

Electromagnetic Emissions Test Report

Application for Grant of Equipment Authorization pursuant to:

> FCC Part 15, Subpart C (15.247 – DTS) FCC Part 15, Subpart E (UNII) and

Industry Canada RSS 210 Issue 5 for an Intentional Radiator on the Atheros Communications, Inc. Model: AR5BXB6 802.11 a/b/g PCI Express Module

> FCC ID: PPD-AR5BXB6 UPN: 4105-AR5BCB6

GRANTEE: Atheros Communications, Inc.

529 Almanor

Sunnyvale, CA 94085

TEST SITE: Elliott Laboratories, Inc.

> 684 W. Maude Avenue Sunnyvale, CA 94086

REPORT DATE: June 29, 2005

FINAL TEST DATE: June 21, 2005

AUTHORIZED SIGNATORY:

Mark Briggs Principal Engineer



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DECLARATIONS OF COMPLIANCE

Equipment Name and Model:

AR5BXB6 802.11 a/b/g PCI Express Module

Manufacturer:

Atheros Communications, Inc. 529 Almanor Sunnyvale, CA 94085

Tested to applicable standards:

RSS-210, Issue 5, November 2001 (Low Power License-Exempt Radiocommunication

Devices)

FCC Part 15.247 (DTS)

FCC Part 15 E (UNII)

Measurement Facility Description Filed With Department of Industry:

Departmental Acknowledgement Number: IC2845 **SV1** Dated August 16, 2004 Departmental Acknowledgement Number: IC2845 **SV2** Dated August 16, 2004 Departmental Acknowledgement Number: IC2845 **SV3** Dated August 16, 2004

I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above mentioned departmental standards (through the use of ANSI C63.4:2003 as detailed in section 5.3 of RSS-210, Issue 5); and that the equipment performed in accordance with the data submitted in this report.

Signature

Name Mark Briggs

Title Principal Engineer

Company Elliott Laboratories Inc.
Address 684 W. Maude Ave

Sunnyvale, CA 94086

USA

Date: June 29, 2005

Maintenance of compliance with the above standards 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.).

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SCOPE

An electromagnetic emissions test has been performed on the Atheros Communications, Inc. model AR5BXB6 802.11 a/b/g PCI Express Module pursuant to Subpart C of Part 15 of FCC Rules for intentional radiators and RSS-210 Issue 5 for licence-exempt low power devices. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4:2003 as outlined in Elliott Laboratories test procedures.

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC 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.

The test results recorded herein are based on a single type test of the Atheros Communications, Inc. model AR5BXB6 802.11 a/b/g PCI Express Module and therefore apply only to the tested sample. The sample was selected and prepared by Michael Green of Atheros Communications, Inc.

OBJECTIVE

The primary objective of the manufacturer is compliance with Subparts C and E of Part 15 of FCC Rules and RSS-210 Issue 5 for license-exempt low power devices for the radiated and conducted emissions of intentional radiators. Certification of these devices is required as a prerequisite to marketing as defined in Part 2 the FCC Rules.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information to the FCC. The FCC issues a grant of equipment authorization upon successful completion of their 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.

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SUMMARY OF RESULTS

FCC 15.247 / RSS 210 6.2.2(o) – 2400 – 2483.5 MHz Band

FCC Part 15 Section	RSS 210 Section	Description	Measured Value	Comments	Result
15.247(a)	6.2.2(o)(b)	Digital Modulation	Systems uses OFDM and DSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	6.2.2(o)(b)	6dB Bandwidth	802.11b: 10.1 MHz 802.11g: 16.7 MHz Turbo: 32.0 MHz	Minimum allowed is 500kHz	Complies
	RSP 100	99% Bandwidth	802.11b: 15.8 MHz 802.11g: 17.5 MHz Turbo: 33.8 MHz	For information only	Complies
15.247 (b) (3)	6.2.2(o)(b)	Output Power, (Peak power measurement) 2400 - 2483.5 MHz	802.11b: 20.0 dBm 802.11g: 22.8 dBm Turbo: 22.6 dBm EIRP = 0.436 W	Multi-point applications: Maximum permitted is 1Watt, with EIRP limited to 4 Watts.	Complies
15.247(d)	6.2.2(o)(b)	Power Spectral Density	802.11b: -2.6dBm/3kHz 802.11g: -4.0dBm/3kHz Turbo: -6.6dBm/3kHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	6.2.2(o)(e1)	Antenna Port Spurious Emissions – 30MHz – 25 GHz	All spurious emissions < -20dBc	All spurious emissions < -20dBc.	Complies
15.247(c) / 15.209		Radiated Spurious Emissions –30MHz – 25 GHz	53.2dBuV/m (457.1uV/m) @ 2390.0MHz (-0.8dB)	Emissions in restricted bands must meet the radiated emissions limits detailed in 15.207. All others must be <-20dBc	Complies
	7.3, Table 3	Receiver Spurious Emissions –30MHz – 7.5 GHz	38.8dBuV/m (87.1uV/m)) @ 995.400 MHz (-15.2dB)	Used more stringent limit of FCC 15.209	Complies

Note: receive mode emissions below 1 GHz are representative of transmit mode emissions below 1GHz. Preliminary scans in an anechoic chamber of the emissions in transmit mode and receive mode on all operating channels showed no significant differences in the emissions from the EUT and host system's test fixture between the modes.

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FCC 15.247 / RSS 210 6.2.2(o) – 5725-5850 MHz Band	FCC 15.247	/ RSS 210 6.2.2(o)) – 5725-5850 MHz Band
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FUU 13.2477 K3		3723-3830 IVIAZ BAHU			
FCC Part 15 Section	RSS 210 Section	Description	Measured Value	Comments	Result
15.247(a)	6.2.2(o)(b)	Digital Modulation	Systems uses OFDM techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	6.2.2(o)(b)	6dB Bandwidth	802.11a: 16.5 MHz Turbo: 32.2 MHz	Minimum allowed is 500kHz	Complies
	RSP 100	99% Bandwidth	802.11a: 17.0 MHz Turbo: 33.5 MHz	For information only	Complies
15.247 (b) (3) 15.247	6.2.2(o)(b)	Output Power, (Peak power measurement) 5725 - 5850 MHz	802.11a: 21.5dBm EIRP = 0.48 W	Multi-point applications: Maximum permitted is 1Watt, with EIRP limited to 4 Watts.	Complies
15.247(d)	6.2.2(o)(b)	Power Spectral Density	802.11a: -5.5dBkHz Turbo: -7.4dBmHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	6.2.2(o)(e1)	Antenna Port Spurious Emissions – 30MHz – 40 GHz	All spurious emissions < -20dBc	All spurious emissions < -20dBc.	Complies
15.247(c) / 15.209		Radiated Spurious Emissions 30MHz – 40 GHz	51.8dBμV/m (387.7μV/m) @ 11649.0 MHz (-2.2dB)	Emissions in restricted bands subject to 15.207. All others must be < - 20dBc	Complies
	7.3, Table 3	Receiver Spurious Emissions 30MHz – 18 GHz	38.8dBuV/m (87.1uV/m)) @ 995.400 MHz (-15.2dB)	Used more stringent limit of LP0002	Complies

Note: receive mode emissions below 1 GHz are representative of transmit mode emissions below 1GHz. Preliminary scans in an anechoic chamber of the emissions in transmit mode and receive mode on all operating channels showed no significant differences in the emissions from the EUT and host system's test fixture between the modes.

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FCC Part 15 Section	RSS 210 Section	Description	Comments	Result
15.407(e)		Indoor operation only	The device is not designed for outdoor use and the user is instructed that the device is for indoor use only	COMPLIES
	6.2.2 q(iv)(b)	Peak Spectral Density	Peak power spectral density does not exceed the average by more than 6dB	COMPLIES
15.407(a)(6)		Peak Excursion Ratio	Peak to average excursion 11.7dB	COMPLIES
	6.2.2 q(iv)(c)	Channel Selection	The device was tested on the following channels: 5180, 5240, 5260 and 5320 MHz in 802.11a mode and 5200 and 5290 MHz in turbo mode. These channels represent the highest, lowest and center channels for 802.11a mode and both available turbo channels.	N/A
15.407 (c)	6.2.2 q(iv)(d)	Automatic Discontinuation of Operation in the absence of information to transmit	Operation is discontinued in the absence of information to transmit refer to page 4 of the operational description.	COMPLIES
15.407 (g)	6.2.2 q(iv)(e)	Frequency Stability	Frequency stability is better than 20 ppm, refer to page 4 of the operational description.	COMPLIES
15.407(a) (1)	6.2.2 q1 (i)	99% Bandwidth	17.0 MHz (802.11a) 34.0 MHz (turbo)	N/A
15.407(a) (2)	6.2.2 q1 (ii)	Min. 26dB Bandwidth	28.9 MHz (802.11a) 46.9 MHz (turbo)	N/A
Operation in th	ne 5.15 – 5.25 GH	z Band		
15.407(a) (1)	6.2.2 q1 (i)	Output Power (using DA-02-2138)	5150 - 5250: 16.1 dBm	COMPLIES
15.407(a) (1))	6.2.2 q1 (i)	Power Spectral Density	5150 - 5250: 4.0 dBm/MHz	COMPLIES
density of spuri	ous emissions in	the 5.15 – 5.25 GHz band (1) and RSS 210 6.2.2 q1 (i)	is restricted to indoor use only, therefore the were limited to the power spectral limits for i	
15.407(a) (2)	6.2.2 q1 (ii)	Output Power (using DA-02-2138)	5250 - 5350: 16.1dBm	COMPLIES
15.407(a) (2))	6.2.2 q1 (ii)	Power Spectral Density	5250 - 5350: 4.0 dBm/MHz	COMPLIES
Spurious Emis	sions			
15.407(b) (5) / 15.209	6.2.2 q1 (ii)	Antenna Port Spurious Emissions, 30MHz - 40GHz	All emissions less than -27dBm/MHz	COMPLIES
15.407(b) (5) / 15.209	6.2.2 q1 (ii)	Radiated Spurious Emissions below 1GHz	38.8dBuV/m (87.1uV/m)) @ 995.400 MHz (-15.2dB)	COMPLIES
15.407(b) (2)	6.2.2 q1 (ii)	Radiated Spurious Emissions 1 - 40GHz	53.7dBμV/m (485.8μV/m) @ 10638.7MHz (-1.8dB)	COMPLIES
	7.3, Table 3	Receiver Radiated Spurious Emissions 1 – 18 GHz	38.8dBuV/m (87.1uV/m)) @ 995.400 MHz (-15.2dB)	COMPLIES

Note: receive mode emissions below 1GHz are representative of transmit mode emissions below 1GHz. Preliminary scans in an anechoic chamber of the emissions in transmit mode and receive mode on all operating channels showed no significant differences in the emissions from the EUT and host system's test fixture between the modes.

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FCC and RSS 210 Requirements Common To All Operating Bands

FCC Part 15 Section	RSS 210 Section	Description	Measured Value	Comments	Result
15.207		AC Conducted Emissions	48.8dBuV @ 0.225MHz (-13.8dB)		Complies
	6.6	AC Conducted Emissions	29.8dBuV @ 17.82 MHz (-18.2dB)		Complies
15.247 (b) (5)		RF Exposure Requirements	Mobile device with separation distance >=20cm stated in manual	Minimum separation distance of 20cm is sufficient – supported in user manual(s)	Complies
15.203, 15.407 (d)		RF Connector	Antennas will be integrated into the host system	Antennas connect via a non-standard Hirose connector	Complies

MEASUREMENT UNCERTAINTIES

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

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
	0.15 (. 20	2.4
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	30 to 1000	± 3.6

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EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Atheros Communications, Inc. model AR5BXB6 802.11 a/b/g PCI Express Module is an 802.11a/b/g wireless adapter designed to connect to a PCI Express port of a PC. As the objective was to obtain a modular approval for the EUT the device was located on an extender card, outside of the host PC. The host PC and module were considered table-top equipment during testing to simulate the end-user environment. The EUT is powered via the host PCs PCI Express interface bus.

The sample was received on June 20, 2005 and tested between June 21 and June 29, 2005. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Atheros	AR5BXB6	802.11 abg PCI Express Module		

OTHER EUT DETAILS

The EUT's antennas connect to the device via a non-standard connector. The EUT has two antenna rf ports (aux and main) designed to provide spatial diversity. The antennas are designed to be installed above the display of the host laptop. Two different antennas were evaluated, as detailed below.

The radio utilizes a WNC W/N-S-1.13-300W- (2-2-1) & 300B-(2-2-1) Omni directional antenna, which has a maximum antenna gain of 3.6dBi (Including cable loss) at 2.4GHz band, and gain of 4.8dBi (Including cable loss) at 5.8GHz band. The radio also utilizes a WNC WN-S-1.37-300W- (2-2-1) & 300B-(2-2-1) Omni directional antenna, which has a maximum antenna gain of 5.6dBi (including cable loss) at 5.2GHz band. All other lower gain antennas of the same type that may be used with this module are listed in a separate document.

ENCLOSURE

The EUT does not have an enclosure. It does have a shield over the rf circuits.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with the emission specifications.

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SUPPORT EQUIPMENT

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

Manufacturer	Model	Description	Serial Number	FCC ID
IBM	Thinkpad S141-020	Laptop PC	AA-GHOWK	-

EUT INTERFACE PORTS

The EUT was connected into the PCI Express bus of the laptop via an extender card installed in the PC-Card slot of the IBM laptop.

EUT OPERATION DURING TESTING

The EUT was either in a continuous transmit mode (actually, a mode with a > 99% duty cycle referenced by the ART software as "Frame") or in a continuous receive mode. For transmit mode tests the data rate was set to 1Mb/s (802.11b), 6Mb/s (802.11g and 802.11a) or 12 Mb/s (turbo). These data rates produced the highest PSD in their respective modes.

Spurious emissions were measured using the highest gain antenna for the frequency band under test. Additional measurements at harmonics were made on the channel in each band with the highest emissions using the other antenna.

ANTENNA REQUIREMENTS

The antenna port is a non standard, Hirose connector, which meets the requirements of 15.203.

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TEST SITE

GENERAL INFORMATION

Final test measurements were taken on June 21, 2005at the Elliott Laboratories Open Area Test Site #1 & 2 located at 684 West Maude Avenue, Sunnyvale, California. The test site contains separate areas for radiated and conducted emissions testing. Pursuant to section 2.948 of the Rules, construction, calibration, and equipment data has been filed with the Federal Communications Commission. In accordance with Industry Canada rules detailed in RSS 210 Issue 5 and RSS-212, construction, calibration, and equipment data for the test sites have been filed with the Federal Communications Commission.

The FCC recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent FCC requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment. The test site is maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines.

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MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 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.

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.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde and Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

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

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

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POWER METER

A power meter and peak power sensor are used for all direct output power measurements from transmitters as they provide a broadband indication of the power output.

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 biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors programmed into the test receivers.

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.

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

INSTRUMENT CALIBRATION

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

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TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit.

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. 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. Emissions which have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

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CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements are performed 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.

Measurement bandwidths (video and resolution) are set in accordance with FCC procedures for the type of radio being tested.

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SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions from the AC power port are given in units of microvolts, the limits for radiated electric field emissions are given in units of microvolts per meter at a specified test distance and the output power limits are given in terms of Watts, milliwatts or dBm. 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.

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp) the following formula is used to determine the field strength limit in terms of microvolts per meter at a distance of 3m from the equipment under test:

$$E = \frac{1000000 \text{ v } 30 \text{ P}}{3} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

For reference, converting the voltage and electric field strength specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. Conversion of power specification limits from linear units (in milliwatts) to decibel form (in dBm) is accomplished by taking the base ten logarithm, then multiplying by 10.

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FCC 15.407 (a)and RSS 210 (o) OUTPUT POWER LIMITS

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

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 – 928	1 Watts (30 dBm)	8 dBm/3kHz
2400 - 2483.5	1 Watts (30 dBm)	8 dBm/3kHz
5725 – 5850	1 Watts (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 - 5850 MHz band are not subject to this restriction.

RSS 210 (o) AND FCC 15.247 SPURIOUS RADIATED EMISSIONS LIMITS

T limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands detailed in Part 15.205 and for all spurious emissions from the receiver are:

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

All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest inband signal level.

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FCC 15.205 AC POWER PORT CONDUCTED EMISSIONS LIMITS

The table below shows the limits for emissions on the AC power line as detailed in FCC Part 15.205.

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

RSS-210 SECTION 6.6 AC POWER PORT CONDUCTED EMISSIONS LIMITS

The table below shows the limits for emissions on the AC power line as detailed in Industry Canada RSS-210 section 6.6.

Frequency Range	Limit	Limit
(MHz)	(uV)	(dBuV)
0.450 to 30.000	250	48

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SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r = C$$

and

$$C - S = M$$

where:

 R_r = Receiver Reading in dBuV

C = Corrected Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

File: R60260 Page 19 of 20 pages

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, 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

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

File: R60260 Page 20 of 20 pages

EXHIBIT 1: Test Equipment Calibration Data

1 Page

File: R60260 Exhibit Page 1 of 2 Pages

Conducted Emissions - AC Power Ports	Conducted	Emissions -	- AC	Power	Ports
--------------------------------------	-----------	-------------	------	-------	--------------

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	Asset #	Cal Due
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	812	11-Feb-06
Fischer Custom Comm.	LISN, Freq. 0.9 -30 MHz,16 Amp	FCC-LISN-50/250-16-2	1079	01-Jul-05
Rohde & Schwarz	Test Receiver, 9kHz-2750MHz	ESCS 30	1337	12-Jan-06

Radiated Emissions, 30 - 40,000 MHz							
<u>Manufacturer</u>	<u>Description</u>	Model #	Asset #	Cal Due			
Elliott Laboratories	Tunable Dipole Antenna	(White)(30-60 MHz)	343	07-Apr-06			
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	26-Apr-06			
Hewlett Packard	EMC Spectrum Analyzer, 9KHz - 22GHz	8593EM	1319	28-Mar-06			
EMCO	Biconical Antenna, 30-300 MHz	3110B	1320	25-Aug-05			
EMCO	Log Periodic Antenna, 0.2-2 GHz	3148	1321	30-Mar-07			
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	23-May-06			
ETS-Lindgren	Horn Antenna, D. Ridge 1-18GHz	3117	1662	11-Apr-06			
Hewlett Packard	Microwave EMI test system, 1-26.5 GHz	84125B	1145	11-Jul-05			

Frequency range, Carrier Frequency, Power, 06-Jul-05					
<u>Manufacturer</u>	<u>Description</u>	Model #	Asset # Cal Due		
Rohde & Schwarz	Power Sensor 100uW - 10 Watts	NRV-Z53	1236 01-Mar-06		
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290 09-May-06		
Agilent	Spectrum analyzer, 9kHz - 26 GHz	8563E	WC 1033 17-Feb-06		

EXHIBIT 2: Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T60077 70 Pages

Elliot	t	EM	C Test Data
Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express	T-Log Number:	T60077
	Module	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Emissions Spec:	FCC 15E,15.247	Class:	n/a
Immunity Spec:	-	Environment:	n/a

EMC Test Data

For The

Atheros

Model

AR5BXB6 802.11 a/b/g PCI Express Module

Date of Last Test: 7/6/2005



EMC Test Data

Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express	T-Log Number:	T60077
	Module	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Emissions Spec:	FCC 15E,15.247	Class:	n/a
Immunity Spec:	-	Environment:	n/a

EUT INFORMATION

General Description

The EUT is an 802.11a/b/g wireless adapter designed to connect to a PCI Express port of a PC. As the objective was to obtain a modular approval for the EUT the device was located on an extender card, outside of the host PC. Additional digital device emissions tests were performed with the EUT installed inside a host PC. The host PC was, therefore, treated as tabletop equipment during testing to simulate the end-user environment. The EUT is powered via the host PCs PCI Express interface bus.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Atheros	AR5BXB6	802.11 abg/USB adapter	Prototype	-
Atheros	AR5BXB6	802.11 abg/USB adapter	Prototype	-

EUT Antenna

The EUT's antennas connect to the device via a non-standard (Hirose) connector. The EUT has two antenna rf ports (aux and main) designed to provide spatial diversity. The antennas are designed to be installed above the display of the host laptop. Two different antennas were evaluated, as detailed below.

The radio was tested with:

WNC W/N-S-1.13-300W-(2-2-1) & 300B-(2-2-1) Omnidirectional antenna, which has a maximum antenna gain of 3.6dBi (including cable loss) at 2.4GHz, and a gain of 4.8dBi (including cable loss) at 5.8GHz;

WNC WN-S-1.37-300W-(2-2-1) & 300B-(2-2-1) Omnidirectional antenna, which has a maximum antenna gain of 5.6dBi (including cable loss) at 5.2GHz.

All other lower gain antennas of the same type that may be used with this module are listed in a separate document.

EUT Enclosure

The EUT does not have an enclosure. It does have a shield over the rf circuits.

Modification History

Mod.#	Test	Date	Modification
1	-	-	-

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

Elliot	t	ЕМ	C Test Data
Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express	T-Log Number:	T60077
	Module	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Emissions Spec:	FCC 15E,15.247	Class:	n/a
Immunity Spec:	-	Environment:	n/a

Test Configuration #1

Local Support Equipment

		<u> </u>		
Manufacturer	Model	Description	Serial Number	FCC ID
IBM		Laptop		DoC

Interface Cabling and Ports

Port	Connected To		Cable(s)	
FUIL	Connected To	Description	Shielded or Unshielded	Length(m)
None				

EUT connected to the host system via an extender card installed in the top PCCard slot. The EUT was tested outside of a host system as it is being tested to obtain a modular approval for the FCC.

EUT Operation During Emissions Tests

During testing the device was transmitting continuously or in a continuous receive mode on the channel specified. For transmit-mode tests the data rates were set to 1Mb/s for 802.11b mode, 6Mb/s for 802.11a mode and 12Mb/s for turbo mode.

Elliott	EMC Test Data
Client: Atheros	Job Number: J59977
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077
Wodel. ARSBABO 602.11 a/b/g PCI Express Wodule	Account Manager: Joe Rohlfes
Contact: Michael Green	
Spec: FCC 15E,15.247	Class: n/a

Conducted Emissions - Power Ports

Test Specifics

COT 111: 44

Spec: FCC 15E,15.247

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

specification listed above.

Date of Test: 4/20/2005 Config. Used: 1 Test Engineer: Mehran Birgani Config Change: None Test Location: SVOATS #2 EUT Voltage: Host System

General Test Configuration

The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment.

Ambient Conditions: Temperature: 20 °C

> Rel. Humidity: 58 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 230V/50Hz	EN55022 Class B	Pass	40.7dBµV @ 22.025MHz (-9.3dB)
2	CE, AC Power,120V/60Hz	EN55022 Class B	Pass	48.8dBµV @ 0.225MHz (-13.8dB)
3	CE, AC Power,120V/60Hz	RSS 210	Pass	48.8dBµV @ 0.225MHz (-13.8dB)

AC conducted emissions were independent of operating frequency and mode, therefore all final measurements made with the EUT operating at 5320 MHz.

Modifications Made During Testing:

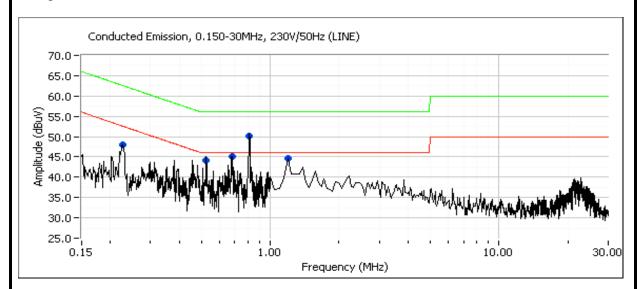
No modifications were made to the EUT during testing

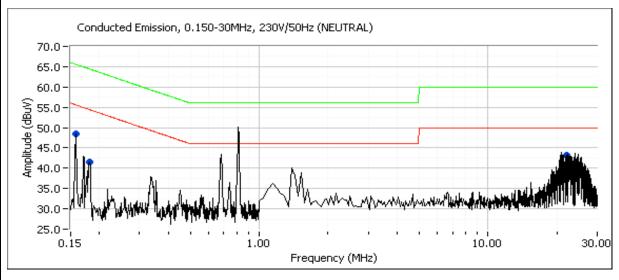
Deviations From The Standard

No deviations were made from the requirements of the standard.

Elliott	EMC Test Data
Client: Atheros	Job Number: J59977
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077
Wodel. ARSBADO 602.11 a/b/g FCI Expless Wodule	Account Manager: Joe Rohlfes
Contact: Michael Green	
Spec: FCC 15E,15.247	Class: n/a

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz





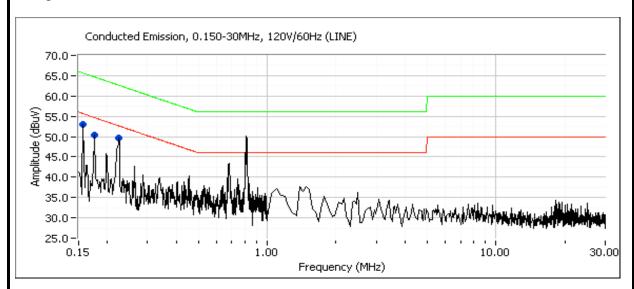
EMC Test Data Client: Atheros Job Number: J59977 Model: AR5BXB6 802.11 a/b/g PCI Express Module T-Log Number: T60077 Account Manager: Joe Rohlfes Contact: Michael Green Class: n/a

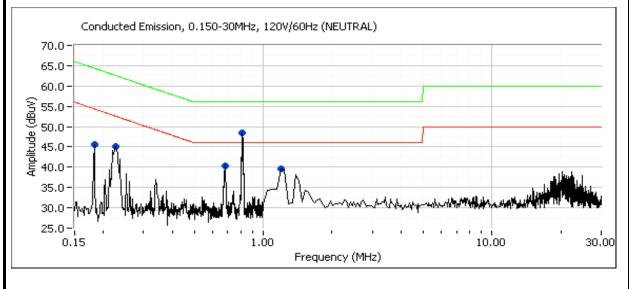
Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz

Frequency	Level	AC	EN55022	2 Class B	Detector	Comments
MHz	$\text{dB}\mu\text{V}$	Line	Limit	Margin	QP/Ave	
22.025	40.7	Neutral	50.0	-9.3	Average	
0.225	45.2	Line	62.6	-17.4	QP	
22.025	42.4	Neutral	60.0	-17.6	QP	
0.223	40.8	Neutral	62.7	-21.9	QP	
0.223	29.1	Neutral	52.7	-23.6	Average	
0.225	28.5	Line	52.6	-24.1	Average	
0.561	18.5	Line	46.0	-27.5	Average	
0.561	26.6	Line	56.0	-29.4	QP	
0.813	43.0	Line	56.0	-13.0	QP	Ambient
0.813	39.6	Line	46.0	-6.4	Average	Ambient
0.680	42.4	Line	56.0	-13.6	QP	Ambient
0.680	39.1	Line	46.0	-6.9	Average	Ambient
1.168	40.5	Line	56.0	-15.5	QP	Ambient
1.168	35.9	Line	46.0	-10.1	Average	Ambient

Elliott	EMC Test Data
Client: Atheros	Job Number: J59977
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077
Wodel. ARSBADO 602.11 a/b/g FCI Expless Wodule	Account Manager: Joe Rohlfes
Contact: Michael Green	
Spec: FCC 15E,15.247	Class: n/a

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





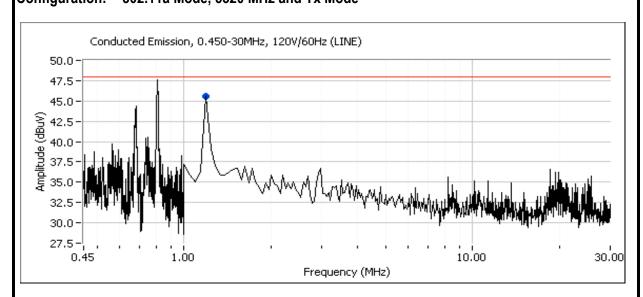
Client: Atheros Job Number: J59977 Model: AR5BXB6 802.11 a/b/g PCI Express Module T-Log Number: T60077 Contact: Michael Green Joe Rohlfes Spec: FCC 15E,15.247 Class: n/a

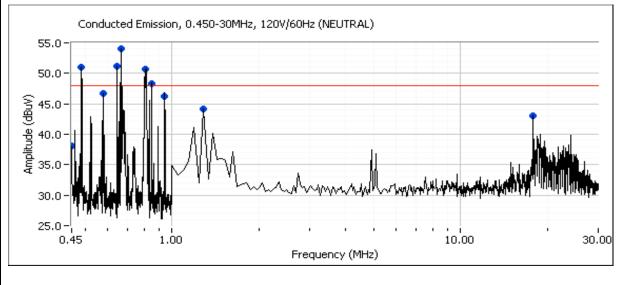
Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

Frequency	Level	AC	EN55022	2 Class B	Detector	Comments
MHz	$\text{dB}\mu\text{V}$	Line	Limit	Margin	QP/Ave	
0.225	48.8	Line	62.6	-13.8	QP	
0.225	34.5	Line	52.6	-18.1	Average	
0.227	43.2	Neutral	62.6	-19.4	QP	
0.227	31.4	Neutral	52.6	-21.2	Average	
0.157	42.6	Line	65.6	-23.0	QP	
0.176	40.1	Line	64.7	-24.6	QP	
0.181	34.8	Neutral	64.4	-29.6	QP	
0.668	13.6	Neutral	46.0	-32.4	Average	
0.668	19.1	Neutral	56.0	-36.9	QP	
0.176	11.2	Line	54.7	-43.5	Average	
0.157	12.0	Line	55.6	-43.6	Average	
0.181	6.5	Neutral	54.4	-47.9	Average	

Elliott	EMC Test Data
Client: Atheros	Job Number: J59977
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077
Wodel. ARSBADO 602.11 a/b/g PCI Express Woddie	Account Manager: Joe Rohlfes
Contact: Michael Green	
Spec: FCC 15E,15.247	Class: n/a

Run #3: AC Power Port Conducted Emissions, 0.45 - 30MHz, 120V/60Hz Configuration: 802.11a Mode, 5320 MHz and Tx Mode





Client: Atheros Job Number: J59977 Model: AR5BXB6 802.11 a/b/g PCI Express Module T-Log Number: T60077 Contact: Michael Green Joe Rohlfes Spec: FCC 15E,15.247 Class: n/a

Run #3: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

Frequency	Level	AC	RSS	210	Detector	Comments
MHz	$dB\mu V$	Line	Limit	Margin	QP/Ave	
17.820	29.8	Neutral	48.0	-18.2	QP	
0.450	28.4	Line	48.0	-19.6	QP	
0.450	26.6	Neutral	48.0	-21.4	QP	
0.559	24.3	Line	48.0	-23.7	QP	
0.563	24.3	Neutral	48.0	-23.7	QP	
0.677	16.5	Neutral	48.0	-31.5	QP	
0.487	15.0	Neutral	48.0	-33.0	QP	
1.238	12.3	Line	48.0	-35.7	QP	
1.290	10.6	Neutral	48.0	-37.4	QP	
0.648	9.4	Neutral	48.0	-38.6	QP	
0.943	8.0	Neutral	48.0	-40.0	QP	
0.808	45.0	Neutral	48.0	-3.0	QP	Ambient

Elliott	EMC Test Data
Client: Atheros	Job Number: J59977
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077
Middel. ARSBABO 602.11 a/b/g PCI Express Middle	Account Manager: Joe Rohlfes
Contact: Michael Green	
Spec: FCC 15E,15.247	Class: n/a

Radiated Emissions - Receiver

Test Specifics

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: 6/20/2005 Config. Used: 1

Test Engineer: Mehran Birgani Config Change: None

Test Location: SVOATS #1 EUT Voltage: 120V/60Hz

General Test Configuration

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

The test distance and extrapolation factor (if used) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Note, for testing above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Ambient Conditions: Temperature: 22 °C

Rel. Humidity: 44 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
	RE, 1000 - 18000 MHz,			30.1dBµV/m
1	Maximized Emissions	RSS 210	Pass	(31.9µV/m) @
	Waxiiilized Eiilissiolis			1196.2MHz (-23.9dB)
	RE, 30 - 1000 MHz, Maximized			38.8dBµV/m
2	, , , , , , , , , , , , , , , , , , ,	RSS 210	Pass	(87.1µV/m) @
	Emissions			995.400MHz (-15.2dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Atheros Model: AR5BXB6 802.11

EMC Test Data

Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
Model.	ANDBABO 002.11 a/b/g FCI Express inlocute	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

Run #1: Maximized readings, 1000 - 40000 MHz: Receive Mode

Date of Test: 6/20/2005 Config. Used: #1
Test Engineer: Mehran Birgani Config Change: -

Test Location: SVOATS #1 EUT Voltage: 120V/60Hz

Frequency	Level	Pol	RSS	210	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1196.230	30.1	V	54.0	-23.9	Avg	104	1.7	
1196.230	29.9	Н	54.0	-24.1	Avg	233	2.1	
2490.030	29.9	Н	54.0	-24.1	Avg	327	2.3	
2490.030	29.3	V	54.0	-24.7	Avg	196	1.0	
4997.780	28.5	Н	54.0	-25.5	Avg	73	1.0	
4997.780	47.5	Н	74.0	-26.5	Pk	233	2.1	
1199.963	26.5	V	54.0	-27.5	Avg	130	2.2	
1199.963	45.8	V	74.0	-28.2	Pk	130	2.2	
2491.920	45.2	V	74.0	-28.8	Pk	104	1.7	
2491.920	45.1	V	74.0	-28.9	Pk	196	1.0	
4991.365	45.0	Н	74.0	-29.0	Pk	327	2.3	
4991.365	41.6	Н	74.0	-32.4	Pk	73	1.0	

Note 1:	No other signals observed within 20dB of the limit line. Signals above were independent of receive channel. The
	measurements above were made with the device operating in receive mode on the center channel in the 2.4 GHz
	band. The device was scanned operating on the top/bottom channels in the 2.4 GHz band and the 5GHz bands. No
	other significant emissions were observed on these channels.

Note 2: Limit used is the FCC 15.209 limit which is more stringent than the RSS 210 limit

Elliott

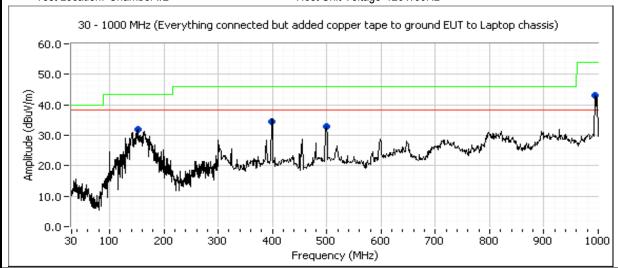
EMC Test Data

Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
	ANDBABO 002.11 a/b/g FCI Express inlocute	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

Run #2: Preliminary Radiated Emissions, 30-1000 MHz

Date of Test: 6/22/2005 Config. Used: #1
Test Engineer: Juan Martinez Config Change: -

Test Location: Chamber #2 Host Unit Voltage 120V/60Hz



Frequency	Level	Pol	FCC B		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
151.500	31.9	V	43.5	-11.6	Peak	360	1.7	
399.167	34.5	Н	46.0	-11.5	Peak	181	1.7	
499.500	33.0	Н	46.0	-13.0	Peak	31	1.7	
994.167	43.0	V	54.0	-11.1	Peak	269	1.7	

Maximized Readings from Run #2

Date of Test: 6/24/2005 Config. Used: #1
Test Engineer: Rafael Varelas Config Change: -

Test Location: SVOATS #2 Host Unit Voltage 120V/60Hz

Level	Pol	FCC B		Detector	Azimuth	Height	Comments
dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
38.8	V	54.0	-15.2	QP	320	1.0	
27.3	V	43.5	-16.2	QP	297	1.0	Broadband
28.3	Н	46.0	-17.7	QP	210	1.0	
23.2	Н	46.0	-22.8	QP	15	1.6	
	dBμV/m 38.8 27.3 28.3	dBμV/m v/h 38.8 V 27.3 V 28.3 H	dBμV/m v/h Limit 38.8 V 54.0 27.3 V 43.5 28.3 H 46.0	dBμV/m v/h Limit Margin 38.8 V 54.0 -15.2 27.3 V 43.5 -16.2 28.3 H 46.0 -17.7	dBμV/m v/h Limit Margin Pk/QP/Avg 38.8 V 54.0 -15.2 QP 27.3 V 43.5 -16.2 QP 28.3 H 46.0 -17.7 QP	dBμV/m v/h Limit Margin Pk/QP/Avg degrees 38.8 V 54.0 -15.2 QP 320 27.3 V 43.5 -16.2 QP 297 28.3 H 46.0 -17.7 QP 210	dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 38.8 V 54.0 -15.2 QP 320 1.0 27.3 V 43.5 -16.2 QP 297 1.0 28.3 H 46.0 -17.7 QP 210 1.0

C	Elliott	EMC Test Data			
Client:	Atheros	Job Number:	J59977		
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077		
iviodei.	ANJBABO 002.11 arb/g FCI Express Module	Account Manager:	Joe Rohlfes		
Contact:	Michael Green				
Spec:	FCC 15E,15.247	Class:	N/A		

FCC 15.247 DTS - Power, Bandwidth and Spurious Emissions

Test Specifics

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: 6/21/2005 Config. Used: 1

Test Engineer: Mehran Birgani Config Change: None

Test Location: SVOATS #1 Host Unit Voltage 120V/60Hz

General Test Configuration

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

Ambient Conditions: Temperature: 20 °C

Rel. Humidity: 45 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail)
1	Antenna Port Spurious Emissions 30 - 25000 MHz	FCC Part 15.209 / 15.247(c)	Pass	All emissions more than 20dB below in-band level
2	Bandwidth (802.11b)	15.247(a)	Pass	6dB: 10.1 MHz 99%: 15.8 MHz
2	Bandwidth (802.11g)	15.247(a)	Pass	6dB: 16.7 MHz 99%: 17.5 MHz
2	Bandwidth (Turbo)	15.247(a)	Pass	6dB: 32.0 MHz 99%: 33.8 MHz
3	Output Power (802.11b)	15.247(b)	Pass	20dBm (0.10W)
3	Output Power (802.11g)	15.247(b)	Pass	22.8dBm (0.19W)
3	Output Power (Turbo)	15.247(b)	Pass	22.6dBm (0.18W)
4	Power Spectral Density (PSD)	15.247(d)	Pass	.11b: -2.6dBm/3kHz .11g: -4.0dBm/3kHz Turbo: -6.6dBm/3kHz

Modifications Made During Testing:

No modifications were made to the EUT during testing

EMC Test Data

-			
Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
woder.	ARSBABO 602.11 a/b/g FCI Expless Woudle	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

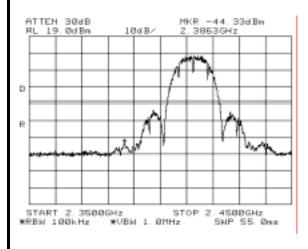
Deviations From The Standard

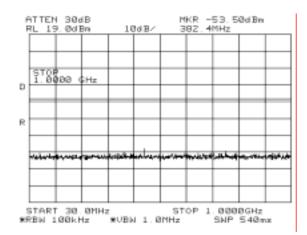
No deviations were made from the requirements of the standard.

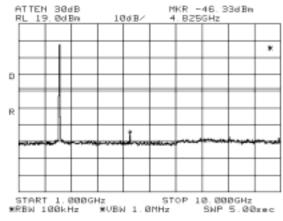
Run #1 Antenna Conducted Spurious Emissions, 30 - 25000 MHz.

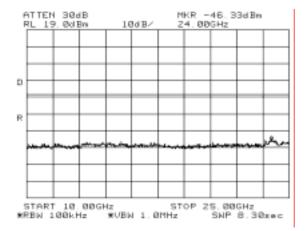
Refer to plots below. Scans made using RBW=VB=100 KHz with the limit line set at 20dB below the highest in-band signal level

Run #1a, 2412 MHz, 802.11b









Elliott EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1b, 2437 MHz, 802.11b ATTEN 30dB RL 19.0dBn ATTEN 30dB RL 19.0dBm 10dB/ STOP 2.47500GHz Hz SNP 50.0mx STOP 1.0000GHz tz SNP 540mx START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz START Z. 40000GHz ∗VBW 1.8MHz *RBW 100kHz ATTEN 30dB RL 19.0dBm MKR -45.83dBm 4.87ØGHz ATTEN 30dB RL 19.0dBm MKR -45.83dBm 24.85GHz 10dB/ 18dB/ START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 18.8886Hz Hz SNP 5.88zec START 10.00GHz *RBW 100kHz ** STOP 25.00GHz ¥UBW 1.0MHz SNP 8.30xec

EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1c, 2462 MHz, 802.11b ATTEN 30dB RL 19.0dBm MKR -54.17dBm 785.0MHz ATTEN 30dB RL 19.0dBm MKR -47.33dBm 2.48448GHz 10dB/ START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP 1.0000GHz Hz SNP 540mx START 2.438886Hz STOP 2.588886Hz *RBW 188kHz *VBW 1.8MHz SNP 58.0mx ATTEN 30dB RL 19.0dBm MKR -45.17dBm 4.930GHz ATTEN 30dB RL 19.0dBm MKR -45.17dBm 10dB/ 10dB/ 21.10GHz START 1.000GHz SUBW 1.0MHz START 18.88GHz START 18.88GHz *98kHz *VBW 1.8MHz STOP 25.00GHz Hz SNP 8.30xec STOP 10.000GHz Hz SNP 5.00xec ₩RBW 100kHz *RBW 100kHz

EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1d, 2412 MHz, 802.11g MKR -52.67dBm 340.4MHz ATTEN 30dB RL 19.0dBm MKR -32.83dBm 2.3900GHz 10dB/ RL 19.0dBn D R START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP 1.8888GHz Hz SNP 548mx START Z. 3500GHz STOP Z. 4750GHz *RBW 100kHz *VBW 1. 0MHz SNP 69. 0mz ATTEN 30dB RL 19.0dBm MKR -52.67dBm 3.880GHz ATTEN 30dB RL 19.0dBm MKR -46.17dBm 23.93GHz 10dB/ 10dB/ START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 10.000GHz Hz SNP 5.00xec START 10.00GHz ST *RBW 100kHz *VBW 1.0MHz STOP 25.00GHz Hz SNP 8.30xec

EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1e, 2437 MHz, 802.11g ATTEN 30dB RL 19.0dBm MKR -52.33dBm 110.8MHz ATTEN 30dB RL 19.0dBn MKR -50.83dBm 2.3900GHz 10dB/ 10dB/ إناطالها D D STOP 1.0000GHz Hz SNP 540mx START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz START Z.3888GHz ST *RBW 188kHz *VBW 1.8MHz STOP 2.5000GHz Hz SNP 66.0mm MKR -51.50dBm 1.750GHz ATTEN 30dB RL 19.0dBm ATTEN 30dB MKR -45.67dBm 10dB/ 10dB/ 24.10GHz D START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 10.000GHz dz SNP 5.00zec START 18.88GHz STOP 25.88GHz *RBW 188kHz *VBW 1.8MHz SWP 8.38zec

EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1f, 2462 MHz, 802.11g ATTEN 30dB RL 19.0dBm MKR -30.00dBm 2.48350GHz MKR -53.33dBm 786.6MHz ATTEN 30dB RL 19.0dBm 10dB/ 10dB/ D START Z. 42500GHz ST *RBW 100kHz *VBW 1.0MHz STOP 2.50000GHz Hz SNP 50.0mx START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP 1.88886Hz SNP 540mx ATTEN 30dB RL 19.0dBm MKR -51.17dBm 8.020GHz ATTEN 30dB RL 19.0dBm MKR -45.67dBm 23.98GHz 10dB/ 10dB/ START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 10.000GHz START 18.88GHz STOP 25.88GHz *RBW 188kHz *VBW 1.8MHz SWP 8.30xec

EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1g, 2437 MHz, Turbo ATTEN 30dB RL 19.0dBm MKR -53.67dBm 999.999909HHz ATTEN 30dB RL 19.0dBm MKR -43.17dBm 10dB/ 10dB/ Z.3900GHz D D STOP 1.00000000GHz Hz SNP 50.0mx START 999,9999MHz ST *RBW 100kHz *VBW 1.0MHz STOP 2.495ØGHz Hz SNP 63.@nex START Z. 3888GHz ST *RBW 188kHz *VBW 1. 8MHz MKR -52.17dBm 1.780GHz ATTEN 30dB RL 19.0dBm ATTEN 30dB RL 19.0dBm MKR -50.17dBm 10dB/ 10dB/ 11.30GHz * D STOP 25.00GHz Hz SNP 8.30xec START 18.88GHz ST *RBW 188kHz *VBW 1.8MHz START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 10.000GHz Hz SNP 5.00xec

EMC Test Data

Client:	Atheros	Job Number:	J59977
Madal	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
iviodei.	ARSBABO 602.11 a/b/g FCI Expless Woudle	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Run #2: Signal Bandwidth

Channel	Mode	Resolution	6dB Signal Bandwidth	99% Signal Bandwidth
Channer	Mode	Bandwidth	(MHz)	(MHz)
2412	802.11b	100kHz	10.1	15.9
2437	802.11b	100kHz	10.1	15.9
2462	802.11b	100kHz	10.1	15.8
2412	802.11g	100kHz	16.7	17.6
2437	802.11g	100kHz	16.7	17.5
2462	802.11g	100kHz	16.7	17.5
2437	Turbo	100kHz	32.0	33.8

Run #3: Output Power

Maximum antenna gain: 3.62 dBi (Highest Gain antenna is EBJ Aux in this band)

EUT power setting at 19 for 802.11g and turbo modes, 20 for 802.11b mode

. oourng ar	10 101 00=11 19 01110 0		,		
Channel	Mode	Res BW	Output Power (dBm)	Output Power (W)	EIRP (W)
2412	802.11b	n/a	20.0	0.100	0.230
2437	802.11b	n/a	20.0	0.100	0.230
2462	802.11b	n/a	20.0	0.100	0.230
2412	802.11g	n/a	22.8	0.191	0.439
2437	802.11g	n/a	22.6	0.182	0.419
2462	802.11g	n/a	22.6	0.182	0.419
2437	Turbo	n/a	22.6	0.182	0.419

Note 1: Output power measured using a peak power meter.

Run #4: Power Spectral Density

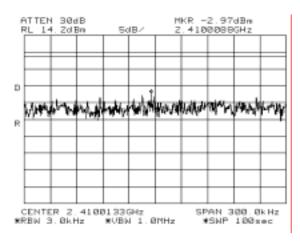
Channel	Mode	Freq. (MHz)	P.S.D. (averaged over 1 second in a 3kHz bandwidth) dBm	Limit	Result
2412	802.11b	2410.00	-3.0	8.0	Pass
2437	802.11b	2436.83	-2.6	8.0	Pass
2462	802.11b	2461.20	-3.6	8.0	Pass
2412	802.11g	2407.00	-4.0	8.0	Pass
2437	802.11g	2438.23	-4.8	8.0	Pass
2462	802.11g	2457.96	-6.0	8.0	Pass
2437	Turbo	2437.00	-6.6	8.0	Pass

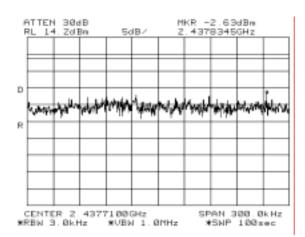
Power spectral density plots on following pages ...

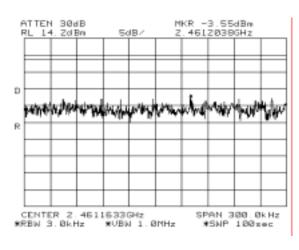
EMC Test Data

-			
Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
woder:	ARSBABO 602.11 a/b/g FCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Plots for 802.11b mode







EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Plots for 802.11g mode ATTEN 30dB RL 14. ZdBm MKR -3.97dBm Z.4069963GHz MKR -4.80dBm 2.4382279GHz ATTEN 30dB SdB/ SdB/ D D mare war war of CENTER 2.4869983GHz *RBW 3.8kHz *VBW 1.8MHz SPAN 300.0kHz *SNP 100zec CENTER 2.4382283GHz *RBW 3.8kHz *VBW 1.8MHz SPAN 388.8kHz *SNP 188zec MKR -5.97dBm Z.4579615GHz ATTEN 30dB SdB/ wholeywood CENTER 2.4578758GHz *RBW 3.8kHz *VBW 1.8MHz SPAN 300.0kHz *SNP 100zec Plots for 802.11g Turbo mode ATTEN 30dB RL 14. ZdBm MKR -6.63dBm 4369963GHz Ď R CENTER 2.4369968GHz *RBW 3.8kHz *VBW 1.8NHz SPAN 300.0kHz *SNP 100zec

Elliott	EMC Test Data			
Client: Atheros	Job Number: J59977			
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077			
Woder. ARSBABO 602.11 a/b/g PCI Express Woddie	Account Manager: Joe Rohlfes			
Contact: Michael Green				
Spec: FCC 15E,15.247	Class: N/A			

Radiated Emissions 1 - 26 GHz (Transmit Mode) EUT Operating in the 2.4GHz Band FCC 15.247

Test Specifics

The objective of this test session is to perform engineering evaluation testing of the EUT with respect to Objective:

the specification listed above.

Date of Test: 6/16/2005 - 6/21/2005 Config. Used: #1

Test Engineer: Varelas, Birgani, Briggs Config Change: None

Test Location: SVOATS #2, #1 Host Unit Voltage 120V/60Hz

General Test Configuration

The EUT and host laptop were located on the turntable for radiated spurious emissions testing. The EUT was controlled via ART software that set the EUT to transmit continuously at target power of 19 and 20, 1Mb/s for 802.11b mode and 6Mb/s for 802.11a and 802.11g modes.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless stated otherwise.

Ambient Conditions: Temperature: 16 °C

Rel. Humidity: 80 %

Summary of Results

Run #	Run # Test Performed		Pass / Fail	Result / Margin
1a - c (EUT @ 2412, 2437, 2462)	· · · · · · · · · · · · · · · · · · ·		Pass	52.5dBµV/m (422.7µV/m) @ 4824.1MHz (-1.5dB)
2a - c (EUT @ 2412, 2437, 2462)	802.11g Fundamental and Spurious Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	Pass	53.2dBµV/m (457.1µV/m) @ 2390.0MHz (-0.8dB)
3	Turbo Mode Fundamental and band edges	FCC Part 15.209 / 15.247(c)	Pass	47.6dBμV/m (239.9μV/m) @ 2390.0MHz (-6.4dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the standard.



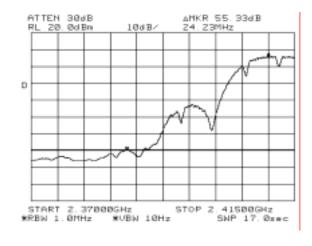
EMC Test Data

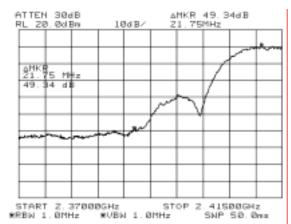
Client:	Atheros	Job Number:	J59977
Madali	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
wodei.	ARSBABO 602.11 a/b/g FCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Run #1: 802.11b Mode with Wistron EBJ Aux Antenna (Highest gain antenna in 2.4GHz Band)

Run #1a: Radiated Spurious Emissions. Low Channel @ 2412 MHz 802.11b (1Mb/s) 802.11b Mode Power level setting = 20 (target power in ART)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2411.460	101.8	Н	-	-	AVG	196	1.2	Fundamental
2411.460	104.8	Н	-	-	PK	196	1.2	Fundamental
2411.275	90.5	V	-	-	AVG	205	1.0	Fundamental
2411.275	93.7	V	-	-	PK	205	1.0	Fundamental





Method 1, band edge marker delta

Delta Marker - Peak	49.30 dB	RB = VB= 1MHz
Delta Marker - Average	55.30 dB	RB=1MHz, VB = 10Hz

Band Edge Signal Radiated 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	
2386.350	46.5	V	54.0	-7.5	Avg	235	1.1	
2389.700	55.5	V	74.0	-18.5	Pk	235	1.1	

Client:	Elli(Atheros						Job Number: J59977	
								og Number: T60077
Model:	AR5BXB6	802.11	a/b/g PCIE	express Mo	dule			int Manager: Joe Rohlfes
Contact:	Michael G	reen						
	FCC 15E,							Class: N/A
			Fmission	s Low Ch	annel @ 241:	2 MHz 802 1	1b (1Mb/s)	802.11b Mode
Spurious F		-		J. 2011 C.I.			(
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.02	51.1	V	54.0	-2.9	AVG	343	1.0	
4823.885	50.6	Н	54.0	-3.5	AVG	84	1.6	
14470.61	43.1	V	54.0	-10.9	AVG	37	1.9	Noise Floor
14471.08	42.6	Н	54.0	-11.4	AVG	152	1.0	Noise Floor
9647.635	40.0	Н	54.0	-14.0	AVG	39	1.0	Noise Floor
9646.93	39.4	V	54.0	-14.6	AVG	195	1.0	Noise Floor
12059.50	39.0	V	54.0	-15.0	AVG	77	1.5	Noise Floor
12059.49	38.9	Н	54.0	-15.1	AVG	58	1.1	Noise Floor
14470.61	54.5	V	74.0	-19.5	PK	37	1.9	Noise Floor
4823.885	54.3	Н	74.0	-19.7	PK	84	1.6	
4824.02	54.2	V	74.0	-19.8	PK	343	1.0	
14471.08	54.0	Н	74.0	-20.0	PK	152	1.0	Noise Floor
7237.800	51.2	Н	72.9	-21.7	AVG	107	1.8	Non-restricted
9646.93	51.6	V	74.0	-22.4	PK	195	1.0	Noise Floor
9647.635	51.6	Н	74.0	-22.4	PK	39	1.0	Noise Floor
12059.49	50.8	Н	74.0	-23.2	PK	58	1.1	Noise Floor
12059.50	50.3	V	74.0	-23.7	PK	77	1.5	Noise Floor
7236.75	44.2	V	72.9	-28.7	AVG	300	1.0	Non-restricted
7237.800	57.0	Н	-	-	PK	107	1.8	Non-restricted
7236.75	52.6	V	-	-	PK	300	1.0	Non-restricted
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Note 1:					it of 15.209 w		nath (naak	or average) minus the hand adae
Note 2:	_			ulateu IIOII	i tile iulitallie	iliai lielu siit	engin (peak	or average) minus the band edge
	delta mark	tei illeas	urement.					
FLIT at 241	2 MHz 80	2 11h Ma	nde (Chann	el and mod	e with highes	t enurious er	niesions fro	m run 1 and run 2)
Spurious F			•	or and mod	o with ringhlos	c opunous on	1110010110 110	mran ranaran 2)
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.060	52.5	V	54.0	-1.5	AVG	334	1.0	2nd Harmonic (Aux, 20.0dBm)
4824.017	47.2	H	54.0	-6.8	AVG	125	1.0	2nd Harmonic (Aux, 20.0dBm)
4824.060	54.9	V	74.0	-19.1	PK	334	1.0	2nd Harmonic (Aux, 20.0dBm)
4824.017	51.2	H	74.0	-22.8	PK	125	1.0	2nd Harmonic (Aux, 20.0dBm)

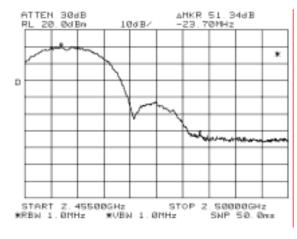
el Green 5E,15.247 ed Spuriou	rget power i	s. Center (Channel @ 2 Detector Pk/QP/Avg	437 MHz, 80	T-L Accou	ob Number: og Number: nt Manager: Class:	T60077 Joe Rohlfes
el Green 5E,15.247 ed Spuriou ag = 20 (ta I Pol m v/h V H H V V	15.209 Limit 54.0 54.0 54.0	s. Center (n ART) / 15.247 Margin -7.4	Channel @ 2		Accou	nt Manager:	Joe Rohlfes
ted Spuriou	15.209 Limit 54.0 54.0 54.0	n ART) / 15.247 Margin -7.4	Detector				
ted Spuriou	15.209 Limit 54.0 54.0 54.0	n ART) / 15.247 Margin -7.4	Detector		2.11b	Class:	N/A
ed Spuriou eg = 20 (ta i Pol m V/h V H H V V	15.209 Limit 54.0 54.0 54.0	n ART) / 15.247 Margin -7.4	Detector		2.11b	Class.	IN/A
ng = 20 (ta Pol Mm v/h V H H V	15.209 Limit 54.0 54.0 54.0	n ART) / 15.247 Margin -7.4	Detector		2.110		
Pol m v/h V H H V V	15.209 Limit 54.0 54.0 54.0	/ 15.247 Margin -7.4		Azimuth			
m v/h V H V V V V	Limit 54.0 54.0 54.0	Margin -7.4			Height	Comments	
V H H V	54.0 54.0 54.0	-7.4	9	degrees	meters	55	
H V V	54.0 54.0	7.1	AVG	171	1.0		
V		-7.4	AVG	83	1.6		
V	540	-7.5	AVG	103	1.2		
	34.0	-13.1	AVG	206	1.7	Noise Floor	ſ
l H	54.0	-13.3	AVG	322	1.3		
	54.0	-13.7	AVG	190	1.0	Noise Floor	
V	54.0	-15.3	AVG	242	1.0	Noise Floor	
Н	54.0	-15.3	AVG	212	1.0	Noise Floor	
Н	54.0	-15.3	AVG	132	1.0	Noise Floor	
V	54.0	-15.5	AVG	179	1.1	Noise Floor	<u> </u>
	74.0	-21.0	PK	103	1.2		
	-					Noise Floor	ſ
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	_					Noise Floor	
3) H V V 5 V 8 H 8 V 8 H 1 H 2 V 0 V 8 H	V 74.0 V 74.0 B H 74.0 B V 74.0 B H 74.0 C V 74.0 C V 74.0 C V 74.0 C V 74.0	V 74.0 -22.3 5 V 74.0 -22.5 8 H 74.0 -22.7 8 V 74.0 -22.7 8 H 74.0 -22.8 9 H 74.0 -23.6 10 V 74.0 -24.0	V 74.0 -22.3 PK 6 V 74.0 -22.5 PK 8 H 74.0 -22.7 PK 8 V 74.0 -22.7 PK 8 H 74.0 -22.8 PK 9 H 74.0 -23.6 PK 10 V 74.0 -23.8 PK 10 V 74.0 -24.0 PK	V 74.0 -22.3 PK 206 S V 74.0 -22.5 PK 171 B H 74.0 -22.7 PK 83 B V 74.0 -22.7 PK 179 B H 74.0 -22.8 PK 190 B H 74.0 -23.6 PK 212 C V 74.0 -23.8 PK 242 D V 74.0 -24.0 PK 322	V 74.0 -22.3 PK 206 1.7 5 V 74.0 -22.5 PK 171 1.0 8 H 74.0 -22.7 PK 83 1.6 8 V 74.0 -22.7 PK 179 1.1 8 H 74.0 -22.8 PK 190 1.0 9 H 74.0 -23.6 PK 212 1.0 9 V 74.0 -23.8 PK 242 1.0 9 V 74.0 -24.0 PK 322 1.3	V 74.0 -22.3 PK 206 1.7 Noise Floor 5 V 74.0 -22.5 PK 171 1.0 8 H 74.0 -22.7 PK 83 1.6 8 V 74.0 -22.7 PK 179 1.1 Noise Floor 8 H 74.0 -22.8 PK 190 1.0 Noise Floor 9 H 74.0 -23.6 PK 212 1.0 Noise Floor 9 V 74.0 -23.8 PK 242 1.0 Noise Floor 9 V 74.0 -24.0 PK 322 1.3

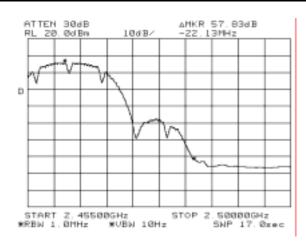
EMC Test Data

Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
Model.	ANJBABO 002.11 a/b/g FCI Express Woulde	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Run #1c: Radiated Spurious Emissions. High Channel @ 2462 MHz 802.11b (1Mb/s) Fundamental Signal, power level setting = 20 (target power in ART)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2462.805	99.0	Н	-	-	AVG	172	1.9	Fundamental
2462.805	101.9	Н	-	-	PK	172	1.9	Fundamental
2461.207	92.9	V	-	-	AVG	4	1.1	Fundamental
2461.207	96.0	V	-	-	PK	4	1.1	Fundamental





Method 1, band edge marker delta

Delta Marker - Peak	51.03 dB	RB = VB= 1MHz
Delta Marker - Average	57.80 dB	RB=1MHz, VB = 10Hz

Band Edge Signal Radiated Field Strength

ı	Dalla Lago	oigilai it	uaiutca	i icia oticii	gtii				
	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	41.2	Н	54.0	-12.8	Avg	172	1.9	
	2484.000	50.9	Н	74.0	-23.1	Pk	172	1.9	

T-Log Number: T60077 Account Manager: Joe Rohlfes	Account Manager: Joe Record	9977	J59977	lob Number: J	J		Client:								
Contact: Michael Green Spec: FCC 15E,15.247 Run #1c: Radiated Spurious Emissions. High Channel @ 2462 MHz 802.11b (1Mb/s) Spurious Radiated Emissions: Frequency Level Pol 15.209 / 15.247 MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 4924.10 47.3 V 54.0 -6.7 AVG 229 1.0 4923.950 45.9 H 54.0 -8.1 AVG 268 1.0 7386.675 45.4 H 54.0 -8.6 AVG 81 1.9 9848.53 39.7 V 54.0 -14.3 AVG 13 1.0 Noise Floor 846.945 39.5 H 54.0 -14.5 AVG 287 1.6 Noise Floor 14771.01 39.5 V 54.0 -14.5 AVG 284 1.0 Noise Floor 14771.83 39.5 H 54.0 -14.6 AVG 284 1.0 Noise Floor 12308.86 38.8 H 54.0 -15.3 AVG 66 1.0 Noise Floor 12309.26 38.8 V 54.0 -15.3 AVG 93 1.0 Noise Floor 12309.26 38.8 V 54.0 -16.3 AVG 291 1.3 7386.675 52.4 H 74.0 -21.6 PK 81 1.9 4924.10 51.7 V 74.0 -22.8 PK 284 1.0 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 284 1.0 Noise Floor 12309.86 50.9 H 74.0 -22.8 PK 284 1.0 Noise Floor 12309.86 50.9 H 74.0 -22.8 PK 287 1.6 Noise Floor 12309.26 49.8 V 74.0 -23.1 PK 66 1.0 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 168 1.0 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 168 1.0 Noise Floor 12309.26 49.8 V 74.0 -22.8 PK 287 1.6 Noise Floor 12309.26 49.8 V 74.0 -22.8 PK 287 1.6 Noise Floor 12309.26 49.8 V 74.0 -22.8 PK 287 1.6 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 18 1.0 Noise Floor 12309.26 49.8 V 74.0 -22.8 PK 287 1.6 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 18 1.0 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 18 1.0 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 18 1.0 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 19 1.0 Noise Floor 12309.26 49.8 V 74.0 -23.3 PK 291 1.3 Noise Floor	Contact: Michael Green Spec: FCC 15E,15.247 Run #1c: Radiated Spurious Emissions. High Channel @ 2462 MHz 802.11b (1Mb/s) Spurious Radiated Emissions: Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 4924.10 47.3 V 54.0 -6.7 AVG 229 1.0 4923.950 45.9 H 54.0 -8.1 AVG 268 1.0 7386.675 45.4 H 54.0 -14.3 AVG 13 1.0 Noise Floor 49846.945 39.5 H 54.0 -14.5 AVG 287 1.6 Noise Floor 4771.01 39.5 V 54.0 -14.5 AVG 284 1.0 Noise Floor 4771.83 39.5 H 54.0 -14.6 AVG 284 1.0 Noise Floor 42308.86 38.8 H 54.0 -15.3 AVG 66 1.0 Noise Floor 42309.26 38.8 V 54.0 -15.3 AVG 93 1.0 Noise Floor 4386.675 52.4 H 74.0 -21.6 PK 81 1.9 4924.10 51.7 V 74.0 -22.3 PK 229 1.0 4771.83 51.5 H 74.0 -22.8 PK 284 1.0 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 284 1.0 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 287 1.6 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 287 1.6 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 287 1.6 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 287 1.6 Noise Floor 4923.950 51.2 H 74.0 -22.8 PK 287 1.6 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 287 1.6 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 287 1.6 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 287 1.6 Noise Floor 4923.950 50.9 H 74.0 -22.8 PK 287 1.6 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 291 1.3 Noise Floor 4923.950 50.9 H 74.0 -22.8 PK 291 1.3 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 291 1.3 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 291 1.3 Noise Floor 4923.950 50.9 H 74.0 -22.3 PK 291 1.3 Noise Floor	0077	T60077	.og Number: T	T-L		lula	iverses May		000 11 4	ADEDVDG	Madalı			
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Run #1c: Radiated Spurious Emissions. High Channel @ 2462 MHz 802.11b (1Mb/s)	Run #1c: Radiated Spurious Emissions. High Channel @ 2462 MHz 802.11b (1Mb/s)									reen	Michael G	Contact:			
Spurious Radiated Emissions: Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments	Spurious Radiated Emissions: Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Height Comments Comments MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 4924.10 47.3 V 54.0 -6.7 AVG 229 1.0 4923.950 45.9 H 54.0 -8.1 AVG 268 1.0 7386.675 45.4 H 54.0 -8.6 AVG 81 1.9 9846.945 39.5 H 54.0 -14.5 AVG 287 1.6 Noise Floor 14771.83 39.5 H 54.0 -14.5 AVG 168 1.0 Noise Floor 14771.83 39.5 H 54.0 -14.6 AVG 284 1.0 Noise Floor 12308.86 38.8 H 54.0 -15.3 AVG 66 1.0 Noise Floor 7387.82 37.7 V <	4	N/A	Class: N						15.247	FCC 15E,1	Spec:			
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14771.01 50.9 V 74.0 -23.1 PK 168 1.0 Noise Floor 9848.53 50.7 V 74.0 -23.3 PK 13 1.0 Noise Floor 12309.26 49.8 V 74.0 -24.2 PK 93 1.0 Noise Floor 7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge	14771.01 50.9 V 74.0 -23.1 PK 168 1.0 Noise Floor 9848.53 50.7 V 74.0 -23.3 PK 13 1.0 Noise Floor 12309.26 49.8 V 74.0 -24.2 PK 93 1.0 Noise Floor 7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus														
9848.53 50.7 V 74.0 -23.3 PK 13 1.0 Noise Floor 12309.26 49.8 V 74.0 -24.2 PK 93 1.0 Noise Floor 7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge.	9848.53 50.7 V 74.0 -23.3 PK 13 1.0 Noise Floor 12309.26 49.8 V 74.0 -24.2 PK 93 1.0 Noise Floor 7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Note 2: Band-edge measurement calculated from the fundamental field strength (peak or average) minus														
12309.26 49.8 V 74.0 -24.2 PK 93 1.0 Noise Floor 7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge.	12309.26 49.8 V 74.0 -24.2 PK 93 1.0 Noise Floor 7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus														
7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge.	7387.82 48.1 V 74.0 -25.9 PK 291 1.3 Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus														
Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge.	Note 1: For emissions in restricted bands, the limit of 15.209 was used. Band-edge measurement calculated from the fundamental field strength (peak or average) minus														
Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge	Band-edge measurement calculated from the fundamental field strength (peak or average) minus			I.							•				
NOTO /	NOTO 7' I											Note 1:			
della marker measurement.	della marker measurement.	ius trie bario eog	minus me	or average) ii	ngin (peak	ntai neid stre	the lundame	uiated irom			_	Note 2:			
									urement.	er meas	delta mark				

EMC Test Data

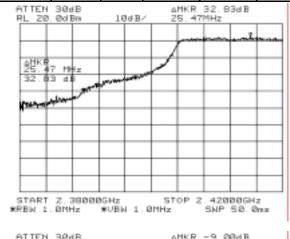
Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
wodei.	ARSBABO 602.11 a/b/g FCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

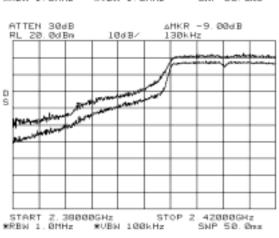
Run #2: 802.11g Mode with Wistron EBJ Aux Antenna (Highest gain antenna in 2.4GHz Band)

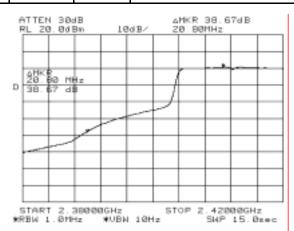
Run #2a: Radiated Spurious Emissions. Low Channel @ 2412 MHz 802.11g (6Mb/s)

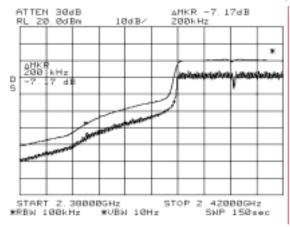
Fundamental Signal, power level setting = 19 (target power in ART)

	· · · · · ·	,		3 10 3				
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.753	99.1	Η	-	-	AVG	197	1.9	Fundamental
2410.753	108.7	Н	-	-	PK	197	1.9	Fundamental
2405.233	93.8	V	-	-	AVG	197	1.9	Fundamental
2405.233	102.2	V	-	-	PK	197	1.9	Fundamental









continued on next page ..

Elliott EMC Test Data Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Class: N/A Spec: FCC 15E,15.247 Run #2a (continued): Radiated Spurious Emissions. Low Channel @ 2412 MHz 802.11g (6Mb/s) Delta Marker (In-band to restricted band) - Peak 32.80 dB RB = VB= 1MHz Delta Marker (In-band to restricted band) - Average 38.70 dB RB=1MHz, VB = 10Hz Bandwidth delta marker at band edge (average) 7.20 dB 100k to 1 MHz, Average Bandwidth delta marker at band edge (peak) 9.00 dB 100k to 1 MHz, Peak Correction factor - average 45.90 dB Correction factor - peak 41.80 dB As the highest out of band signal is directly at the band edge, and to account for the fact that a 1MHz measurement bandwidth includes signal in the restricted band and in the allocated band, the additional bandwidth correction factors (100kHz - 1MHz bandwidth) were added to the deltas between in-band and band-edge signal levels noted above. Band Edge Signal Radiated Field Strength, 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 2390.000 53.2 Η 54.0 -0.8 210 1.1 Note 2 Avg 2390.000 74.0 Pk 210 66.9 1.1 Note 2 Spurious Radiated Emissions: 15.209 / 15.247 Frequency Level Detector Azimuth Height Comments Pk/QP/Avg MHz $dB\mu V/m$ v/h Limit Margin degrees meters 7234.605 42.4 AVG Н 54.0 -11.6 77 1.0 Noise floor -13.9 7237.405 40.1 54.0 **AVG** 30 1.0 Noise floor 4822.610 37.7 Η 54.0 -16.3 **AVG** 275 1.0 Noise floor 4823.020 Noise floor ٧ 54.0 -17.4 AVG 266 1.0 36.6 7234.605 53.3 Н 74.0 -20.7 PΚ 77 1.0 Noise floor

Note 2:

7237.405

4822.610

4823.020

51.5

49.2

48.2

٧

Н

74.0

74.0

74.0

-22.6

-24.9

-25.8

Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge delta marker measurement minus bandwudth correction factor at the band edge

30

275

266

1.0

1.0

1.0

Noise floor

Noise floor

Noise floor

PΚ

PK

PΚ

EMC Test Data

Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
Model.	ANDBABO 002.11 a/b/g FCI Express inlocure	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Run #2b: Radiated Spurious Emissions. Center Channel @ 2437 MHz 802.11g (6Mb/s)

Power level setting = 19 (target power in ART)

		(901 0 11 01 11	,				
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7310.010	39.7	Н	54.0	-14.3	AVG	79	1.0	Noise Floor
7311.120	37.8	V	54.0	-16.2	AVG	360	1.0	Noise Floor
4874.050	36.8	V	54.0	-17.3	AVG	214	1.0	Noise Floor
4873.780	36.6	Н	54.0	-17.4	AVG	80	1.6	Noise Floor
7310.010	51.6	Н	74.0	-22.4	PK	79	1.0	Noise Floor
7311.120	49.8	V	74.0	-24.2	PK	360	1.0	Noise Floor
4873.780	48.9	Н	74.0	-25.2	PK	80	1.6	Noise Floor
4874.050	48.2	V	74.0	-25.8	PK	214	1.0	Noise Floor

Note 1: All other emissions more than 20dB below the limit.

Run #2c: Radiated Spurious Emissions. Highest Channel @ 2462 MHz 802.11g (6Mb/s)

Fundamental Signal, power level setting = 19 (target power in ART)

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2459.118	95.6	Н	-	-	AVG	340	1.1	Fundamental
2459.118	104.1	Н	-	-	PK	340	1.1	Fundamental
2460.934	89.4	V	-	-	AVG	6	1.1	Fundamental
2460.934	98.0	V	-	-	PK	6	1.1	Fundamental

continued on next page ...

Elliott Client: Atheros

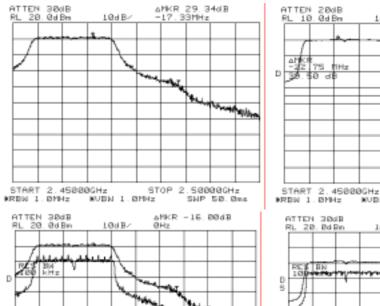
EMC Test Data

ΔMKR 39.50dB -22.75MHz

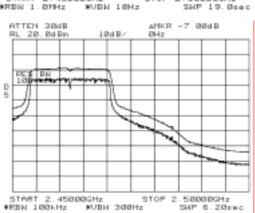
STOP 2.50000GHz

Client:	Atheros	Job Number:	J59977
Madalı	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
wodei.	ARSBABO 602.11 a/b/g PCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

..continued



STOP 2.580000GHz Hz SHP 50.8ms



18dB/

Marker deltas:

Delta Marker (In-band to restricted band) - Peak	29.30 dB	RB =
Delta Marker (In-band to restricted band) - Average	39.50 dB	RB=1
Bandwidth delta marker at band edge (average)	7.00 dB	100k
Bandwidth delta marker at band edge (peak)	16.00 dB	100k
Correction factor - average	46.50 dB	This fa
Correction factor - peak	45.30 dB	This fa

RB = VB= 1MHz RB=1MHz, VB = 10Hz 100k to 1 MHz, Average

100k to 1 MHz, Peak

This factor used, highest out of band @ band edge This factor used, highest out of band @ band edge

As the highest out of band signal is directly at the band edge, and to account for the fact that a 1MHz measurement bandwidth includes signal in the restricted band and in the allocated band, the additional bandwidth correction factors (100kHz - 1MHz bandwidth) were added to the deltas between in-band and band-edge signal levels noted above.

Band Edge Signal Radiated Field Strength, 100kHz delta method

START 2.45000GHz ST *RBH 100kHz *VBH 1.0MHz

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	49.1	Н	54.0	-4.9	Avg	225	1.1	Note 2
2483.500	58.8	Н	74.0	-15.2	Pk	225	1.1	Note 2

Note 2: Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge delta marker measurement minus bandwudth correction factor at the band edge

€ I	Atheros							lob Number:	J59977
					.og Number:				
Model:	AR5BXB6	802.11	a/b/g PCIE	express Mod	dule				Joe Rohlfes
Contact:	Michael G	reen							
	FCC 15E,							Class:	N/A
			s (channel				1		
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
7385.090	38.9	Н	54.0	-15.1	AVG	83	1.0	Noise Floor	ſ
7385.767	38.0	V	54.0	-16.0	AVG	328	1.8	Noise Floor	ſ
4923.870	36.0	Н	54.0	-18.0	AVG	81	1.0	Noise Floor	
4922.500	35.9	V	54.0	-18.2	AVG	194	1.0	Noise Floor	ſ
7385.090	50.9	Н	74.0	-23.1	PK	83	1.0	Noise Floor	ſ
7385.767	49.8	V	74.0	-24.2	PK	328	1.8	Noise Floor	ſ
	48.4	V	74.0	-25.6	PK	194	1.0	Noise Floor	
4922.500		Н	74.0	-26.4	PK	81	1.0	Noise Floor	•

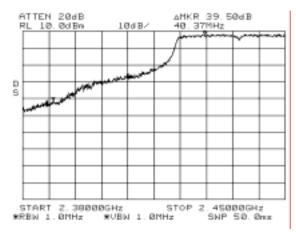
EMC Test Data

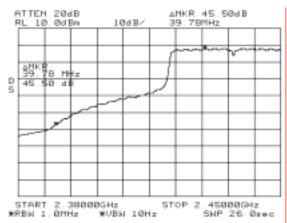
Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
Model.	ANJBABO 002.11 a/b/g FCI Express Woulde	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

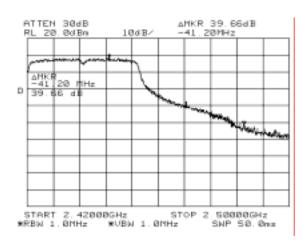
Run #3: Turbo Mode with Wistron EBJ Aux Antenna (Highest gain antenna in 2.4GHz Band) Radiated Spurious Emissions. Turbo Channel @ 2437 MHz (12Mb/s), power setting = 19

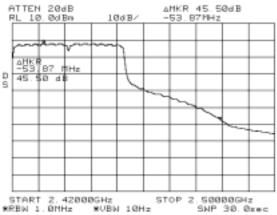
Fundamental Signal

Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2439.917	93.1	Η	-	-	AVG	185	1.9	Fundamental
2439.917	101.5	Η	-	-	PK	185	1.9	Fundamental
2442.308	87.7	V	-	-	AVG	246	1.0	Fundamental
2442.308	96.8	V	-	-	PK	246	1.0	Fundamental









% !	Ellic	\tt						FM	C Test Data
	Atheros	лі						Job Number:	
								og Number:	
Model:	AR5BXB6	802.11	a/b/g PCIE	xpress Mod	ule				Joe Rohlfes
Contact:	ct: Michael Green								
Spec: FCC 15E,15.247							Class:	N/A	
Band edge	marker de	elta - 23	90 MHz						
Delta Marker - Peak 39.50 dB						RB = VB=			
			Delta Marke	r - Average	45.50	dB	RB=1MHz	, VB = 10Hz	
Band edge	marker de	elta - 24	83.5 MHz						
				rker - Peak	39.66	dB	RB = VB=	1MHz	
			Delta Marke	r - Average	45.50	dB	RB=1MHz	, VB = 10Hz	
			Field Streng	gth / 45 047	I	A ' (1	T	<u> </u>	
requency		Pol	15.209 /		Detector	Azimuth	Height	Comments	
MHz 2390.000	dBμV/m 47.6	v/h V	Limit 54.0	Margin -6.4	Pk/QP/Avg AVG	degrees 185	meters 1.9	Note 2	
2389.000	62.0	V	74.0	-0.4 -12.0	PK	185	1.9	Note 2	
2000.000 I	02.0	V		-6.4	AVG	185	1.9	Note 2	
	47.6	٧	54 N						
2483.500	47.6 61.8	V	54.0 74.0						
2483.500	47.6 61.8		54.0 74.0	-0.4 -12.2	PK	185	1.9	Note 2	
2483.500 2484.000	61.8	V	74.0	-12.2		185	1.9	Note 2	
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge
2483.500 2484.000 Note 1:	61.8 All other sp	V oruious e e measu	74.0 emissions be rement calc	-12.2 etween 1 an	PK id 26GHz we	185 ere below the	1.9 e noise floor	Note 2	minus the band edge

(C	Elliott	EM	C Test Data
Client:	Atheros	Job Number:	J59977
Model	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
woder.	ARSBABO 602.11 a/b/g FCI Express Module	Account Manager:	Joe Rohlfes
Contact:	Michael Green		

FCC 15.247 DTS - Power, Bandwidth and Spurious Emissions

Test Specifics

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

Class: N/A

specification listed above.

Date of Test: 6/21/2005 Config. Used: 1

Test Engineer: Mehran Birgani Config Change: None

Test Location: SVOATS #1 Host Unit Voltage 120V/60Hz

General Test Configuration

Spec: FCC 15E,15.247

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

Ambient Conditions: Temperature: 20 °C

Rel. Humidity: 45 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Antenna Port Spurious Emissions 30 - 40000 MHz	FCC Part 15.209 / 15.247(c)	Pass	All emissions > -20dBc
2	6dB Bandwidth	15.247(a)	Pass	802.11a: 16.5MHz Turbo: 32.2MHz
2	99% Bandwidth	15.247(a)	Pass	802.11a: 17.0MHz Turbo: 33.5MHz
3	Output Power	15.247(b)	Pass	21.5dBm (0.141 W)
4	Power Spectral Density (PSD)	15.247(d)	Pass	-5.5dBm/3kHz

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.

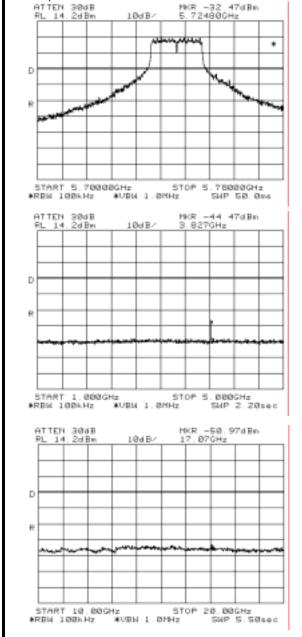
EMC Test Data

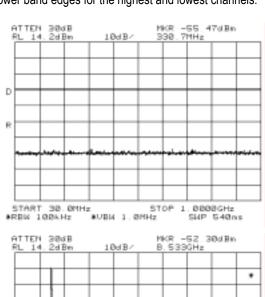
-			
Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077	
	ARSBABO 602.11 a/b/g FCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

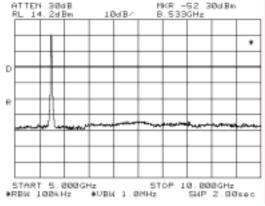
Run #1 Antenna Conducted Spurious Emissions, 30 - 40000 MHz.

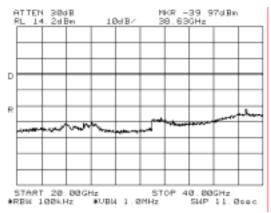
Refer to plots below. Scans made using RBW=VB=100 KHz with the limit line set at 20dB below the highest in-band signal level. Plots show compliance with the -20dBc limit atupper and lower band edges for the highest and lowest channels.

Run #1a, 5745 MHz









EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1b, 5785 MHz MKR -56.13dBm 540.9MHz ATTEN 30dB RL 14.ZdBm ATTEN 30dB RL 14.ZdBm MKR 5.03dBm 5.7790GHz 10dB/ 10dB/ D START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP 1.88886Hz dz SNP 548mx START S. 7000GHz ST *RBW 100kHz #VBW 1.0MHz STOP S. 8588GHz Hz SNP 83. 8ms ATTEN 30dB RL 14.ZdBm MKR -42.97dBm 3.853GHz MKR -53.13dBm 8.567GHz ATTEN 30dB 10dB/ 10dB/ RL 14. ZdBn START S. 888GHz 3: START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 5.000GHz Hz SNP 2.20xec STOP 10.000GHz tz SNP 2.80xec *RBW 100kHz MKR -51.47dBm 17.13GHz ATTEN 30dB RL 14. ZdBm MKR -39.80dBm 38.50GHz ATTEN 30dB 14. ZdBm 10dB/ 10dB/ START 18.88GHz ST *RBW 188kHz *VBW 1.8MHz STOP 20.00GHz Hz SNP 5.50xec START Z8.88GHz ST *RBW 188kHz *VBW 1.8MHz STOP 40.00GHz Hz SWP 11.0xec

EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1c, 5825 MHz ATTEN 30dB RL 14. ZdBm ATTEN 30dB RL 14.ZdBm MKR -57.63dBm 838.3MHz MKR -34.80dBm 10dB/ 10dB/ B500GHz × D D START S. 7888GHz STOP S. 8888GHz *RBW 188kHz *VBW 1. 8MHz SWP 99. 8ms START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP 1.88886Hz dz SNP 548ms ATTEN 30dB MKR -42.80dBm 3.880GHz MKR -53.13dBm 8.600GHz ATTEN 30dB RL 14. ZdBm 10dB/ 18dB/ D START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 5.000GHz Hz SWP 2.20xec START S. 000GHz ST *RBW 100kHz *VBW 1. 0MHz STOP 10.000GHz Hz SNP 2.80xec MKR -51.47dBm 17.20GHz MKR -39.80dBm 38.47GHz ATTEN 30dB RL 14. ZdBm ATTEN 30dB RL 14. ZdBm 10dB/ 10dB/ n START 18.88GHz STOP 28.88GHz *RBW 188kHz *VBW 1.8MHz SNP 5.58zec START 28.88GHz STOP 48.88GHz *RBW 188kHz *VBW 1.8MHz SNP 11.8xec

EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1d, 5760 MHz, Turbo Mode ATTEN 30dB RL 14.ZdBm ATTEN 30dB RL 14.ZdBm MKR -56.13dBm 515.0MHz 10dB/ 10dB/ * D D R START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz START S. 7000GHz ST *RBW 100kHz *VBW 1.0MHz STOP S. 8288GHz Hz SNP 66. 8mx STOP 1.88886Hz Hz SNP 548mx MKR -44.80dBm 3.833GHz MKR -53.88dBm 8.542GHz ATTEN 30dB ATTEN 304B 18dB/ 10dB/ RL 14. ZdBn RL 14. ZdBm START 1.000GHz ST *RBW 100kHz *VBW 1.0MHz STOP 5.000GHz Hz SNP 2.20xec START S. 888GHz ST *RBW 188kHz *VBW 1.8MHz STOP 10.000GHz Hz SNP 2.80xec MKR -51.30dBm 17.88GHz ALLEN 309B ATTEN 304B MKR -39.13dBm 39. 20GHz 10dB/ 10dB/ RL 14. ZdBn D STOP 40.00GHz Hz SNP 11.0xec START 18.88GHz ST *RBW 188kHz *VBW 1.8MHz STOP 20.00GHz Hz SNP 5.50xec START Z0.00GHz ST *RBW 100kHz *VBW 1.0MHz

EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Run #1d, 5805 MHz, Turbo Mode ATTEN 30dB RL 14.ZdBm ATTEN 30dB RL 14. ZdBm MKR -55.30dBm 515.0MHz 10dB/ 18dB/ D R START S.7SS00GHz ST *RBW 100kHz *VBW 1.0MHz START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP S. 85888GHz STOP 1.88886Hz SNP 52. 8ms SNP 540mx MKR -55.30dBm 515.0MHz MKR -52.97dBm ATTEN 30dB ATTEN 30dB 10dB/ 10dB/ 8.583GHz START 30.0MHz ST *RBW 100kHz *VBW 1.0MHz STOP 1.0000GHz Hz SNP 540ms START S. 888GHz ST *RBW 188kHz *VBW 1.8MHz STOP 18.888GHz Hz SNP 2.88xec MKR -50.63dBm 17.17GHz ATTEN 30dB RL 14. ZdBm ATTEN 304B MKR -39, 47dBm 10dB/ 38.60GHz 10dB/ RL 14. ZdBn D START 10.00GHz ST *RBW 100kHz *VBW 1.0MHz START Z0.00GHz ST *RBW 100kHz *VBW 1.0MHz STOP 48.88GHz Hz SNP 11.8xec STOP 28.88GHz dz SNP 5.50xec

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EMC Test Data

Client:	Atheros	Job Number:	J59977
Model	ADEDVD6 902 11 a/b/g DCI Everges Medule	T-Log Number: T60077	
woder.	AR5BXB6 802.11 a/b/g PCI Express Module	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Run #2: Signal Bandwidth

Channel	Mode	Resolution	6dB Signal Bandwidth	99% Signal Bandwidth
Channel	Mode	Bandwidth	(MHz)	(MHz)
5745	802.11a	100kHz	16.6	17.0
5785	802.11a	100kHz	16.7	17.0
5825	802.11a	100kHz	16.5	17.0
5760	Turbo	100kHz	32.3	33.5
5805	Turbo	100kHz	32.2	33.1

Run #3: Output Power

Maximum antenna gain:

4.76 dBi

(Highest Gain antenna is EBJ Main in this band)

EUT power setting at 18 for all measurements

Channel	Mode	Res BW	Output Power (dBm)	Output Power (W)	EIRP (W)
5745	802.11a	n/a	21.5	0.141	0.423
5785	802.11a	n/a	21.4	0.138	0.413
5825	802.11a	n/a	21.3	0.135	0.404
5760	Turbo	n/a	21.4	0.138	0.413
5805	Turbo	n/a	21.3	0.135	0.404

Note 1: Output power measured using a peak power meter.

Run #4: Power Spectral Density

Channel	Mode	Freq. (MHz)	P.S.D. (averaged over 1 second in a 3kHz bandwidth) dBm	Limit	Result
5745	802.11a	5745.36	-7.7	8.0	Pass
5785	802.11a	5778.76	-6.2	8.0	Pass
5825	802.11a	5819.99	-5.5	8.0	Pass
5760	Turbo	5757.49	-9.0	8.0	Pass
5805	Turbo	5809.94	-7.4	8.0	Pass

Power spectral density plots on following pages ...

EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Class: N/A Spec: FCC 15E,15.247 Plots for 802.11a mode ATTEN 30dB RL 14.2dBm MKR -6.22dBm 5.7787607GHz MKR -7.72dBm 5.7453550GHz ATTEN 30dB RL 14.ZdBm SdB/ العربير CENTER 5.7453250GHz RBW 3.0kHz #VBW 1.0MHz SPAN 300.0kHz *SNP 100zec CENTER 5.7787417GHz *RBW 3.8kHz *VBW 1.8NHz SPAN 300.0kHz *SNP 100zec ∗RBW 3. ØkHz MKR -5.47dBm 5.8199918GHz ATTEN 30dB RL 14. ZdBm SdB/ CENTER 5.8199833GHz *RBW 3.8kHz *VBW 1.8NHz SPAN 300.0kHz *SNP 100zec Plots for turbo mode MKR -8.97dBm 5.7574915GHz ATTEN 30dB ATTEN 20dB MKR -7.35dBm SdB/ RL 11 9d Bn SdB/ 5.8099455GHz D Ď monthe الوجاليس الموادمة بالماحي CENTER 5.7574400GHz *RBW 3.8kHz *VBW 1.8NHz SPAN 300.0kHz #SNP 100zec CENTER 5.8100000GHz *RBW 3.8kHz *VBW 1.8MHz SPAN 300.0kHz *SNP 100zec

Elliott	EMC Test Data
Client: Atheros	Job Number: J59977
Model: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number: T60077
Widdel. ARSBADO 602.11 a/b/g PCI Express Widdie	Account Manager: Joe Rohlfes
Contact: Michael Green	
Spec: FCC 15E,15.247	Class: N/A

FCC Part 15 Subpart E Tests - Antenna Port Measurements

Test Specifics

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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: 6/21/2005 Config. Used: 1

Test Engineer: Mehran Birgani Config Change: none

Test Location: SVOATS #1 Host Unit Voltage 120V/60Hz

General Test Configuration

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

Ambient Conditions: Temperature: 20 °C

Rel. Humidity: 50 %

Summary of Results

Run#	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.407(a) (1), (2)	Pass	16.1dBm
1	Power Spectral Density (PSD)	15.407(a) (1), (2)	Pass	4dBm/MHz
1	26dB Bandwidth	15.407	-	> 20 MHz
1	20 dB Bandwidth	RSS 210	-	> 20 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	Worst case was 11.7dB (Turbo mode)
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the 27dBm/MHz limit

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Eliott EMC Test Data Client: Atheros Job Number: J59977 Model: AR5BXB6 802.11 a/b/g PCI Express Module T-Log Number: T60077 Account Manager: Joe Rohlfes Account Manager: Joe Rohlfes Contact: Michael Green Class: N/A

Run #1: Bandwidth, Output Power and Power Spectral Density

Nominal power setting = 18 for all channels

Antenna Gain: _____5.56 dBi (highest gain anntena in 5.150-5.350 is ED4 Main)

Frequency	ncy Bandwidth (note 1) MHz		Output	Output Power Power		PSD (FCC - note 3)		PSD (RSS210 - note 4)		
requericy	Danuw	Dallawiatii (iiote i) ivii iz		(note 2) dBm		(Watts)	dBm/MHz		dBm/MHz	
(MHz)	20dB	26dB	99%	Measured	Limit		Measured	Limit	Avg	Peak
5180	20.2	29.8	17.0	16.0	17.0	0.040	3.9	4.0	9.7	12.7
5240	22.1	33.7	17.0	16.1	17.0	0.041	4.0	4.0	9.7	12.9
5260	22.2	32.7	17.0	16.1	24.0	0.041	4.0	11.0	9.7	13.3
5320	21.3	28.9	17.0	14.2	24.0	0.026	2.2	11.0	9.7	11.5
5200	36.9	46.9	34.0	14.7	17.0	0.030	0.0	4.0	6.7	10.2
5290	36.6	48.1	34.0	16.0	24.0	0.040	1.2	11.0	6.7	8.9

Note 1 Bandwidth measured using RBW = 300kHz.

Output power measured using a spectrum analyzer with:

Note 2 RBW=1MHz, VB=1 MHz, sample/peak detector, power averaging on (100 samples) and power integration over 50 MHz span.

Note 3 RB=1MHz, VB=3 MHz, peak detector.

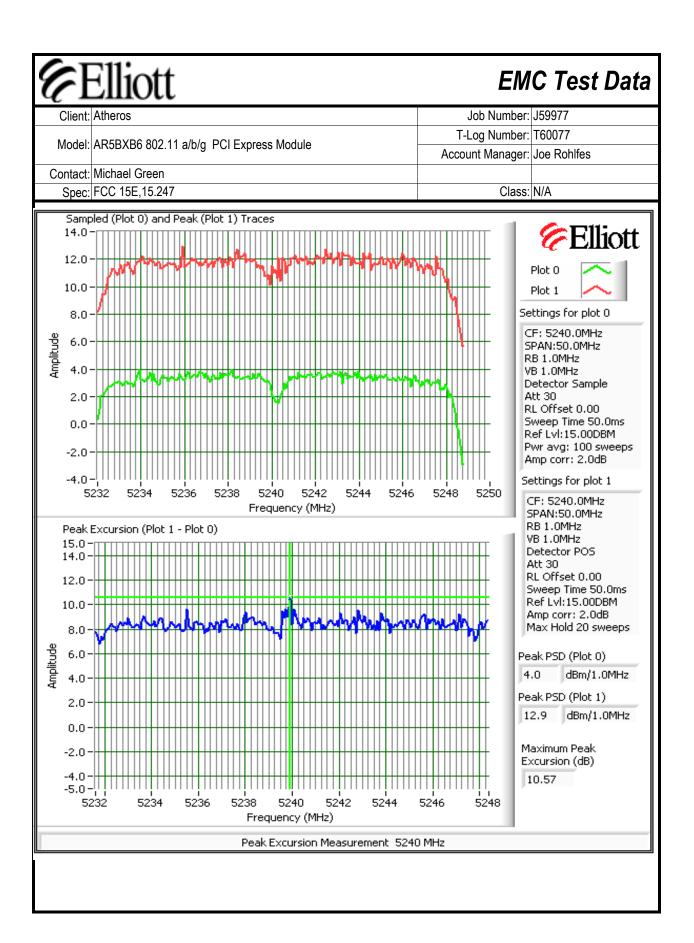
Measurement of peak power spectral density was made using RBW = 1MHz, VBW = 1MHz. The average value is Note 4 the peak output power (measured to be 22.0dBm) divided by the 99% bandwidth. For RSS210 the measured value must not exceed the average value by more than 6dB without reducing the limit for output power.

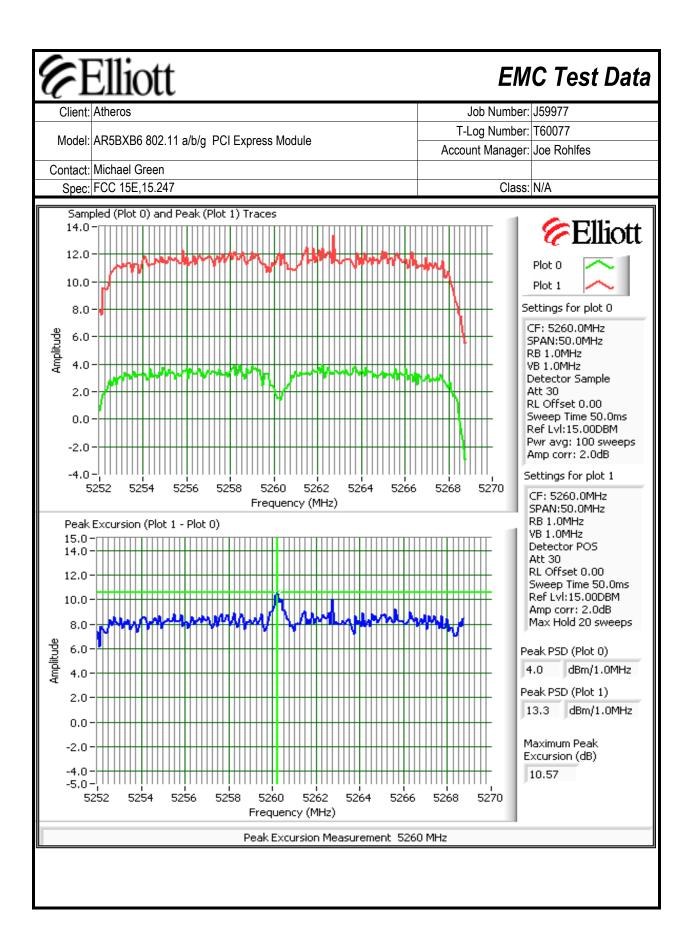
Elliott EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Elliott 5.0-Spectrum Analyzer Settings CF: 5180.0MHz 0.0 SPAN:50.0MHz RB 1.0MHz -5.0 VB 1.0MHz Detector Sample Att 30 -10.0 RL Offset 0.00 Sweep Time 50.0ms Ref Lvl: 15.00DBM ឝ្គី -15.0· Pwr avg: 100 sweeps Amp corr: 2.0dB -20.0 Bin size: 83kHz Highest PSD 3,86 dBm/1.0MHz -25.0 99% Bandwidth -30.0 17.00 MHz Power Over Span -35.0 - \ 5200.0 5205.0 5155.0 5160.0 5170.0 5190.0 39,745 mW 5180.0 15.99 dBm Frequency (MHz) PSD, 99% Bandwidth and Power Over Span Plot **Elliott** 5.0 Spectrum Analyzer Settings CF: 5240.0MHz 0.0-SPAN:50.0MHz RB 1.0MHz -5.0 VB 1.0MHz Detector Sample Att 30 -10.0 -RL Offset 0.00 Sweep Time 50.0ms Ref Lvl: 15.00DBM 출 -15.0 Pwr avg: 100 sweeps Amp corr: 2.0dB Bin size: 83kHz -20.0 Highest PSD: 3,96 dBm/1.0MHz -25.0 -99% Bandwidth -30.0 17.00 MHz Power Over Span -35.0 ⁻¹ 5260.0 5265.0 40,494 mW 5250.0 5215.0 5220.0 5230.0 5240.0 16.07 dBm Frequency (MHz) PSD, 99% Bandwidth and Power Over Span Plot

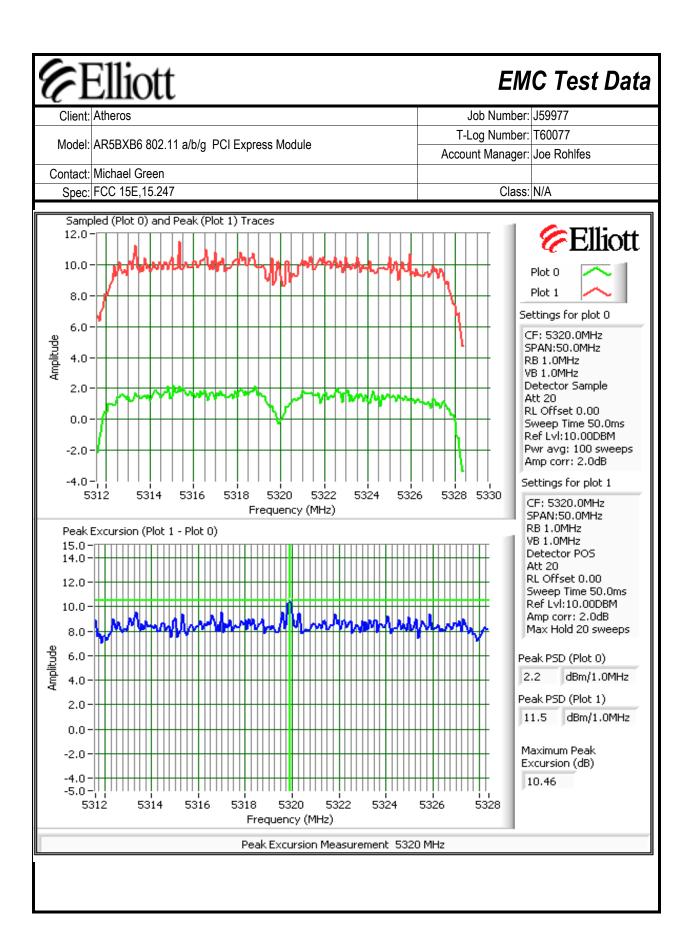
Elliott EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Elliott 5.0 Spectrum Analyzer Settings CF: 5260.0MHz 0.0 SPAN:50.0MHz RB 1.0MHz -5.0 VB 1.0MHz Detector Sample Att 30 -10.0-RL Offset 0.00 Sweep Time 50.0ms Ref Lvl: 15.00DBM 蜃 -15.0 Pwr avg: 100 sweeps Amp corr: 2.0dB -20.0 Bin size: 83kHz Highest PSD 3,96 dBm/1.0MHz -25.0 99% Bandwidth -30.0 17.00 MHz Power Over Span -35.0 ⁻¹ 40.314 mW 5235.0 5240.0 5270.0 5280.0 5285.0 5250.0 5260.0 16.05 dBm Frequency (MHz) PSD, 99% Bandwidth and Power Over Span Plot **Elliott** 5.0 Spectrum Analyzer Settings 0.0 CF: 5320.0MHz SPAN:50.0MHz RB 1.0MHz -5.0 VB 1.0MHz Detector Sample -10.0 -Att 20 RL Offset 0.00 Sweep Time 50.0ms -15.0 Ref Lvl: 10.00DBM Pwr avg: 100 sweeps -20.0 Amp corr: 2.0dB Bin size: 83kHz -25.0 Highest PSD 2.20 dBm/1.0MHz -30.0 99% Bandwidth -35.0 17.00 MHz Power Over Span -40.0 -\ 26.277 mW 5340.0 5345.0 5295.0 5300.0 5310.0 5320.0 5330.0 Frequency (MHz) 14.20 dBm PSD, 99% Bandwidth and Power Over Span Plot

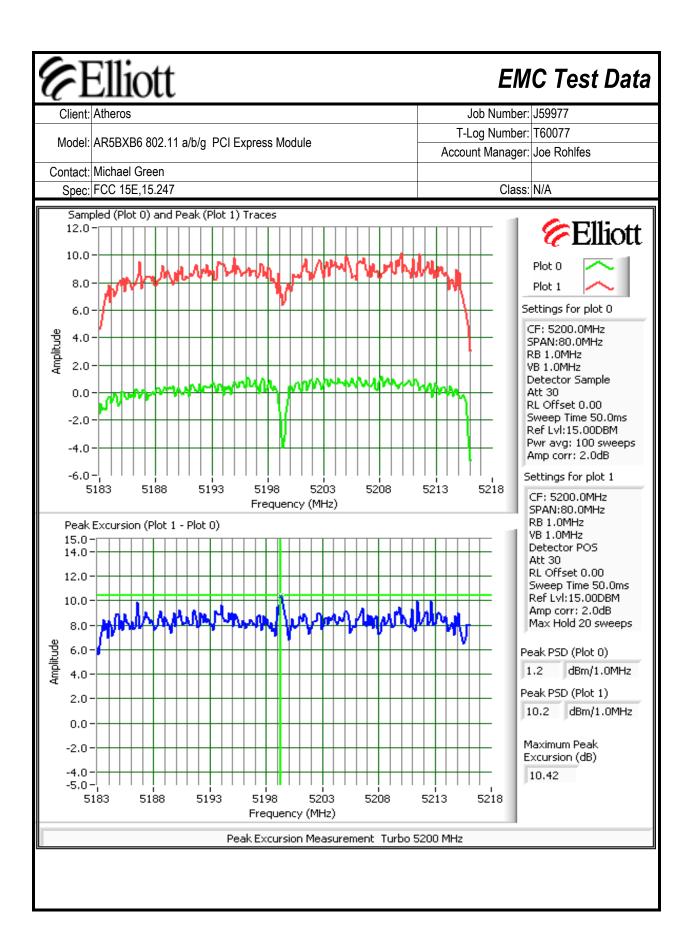
Elliott EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Elliott 5.0 Spectrum Analyzer Settings CF: 5200.0MHz 0.0 SPAN:80.0MHz RB 1.0MHz -5.0 VB 1.0MHz Detector Sample Att 30 -10.0-RL Offset 0.00 Sweep Time 50.0ms Ref Lvl: 15.00DBM 튤 -15.0-Pwr avg: 100 sweeps Amp corr: 2.0dB -20.0 Bin size: 133kHz Highest PSD -25.0-1.23 dBm/1.0MHz 99% Bandwidth -30.0 34.00 MHz Power Over Span -35.0 -39.895 mW 5160.0 5170.0 5180.0 5190.0 5200.0 5210.0 5220.0 5230.0 5240.0 Frequency (MHz) 16.01 dBm PSD, 99% Bandwidth and Power Over Span Plot Elliott 5.0 Spectrum Analyzer Settings CF: 5290.0MHz 0.0 SPAN:80.0MHz RB 1.0MHz -5.0-VB 1.0MHz Detector Sample Att 30 -10.0-RL Offset 0.00 Sweep Time 50.0ms Ref Lvl: 15.00DBM 호 -15.0· Pwr avg: 100 sweeps Amp corr: 2.0dB -20.0Bin size: 133kHz Highest PSD -25.0-0.01 dBm/1.0MHz 99% Bandwidth -30.0 34.00 MHz Power Over Span -35.0 -\ 29.323 mW 5260.0 5270.0 5280.0 5290.0 5300.0 5310.0 5320.0 5330.0 5250.0 Frequency (MHz) 14.67 dBm PSD, 99% Bandwidth and Power Over Span Plot

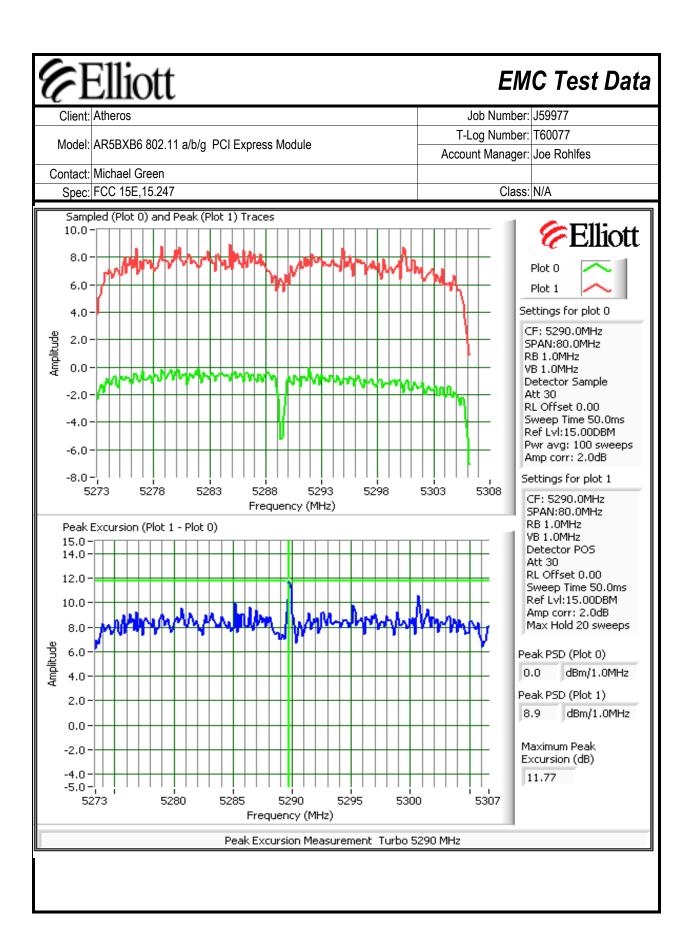
	Elliott	EM	C Test Data
	Atheros	Job Number:	J59977
Model	ADSDVDS 902 11 o/b/g DCI Everges Module	T-Log Number:	T60077
wodei.	AR5BXB6 802.11 a/b/g PCI Express Module	Account Manager:	Joe Rohlfes
	Michael Green		N.//A
	FCC 15E,15.247 Pak Excursion Measurement	Class:	N/A
uii #2. F			
Sami	Plots Showing Peak Excursion Plots Open Peak Excursion Plots Open Peak (Plot 1) Traces Plots Open Peak Excursion Plots Open Peak Excur	<u>'n</u> 	
14.0		TITITITITI 1	Elliott
12.0			
12.0	Philliphy arthrophy with Why a part of the property of the pro	444	Plot 0
10.0	· /	 	Plot 1
8.0	-		ettings for plot 0 CF: 5180.0MHz
Amplitude 0.0		<u> </u>	5PAN:50.0MHz
# 6.0			RB 1.0MHz VB 1.0MHz
4.0			Detector Sample Att 30
2.0	white the second		RL Offset 0.00 Sweep Time 50.0ms
	χΥ		Ref Lvl:15.00DBM
0.0	•		Pwr avg: 100 sweeps Amp corr: 2.0dB
-2.0			ettings for plot 1
5	172 5174 5176 5178 5180 5182 5184 5186 Frequency (MHz)		CF: 5180.0MHz
Peak	Excursion (Plot 1 - Plot 0)		SPAN:50.0MHz RB 1.0MHz
15.0 14.0			VB 1.0MHz Detector POS
			Att 30 RL Offset 0.00
12.0	·		Sweep Time 50.0ms Ref Lvl:15.00DBM
10.0	يريد الأوروا والأوراد والمراكب		Amp corr: 2.0dB
8.0	The state of the August of the	"YYW (Max Hold 20 sweeps
Amplitude 4.0			eak PSD (Plot 0)
를 4.0·	·		3.9 dBm/1.0MHz
2.0			eak PSD (Plot 1)
0.0			12.7 dBm/1.0MHz
-2.0			laximum Peak
-4.0			xcursion (dB)
-5.0			10.75
5	.72 5174 5176 5178 5180 5182 5184 5186 Frequency (MHz)	5188 5190	











EMC Test Data

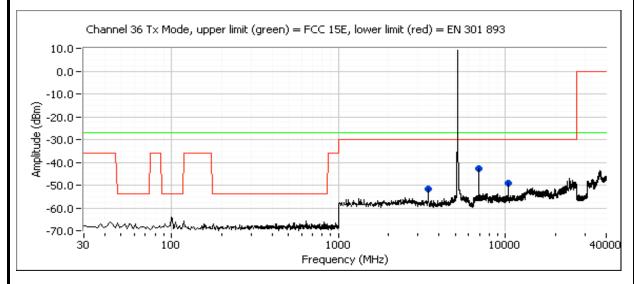
Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
	ARSBABO 602.11 a/b/g FCI Express Woudle	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

The antenna gain of the radios integral antenna is 1.45dBi. The EIRP limit is -27dBm/MHz for all out of band signals that do not fall in restricted bands. A limit of -28.5 dBm was, therefore, used for signals not in restricted bands and close to the intentional band with the assumption that the antenna gain was equal to 1.45 within 100 MHz of the upper and lower band edges. For signals removed from the band edge by more than 100MHz, radiated measurements were made (refer to run #6) if the signal amplitude exceeded -37dBm.

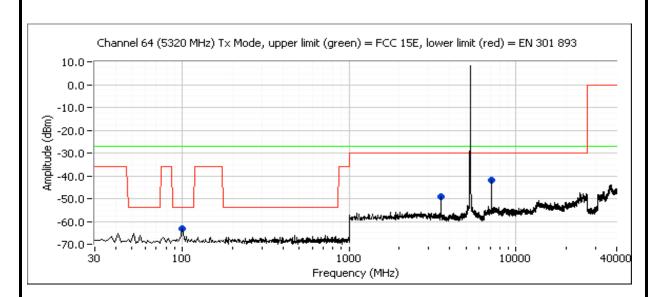
Channel	Mode	Frequency Range	Highest Spurious Signal
5180	802.11a	30 - 40000 MHz	All below -27dBm eirp
5240	802.11a	30 - 40000 MHz	All below -27dBm eirp
5260	802.11a	30 - 40000 MHz	All below -27dBm eirp
5320	802.11a	30 - 40000 MHz	All below -27dBm eirp
5200	Turbo	30 - 40000 MHz	All below -27dBm eirp
5290	Turbo	30 - 40000 MHz	All below -27dBm eirp

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)



EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: N/A Channel 48 (5240 MHz) Tx Mode, upper limit (green) = FCC 15E, lower limit (red) = EN 301 893 10.0 0.0 -10.0 Amplitude (dBm) -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 40000 100 1000 10000 Frequency (MHz) Channel 52 (5260 MHz) Tx Mode, upper limit (green) = FCC 15E, lower limit (red) = EN 301 893 10.0 0.0 -10.0 -40.0 -40.0 -50.0 -60.0 -70.0 100 40000 1000 10000 30 Frequency (MHz)

	Elliott	EMC Test Data			
Client:	Atheros	Job Number:	J59977		
Madal	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077		
wodei.	ARSBABO 002.11 a/b/g FCI Express Module	Account Manager:	Joe Rohlfes		
Contact:	Michael Green				
Spec:	FCC 15E,15.247	Class:	N/A		



Note - as turbo mode has a lower PSD than the 802.11a mode, plots of the 802.11a mode are considere the worst case for spurious emissions.

	Elliott	
Client	: Atheros	Job N
Model	: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log N
Model.	ANDDADO 002.11 a/b/g FOI Express Module	Account Ma

EMC Test Data

Client:	Atheros	Job Number:	J59977
Madalı	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
iviodei.	ANDBABO 002.11 a/b/g FCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

Radiated Emissions 1 - 40GHz (Transmit Mode) 5150 - 5240, 5260 - 5320 and 5725 - 5850 MHz Bands FCC 15 E / FCC 15.247

Test Specifics

The objective of this test session is to perform engineering evaluation testing of the EUT with respect to

the specification listed above.

Date of Test: 6/16/2005 - 6/21/2005 Config. Used: #1 Test Engineer: Varelas, Birgani, Briggs Config Change: None Test Location: SVOATS #2, #1 Host Unit Voltage 120V/60Hz

General Test Configuration

The EUT and host laptop were located on the turntable for radiated spurious emissions testing. The EUT was controlled via ART software that set the EUT to transmit continuously at target power of 18, 1Mb/s for 802.11b mode and 6Mb/s for 802.11a and 802.11g modes.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless stated otherwise.

Ambient Conditions: Temperature: 15 °C

Rel. Humidity: 75 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a - d (5180, 5240,	802.11a (5150 - 5350 MHz)			53.7dBµV/m
5260, 5320)	Radiated Spurious Emissions,	FCC Part 15.209 / 15E	Pass	(485.8µV/m) @
5200, 5520)	1 - 40 GHz			10638.7MHz (-0.3dB)
	Turbo Mode (5150 - 5350			50.6dBµV/m
2a, b (5200, 5290)	MHz) Radiated Spurious	FCC Part 15.209 / 15E	Pass	(338.8µV/m) @
	Emissions, 1 - 40 GHz			5150.0MHz (-3.4dB)
3a, 3b, 3c (5745,	802.11a (5725 - 5850 MHz)	FCC Part 15.209 /		51.8dBµV/m
5785, 5825)	Radiated Spurious Emissions,	15.247	Pass	(387.7µV/m) @
3705, 5025)	1 - 40 GHz	10.247		11649.0MHz (-2.2dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the standard:

EMC Test Data

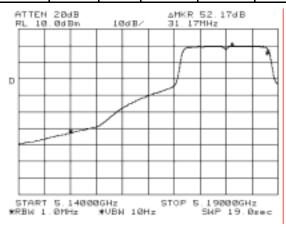
Client:	Atheros	Job Number:	J59977
Model:	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
	ANDBABO 002.11 a/b/g FCI Express inlocure	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

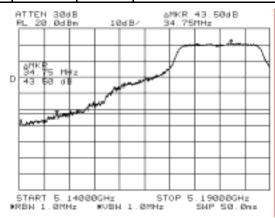
Run #1: 802.11a Mode, 5150 - 5350 MHz

Run #1a: Radiated Spurious Emissions. Channel 36 @ 5180 MHz

Fundamental Signal, power level setting = 18 (target power in ART)

	the state of the s							
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5175.975	100.0	V	-	-	AVG	159	2.1	Fundamental
5175.975	109.0	V	-	-	PK	159	2.1	Fundamental
5176.934	97.1	Н	-	-	AVG	92	1.0	Fundamental
5176.934	106.2	Н	-	-	PK	92	1.0	Fundamental





Method 1, band edge marker delta

Delta Marker - Peak 43.50 dB RB = VB= 1MHz

Delta Marker - Average 52.20 dB RB=1MHz, VB = 10Hz

Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5150.000	47.8	V	54.0	-6.2	Avg	159	2.1	
5147.500	65.5	V	74.0	-8.5	Pk	159	2.1	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to - 27dBm/MHz (~68dBuV/m).

Note 2: Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge delta marker measurement.

Client: Atheros Model: AR5BXB6 802.11

EMC Test Data

Client:	Atheros	Job Number:	J59977
Madalı	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
wodei.	ANSBADO 602.11 albig PCI Expless Module	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

Other Spurious Radiated Emissions (#36, 5180 MHz):

Other Opul	orther opunious Radiated Linissions (#30, 5100 Miliz).								
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
15542.27	46.0	V	54.0	-8.1	AVG	20	1.2		
10360.75	58.9	Н	68.3	-9.4	PK	34	1.4	Non-restricted (pk reading, avg limit)	
10357.20	58.9	V	68.3	-9.5	PK	52	1.4	Non-restricted (pk reading, avg limit)	
15541.70	40.0	Н	54.0	-14.0	AVG	35	1.0		
15542.27	59.7	V	74.0	-14.4	PK	20	1.2		
10360.75	47.2	Н	68.3	-21.1	AVG	34	1.4	Non-restricted	
10357.20	47.0	V	68.3	-21.3	AVG	52	1.4	Non-restricted	
15541.70	52.0	Н	74.0	-22.0	PK	35	1.0		
								-	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -27dBm/MHz (~68dBuV/m).

Run #1b: Radiated Spurious Emissions. Channel 48 @ 5240 MHz Spurious Emissions (ED4 Antenna (Main), Power level 18dBm)

			7,		<i></i>		
Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments
dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
47.5	V	54.0	-6.5	AVG	21	1.3	
44.0	Н	54.0	-10.0	AVG	44	1.0	
59.5	V	74.0	-14.6	PK	21	1.3	
56.1	Н	74.0	-17.9	PK	44	1.0	
49.5	V	68.3	-18.8	AVG	340	1.4	Non-restricted
47.6	Н	68.3	-20.7	AVG	53	1.3	Non-restricted
64.8	V	68.3	-3.5	PK	340	1.4	Non-restricted (pk reading, avg limit)
60.9	Н	68.3	-7.4	PK	53	1.3	Non-restricted (pk reading, avg limit)
	dBμV/m 47.5 44.0 59.5 56.1 49.5 47.6 64.8	dBμV/m V/H 47.5 V 44.0 H 59.5 V 56.1 H 49.5 V 47.6 H 64.8 V	dBμV/m V/H Limit 47.5 V 54.0 44.0 H 54.0 59.5 V 74.0 56.1 H 74.0 49.5 V 68.3 47.6 H 68.3 64.8 V 68.3	dBμV/m V/H Limit Margin 47.5 V 54.0 -6.5 44.0 H 54.0 -10.0 59.5 V 74.0 -14.6 56.1 H 74.0 -17.9 49.5 V 68.3 -18.8 47.6 H 68.3 -20.7 64.8 V 68.3 -3.5	dBμV/m V/H Limit Margin Pk/QP/Avg 47.5 V 54.0 -6.5 AVG 44.0 H 54.0 -10.0 AVG 59.5 V 74.0 -14.6 PK 56.1 H 74.0 -17.9 PK 49.5 V 68.3 -18.8 AVG 47.6 H 68.3 -20.7 AVG 64.8 V 68.3 -3.5 PK	dBμV/m V/H Limit Margin Pk/QP/Avg degrees 47.5 V 54.0 -6.5 AVG 21 44.0 H 54.0 -10.0 AVG 44 59.5 V 74.0 -14.6 PK 21 56.1 H 74.0 -17.9 PK 44 49.5 V 68.3 -18.8 AVG 340 47.6 H 68.3 -20.7 AVG 53 64.8 V 68.3 -3.5 PK 340	dBμV/m V/H Limit Margin Pk/QP/Avg degrees meters 47.5 V 54.0 -6.5 AVG 21 1.3 44.0 H 54.0 -10.0 AVG 44 1.0 59.5 V 74.0 -14.6 PK 21 1.3 56.1 H 74.0 -17.9 PK 44 1.0 49.5 V 68.3 -18.8 AVG 340 1.4 47.6 H 68.3 -20.7 AVG 53 1.3 64.8 V 68.3 -3.5 PK 340 1.4

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to - 27dBm/MHz (~68dBuV/m).

Elliott EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: n/a Run #1c: Radiated Spurious Emissions. Channel 52 @ 5260 MHz Spurious Emissions 15.209 / 15E Frequency Level Pol Detector Azimuth Height Comments MHz dBμV/m V/H Pk/QP/Avg Margin Limit degrees meters 15777.75 54.0 48.1 -5.9 **AVG** 20 1.2 15776.10 43.3 Η 54.0 -10.7 AVG 44 1.3 15777.75 74.0 -13.9 PK 20 1.2 60.1 ٧ 10519.98 AVG 220 51.4 ٧ 68.3 -16.9 1.5 Partial ambient, Non-restricted -18.3 15776.10 55.7 Η 74.0 PK 44 1.3 10519.75 48.9 68.3 -19.4 AVG 35 1.2 Partial ambient, Non-restricted Η 10519.98 63.2 ٧ 68.3 -5.1 PK 220 1.5 Non-restricted (pk reading, avg limit) 10519.75 60.7 Н 68.3 -7.7 PK 35 1.2 Non-restricted (pk reading, avg limit) For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -Note 1: 27dBm/MHz (~68dBuV/m).

Elliott EMC Test Data Job Number: J59977 Client: Atheros T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: n/a Run #1d: Radiated Spurious Emissions. High Channel @ 5320 MHz Fundamental Signal, power level setting = 18 (target power in ART) Frequency Level Pol 15.209 / 15E Detector Azimuth Height Comments V/H Pk/QP/Avg MHz dBuV/m Limit Margin degrees meters 5320.000 99.7 ٧ **AVG** 50 1.0 **Fundamental** 5320.000 108.0 V PΚ 50 1.0 **Fundamental** AVG 5323.450 98.6 46 1.4 Fundamental Η 5323.450 107.5 Н PΚ 46 1.4 Fundamental ATTEN 20dB RL 10.0dBm ΔMKR 53.33dB -33.50MHz ΔMKR 46, 50dB -27, 75MHz ATTEN 20dB RL 10.0dBm 10dB/ 10dB/ START 5. 31000GHz STOP 5.36000GHz START 5.31888GHz STOP 5.36000GHz *RBH 1.8MHz *UBW 1.0MHz SMP 50.0ms *RBW 1.0MHz ₩UBW 300Hz SMP 620mg Method 1, band edge marker delta Delta Marker - Peak 46.50 dB RB = VB= 1MHz Delta Marker - Average 53.30 dB RB=1MHz, VB = 10Hz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.209 / 15F Detector Azimuth Height Comments

ricquericy		5	10.200	77 102	Detector	/ \ZIIIIdiii	ricigit	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	46.4	V	54.0	-7.6	Avg	210	1.0	
5350.700	61.5	V	74.0	-12.5	Pk	210	1.0	

Note 1	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -
Note 1:	27dBm/MHz (~68dBuV/m).
Note 2:	Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge
Note 2.	delta marker measurement.

	Zlli(ott						EIVI	C Test Data
	Atheros							lob Number:	J59977
							T-Log Number: T60077		T60077
Model:	AR5BXB6	802.11	a/b/g PCI E	xpress Mo	dule		Accou	nt Manager:	Joe Rohlfes
Contact:	Michael G	reen							
Spec:	FCC 15E,	15.247						Class:	n/a
Other Spu	rious Radi	ated En	nissions:						
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
10641.55	45.7	V	54.0	-8.3	AVG	225	1.6		
10639.75	45.1	Н	54.0	-8.9	AVG	46	1.4		
15959.70	44.8	V	54.0	-9.2	AVG	360	1.3		
15953.80	43.6	Н	54.0	-10.4	AVG	40	1.4		
10639.75	60.4	Н	74.0	-13.6	PK	46	1.4		
10641.55	60.3	V	74.0	-13.8	PK	225	1.6		
15959.70	57.2	V	74.0	-16.8	PK	360	1.3		
15953.80	56.4	Н	74.0	-17.6	PK	40	1.4		
	Z / GDITI/IVII	12 (000	dBuV/m).						
Run #1e:	Spurious E	missior Emissio	ns. Channe	e EBJ ante	enna				
Run #1e: \$ Spurious E	Spurious E Spurious I Emissions	missior Emissio (EBJ A	ns. Channe ns using th ntenna, Pov	e EBJ ante ver level 1	enna 8, EUT at 524				
Run #1e: S Spurious E Frequency	Spurious E Spurious E Emissions Level	missior Emissio (EBJ A	ns. Channe ns using th ntenna, Pov 15.209	e EBJ ante ver level 18 9 / 15E	enna 8, EUT at 524 Detector	Azimuth	Height	Comments	
Run #1e: S Spurious E Frequency MHz	Spurious E Spurious E Emissions Level dBµV/m	Emissior Emission (EBJ AI Pol V/H	ns. Channe ns using the ntenna, Pov 15.209 Limit	e EBJ ante ver level 18 9 / 15E Margin	enna 8, EUT at 524 Detector Pk/QP/Avg	Azimuth degrees	meters	Comments	
Run #1e: S Spurious E Frequency MHz 15721.77	Spurious E Spurious E Emissions Level dBµV/m 46.8	Emission Emission (EBJ And Pol V/H V	ns. Channe ns using th ntenna, Pov 15.209 Limit 54.0	e EBJ ante wer level 18 9 / 15E Margin -7.2	enna 8, EUT at 524 Detector Pk/QP/Avg AVG	Azimuth degrees 241	meters 1.4	Comments	
Run #1e: S Spurious E Frequency MHz 15721.77 15717.93	Spurious E Spurious E Emissions Level dBµV/m 46.8 44.0	Emission Emission (EBJ And Pol V/H V	ns. Channe ns using th ntenna, Pov 15.209 Limit 54.0 54.0	e EBJ ante wer level 18 9 / 15E Margin -7.2 -10.0	enna 8, EUT at 524 Detector Pk/QP/Avg AVG AVG	Azimuth degrees 241 261	meters 1.4 1.2		
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78	Spurious E Spurious E Emissions Level dBµV/m 46.8 44.0 55.5	Emission Emissio (EBJ AI Pol V/H V H	ns. Channe ns using the ntenna, Pov 15.209 Limit 54.0 54.0 68.3	e EBJ ante wer level 18 9 / 15E Margin -7.2 -10.0 -12.8	B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG	Azimuth degrees 241 261 249	meters 1.4 1.2 1.4	Comments Non-restric	
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5	Emission (EBJ AI Pol V/H V H V	ns. Channe ns using the ntenna, Pow 15.209 Limit 54.0 54.0 68.3 74.0	e EBJ ante wer level 13 0 / 15E Margin -7.2 -10.0 -12.8 -15.5	B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK	Azimuth degrees 241 261 249 241	meters 1.4 1.2 1.4 1.4		
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5	Emission Emission (EBJ Ar Pol V/H V H V	15.209 Limit 54.0 68.3 74.0 74.0	e EBJ ante wer level 13 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6	B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK	Azimuth degrees 241 261 249 241 261	meters 1.4 1.2 1.4 1.4 1.2	Non-restric	ted
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6	Emission (EBJ Ar Pol V/H V H V	15.200 Limit 54.0 68.3 74.0 68.3 68.3	e EBJ ante wer level 15 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7	B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG	Azimuth degrees 241 261 249 241 261 249	meters 1.4 1.2 1.4 1.4 1.2 1.4 1.1 1.2 1.3	Non-restric	ted
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78	Spurious E Spurious E Emissions Level dBµV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3	Emissior Emissior (EBJ Ar Pol V/H V H V V	15.209 Limit 54.0 68.3 74.0 68.3 68.3 68.3	e EBJ ante wer level 18 9 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0	Physical Research B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK AVG AVG	Azimuth degrees 241 261 249 241 261 249 249 249	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4	Non-restric Non-restric	ted ted ted (pk reading, avg limit)
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78 10481.52	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1	Emission (EBJ Ar Pol V/H V H V	15.200 Limit 54.0 68.3 74.0 68.3 68.3	e EBJ ante wer level 15 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7	B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG	Azimuth degrees 241 261 249 241 261 249	meters 1.4 1.2 1.4 1.4 1.2 1.4 1.3	Non-restric Non-restric	ted
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10481.52 Power leve	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1	Emission Emission (EBJ Ar Pol V/H V H V V H V	15.209 Limit 54.0 68.3 74.0 68.3 68.3 68.3	e EBJ ante wer level 1: 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2	Pinna B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG PK PK AVG	Azimuth degrees 241 261 249 241 261 249 249 249	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3	Non-restric Non-restric Non-restric	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit)
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15717.93 10481.52 10479.78 10481.52 Power leve Frequency	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1 El 17 Level	Emission Emission (EBJ And Poll V/H V H V V H V V V V V V V V V V V V V V	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3	e EBJ ante wer level 13 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2	B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG PK Detector	Azimuth degrees 241 261 249 241 261 249 249 249 249 Azimuth	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height	Non-restric Non-restric	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit)
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15717.93 10481.52 10479.78 10481.52 Power level Frequency MHz	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m	Emission Emission (EBJ An Pol V/H V V V V V	15.209 Limit 54.0 68.3 74.0 68.3 68.3 68.3 68.3 Limit 15.209 Limit 54.0 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 68.3 68.3 68.3	e EBJ ante wer level 1: 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 0 / 15E Margin	Physical Research Programs Physical Research R	Azimuth degrees 241 261 249 241 261 249 249 249 249 Azimuth degrees	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters	Non-restric Non-restric Non-restric Non-restric Comments	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit)
Run #1e: 8 Spurious E Frequency MHz 15721.77 15717.93 10479.78 15717.93 10481.52 10479.78 10481.52 Power leve Frequency MHz 10481.50	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2	Emissior Emissior (EBJ Ar Pol V/H V V V V V V	15.209 Limit 54.0 68.3 74.0 68.3 68.3 68.3 68.3 68.3	e EBJ ante wer level 1: 9 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 Margin -14.1	Physical Research Price	Azimuth degrees 241 261 249 241 261 249 249 249 249 249 249 Azimuth degrees 274	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4	Non-restric Non-restric Non-restric Non-restric Comments 2nd Harmo	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78 10481.52 Power leve Frequency MHz 10481.50 10481.50	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2 68.5	Emissior Emissio (EBJ AI Pol V/H V V V V V Pol V/H V	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 68.3	e EBJ ante wer level 1: 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 0 / 15E Margin	Physical Research Programs Physical Research R	Azimuth degrees 241 261 249 241 261 249 249 249 249 Azimuth degrees	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters	Non-restric Non-restric Non-restric Non-restric Comments 2nd Harmo	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10481.52 Power leve Frequency MHz 10481.50 EBJ Anten	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 66.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2 68.5 na, Power	Emission Emission (EBJ An Pol V/H V H V V H V V V V V V V V Pol V/H V V V I level 16	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 88.3	e EBJ ante wer level 13 9 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 0 / 15E Margin -14.1 -19.8	Pinna B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG PK AVG PK AVG PK AVG PK PK AVG PK PK AVG PK PK PK PK PK PK PK PK PK P	Azimuth degrees 241 261 249 241 261 249 249 249 249 274	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4 1.4	Non-restrice Non-restrice Non-restrice Non-restrice Comments 2nd Harmo 2nd Harmo	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit) mic (Aux, 17.0dBm)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78 10481.52 Power level Frequency MHz 10481.50 10481.50 EBJ Anten Frequency	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2 68.5	Emission Emission (EBJ An Pol V/H V H V V H V V V V Pol V/H V V Pol Pol Pol	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 88.3	e EBJ ante wer level 18 9 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 Margin -14.1 -19.8	Pinna B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG PK PK AVG PK PK AVG PK PK Detector Pk/QP/Avg AVG AVG PK Detector Pk/QP/Avg AVG PK Detector	Azimuth degrees 241 261 249 241 261 249 249 249 249 249 249 Azimuth degrees 274	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4	Non-restric Non-restric Non-restric Non-restric Comments 2nd Harmo	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit) mic (Aux, 17.0dBm)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78 10481.52 Power level Frequency MHz 10481.50 10481.50 10481.50 EBJ Anten Frequency MHz	Spurious E Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2 68.5 na, Power Level dBμV/m	Emission Emission (EBJ An Pol V/H V H V V H V V V V Pol V/H V V V Ievel 10 V/H	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 88.3	e EBJ ante wer level 13 9 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 0 / 15E Margin -14.1 -19.8	Pinna B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG PK AVG PK AVG PK AVG PK PK AVG PK PK AVG PK PK PK PK PK PK PK PK PK P	Azimuth degrees 241 261 249 241 261 249 249 249 249 274	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4 1.4	Non-restrice Non-restrice Non-restrice Non-restrice Comments 2nd Harmo 2nd Harmo Comments	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit) tited (pk reading, avg limit) sinic (Aux, 17.0dBm) sinic (Aux, 17.0dBm)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78 10481.52 Power level Frequency MHz 10481.50 10481.50 EBJ Anten Frequency	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2 68.5 na, Power	Emission Emission (EBJ An Pol V/H V H V V H V V V V Pol V/H V V Pol Pol Pol	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 68.3 68.3 88.3 68.5 15.209	e EBJ ante wer level 18 9 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 Margin -14.1 -19.8	Pinna B, EUT at 524 Detector Pk/QP/Avg AVG AVG AVG PK PK PK AVG PK PK AVG PK PK AVG PK PK Detector Pk/QP/Avg AVG AVG PK Detector Pk/QP/Avg AVG PK Detector	Azimuth degrees 241 261 249 241 261 249 249 249 249 249 Azimuth degrees 274 274 Azimuth	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4 Height	Non-restrice Non-restrice Non-restrice Non-restrice Comments 2nd Harmo 2nd Harmo Comments	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit) mic (Aux, 17.0dBm)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15721.77 15717.93 10481.52 10479.78 10481.52 Power level Frequency MHz 10481.50 10481.50 10481.50 EBJ Anten Frequency MHz	Spurious E Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 58.5 56.5 47.6 68.3 61.1 el 17 Level dBμV/m 54.2 68.5 na, Power Level dBμV/m	Emission Emission (EBJ An Pol V/H V H V V H V V V V Pol V/H V V V Ievel 10 V/H	15.209 Limit 54.0 68.3 74.0 68.3 68.3 68.3 68.3 68.3 68.3 68.3 68.3	e EBJ ante wer level 1: 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 0 / 15E Margin -14.1 -19.8	Physical Research Programs Physical Research R	Azimuth degrees 241 261 249 241 261 249 249 249 249 249 Azimuth degrees 274 274 Azimuth degrees	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4 Height meters	Non-restric Non-restric Non-restric Non-restric Comments 2nd Harmo Comments 2nd Harmo	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit) tited (pk reading, avg limit) sinic (Aux, 17.0dBm) sinic (Aux, 17.0dBm)
Run #1e: Spurious E Frequency MHz 15721.77 15717.93 10479.78 15717.93 10481.52 10479.78 10481.52 Power leve Frequency MHz 10481.50 10481.50 10481.50 EBJ Anten Frequency MHz 10480.22	Spurious E Spurious E Emissions Level dBμV/m 46.8 44.0 55.5 56.5 47.6 68.3 61.1 El 17 Level dBμV/m 54.2 68.5 na, Power Level dBμV/m	Emissior Emissior (EBJ Ar Pol V/H V H V V V V V V Pol V/H V V V r level 16 V/H V	15.209 Limit 54.0 68.3 74.0 74.0 68.3 68.3 68.3 68.3 68.3 68.3 68.3 Limit 68.3 88.3 68.3	e EBJ ante wer level 1: 0 / 15E Margin -7.2 -10.0 -12.8 -15.5 -17.6 -20.7 0.0 -7.2 0 / 15E Margin -14.1 -19.8	Physical Research Programs Physical Research R	Azimuth degrees 241 261 249 241 261 249 249 249 249 249 Azimuth degrees 274 274 Azimuth degrees 248	meters 1.4 1.2 1.4 1.4 1.2 1.3 1.4 1.3 Height meters 1.4 Height meters 1.4 1.4	Non-restrice Non-restrice Non-restrice Non-restrice Comments 2nd Harmo 2nd Harmo Comments 2nd Harmo 2nd Harmo 2nd Harmo 2nd Harmo 2nd Harmo	ted ted ted (pk reading, avg limit) ted (pk reading, avg limit) nic (Aux, 17.0dBm) nic (Aux, 17.0dBm)

Client Atheros		Ellic)tt						EM	C Test Dat	
Account Manager: Joe Rohlfes									Job Number: J59977		
Account Manager: Joe Ronifes	Madali	Andali ADEDVDG 900 11 a/b/a DCI Evaraga Madula						T-L	og Number:	T60077	
Spec: FCC 15E,15.247 Class: n/a urious Emissions (EBJ Antenna, Power level 18, EUT at 5320 MHz) quency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBμV/m V/H Limit Margin Pk/QP/Avg degrees meters 638.69 53.7 H 54.0 -0.3 AVG 42 1.0 638.69 64.5 H 74.0 -9.5 PK 42 1.0 637.19 52.7 V 54.0 -1.3 AVG 53 1.4	Model:	/lode: ARSBXB6 802.11 a/b/g PCI Express Module						Accou	ınt Manager:	Joe Rohlfes	
urious Emissions (EBJ Antenna, Power level 18, EUT at 5320 MHz) quency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBμV/m V/H Limit Margin Pk/QP/Avg degrees meters 638.69 53.7 H 54.0 -0.3 AVG 42 1.0 638.69 64.5 H 74.0 -9.5 PK 42 1.0 637.19 52.7 V 54.0 -1.3 AVG 53 1.4	Contact:	Contact: Michael Green									
quency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBμV/m V/H Limit Margin Pk/QP/Avg degrees meters 638.69 53.7 H 54.0 -0.3 AVG 42 1.0 638.69 64.5 H 74.0 -9.5 PK 42 1.0 637.19 52.7 V 54.0 -1.3 AVG 53 1.4	Spec:	FCC 15E,	15.247						Class:	n/a	
MHz dBμV/m V/H Limit Margin Pk/QP/Avg degrees meters 638.69 53.7 H 54.0 -0.3 AVG 42 1.0 638.69 64.5 H 74.0 -9.5 PK 42 1.0 637.19 52.7 V 54.0 -1.3 AVG 53 1.4				ntenna, Pov	wer level 18						
638.69 53.7 H 54.0 -0.3 AVG 42 1.0 638.69 64.5 H 74.0 -9.5 PK 42 1.0 637.19 52.7 V 54.0 -1.3 AVG 53 1.4									Comments		
638.69 64.5 H 74.0 -9.5 PK 42 1.0 637.19 52.7 V 54.0 -1.3 AVG 53 1.4											
637.19 52.7 V 54.0 -1.3 AVG 53 1.4											

EMC Test Data

Client:	Atheros	Job Number:	J59977
Modal:	lel: AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
Model.	ANJEADO 002.11 albig FCI Express inlocule	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

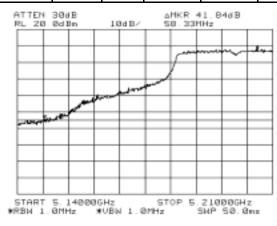
Run #2: Turbo Mode, 5150 - 5350 MHz

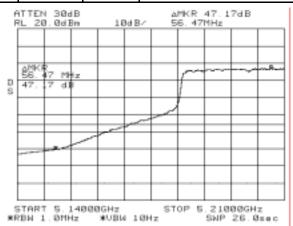
As the PSD for turbo mode is lower than that for 802.11a mode measurements of harmonic signals were considered covered by the 802.11a mode tests.

Run #2a: Radiated Spurious Emissions. Turbo Channel @ 5200 MHz

Fundamental Signal, power level setting = 18 (target power in ART)

		,		9 17 (5511 9				
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5201.400	97.8	V	-	-	AVG	190	2.0	Fundamental
5201.400	106.1	V	-	-	PK	190	2.0	Fundamental
5201.925	95.0	Н	-	-	AVG	99	1.0	Fundamental
5201.925	103.0	Н	-	-	PK	99	1.0	Fundamental





Method 1, band edge marker delta

Delta Marker - Peak	41.8 dB	RB = VB= 1MHz
Delta Marker - Average	47.20 dB	RB=1MHz, VB = 10Hz

Band Edge Signal Radiated Field Strength

	<u> </u>			J -				
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5150.000	50.6	V	54.0	-3.4	Avg	159	2.1	Using first method
5148.000	64.3	V	74.0	-9.7	Pk	159	2.1	Using first method

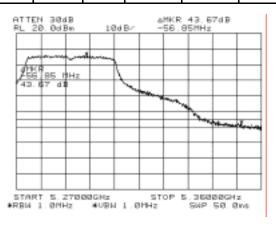
Note 2: Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge delta marker measurement.

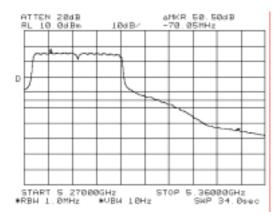
EMC Test Data

Client:	Atheros	Job Number:	J59977
Modal:	AR5BXB6 802.11 a/b/g PCI Express Module	T-Log Number:	T60077
wodei.	ARSBABO 602.11 a/b/g PCI Express ividuale	Account Manager:	Joe Rohlfes
Contact:	Michael Green		
Spec:	FCC 15E,15.247	Class:	n/a

Run #2b: Radiated Spurious Emissions. Turbo Channel @ 5290 MHz Fundamental Signal, power level setting = 18 (target power in ART)

		,		9				
Frequency	Level	Pol	15.209	9 / 15E	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5276.292	95.4	V	-	-	AVG	180	1.1	Fundamental
5276.292	103.7	V	-	-	PK	180	1.1	Fundamental
5288.133	95.2	Н	-	-	AVG	104	1.0	Fundamental
5288.133	103.6	Н	-	-	PK	104	1.0	Fundamental





Method 1, band edge marker delta (5350 MHz band edge)

Delta Marker - Peak	43.7 dB	RB = VB= 1MHz
Delta Marker - Average	50.5 dB	RB=1MHz, VB = 10Hz

Band Edge Signal Radiated Field Strength - 5350 MHz

Frequency	Level	Pol	15.209 / 1	5E / LP002	Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	44.9	V	54.0	-9.1	AVG	180	1.1	
5352.000	60.0	V	74.0	-14.0	PK	180	1.1	

Note 2: Band-edge measurement calculated from the fundamental field strength (peak or average) minus the band edge delta marker measurement.

Client [.]	Atheros					lob Number:	J59977		
Onoric.	7 11.10.00			T-Log Number: T60077					
Model:	AR5BXB6	802.11	a/b/g PCI E	Account Manager: Joe Rohlfes					
Contact:	Michael G	roon			710000	iit iviariagor.	occ remies		
	FCC 15E,				Class:	n/a			
			E70E E0	EO MILL	\A/: a.taa. 111	D III Main	A 4 a a		II/a
				•		EBJ" Main	Antenna	l	
		•			@ 5745 MH jet power in				
Frequency		Pol		y – 16 (tary / 15.247	Detector	Azimuth	Height	Comments	
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
5739.459	99.5	Н	-	- Iviaigiii	AVG	2	1.0	Fundament	al
5739.459	107.9	H	_	_	PK	2	1.0	Fundament	
5742.000	95.8	V	-	-	AVG	66	1.0	Fundament	
5742.000	104.8	V	-	-	PK	66	1.0	Fundament	
Spurious E		-							
Frequency		Pol	15.209	15.247	Detector	Azimuth	Height	Comments	
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
11489.70	49.9	Н	54.0	-4.1	AVG	50	1.1		
11487.75	47.7	V	54.0	-6.3	AVG	304	1.4		
11489.70	62.0	Н	74.0	-12.0	PK	50	1.1		
11487.75	59.7	V	74.0	-14.3	PK	304	1.4		
17233.40	44.0	Н	-	-	AVG	41	1.0	Note 2	
17222.15	41.3	V	-	-	AVG	35	1.0	Note 2	
17233.40	54.7	Н	-	-	PK	41	1.0	Note 2	
17222.15	52.6	V	-	-	PK	35	1.0	Note 2	
Note 1:	For emiss 20dBc.	ions in re	estricted bar	nds, the limi	t of 15.209 w	as used. All	other emiss	sions were s	ubject to the limit of -
Note 2:		more th	an 20dB be	low the limit	t of 20dPa				
VOLE Z.	LIIIISSIOIIS	s inore u	IAII ZUUD DE	iow the iiiiii	1 01 -200DC				
Run #3h·	Radiated 9	Snurious	s Fmissions	Channel	@ 5785 MH	7			
requency					Detector	Azimuth	Height	Comments	
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Commonto	
11571.80	51.9	V	54.0	-2.1	AVG	210	1.0		
11574.90	49.7	Н	54.0	-4.3	AVG	61	1.4	1	
11571.80	63.9	V	74.0	-10.1	PK	210	1.0		
11574.90	61.4	Н	74.0	-12.6	PK	61	1.4		
17363.55	42.7	Н	-	-	AVG	59	1.2	Note 2	
17365.90	41.9	V	-	-	AVG	318	1.0	Note 2	
17365.90	54.2	V	-	-	PK	318	1.0	Note 2	
17363.55	54.3	Н	-	-	PK	59	1.2	Note 2	
			natriated be-	احمال عام المحا					ubject to the limit of -
	i For emiss	ions in re	estricted bar	ias, the iimi	t of 15.209 w	as used. All	other emis	sions were s	ubject to the limit of -

Elliott EMC Test Data Client: Atheros Job Number: J59977 T-Log Number: T60077 Model: AR5BXB6 802.11 a/b/g PCI Express Module Account Manager: Joe Rohlfes Contact: Michael Green Spec: FCC 15E,15.247 Class: n/a Run #3c: Radiated Spurious Emissions. High Channel @ 5825 MHz 15.209 / 15.247 Frequency Level Pol Detector Azimuth Height Comments MHz $dB\mu V/m$ v/h Limit Margin Pk/QP/Avg degrees meters 11649.05 ٧ -2.2 AVG 209 51.8 54.0 1.4 49.4 AVG 11649.65 Н 54.0 -4.657 1.7 11649.05 64.0 ٧ 74.0 -10.0 PΚ 209 1.4 11649.65 PK 60.9 Н 74.0 -13.1 57 1.7 17474.25 43.7 Η AVG 360 1.2 Note 2 -17477.50 43.2 ٧ _ **AVG** 165 1.2 Note 2 17474.25 Н PK 360 Note 2 55.6 1.2 17477.50 PK 165 1.2 Note 2 54.6 For emissions in restricted bands, the limit of 15.209 was used. All other emissions were subject to the limit of -Note 1: 20dBc. Note 2: Emissions more than 20dB below the limit of -20dBc Run #3d: Radiated Spurious Emissions. Channel @ 5785 MHz - spot check with Wistron ED4 Antenna (Main) Spurious Emissions (ED4 Antenna (Main), Power level 18dBm) 15.209 / 15.247 Level Pol Detector Frequency Azimuth Height Comments v/h MHz dB_uV/m Limit Margin Pk/QP/Avg degrees meters 11570.27 54.0 232 45.6 ٧ -8.4 **AVG** 1.4 2nd Harmonic (Main, 18.0dBm) 11570.40 45.0 Η 54.0 -9.1 **AVG** 360 1.4 2nd Harmonic (Main, 18.0dBm) 11570.27 56.5 ٧ 74.0 -17.5 PΚ 232 1.4 2nd Harmonic (Main, 18.0dBm) 11570.40 56.4 Н 74.0 -17.6 PΚ 360 1.4 2nd Harmonic (Main, 18.0dBm) 17357.25 42.3 Н **AVG** 247 1.2 Note 2 17354.18 40.3 ٧ **AVG** 360 1.7 Note 2 17357.25 54.5 Η PΚ 247 1.2 Note 2 PK 17354.18 51.5 360 1.7 Note 2 For emissions in restricted bands, the limit of 15.209 was used. All other emissions were subject to the limit of -Note 1: 20dBc Emissions more than 20dB below the limit of -20dBc Note 2: