	-	q94			53.2 dBµV/m @ 2483.6 MHz (-0.8 dB)
4	n40	3 - 2422MHz		q70	Restricted Band Edge (2390 MHz)		52.5 dBµV/m @ 2388.3 MHz (-1.5 dB)
		6 - 2437MHz		q72			47.7 dBµV/m @ 2389.0 MHz (-6.3 dB)
		6 - 2437MHz		q72	Restricted Band Edge (2483.5 MHz)		53.8 dBµV/m @ 2484.4 MHz (-0.2 dB)
		8 - 2447MHz -		q65			53.9 dBµV/m @ 2484.7 MHz (-0.1 dB)
		9 - 2452MHz -		q58			53.1 dBµV/m @ 2484.5 MHz (-0.9 dB)

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: 184795205922976
Driver: 7.35.177.0
Antenna: Internal

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
n20	MSC0	0.96	No	9.588	0.2	0.4	104
n40	MCS0	0.97	No	9.664	0.1	0.3	103

Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 6:	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, peak detector, linear average mode, sweep time auto, max hold. Max hold for 50*(1/DC) traces

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #3: Radiated Bandedge Measurements

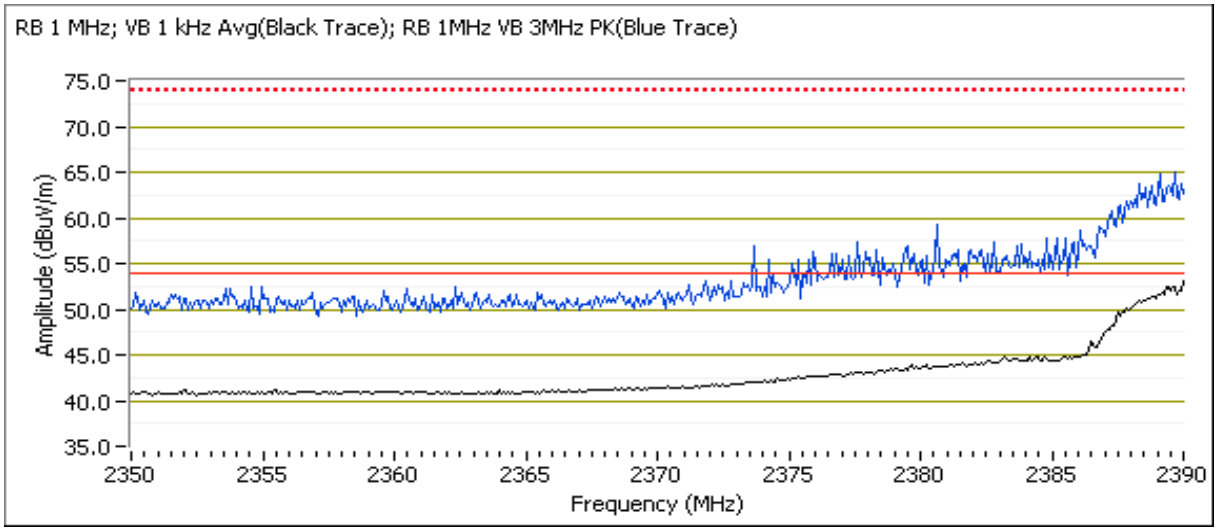
Date of Test: 11/2/2016 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #4

Config. Used: 2
Config Change: none
EUT Voltage: 120V/60Hz

Channel: 1 Mode: n20 Setting = q68
Tx Chain: 3TxBF Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.990	53.1	H	54.0	-0.9	Avg	329	1.3	Note 6,POS; RB 1 MHz; VB: 1 kHz
2389.950	69.5	H	74.0	-4.5	PK	329	1.3	POS; RB 1 MHz; VB: 3 MHz



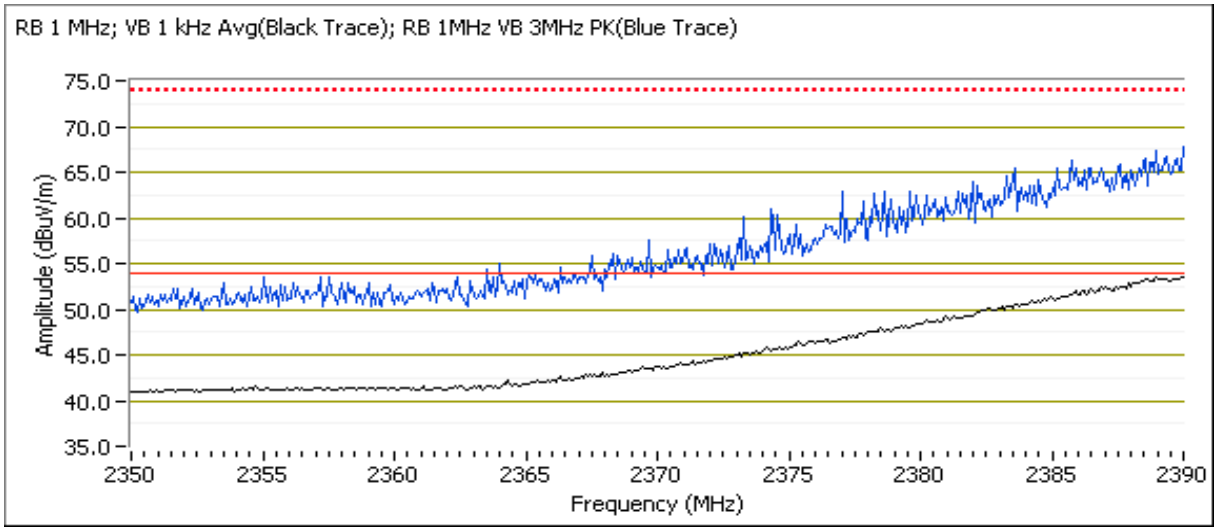
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 2 Mode: n20 Setting = q90
Tx Chain: 3TxBF Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.550	53.3	H	54.0	-0.7	Avg	351	1.3	Note 6,POS; RB 1 MHz; VB: 1 kHz
2389.050	67.3	H	74.0	-6.7	PK	351	1.3	POS; RB 1 MHz; VB: 3 MHz
2389.770	50.4	V	54.0	-3.6	Avg	359	1.0	Note 6,POS; RB 1 MHz; VB: 1 kHz
2389.230	64.2	V	74.0	-9.8	PK	359	1.0	POS; RB 1 MHz; VB: 3 MHz



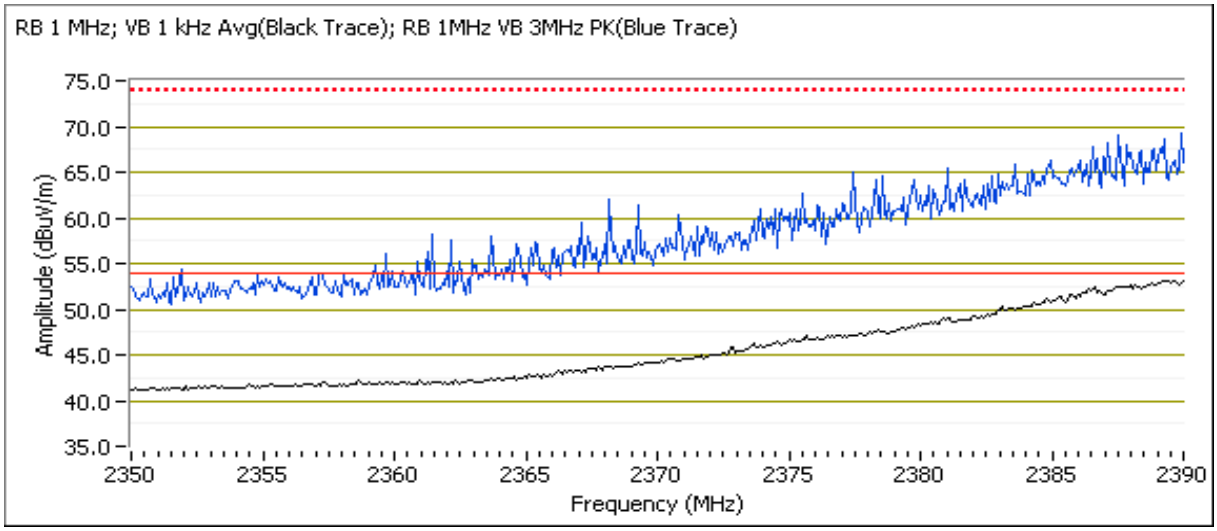
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 3 Mode: n20 Setting = q96
Tx Chain: 3TxBF Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2388.800	53.2	H	54.0	-0.8	Avg	344	1.3	Note 6,POS; RB 1 MHz; VB: 1 kHz
2387.520	68.7	H	74.0	-5.3	PK	344	1.3	POS; RB 1 MHz; VB: 3 MHz



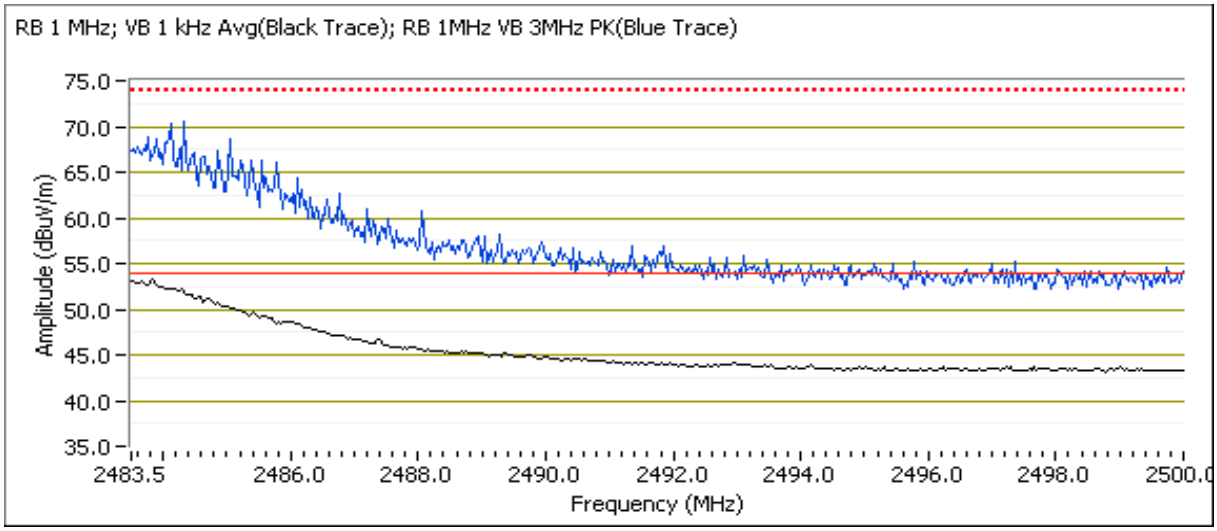
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 11 Mode: n20 Setting = q74
Tx Chain: 3TxBF Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.670	53.0	H	54.0	-1.0	Avg	0	1.2	Note 6,POS; RB 1 MHz; VB: 1 kHz
2484.660	70.3	H	74.0	-3.7	PK	0	1.2	POS; RB 1 MHz; VB: 3 MHz



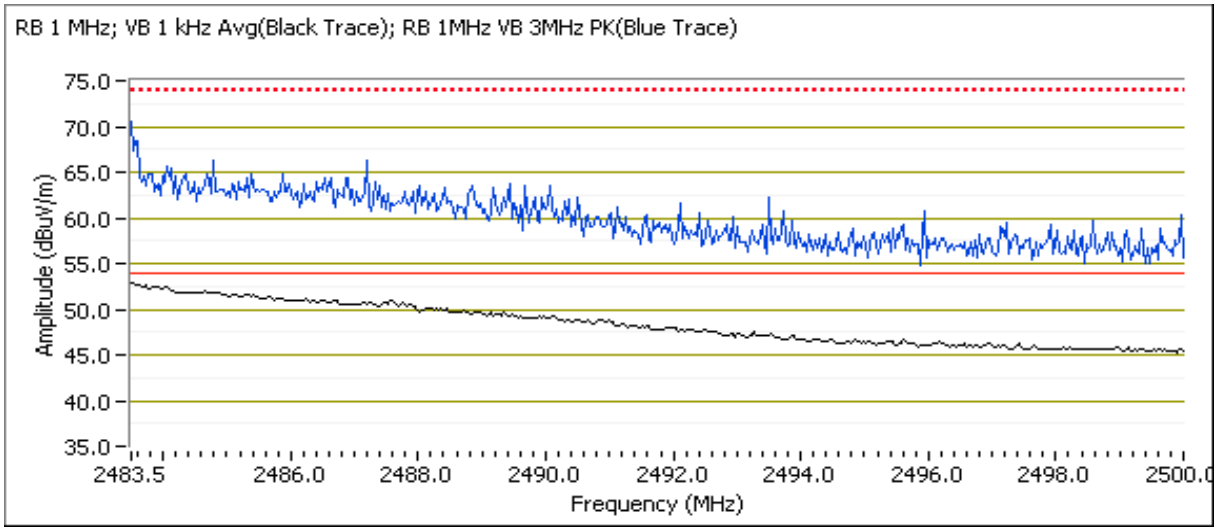
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 10 Mode: n20 Setting = q86
Tx Chain: 3TxBF Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.0	H	54.0	-1.0	Avg	355	1.6	Note 6,POS; RB 1 MHz; VB: 1 kHz
2488.390	70.2	H	74.0	-3.8	PK	355	1.6	POS; RB 1 MHz; VB: 3 MHz



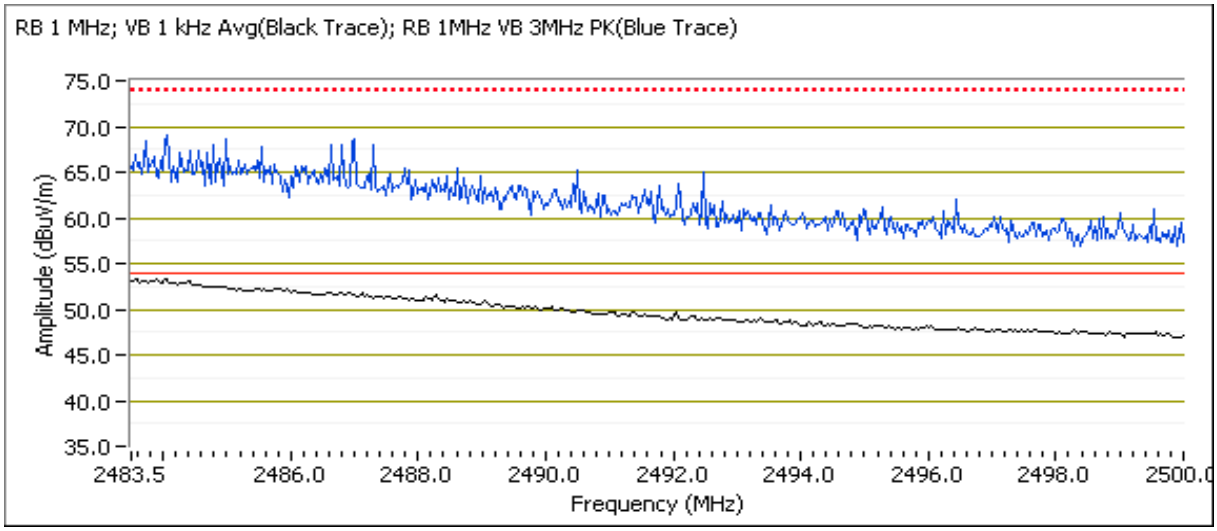
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 9 Mode: n20 Setting = q94
Tx Chain: 3TxBF Data Rate: MSC0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.570	53.2	H	54.0	-0.8	Avg	0	1.2	Note 6,POS; RB 1 MHz; VB: 1 kHz
2484.260	69.3	H	74.0	-4.7	PK	0	1.2	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #4: Radiated Bandedge Measurements

Date of Test: 11/3/2016 0:00
Test Engineer: John Caizzi
Test Location: Chamber 4

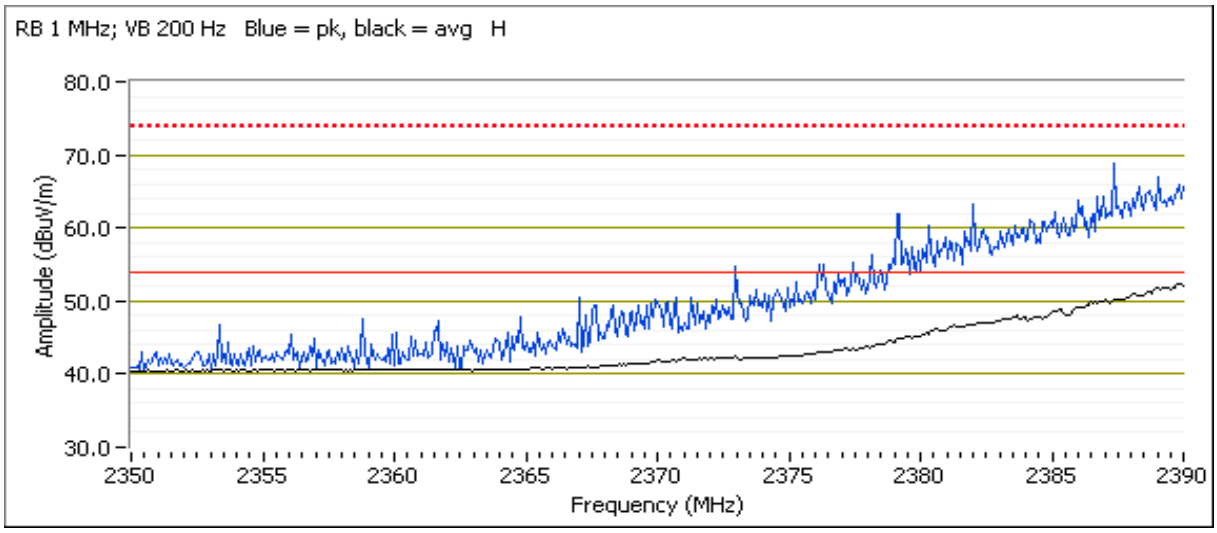
Config. Used: 2
Config Change: none
EUT Voltage: 120V / 60Hz

Channel: 3
Tx Chain: 3TxBF

Mode: n40
Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2388.320	52.5	H	54.0	**-1.5**	Avg	335	1.28	Note 6,POS; RB 1 MHz; VB: 0.2 kHz
2385.670	67.2	H	74.0	-6.8	PK	335	1.28	POS; RB 1 MHz; VB: 3 MHz



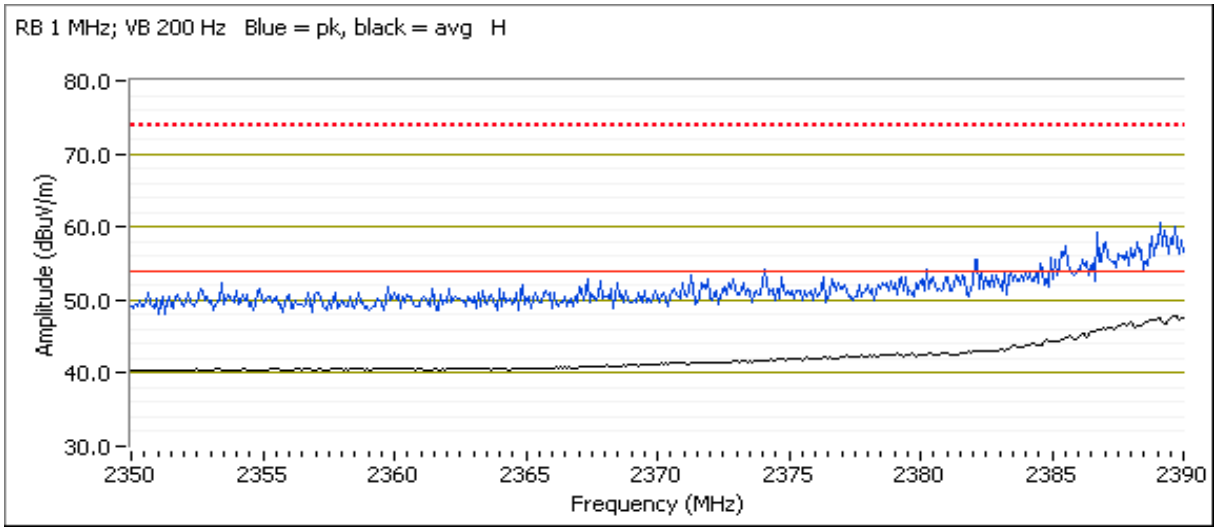
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 6 Mode: n40
Tx Chain: 3TxBF Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.040	47.7	H	54.0	**-6.3**	Avg	0	1.28	Note 6,POS; RB 1 MHz; VB: 0.2 kHz
2388.400	62.6	H	74.0	-11.4	PK	0	1.28	POS; RB 1 MHz; VB: 3 MHz



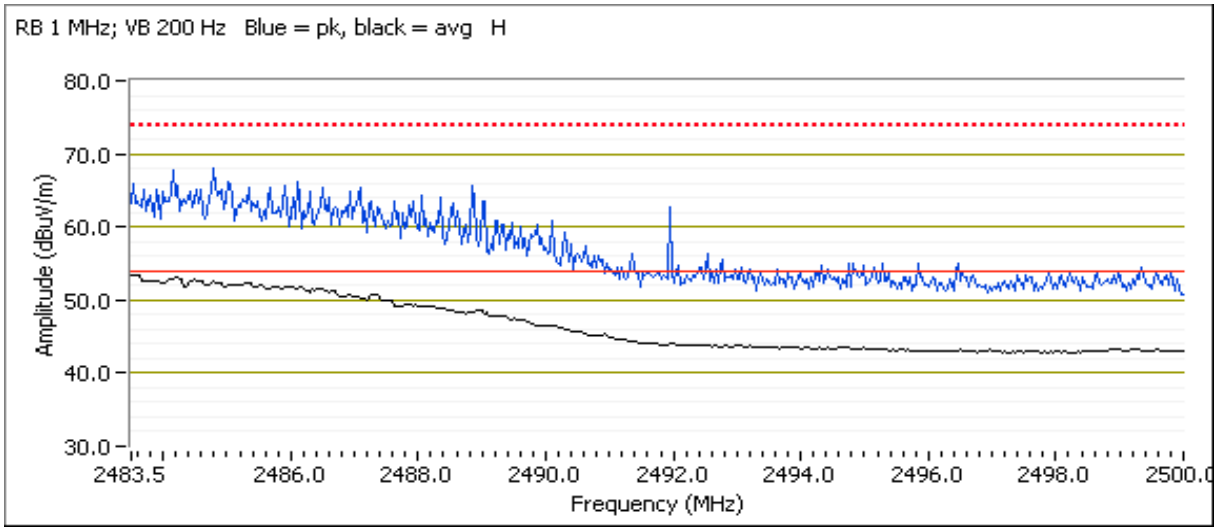
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 6 Mode: n40
Tx Chain: 3TxBF Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.360	53.8	H	54.0	**-0.2**	Avg	336	1.65	Note 6,POS; RB 1 MHz; VB: 0.2 kHz
2486.610	69.1	H	74.0	-4.9	PK	336	1.65	POS; RB 1 MHz; VB: 3 MHz



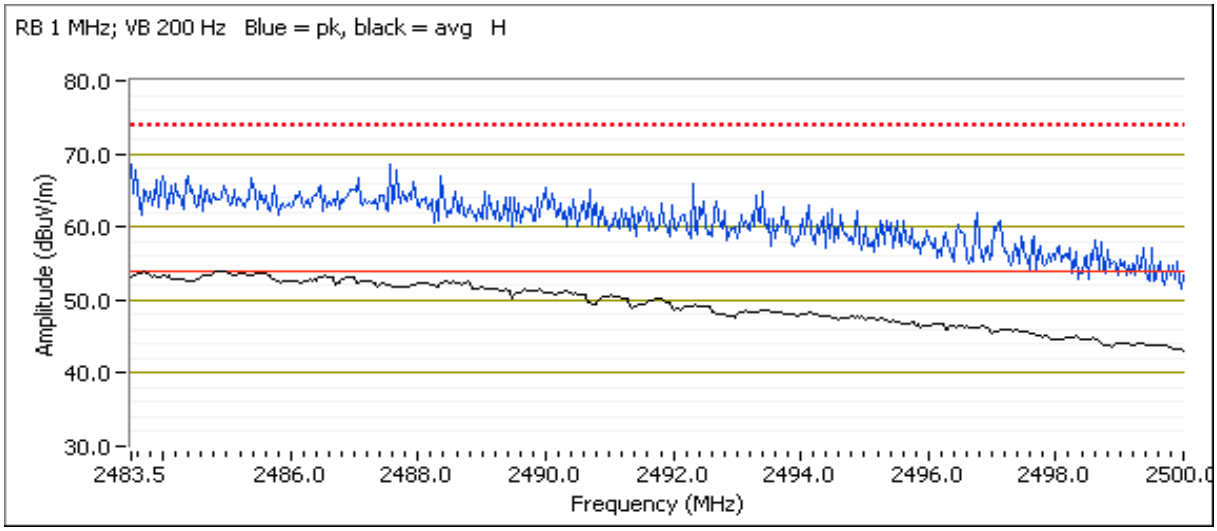
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 8 Mode: n40
Tx Chain: 3TxBF Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.720	53.9	H	54.0	**-0.1**	Avg	353	1.62	Note 6,POS; RB 1 MHz; VB: 0.2 kHz
2484.990	70.2	H	74.0	-3.8	PK	353	1.62	POS; RB 1 MHz; VB: 3 MHz



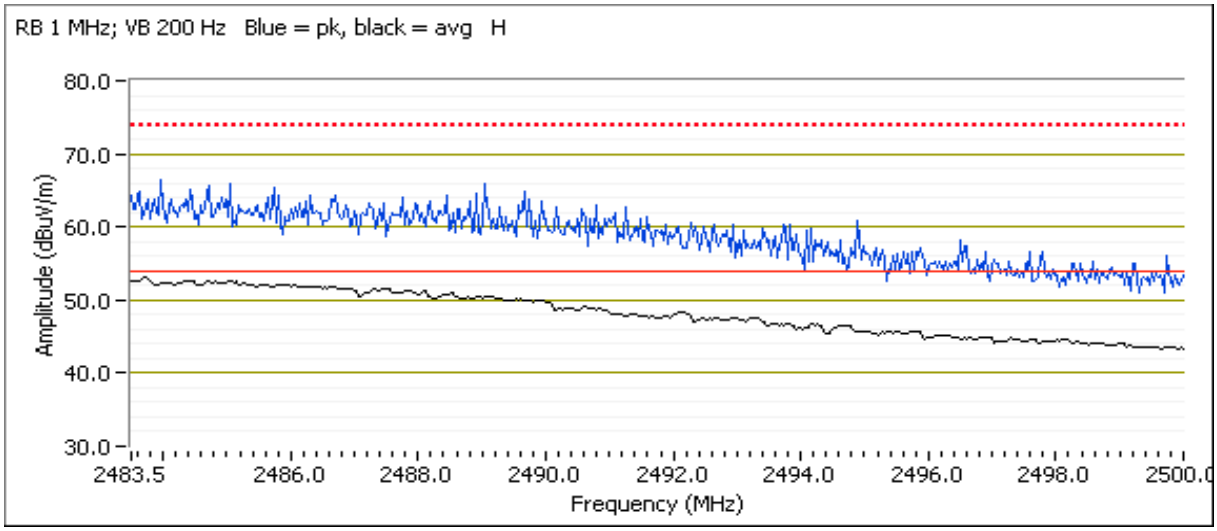
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Channel: 9 Mode: n40
Tx Chain: 3TxBF Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.530	53.1	H	54.0	**-0.9**	Avg	338	1.08	Note 6,POS; RB 1 MHz; VB: 0.2 kHz
2484.820	68.2	H	74.0	-5.8	PK	338	1.08	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

RSS-247 and FCC 15.247 (DTS) Antenna Port Measurements
MIMO and Smart Antenna Systems
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.

Date of Test: 11/3/2016
Test Engineer: John Caizzi
Test Location: Chamber 4B

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

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 23.4 °C
Rel. Humidity: 42 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
TxBF Modes						
1	-	-	Output Power	15.247(b)	Pass	n20: 27.7dBm (0.585W) n40: 20.4dBm (0.111W)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
n20	MSC0	98.4%	Yes	1.917	0	0	10
n40	MSC0	97.7%	Yes	1.24	0.1	0.2	806

Sample Notes

Sample S/N: 184795206019712
Driver: 7.35 RC177.0

Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
2400-2483.5	3.11	3.665	3.653		Yes	Yes	Yes	No	8.3	8.3

For devices that support CDD modes

Min # of spatial streams: 1
Max # of spatial streams: 3

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; Dir G (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, v01r02.

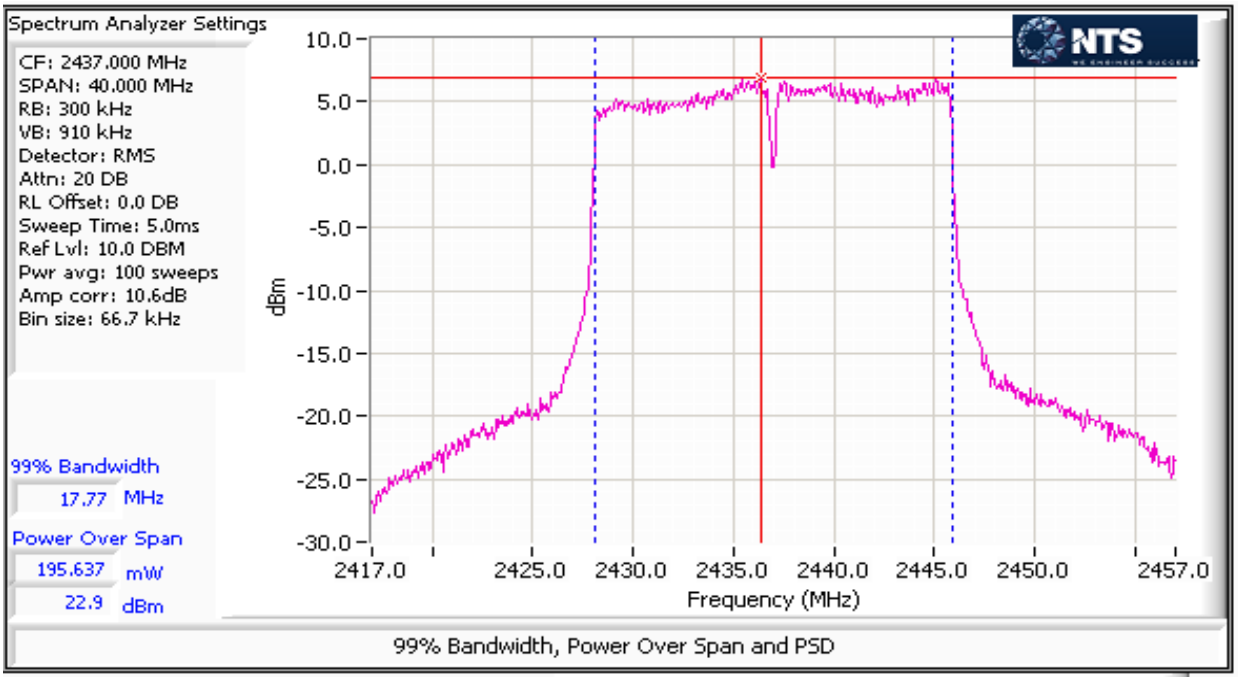
EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1: Output Power

Operating Mode: n20
Directional Gain (dBi): 8.3

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	Power[1] dBm	Total Power[5] mW	Total Power[5] dBm	FCC Limit dBm	Max Power (W)	Result
2412	1	q68		98.4	15.4	99.4	20.0	27.7	0.585	Pass
	3				15.0					
	4									
	2				15.2					
2437	1	q100		98.4	23.0	585.1	27.7	27.7		Pass
	3				22.8					
	4									
	2				22.9					
2462	1	q74		98.4	16.6	134.1	21.3	27.7		Pass
	3				16.3					
	4									
	2				16.6					

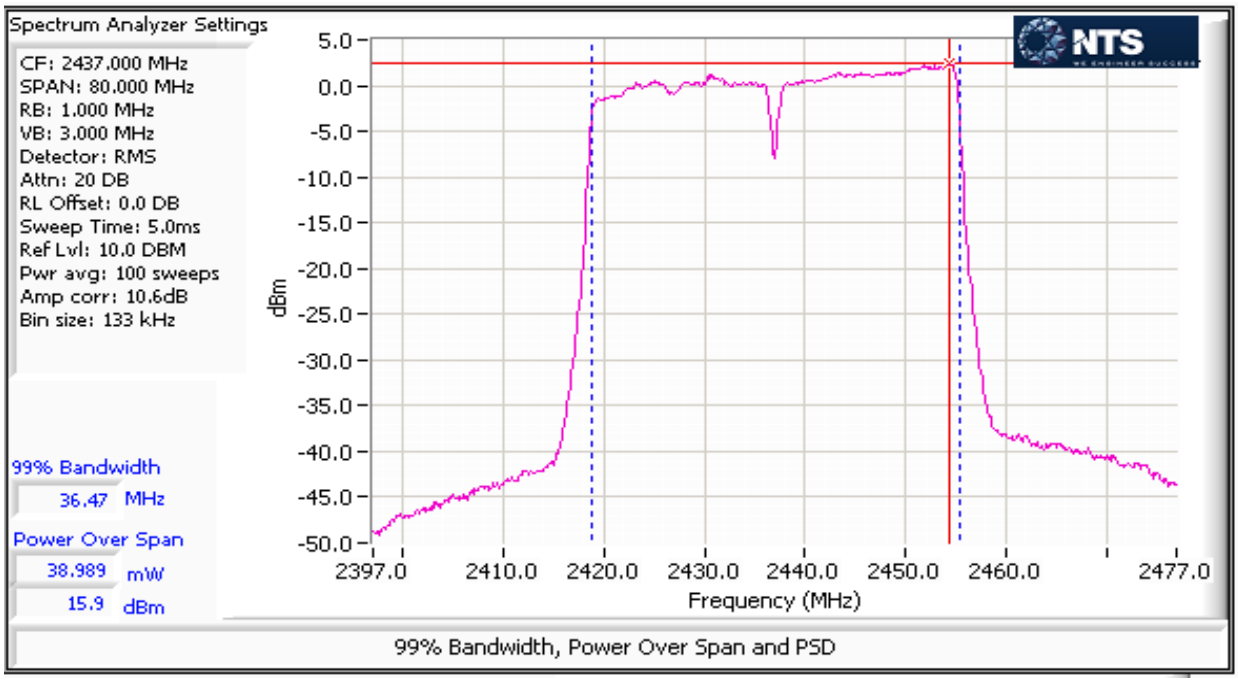


EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Operating Mode: n40
Directional Gain (dBi): 8.3

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	Power[2] dBm	Total Power[5] mW	Total Power[5] dBm	FCC Limit dBm	Max Power (W)	Result
2422	1	q70		97.7	15.4	101.0	20.0	27.7	0.111	Pass
	3				14.9					
	4									
	2				15.2					
2437	1	q70		97.7	15.9	110.8	20.4	27.7		Pass
	3				15.3					
	4									
	2				15.5					
2452	1	q58		97.7	12.9	59.9	17.8	27.7		Pass
	3				12.9					
	4									
	2				12.9					



99% Bandwidth, Power Over Span and PSD

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Note 1:	Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, auto sweep time, RMS detector, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-1 in ANSI C63.10). Spurious limit becomes -30dBc.
Note 2:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, RMS detector, auto sweep time, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-2 in ANSI C63.10). Measurement corrected by Pwr Cor Factor. Spurious limit becomes -30dBc.
Note 5:	Corrected for duty cycle

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

RSS-247, FCC 15.247, FCC 15.407 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: 10/4/2016
Test Engineer: Rafael Varelas
Test Location: Fremont CH 7

Config. Used: 1
Config Change: None
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: 21.8 °C
Rel. Humidity: 43 %

Summary of Results

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
Simultaneous Tx operation							
1	b a	6 40	25.5 23	25.5 23	Radiated Emissions, 30 - 1000MHz	FCC 15.209 / 15.247 / 15 E	31.5 dBµV/m @ 361.09 MHz (-14.5 dB)
	b a	6 40	25.5 23	25.5 23	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.247 / 15 E	51.9 dBµV/m @ 7312.1 MHz (-2.1 dB)
2	b a	6 157	25.5 23	25.5 23	Radiated Emissions, 30 - 1000MHz	FCC 15.209 / 15.247 / 15 E	31.7 dBµV/m @ 361.09 MHz (-14.3 dB)
	b a	6 157	25.5 23	25.5 23	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15.247 / 15 E	52.9 dBµV/m @ 7311.9 MHz (-1.1 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	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	1Mbs	1.00	Yes	12.43	0	0	80
11a	6Mbs	0.89	Yes	0.558	0.51	1.01	1792

Sample Notes

Sample S/N: 184795206016480
Driver: -
Antenna: 3x3, 4x4 internal

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	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)

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1, Radiated Spurious Emissions

Date of Test: 10/4/2016
Test Engineer: Rafael Varelas
Test Location: Fremont CH 7

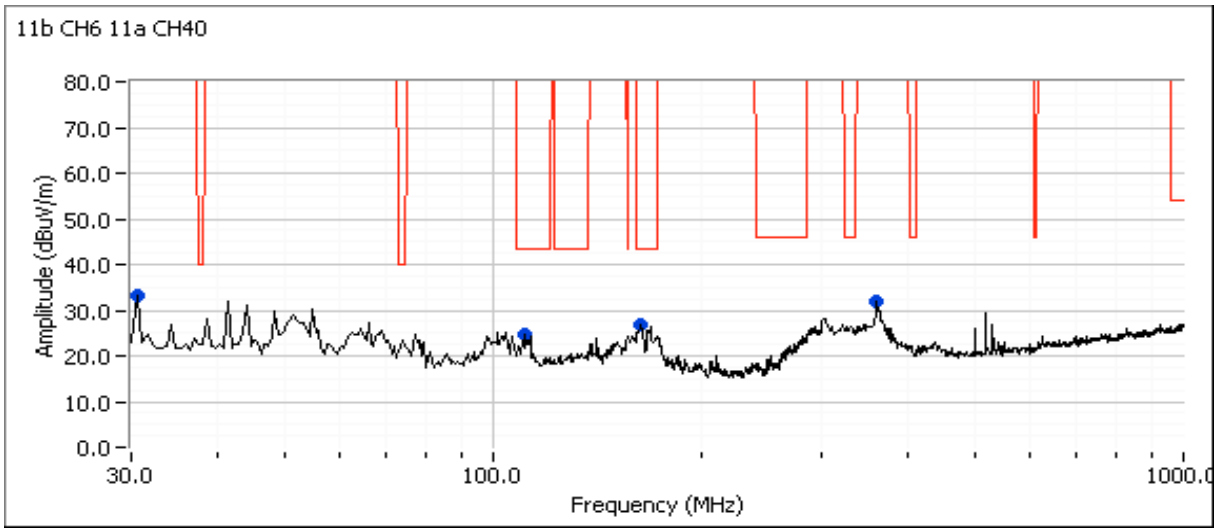
Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 6 Mode: 11b
Tx Chain: 3Tx Data Rate: 1Mbs

Channel: 40 Mode: 11a
Tx Chain: 4Tx Data Rate: 6Mbs

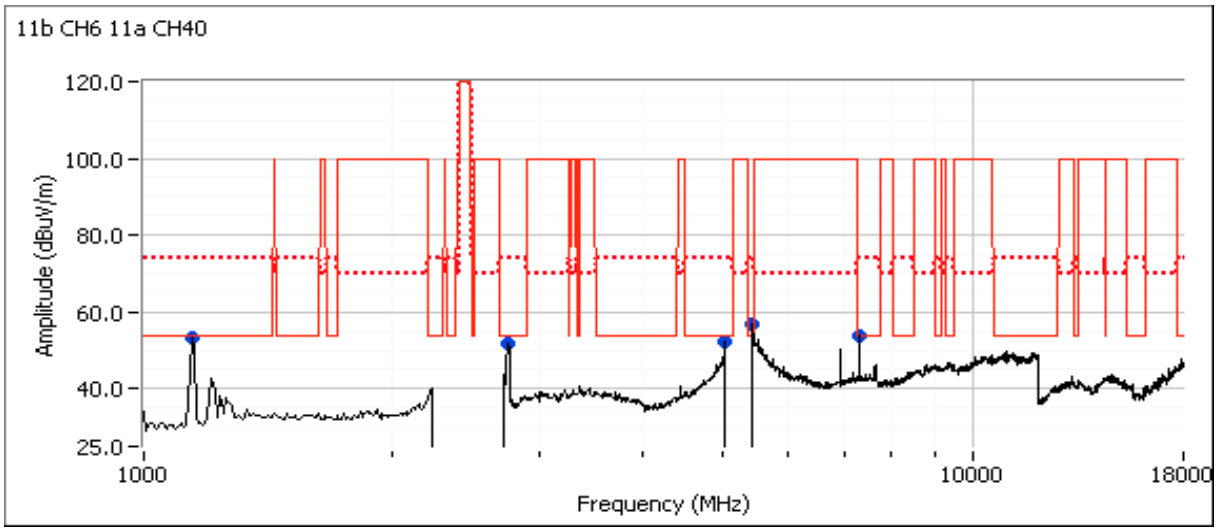
Run #1a: 30-1000MHz

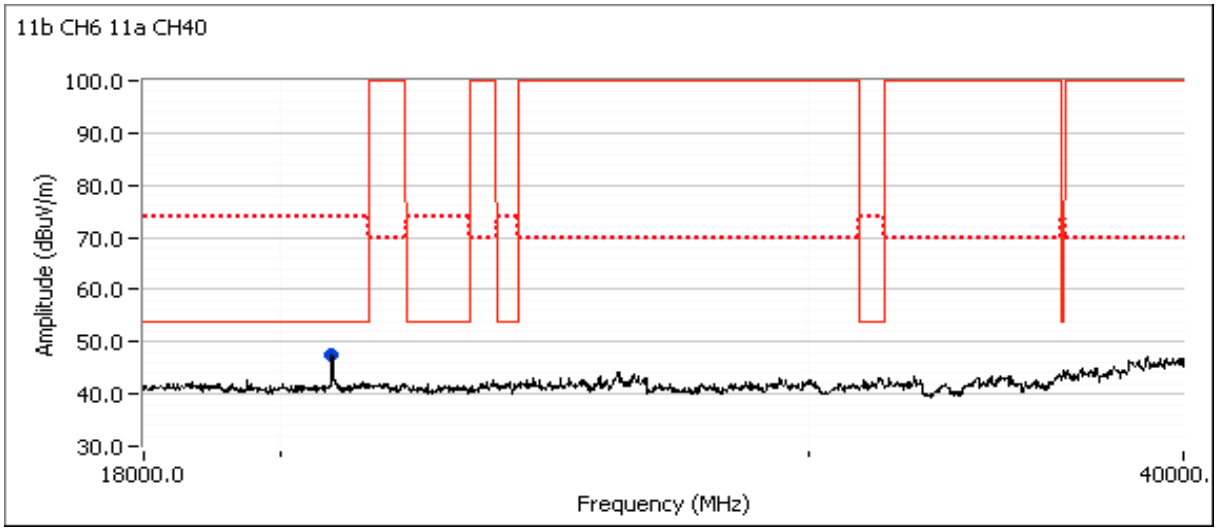
Frequency	Level	Pol	15.209 / 15.247 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
361.087	**31.5**	H	46.0	**-14.5**	QP	239	1.0	Restricted limit used
31.481	18.2	V	40.0	-21.8	QP	325	1.0	Restricted limit used
111.641	18.9	V	43.5	-24.6	QP	167	1.1	QP (1.00s)
165.483	24.7	V	43.5	-18.8	QP	141	0.9	QP (1.00s)



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1b: 1000-40000MHz





EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7312.120	**51.9**	H	54.0	**-2.1**	Avg	341	1.0	RB 1 MHz;VB 3 kHz;Peak
7310.170	58.1	H	74.0	-15.9	PK	341	1.0	RB 1 MHz;VB 3 MHz;Peak
5149.200	49.4	H	54.0	-4.6	Avg	121	1.7	POS; RB 1 MHz; VB: 2 kHz, note 3
5149.920	60.9	H	74.0	-13.1	PK	121	1.7	POS; RB 1 MHz; VB: 3 MHz, note 3
5433.250	49.4	H	54.0	-4.6	Avg	356	1.5	POS; RB 1 MHz; VB: 2 kHz, note 4
5426.190	60.6	H	74.0	-13.4	PK	356	1.5	POS; RB 1 MHz; VB: 3 MHz, note 4
20800.100	44.6	V	54.0	-9.4	Avg	113	1.9	RB 1 MHz;VB 3 kHz;Peak
20799.530	54.0	V	74.0	-20.0	PK	113	1.9	RB 1 MHz;VB 3 MHz;Peak
2768.700	43.1	H	54.0	-10.9	Avg	136	1.3	POS; RB 1 MHz; VB: 2 kHz, note 4
2768.940	53.9	H	74.0	-20.1	PK	136	1.3	POS; RB 1 MHz; VB: 3 MHz, note 4
1142.090	53.2	H	54.0	-0.8	Peak	124	1.0	Non-radio related signal

Note 3:	Measured with bandstop filters with R&S analyzer. Signal is artifact of using filter.
Note 4:	Measured with bandstop filters with R&S analyzer.

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #2, Radiated Spurious Emissions

Date of Test: 10/4/2016
Test Engineer: Rafael Varelas
Test Location: Fremont CH 7

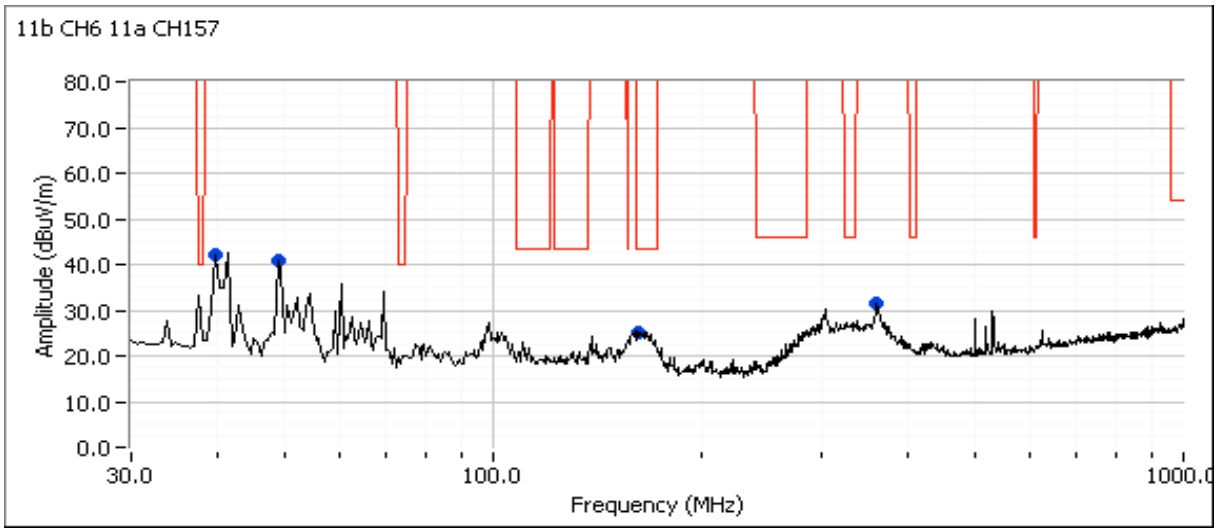
Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 6 Mode: 11b
Tx Chain: 3Tx Data Rate: 1Mbs

Channel: 157 Mode: 11a
Tx Chain: 4Tx Data Rate: 6Mbs

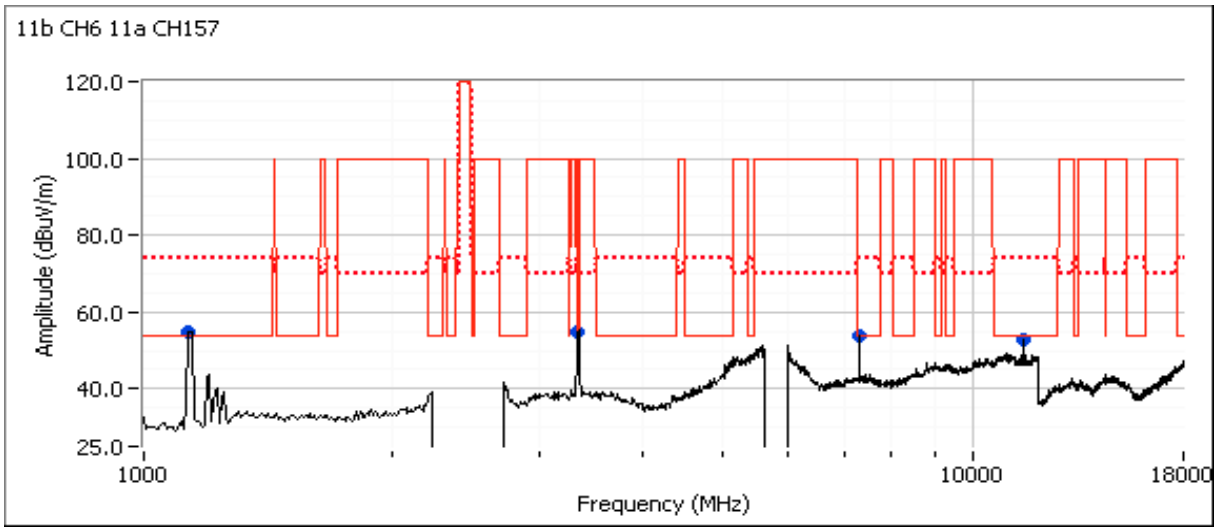
Run #1a: 30-1000MHz

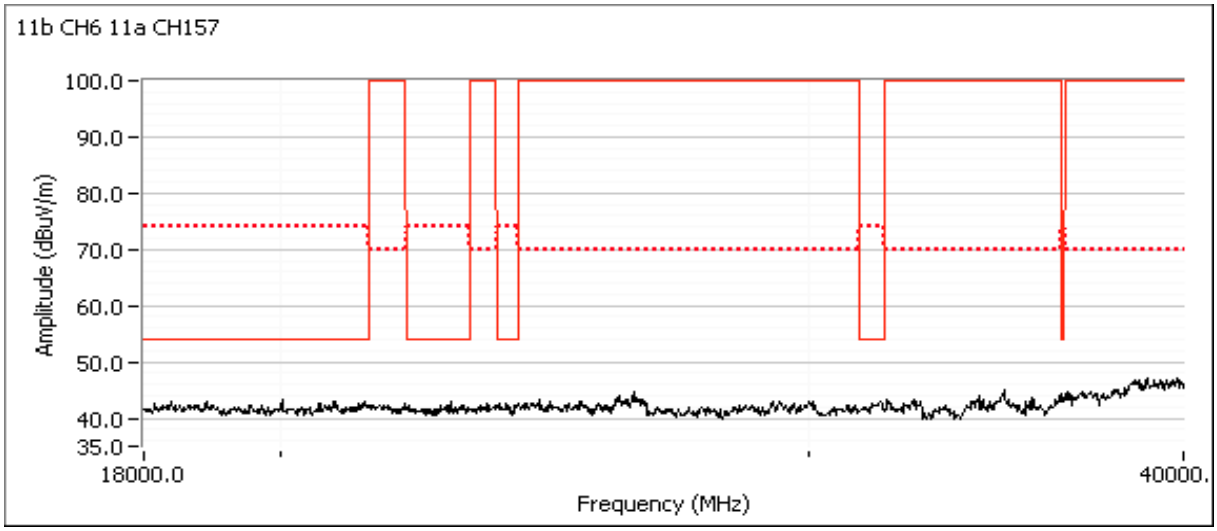
Frequency	Level	Pol	15.209 / 15.247 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
361.093	31.7	H	46.0	-14.3	QP	238	1.0	Restricted limit used
39.677	18.7	V	40.0	-21.3	QP	91	1.0	Restricted limit used
162.551	21.7	V	43.5	-21.8	QP	113	1.0	QP (1.00s)
47.798	23.4	V	40.0	-16.6	QP	292	1.0	Restricted limit used



Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Run #1b: 1000-40000MHz





EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	N/A

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7311.940	**52.9**	H	54.0	**-1.1**	Avg	342	1.1	RB 1 MHz;VB 3 kHz;Peak
7312.030	58.9	H	74.0	-15.1	PK	342	1.1	RB 1 MHz;VB 3 MHz;Peak
3338.610	51.4	V	54.0	-2.6	Avg	340	1.5	RB 1 MHz;VB 3 kHz;Peak
3338.620	62.0	V	74.0	-12.0	PK	340	1.5	RB 1 MHz;VB 3 MHz;Peak
3341.610	62.8	V	68.3	-5.5	PK	340	1.5	RB 1 MHz;VB 3 MHz;Peak
11571.730	48.1	V	54.0	-5.9	Avg	290	1.4	RB 1 MHz;VB 3 kHz;Peak
11572.400	59.5	V	74.0	-14.5	PK	290	1.4	RB 1 MHz;VB 3 MHz;Peak
1139.430								Non-radio related signal

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	B

Conducted Emissions

(NTS Silicon Valley, Fremont Facility, Semi-Anechoic Chamber)

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: 10/5/2016
Test Engineer: Kevin Wen
Test Location: Fremont Chamber #4

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

General Test Configuration

For tabletop equipment, the EUT was located on a table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80 cm from the LISN. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:

Temperature: 25 °C
Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	15.207	Pass	44.8 dBµV @ 0.151 MHz (-21.1 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

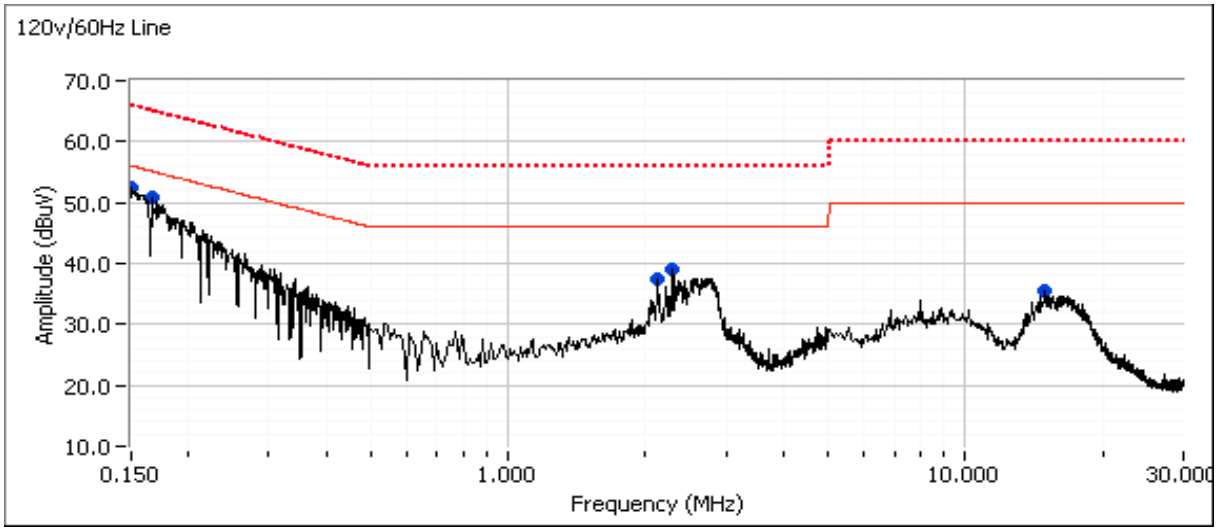
Sample S/N: 184795206016480
Driver: -
Antenna: 4x4 internal

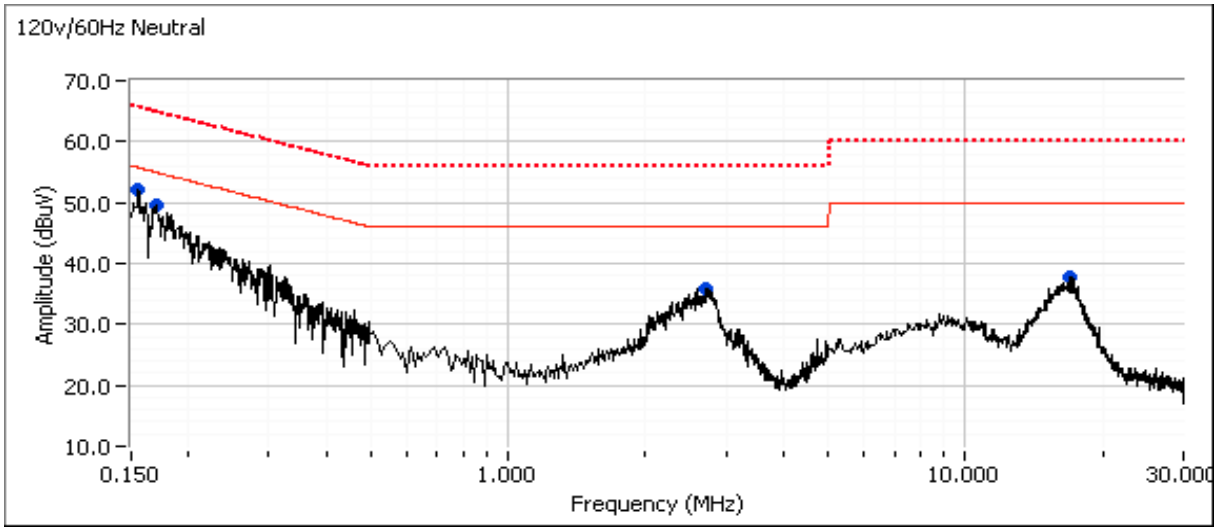
Channel:	6	Mode:	b	Power setting = 25.5
Tx Chain:	3Tx	Data Rate:	1Mbs	
Channel:	157	Mode:	a	Power setting = 23
Tx Chain:	4Tx	Data Rate:	6Mbs	

EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





EMC Test Data

Client:	Arris	Job Number:	JD102271
Model:	BGW210-700	T-Log Number:	T102846
		Project Manager:	Irene Rademacher
Contact:	Mark Rieger	Project Coordinator:	-
Standard:	FCC 15.B, 15.247, 15.407	Class:	B

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dBμV	AC Line	FCC 15.207 Limit	FCC 15.207 Margin	Detector QP/Ave	Comments
0.167	50.9	Line 1	55.1	-4.2	Peak	
0.150	52.3	Line 1	56.0	-3.7	Peak	
2.123	37.5	Line 1	46.0	-8.5	Peak	
2.295	39.0	Line 1	46.0	-7.0	Peak	
14.970	35.6	Line 1	50.0	-14.4	Peak	
0.156	52.2	Neutral	55.7	-3.5	Peak	
0.170	49.6	Neutral	54.9	-5.3	Peak	
2.718	36.0	Neutral	46.0	-10.0	Peak	
16.874	37.9	Neutral	50.0	-12.1	Peak	

Final quasi-peak and average readings

Frequency MHz	Level dBμV	AC Line	FCC 15.207 Limit	FCC 15.207 Margin	Detector QP/Ave	Comments
0.151	**44.8**	Line 1	65.9	**-21.1**	QP	QP (1.00s)
0.156	44.3	Neutral	65.7	-21.4	QP	QP (1.00s)
0.167	42.8	Line 1	65.1	-22.3	QP	QP (1.00s)
2.711	22.0	Neutral	46.0	-24.0	AVG	AVG (0.10s)
2.289	21.3	Line 1	46.0	-24.7	AVG	AVG (0.10s)
16.859	24.8	Neutral	50.0	-25.2	AVG	AVG (0.10s)
2.124	20.7	Line 1	46.0	-25.3	AVG	AVG (0.10s)
14.940	24.3	Line 1	50.0	-25.7	AVG	AVG (0.10s)
0.170	39.3	Neutral	65.0	-25.7	QP	QP (1.00s)
2.711	30.1	Neutral	56.0	-25.9	QP	QP (1.00s)
2.289	29.1	Line 1	56.0	-26.9	QP	QP (1.00s)
16.859	32.2	Neutral	60.0	-27.8	QP	QP (1.00s)
2.124	27.5	Line 1	56.0	-28.5	QP	QP (1.00s)
14.940	29.9	Line 1	60.0	-30.1	QP	QP (1.00s)
0.151	25.3	Line 1	55.9	-30.6	AVG	AVG (0.10s)
0.167	23.8	Line 1	55.1	-31.3	AVG	AVG (0.10s)
0.156	23.1	Neutral	55.7	-32.6	AVG	AVG (0.10s)
0.170	21.2	Neutral	55.0	-33.8	AVG	AVG (0.10s)

End of Report

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