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Electromagnetic Emissions Test Report and Application for Grant of Equipment Authorization pursuant to Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7 FCC Part 15 Subpart C on the LXE Inc Transmitter Model: 4831

UPN:	1995B-4831
FCC ID:	KDZLXE4831P
GRANTEE:	LXE Inc 125 Technology Parkway Norcross, GA 30092
TEST SITE:	Elliott Laboratories, Inc. 684 W. Maude Ave Sunnyvale, CA 94086
REPORT DATE:	April 24, 2008
FINAL TEST DATE:	November 19, Novembeer 27, December 14 andDecember 19, 2007 and Janaury 14, January 15, January 25 and January 28, and March 4, 2008
AUTHORIZED SIGNATORY:	Mark E. Hill Staff Engineer

ACCREDITED

Testing Cert #2016-01

REVISION HISTORY

Rev #	Date	Comments	Modified By
1		Initial Release	DG

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SCOPE

An electromagnetic emissions test has been performed on the LXE, Inc. model 4831 pursuant to the following rules:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003

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

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

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

The test results recorded herein are based on a single type test of the LXE, Inc. model 4831 and therefore apply only to the tested sample. The sample was selected and prepared by Ron Seide of Summit Data Communications.

Testing was originally performed on the Summit Data Communications model SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors. The LXE Inc model 4831 is an OEMd version of the Summit Data device.

OBJECTIVE

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

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

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

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

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

STATEMENT OF COMPLIANCE

The tested sample of Summit Data Communications model SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors complied with the requirements of the following regulations:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15 Subpart C

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

TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	-	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	16.5 MHz - 802.11g 9.1 MHz – 802.11b	>500kHz	Complies
	RSP100	99% Bandwidth	17.2 MHz – 802.11g 12.8 MHz – 802.11b	Information only	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	24.1 dBm (0.258 Watts) EIRP = 0.619 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	7.5 dBm / MHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All emissions < -20dBc	< -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.8dBµV/m (489.8µV/m) @ 4924.0MHz	15.207 in restricted bands, all others < -20dBc	Complies (-0.2dB)

Note 1: EIRP calculated using antenna gain of 3.8 dBi for the highest EIRP multi-point system.

DIGITAL TRANSMISSION SYSTEMS (5725 –5850 MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	16.4 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	17.5 MHz	Information only	Complies
15.247 (b) (3) 15.247		Output Power (multipoint systems)	15.6 dBm (0.036 Watts) EIRP = 0.115 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	-8.3 dBm / MHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions – 30MHz – 40 GHz	All spurious emissions < -20dBc	< -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 40 GHz	52.1dBµV/m (402.7µV/m) @ 11489.9MHz	15.207 in restricted bands, all others < -20dBc	Complies (-1.9 dB)

Note 1: EIRP calculated using antenna gain of 5 dBi for the highest EIRP multi-point system.

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	The radio module uses a unique connector type		Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	41.4dBµV/m (117.5µV/m) @ 2187.3MHz		Complies (- 12.6 dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	55.6dBµV @ 0.167MHz	Refer to standard	Complies (-9.5dB)
15.247 (b) (5)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding non-interference	
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding detachable antenna	

MEASUREMENT UNCERTAINTIES

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

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	0.015 to 30	± 3.0
Radiated Emissions	30 to 1000	± 3.6
Radiated Emissions	1000 to 40000	± 6.0

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Summit Data Communication model SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors is an 802.11a/g compliant wireless LAN radio module which is designed to provide wireless local area networking connectivity. Normally, the EUT would be embedded in various types of mobile and stationary computing devices such as handheld and vehicle mounted data terminals during operation. The EUT was, therefore, placed on a tabletop during emissions testing to simulate the end user environment. The electrical rating of the EUT is 3.3 VDC +/- 5% With typical power consumption of 400 mA (1320mW) while in transmit mode, 180 mA (594mW) while in receive mode and 10 mA (33 mW) while in standby mode.

The sample was received on November 19, 2007 and tested on November 19, Novembeer 27, December 14 andDecember 19, 2007 and Janaury 14, January 15, January 25, January 28, February 28, and March 4, 2008. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Summit Data Communications	SDC-CF10AG	Compact Flash Module	-	TWG-SDCCF10AG

Note: The EUT was tested using an extender card that allowed for the card to be outside of the host system.

ANTENNA SYSTEM

There were three antennas included in the testing:
Laird Centurion, m/n NanoBlade, pcb antenna, 3.8dBi @ 2.45GHz, 5.1dBi @ 5.25GHz, 4.5dBi @ 5.8GHz
Volex, p/n VLX-51004-A, Omni, 2.3dBi @ 2.4GHz, 1.9dBi @ 5GHz
Larson, p/n R380.500.314, Omni, 1.6dBi @ 2.4GHz, 5dBi @ 5GHz

Note: The Volex Omni was used in the 2.4GHz band and the Larson Omni was used in the 5GHz bands. The Laird pcb antenna was also tested for both 2.4GHz and 5GHz.

ENCLOSURE

The EUT does not have an enclosure as it is designed to be installed within the enclosure of a host system.

MODIFICATIONS

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

SUPPORT EQUIPMENT

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

Manufacturer	Model	Description	Serial Number	FCC ID
Hewlett Packard	iPAQ	Handheld Computer	-	-

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
iPAQ Power	AC Mains	2wire	Unshielded	1.5
Flash Module	iPAQ Module Port	-	-	-

EUT OPERATION

During emissions testing the EUT was configured to transmit at the Low, Middle, and High Channel. Note, the radio was unable to transmit continuously due to limitations of the host device.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on November 19, Novembeer 27, December 14 and December 19, 2007 and Janaury 14, January 15, January 25 and January 28, 2008 at the Elliott Laboratories Open Area Test Site OATS located at 684 West Maude Avenue, Sunnyvale, California. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement 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 requirements of ANSI C63.4:2003.

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

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

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

INSTRUMENT CONTROL COMPUTER

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

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

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

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

INSTRUMENT CALIBRATION

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

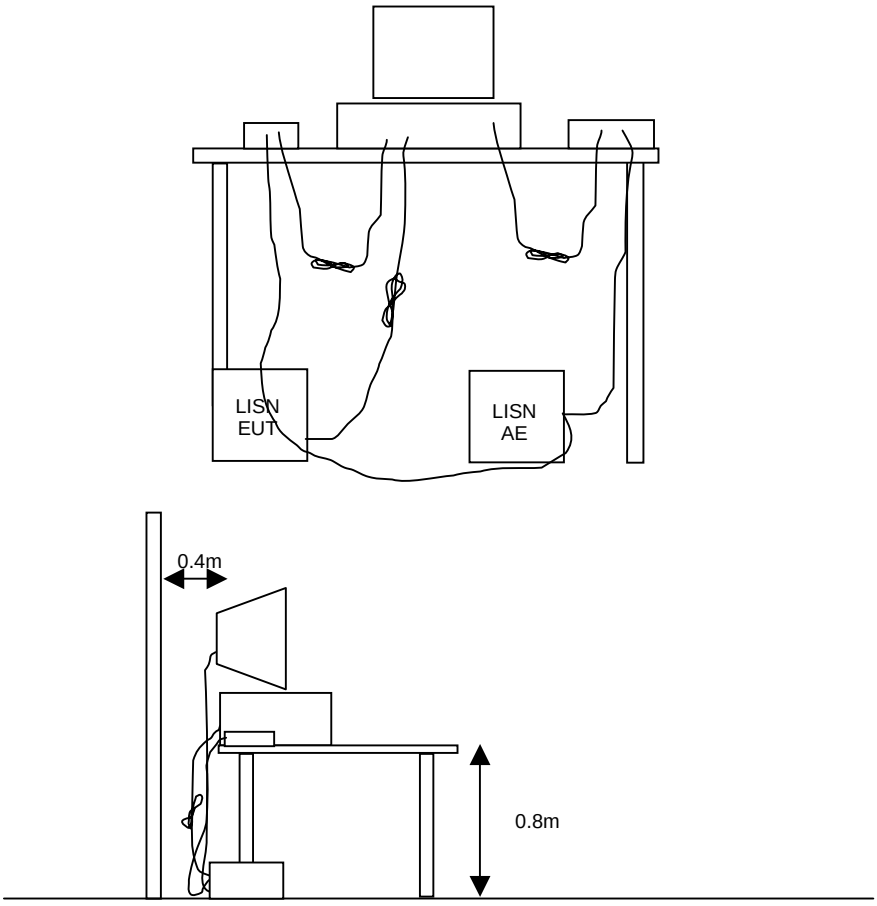
TEST PROCEDURES

EUT AND CABLE PLACEMENT

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

CONDUCTED EMISSIONS

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

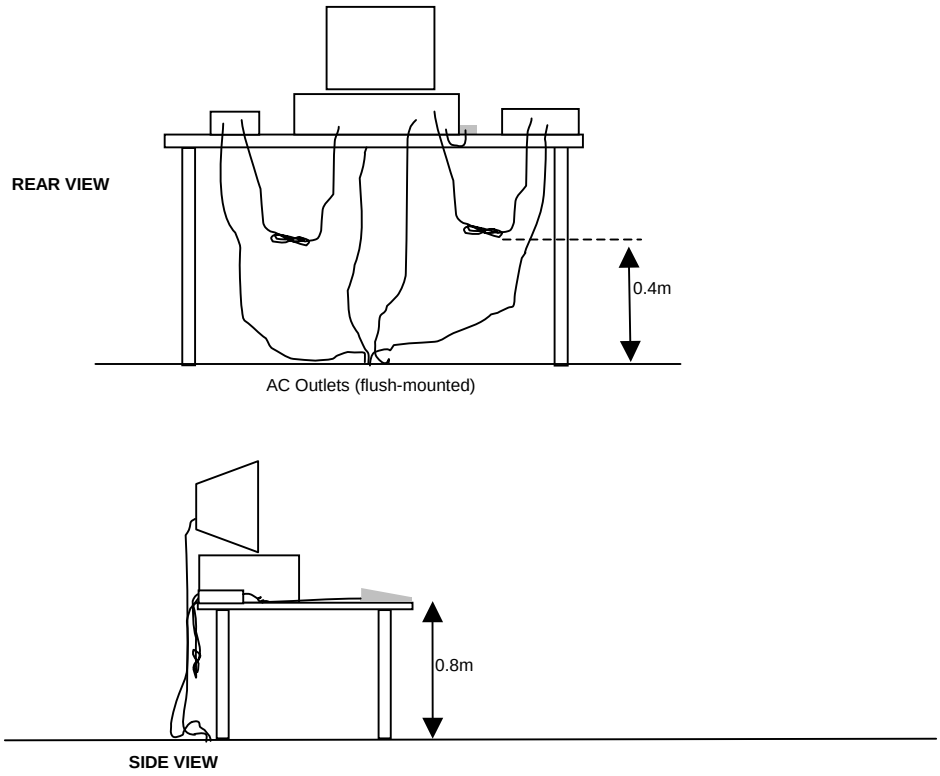


A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT).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

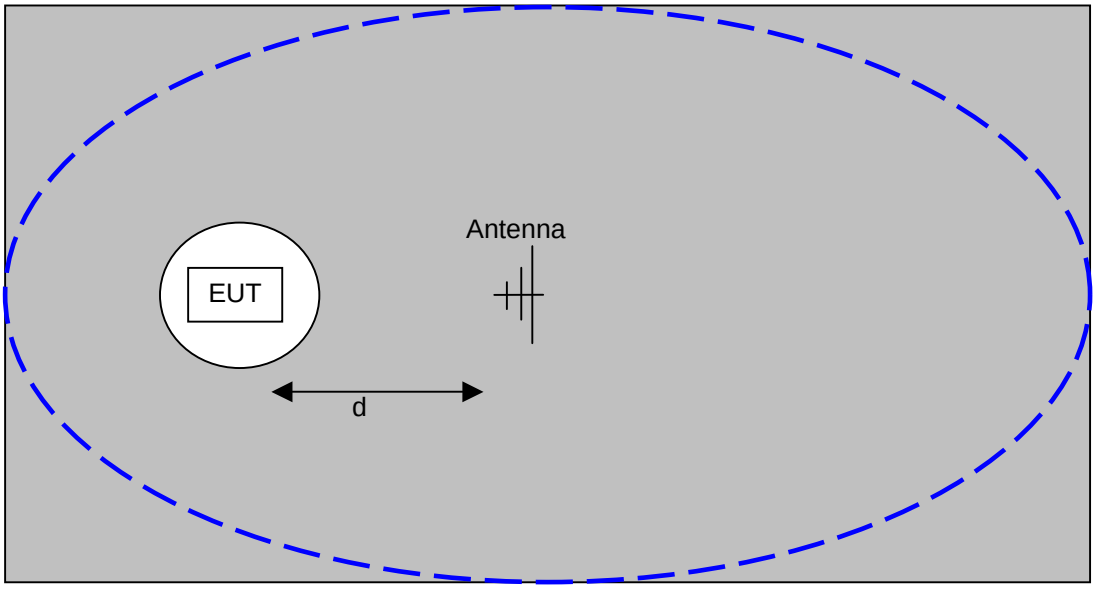
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

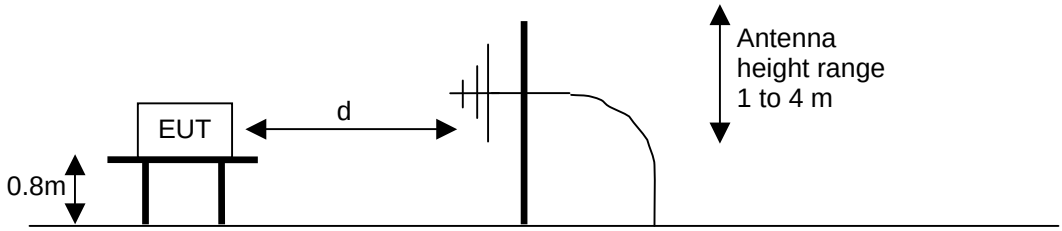
When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



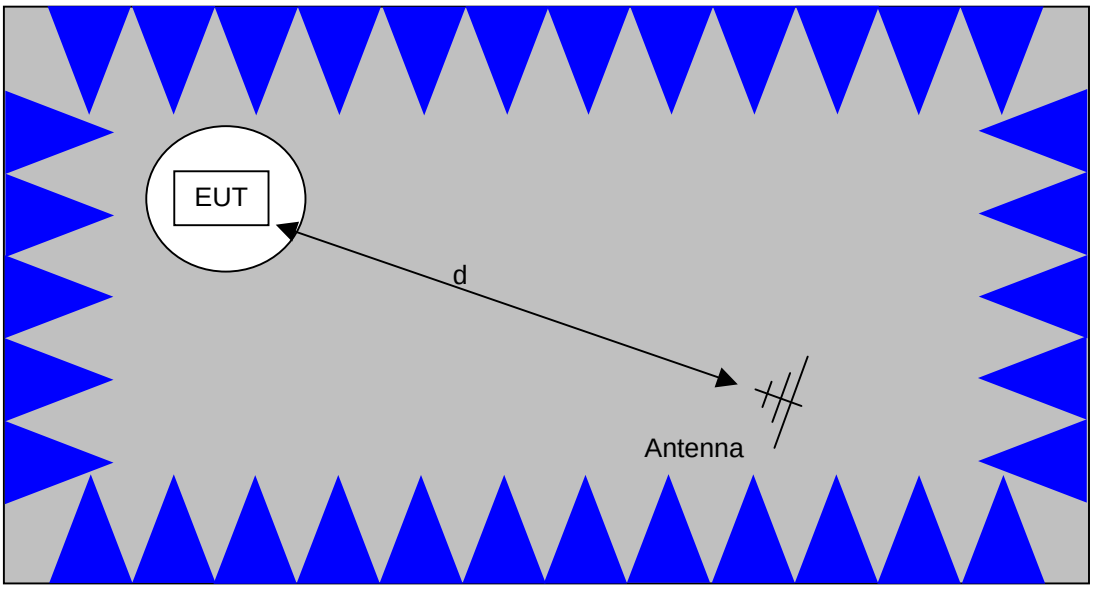
Typical Test Configuration for Radiated Field Strength Measurements



The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test distances (d) of 3m and 10m. Refer to the test data tables for the actual measurement distance.

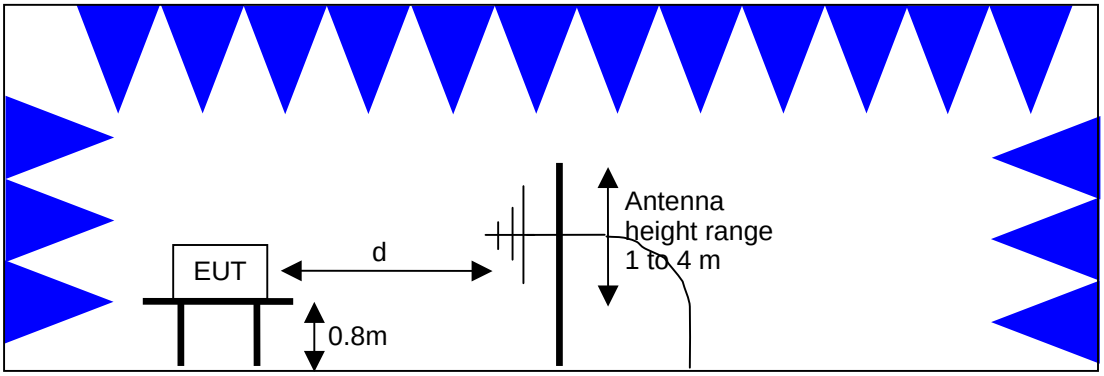


Test Configuration for Radiated Field Strength Measurements
OATS- Plan and Side Views



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

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



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

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

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

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

CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(a), RSS GEN

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1] (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

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

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

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

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

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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 Watt (30 dBm)	8 dBm/3kHz
2400 – 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 – 5850	1 Watt (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.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

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

where P is the eirp (Watts)

EXHIBIT 1: Test Equipment Calibration Data

3 Pages

Radiated Emissions, 30 - 26,500 MHz, 11-Oct-07
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	15-Nov-07
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	High Pass filter, 3.5 GHz (Blu System)	P/N 84300-80038 (84125C)	1391	29-May-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	17-Jan-08

Radiated Emissions, 30 - 26,500 MHz, 12-Oct-07
Engineer: jcaizzi

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	15-Nov-07
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	High Pass filter, 3.5 GHz (Blu System)	P/N 84300-80038 (84125C)	1391	29-May-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	17-Jan-08

Radiated Emissions, 30 - 18,000 MHz, 31-Oct-07
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	15-Nov-07
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz - 22 GHz	8593EM	1319	18-May-08
Hewlett Packard	High Pass filter, 3.5 GHz (Blu System)	P/N 84300-80038 (84125C)	1391	29-May-08

Radiated Emissions, 30 - 12,000 MHz, 19-Nov-07
Engineer: Joseph Cadigal

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	17-Jan-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radio Antenna Port (Power and Spurious Emissions), 26-Nov-07
Engineer: skhushzad

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08

Radio Spurious Emissions, 27-Nov-07
Engineer: Suhaila Khushzad

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	21-Dec-07
EMCO	Log Periodic Antenna, 0.2-2 GHz	3148	1404	30-Mar-08
EMCO	Biconical Antenna, 30-300 MHz	3110B	1497	03-Jul-08

Radio Spurious Emissions, 11-Dec-07
Engineer: Suhaila Khushzad

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	17-Jan-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radiated Emissions, 30 - 40,000 MHz, 12-Dec-07
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Red)	3160-09 (84125C)	1150	05-Nov-08
EMCO	Antenna, Horn, 26.5-40 GHz (SA40-Red)	3160-10 (84125C)	1151	05-Nov-08
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	15-Oct-08

Radio Spurious Emissions, 14-Dec-07
Engineer: Suhaila Khushzad

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	17-Jan-08

Radio Spurious Emissions, 19-Dec-07
Engineer: Suhaila Khushzad

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18GHz	3115	868	26-Apr-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08

Radiated Emissions, 30 - 16,000 MHz, 20-Dec-07
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18GHz	3115	868	26-Apr-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08

Conducted Emissions - AC Power Ports, 21-Dec-07
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	LISN, FCC / CISPR	LISN-4, OATS	362	18-Jul-08
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	812	05-Feb-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	21-Sep-08

Radio Antenna Port (Power and Spurious Emissions), 07-Jan-08
Engineer: Suhaila Khushzad

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	06-Nov-08

Radio Spurious Emissions, 10-Jan-08
Engineer: Suhaila Khushzad

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	780	09-Oct-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08

Radio Antenna Port (Power and Spurious Emissions), 14-Jan-08
Engineer: jcaizzi

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	787	21-Feb-08

Radiated Emissions, 30 - 26,500 MHz, 18-Jan-08
Engineer: jcaizzi

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	29-May-08

Radio Antenna Port (Power and Spurious Emissions), 24-Jan-08
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	25-Jan-08

Conducted Emissions - AC Power Ports, 28-Jan-08
Engineer: Peter Sales

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	Test Receiver, 0.009-30 MHz	ESH3	215	29-Mar-08
Elliott Laboratories	LISN, FCC / CISPR	LISN-3, OATS	304	18-Jul-08
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	29-Nov-08
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1398	05-Feb-08

Radiated Emissions, 1000 - 40000 MHz, 04-Mar-08
Engineer: Pete Sales

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	Head (Inc W1-W4, 1143, 1144) Red	84125C	1145	16-Nov-08
Hewlett Packard	Spectrum Analyzer 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Red)	3160-09 (84125C)	1150	05-Nov-08
EMCO	Antenna, Horn, 26.5-40 GHz (SA40-Red)	3160-10 (84125C)	1151	05-Nov-08

EXHIBIT 2: Test Measurement Data

79 Pages

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Emissions Standard(s):	15.247 / 15.E / RSS-210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Summit Data Communications

Model

SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors

Date of Last Test: 4/25/2008

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manger:	Dean Eriksen
Contact:	Ron Seide		
Emissions Standard(s):	15.247 / 15.E / RSS-210	Class:	-
Immunity Standard(s):	-	Environment:	-

EUT INFORMATION

The following information was collected during the test session(s).

General Description

The EUT is an 802.11a/g compliant wireless LAN radio module which is designed to provide wireless local area networking connectivity. Normally, the EUT would be embedded in various types of mobile and stationary computing devices such as handheld and vehicle mounted data terminals during operation. The EUT was, therefore, placed on a tabletop during emissions testing to simulate the end user environment. The electrical rating of the EUT is 3.3 VDC +/- 5% With typical power consumption of 400 mA (1320mW) while in transmit mode, 180 mA (594mW) while in receive mode and 10 mA (33 mW) while in standby mode.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Summit Data Communications	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	Compact Flash Module	TBP	TWG-SDCCF10AG

EUT Antenna (Intentional Radiators Only)

There were three antennas included in the testing:
Laird Centurion, m/n NanoBlade, pcb antenna, 3.8dBi @ 2.45GHz, 5.1dBi @ 5.25GHz, 4.5dBi @ 5.8GHz
Volex, p/n VLX-51004-A, Omni, 2.3dBi @ 2.4GHz, 1.9dBi @ 5GHz
Larson, p/n R380.500.314, Omni, 1.6dBi @ 2.4GHz, 5dBi @ 5GHz

Note: The Volex Omni was used in the 2.4GHz band and the Larson Omni was used in the 5GHz bands. The Laird pcb antenna was also tested for both 2.4GHz and 5GHz.

The antenna connects to the EUT via a non-standard antenna connector, thereby meeting the requirements of FCC 15.203.

EUT Enclosure

The EUT does not have an enclosure as it is designed to be installed within the enclosure of a host computer or system.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manger:	Dean Eriksen
Contact:	Ron Seide		
Emissions Standard(s):	15.247 / 15.E / RSS-210	Class:	-
Immunity Standard(s):	-	Environment:	-

Test Configuration #1

The following information was collected during the test session(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
-	-	-	-	-

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Hewlett Packard	iPAQ	Handheld Computer	-	-

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
iPAQ Power	AC Mains	2wire	Unshielded	1.5
Flash Module	iPAQ Module Port	-	-	-

EUT Operation During Emissions Tests

During emissions testing the EUT was configured to transmit at the Low, Middle, and High Channel

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

Date of Test: 3/5/2008
Test Engineer: Peter Sales
Test Location: SVOATS #1

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

General Test Configuration

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

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 7 °C
Rel. Humidity: 78 %

Summary of Results

Run #1	TX Mode	Channel	Power Setting	Pass/Fail	Margin
1a	a	149	Full	Pass	51.1dBµV/m (358.9µV/m) @ 11491.5MHz (-2.9dB)
1b	a	157	Full	Pass	48.8dBµV/m (275.4µV/m) @ 11569.7MHz (-5.2dB)
1c	a	161	Full	Pass	48.4dBµV/m (263.0µV/m) @ 17415.3MHz (-5.6dB)

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.

Note:	All tests will be performed in data rate of 54Mbps. Average band edge plots are for reference only, final measurements made with VB=1khz to avoid desensitization at 10Hz which reduced signal level by 6.6dB.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Tx Radiated Spurious Emissions, 30 - 40000 MHz. 5725-5850 MHz Band

Run #1a: Tx Radiated Spurious Emissions, Low Channel @ 5745 MHz,
Full Power settting,Laird PCB Antenna with 5.1dBi, Rate = 54Mbps

Other Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
11491.470	51.1	V	54.0	-2.9	AVG	88	1.5	
11488.750	49.5	H	54.0	-4.5	AVG	105	1.5	
17234.600	48.9	V	54.0	-5.1	AVG	164	1.8	
11491.470	58.6	V	74.0	-15.4	PK	88	1.5	
11488.750	56.4	H	74.0	-17.6	PK	105	1.5	
17234.600	54.3	V	74.0	-19.7	PK	164	1.8	

Run #1b: Tx Radiated Spurious Emissions, Middle Channel @ 5785 MHz,
Full Power settting,Laird PCB Antenna with 5.1dBi, Rate = 54Mbps

Other Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
11569.670	48.8	V	54.0	-5.2	AVG	66	1.0	
17354.140	48.2	V	54.0	-5.8	AVG	149	1.0	
11569.640	46.8	H	54.0	-7.2	AVG	110	1.6	
11569.670	55.8	V	74.0	-18.2	PK	66	1.0	
17354.140	54.6	V	74.0	-19.4	PK	149	1.0	
11569.640	53.8	H	74.0	-20.2	PK	110	1.6	

Run #1c: Tx Radiated Spurious Emissions, High Channel @ 5805 MHz,
Full Power settting,Laird PCB Antenna with 5.1dBi, Rate = 54Mbps

Other Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
17415.310	48.4	H	54.0	-5.6	AVG	25	1.0	
11609.510	44.6	H	54.0	-9.4	AVG	67	1.0	
11608.750	44.5	V	54.0	-9.5	AVG	49	1.0	
17415.310	53.4	H	74.0	-20.6	PK	25	1.0	
11608.750	49.4	V	74.0	-24.6	PK	49	1.0	
11609.510	49.1	H	74.0	-24.9	PK	67	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

Date of Test: 3/5/2008
Test Engineer: Peter Sales
Test Location: SVOATS #1

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

General Test Configuration

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

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 7 °C
Rel. Humidity: 78 %

Summary of Results

Run #1	TX Mode	Channel	Power Setting	Pass/Fail	Margin
1a	a	149	Full	Pass	52.1dBµV/m (402.7µV/m) @ 11489.9MHz (-1.9dB)
1b	a	157	Full	Pass	48.7dBµV/m (272.3µV/m) @ 11569.8MHz (-5.3dB)
1c	a	161	Full	Pass	48.3dBµV/m (260.0µV/m) @ 17415.0MHz (-5.7dB)

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.

Note:	All tests will be performed in data rate of 54Mbps. Average band edge plots are for reference only, final measurements made with VB=1khz to avoid desensitization at 10Hz which reduced signal level by 6.6dB.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Tx Radiated Spurious Emissions, 30 - 40000 MHz. 5725-5850 MHz Band

Run #1a: Tx Radiated Spurious Emissions, Low Channel @ 5745 MHz,
Full Power settting, Flat Omni Antenna with 5.0dBi, Rate = 54Mbps

Other Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
11489.890	52.1	V	54.0	-1.9	AVG	97	1.6	
17234.660	48.9	V	54.0	-5.1	AVG	165	1.0	
11489.500	45.7	H	54.0	-8.3	AVG	112	1.0	
11489.890	59.7	V	74.0	-14.3	PK	97	1.6	
17234.660	55.2	V	74.0	-18.8	PK	165	1.0	
11489.500	52.2	H	74.0	-21.8	PK	112	1.0	

Run #1b: Tx Radiated Spurious Emissions, Middle Channel @ 5785 MHz,
Full Power settting, Flat Omni Antenna with 5.0dBi, Rate = 54Mbps

Other Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
11569.750	48.7	V	54.0	-5.3	AVG	59	1.1	
17354.460	48.1	V	54.0	-5.9	AVG	17	1.0	
11568.780	44.6	H	54.0	-9.4	AVG	100	1.0	
11569.750	55.3	V	74.0	-18.7	PK	59	1.1	
17354.460	53.6	V	74.0	-20.4	PK	17	1.0	
11568.780	50.4	H	74.0	-23.6	PK	100	1.0	

Run #1c: Tx Radiated Spurious Emissions, High Channel @ 5805 MHz,
Full Power settting, Flat Omni Antenna with 5.0dBi, Rate = 54Mbps

Other Spurious Radiated Emissions:

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
17414.950	48.3	H	54.0	-5.7	AVG	155	1.0	
11609.670	44.6	H	54.0	-9.4	AVG	281	1.0	
11611.230	44.5	V	54.0	-9.5	AVG	255	1.0	
17414.950	53.9	H	74.0	-20.1	PK	155	1.0	
11611.230	50.0	V	74.0	-24.0	PK	255	1.0	
11609.670	48.9	H	74.0	-25.1	PK	281	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	-

Conducted Emissions - Power Ports

Test Specific Details

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

Date of Test: 1/28/2008 22:01
Test Engineer: Peter Sales
Test Location: SVOATS #2

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz, 230V/50Hz

General Test Configuration

The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN.

Ambient Conditions:

Temperature: 4 °C
Rel. Humidity: 76 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 230V/50Hz	EN 55022 B	Pass	43.1dBµV @ 0.215MHz (-19.9dB)
2	CE, AC Power,120V/60Hz	EN 55022 B	Pass	55.6dBµV @ 0.167MHz (-9.5dB)

Modifications Made During Testing

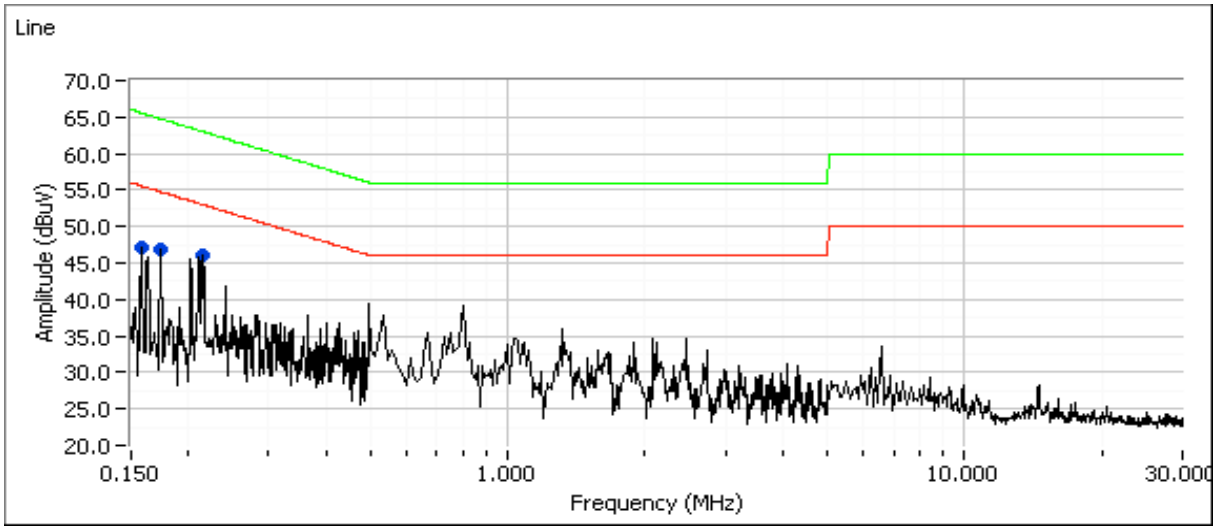
No modifications were made to the EUT during testing

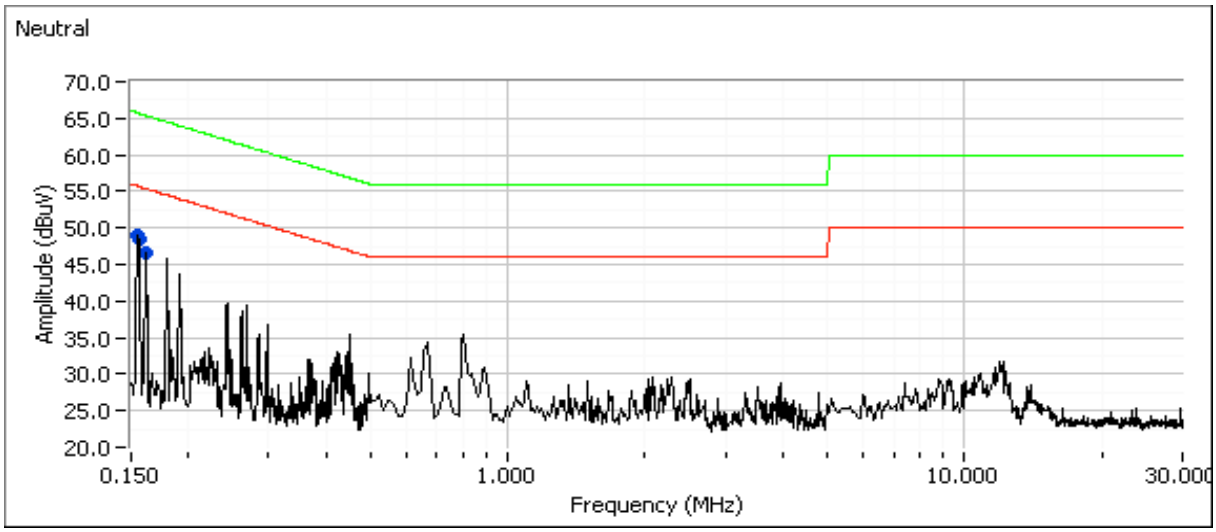
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	-

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





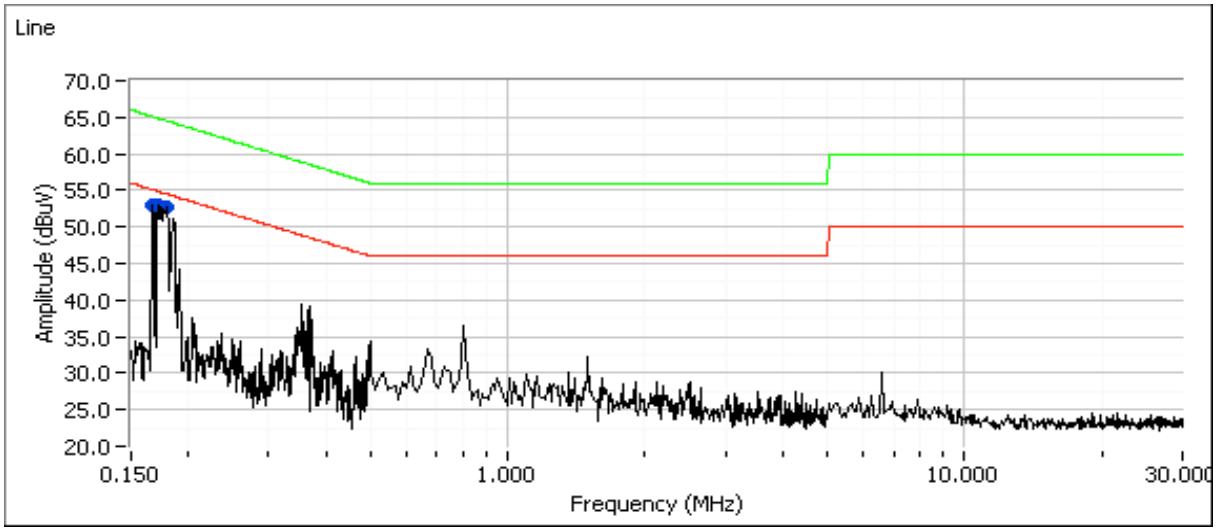
Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz Continued Next Page...

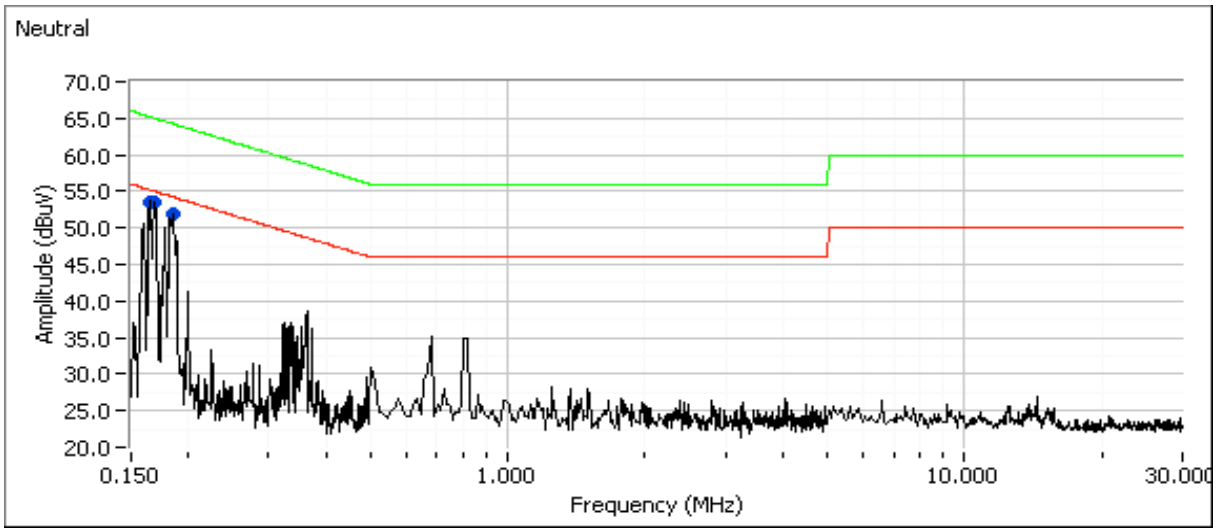
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	-

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.215	43.1	Line 1	63.0	-19.9	QP	
0.153	44.9	Neutral	65.8	-20.9	QP	
0.157	44.5	Neutral	65.6	-21.1	QP	
0.162	43.9	Neutral	65.4	-21.5	QP	
0.159	44.0	Line 1	65.5	-21.5	QP	
0.173	42.5	Line 1	64.8	-22.3	QP	
0.215	21.0	Line 1	53.0	-32.0	AVG	
0.157	17.6	Neutral	55.6	-38.0	AVG	
0.153	17.7	Neutral	55.8	-38.1	AVG	
0.159	17.2	Line 1	55.5	-38.3	AVG	
0.162	17.0	Neutral	55.4	-38.4	AVG	
0.173	16.2	Line 1	54.8	-38.6	AVG	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	-

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





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

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	-

Frequency	Level	AC	EN55022 B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.167	55.6	Line 1	65.1	-9.5	QP	
0.165	55.7	Neutral	65.2	-9.5	QP	
0.169	54.1	Neutral	65.0	-10.9	QP	
0.180	53.4	Line 1	64.5	-11.1	QP	
0.184	52.6	Neutral	64.3	-11.7	QP	
0.172	53.1	Line 1	64.9	-11.8	QP	
0.169	28.7	Neutral	55.0	-26.3	AVG	
0.165	28.7	Neutral	55.2	-26.5	AVG	
0.167	28.1	Line 1	55.1	-27.0	AVG	
0.184	27.1	Neutral	54.3	-27.2	AVG	
0.172	27.6	Line 1	54.9	-27.3	AVG	
0.180	27.0	Line 1	54.5	-27.5	AVG	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

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

Date of Test: 12/14/2007
Test Engineer: Suhaila Khushzad
Test Location: SVOATS # 2
Config. Used: 1
Config Change: None
EUT Voltage: Powered from Host System

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or rou
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 11.7 °C
Rel. Humidity: 56 %

Summary of Results

Run #1	TX Mode	Channel	Power Setting	Pass/Fail	Margin
1a	b	1	Full	Pass	52.9dBµV/m (441.6µV/m) @ 4824.3MHz (-1.1dB)
1b	b	6	Full	Pass	52.4dBµV/m (416.9µV/m) @ 4874.0MHz (-1.6dB)
1c	b	11	Full	Pass	53.2dBµV/m (457.1µV/m) @ 7385.3MHz (-0.8dB)
2a	g	1	Full	Pass	52.4dBµV/m (416.9µV/m) @ 2390.0MHz (-1.6dB)
2b	g	6	Full	Pass	44.6dBµV/m (169.8µV/m) @ 12172.7MHz (-9.4dB)
2c	g	11	Full	Pass	51.2dBµV/m (363.1µV/m) @ 2483.6MHz (-2.8dB)

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:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

Note:	All tests will be performed in data rate of 11Mbps. Average band edge plots are for reference only, final measurements made with VB=1khz to avoid desensitization at 10Hz which reduced signal level by 5.6dB.
Note:	Horizontal measurements were not taken due to previous test that showed vertical measurements were higher.

Fundamental Signal 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	
2413.250	99.0	V	-	-	AVG	92	1.7	
2408.420	97.3	H	-	-	AVG	210	1.1	

Fundamental emission level @ 3m in 100kHz RBW:	99.0	dBµV/m
Limit for emissions outside of restricted bands:	79	dBµV/m

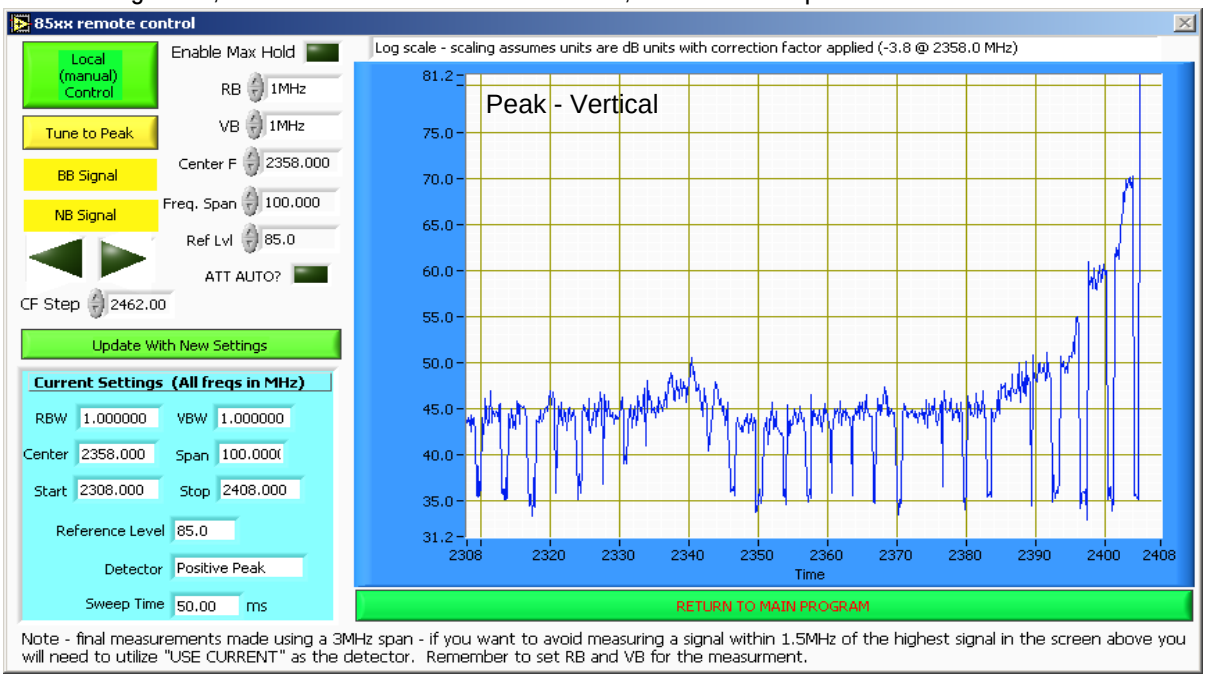
Limit is -20dBc (Peak power measurement)

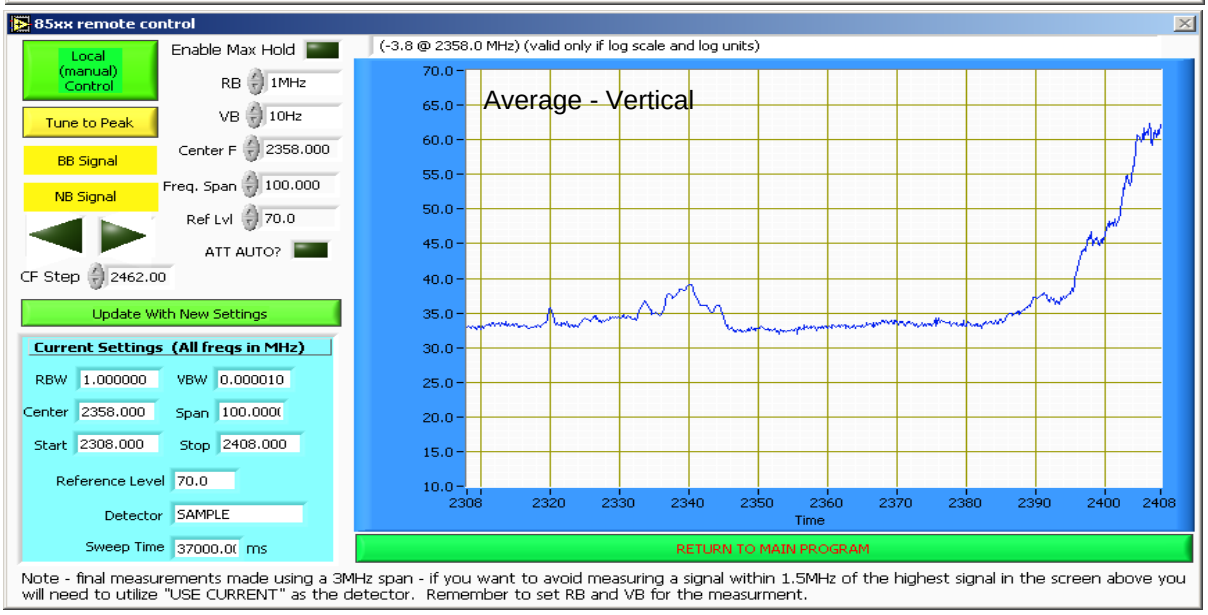
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.330	45.8	V	54.0	-8.2	AVG	92	1.0	
2342.430	43.8	H	54.0	-10.2	AVG	210	1.0	
2389.260	40.8	H	54.0	-13.2	AVG	210	1.0	
2389.330	58.0	V	74.0	-16.0	PK	92	1.0	
2389.260	47.2	H	74.0	-26.8	PK	210	1.0	
2342.430	47.1	H	74.0	-26.9	PK	210	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

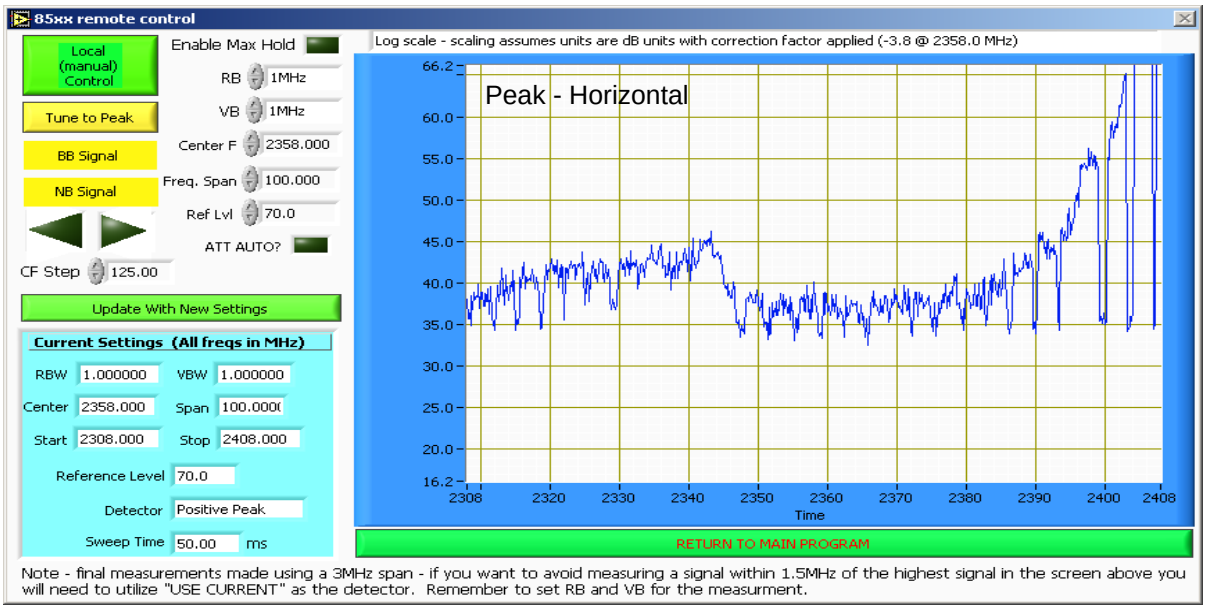
Run # 1a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

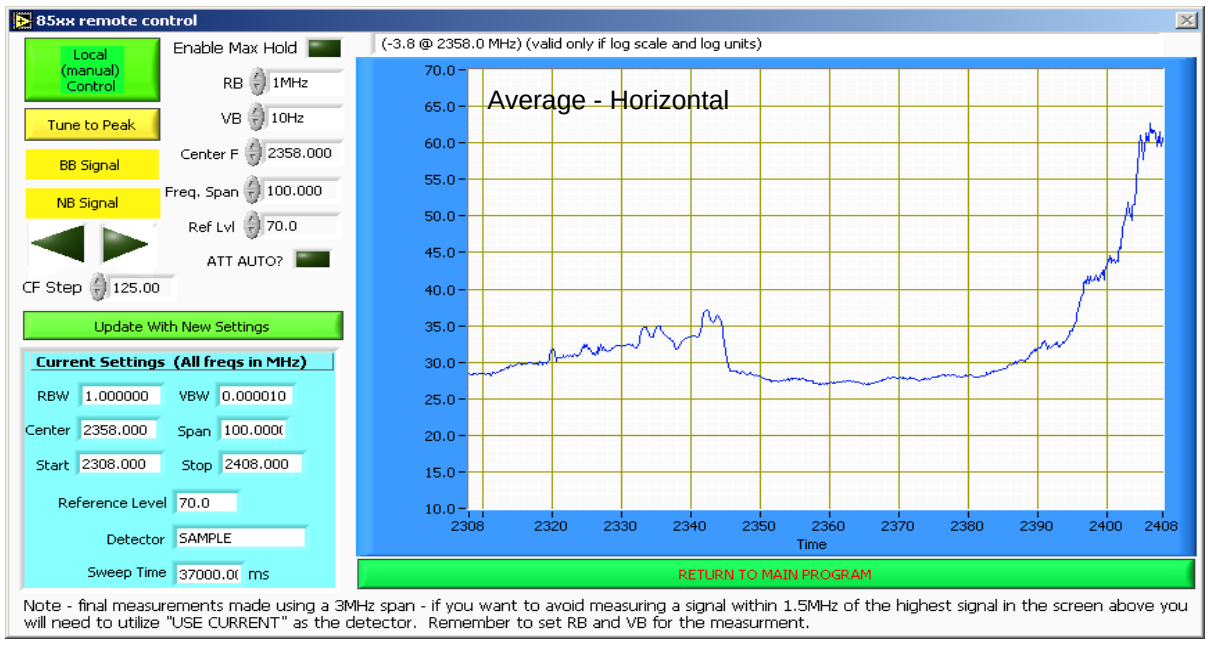




Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.250	52.9	V	54.0	-1.1	AVG	21	1.0	
7234.420	49.5	H	54.0	-4.5	AVG	252	1.5	
7233.920	47.6	V	54.0	-6.4	AVG	255	1.9	
4823.830	45.2	H	54.0	-8.8	AVG	207	1.0	
9648.170	43.1	V	54.0	-10.9	AVG	235	1.0	
9634.750	39.8	H	54.0	-14.2	AVG	315	1.6	
4824.250	59.2	V	74.0	-14.8	PK	21	1.0	
7234.420	54.3	H	74.0	-19.7	PK	252	1.5	
7233.920	52.4	V	74.0	-21.6	PK	255	1.9	
4823.830	52.1	H	74.0	-21.9	PK	207	1.0	
9648.170	46.8	V	74.0	-27.2	PK	235	1.0	
9634.750	45.6	H	74.0	-28.4	PK	315	1.6	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1b: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
Center Channel @ 2437 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

Fundamental Signal 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	
2439.330	97.0	V	-	-	AVG	89	1.0	
2440.250	96.4	H	-	-	AVG	177	2.0	

Fundamental emission level @ 3m in 100kHz RBW:	97 dBµV/m	
Limit for emissions outside of restricted bands:	77 dBµV/m	Limit is -20dBc (Peak power measurement)

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.000	52.4	V	54.0	-1.6	AVG	165	1.0	
7312.920	50.3	H	54.0	-3.7	AVG	245	1.6	
7308.830	49.4	V	54.0	-4.6	AVG	204	2.1	
9747.920	47.5	V	54.0	-6.5	AVG	237	1.0	
9748.250	45.7	H	54.0	-8.3	AVG	282	1.6	
4873.750	45.0	H	54.0	-9.0	AVG	197	2.0	
4874.000	58.8	V	74.0	-15.2	PK	165	1.0	
7312.920	55.1	H	74.0	-18.9	PK	245	1.6	
7308.830	54.3	V	74.0	-19.7	PK	204	2.1	
4873.750	51.6	H	74.0	-22.4	PK	197	2.0	
9747.920	49.5	V	74.0	-24.5	PK	237	1.0	
9748.250	49.2	H	74.0	-24.8	PK	282	1.6	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Elliott

EMC Test Data

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

Fundamental Signal 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	
2465.670	97.9	V	-	-	AVG	90	1.0	
2460.330	94.8	H	-	-	AVG	203	1.0	

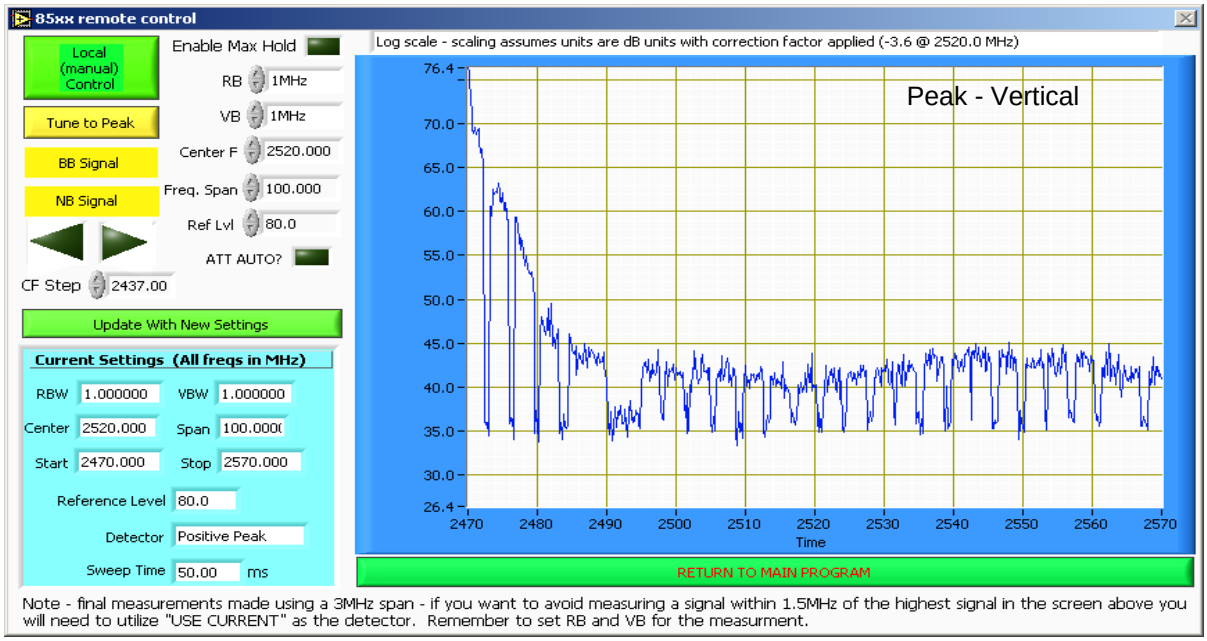
Fundamental emission level @ 3m in 100kHz RBW:	97.9 dBµV/m	
Limit for emissions outside of restricted bands:	77.9 dBµV/m	Limit is -20dBc (Peak power measurement)

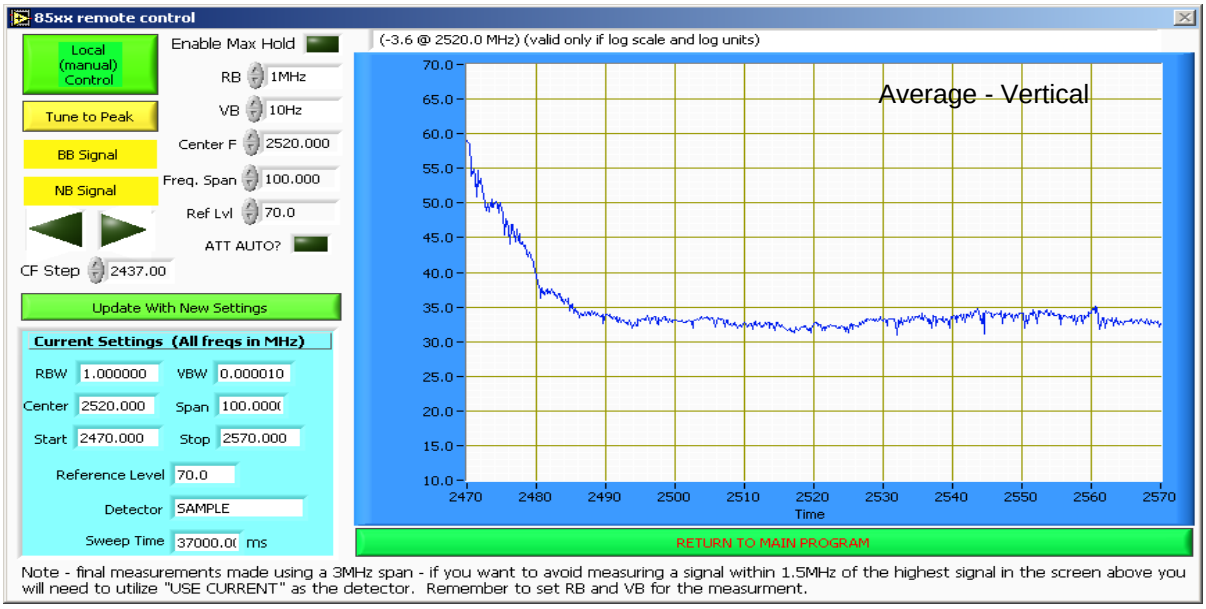
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.780	42.8	V	54.0	-11.2	AVG	90	1.0	
2484.760	37.9	H	54.0	-16.1	AVG	203	1.0	
2484.780	52.6	V	74.0	-21.4	PK	90	1.0	
2484.760	44.2	H	74.0	-29.8	PK	203	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

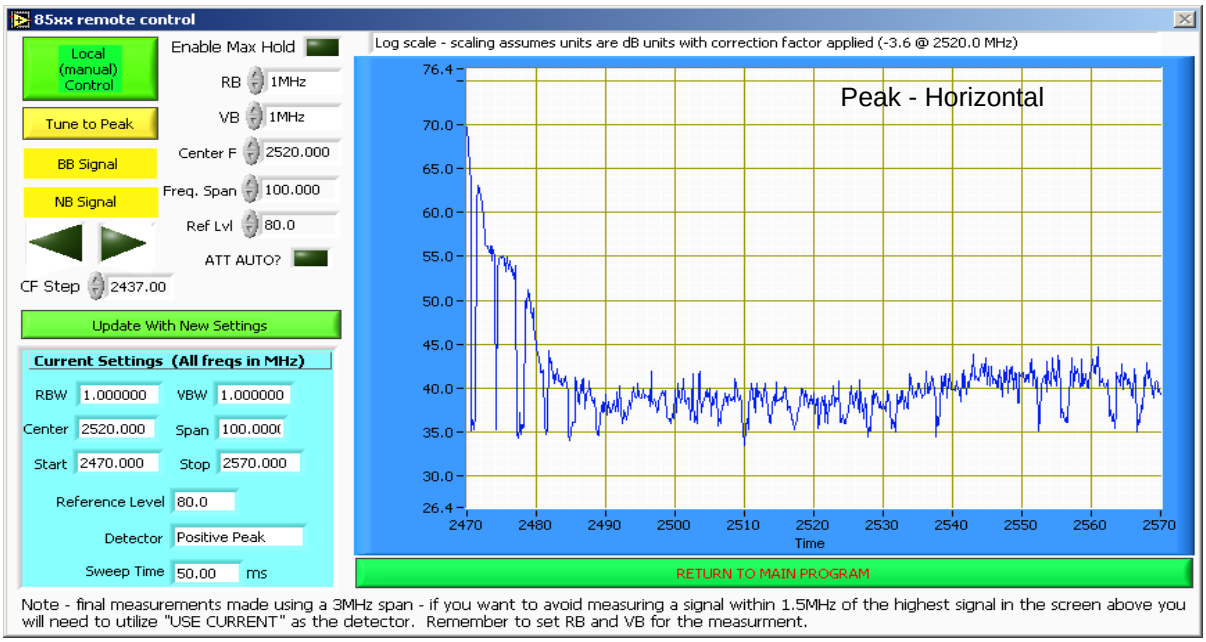
Run # 1c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

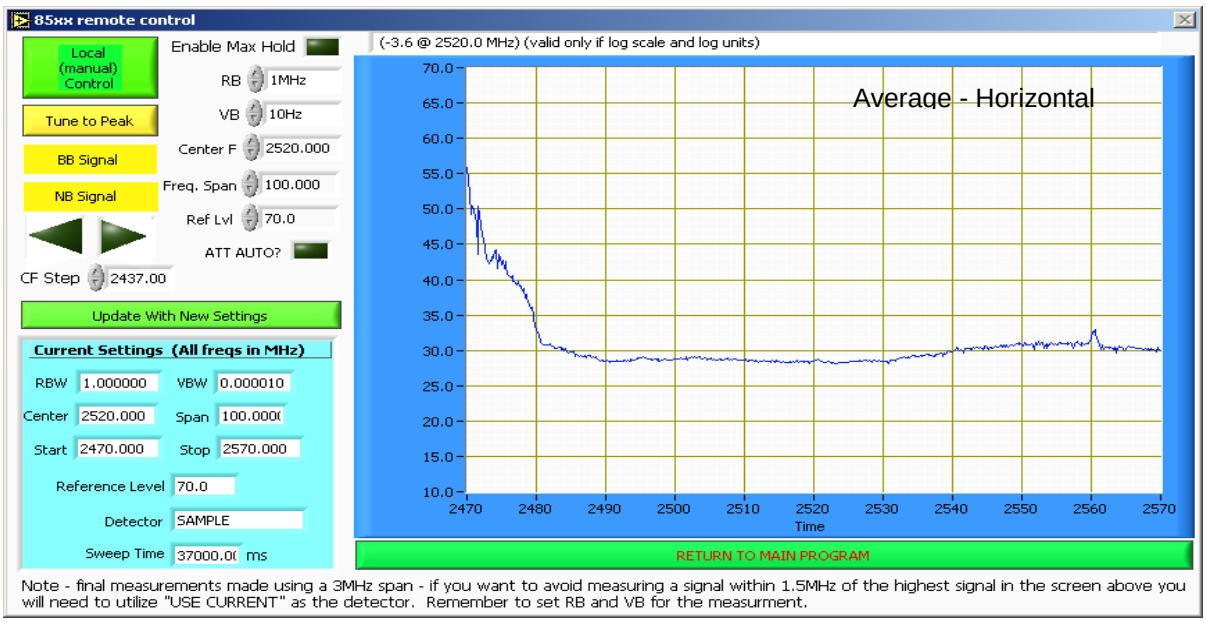




Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
7385.250	53.2	V	54.0	-0.8	AVG	278	1.0	
4924.080	51.4	V	54.0	-2.6	AVG	254	1.0	
7388.670	50.9	H	54.0	-3.1	AVG	261	1.8	
9848.080	50.4	V	54.0	-3.6	AVG	65	1.3	
9848.500	48.2	H	54.0	-5.8	AVG	70	1.6	
4924.080	42.4	H	54.0	-11.6	AVG	208	0.0	
7385.250	58.7	V	74.0	-15.3	PK	278	1.0	
4924.080	58.1	V	74.0	-15.9	PK	254	1.0	
7388.670	55.9	H	74.0	-18.1	PK	261	1.8	
9848.080	52.4	V	74.0	-21.6	PK	65	1.3	
9848.500	51.4	H	74.0	-22.6	PK	70	1.6	
4924.080	49.2	H	74.0	-24.8	PK	208	0.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps

Ambient Conditions: Temperature: 11.7 °C
Rel. Humidity: 56 %

Note:	All tests will be performed in data rate of 54Mbps. Average band edge plots are for reference only, final measurements made with VB=1khz to avoid desensitization at 10Hz which reduced signal level by 6.6dB.
Note:	Horizontal measurements were not taken due to previous test that showed vertical measurements were higher.

Fundamental Signal 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	
2415.000	93.2	V	-	-	PK	95	1.9	
2410.770	89.4	H	-	-	PK	188	2.2	

Fundamental emission level @ 3m in 100kHz RBW:	93.2	dBµV/m
Limit for emissions outside of restricted bands:	73.2	dBµV/m

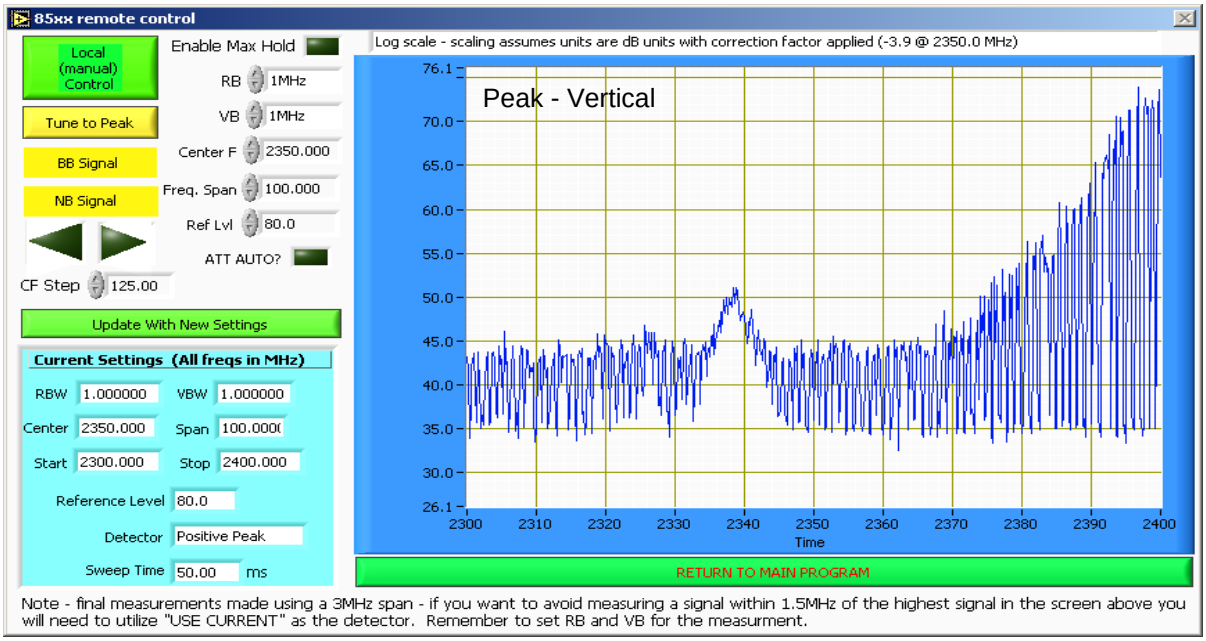
Limit is -20dBc (Peak power measurement)

Band Edge Signal Field Strength

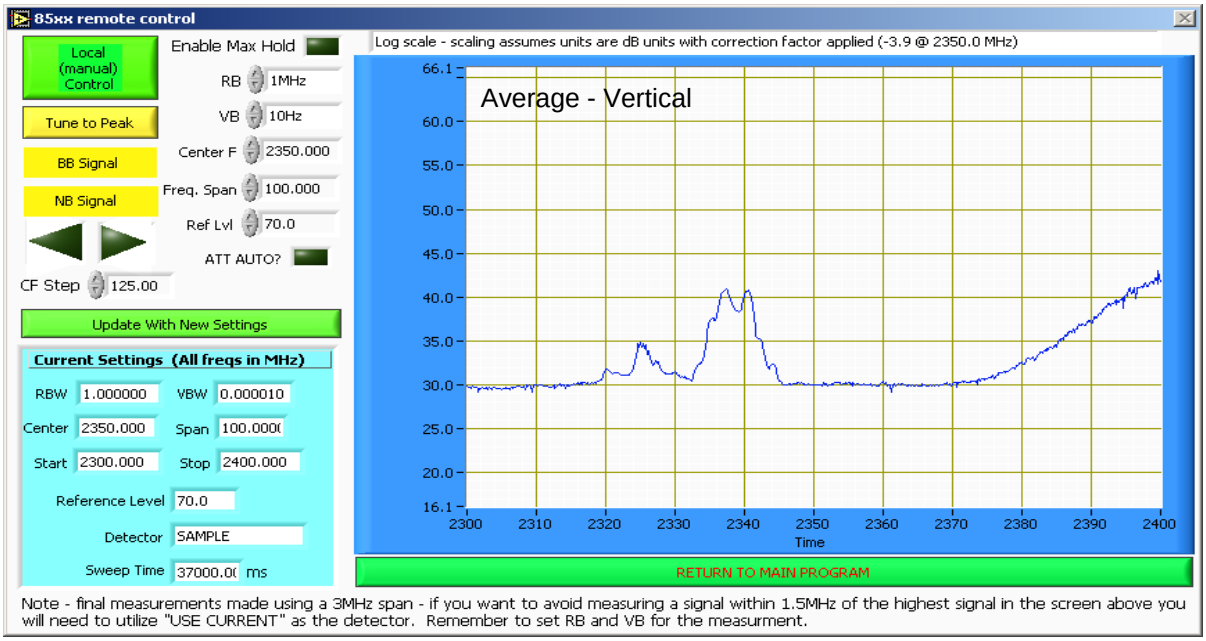
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.980	52.4	V	54.0	-1.6	AVG	18	1.1	
2337.920	50.0	V	54.0	-4.0	AVG	18	1.1	
2389.980	65.5	V	74.0	-8.5	PK	18	1.1	
2389.950	45.2	H	54.0	-8.8	AVG	300	1.1	
2342.020	44.2	H	54.0	-9.8	AVG	300	1.1	
2389.950	57.3	H	74.0	-16.7	PK	300	1.1	
2337.920	52.8	V	74.0	-21.2	PK	18	1.1	
2342.020	45.7	H	74.0	-28.3	PK	300	1.1	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps



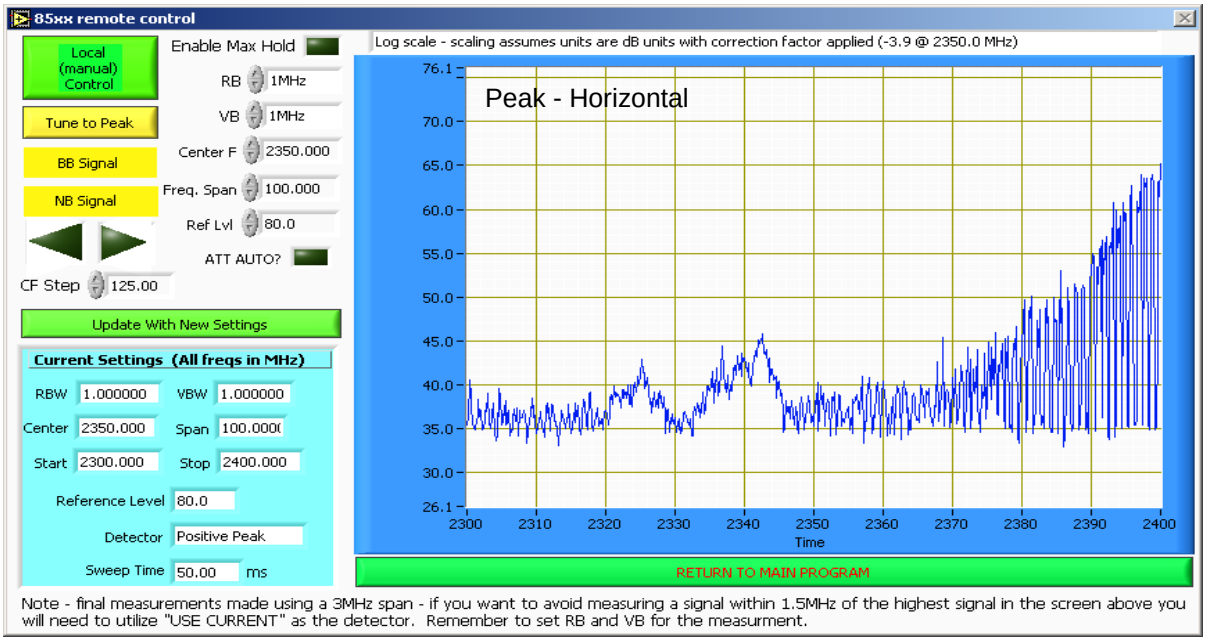
Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurment.

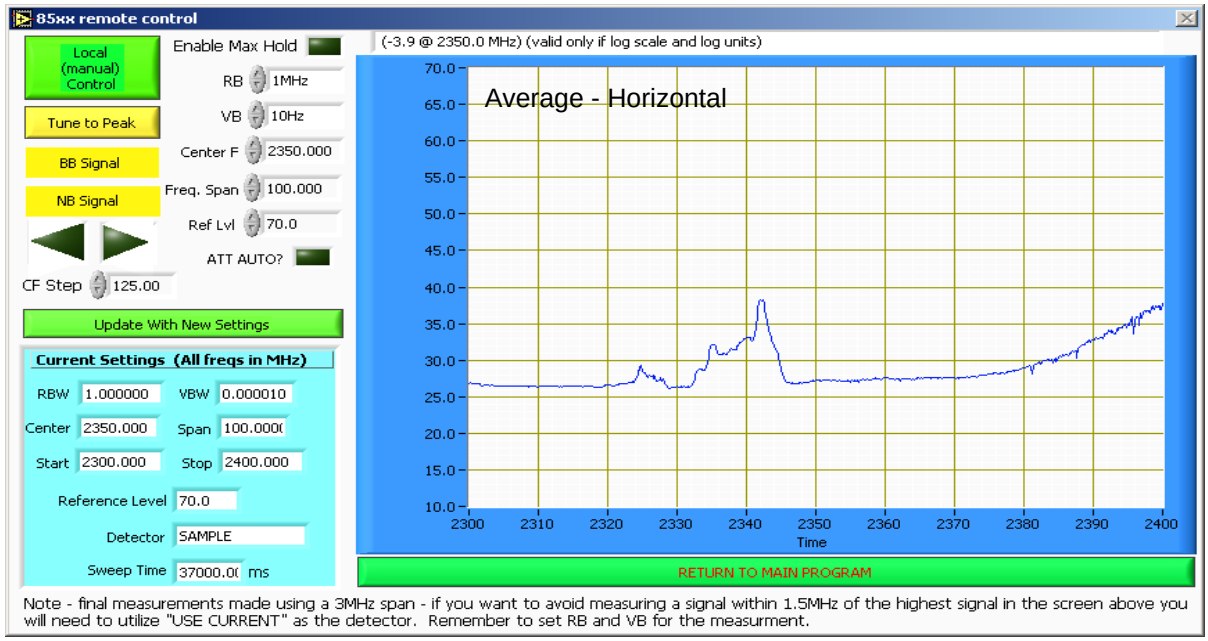


Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurment.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2a: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
Low Channel @ 2412 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7235.17	50.2	V	54.0	-3.8	AVG	29	2.1	
4826.67	49.3	V	54.0	-4.7	AVG	354	2.0	
12043.33	45.8	H	54.0	-8.2	AVG	132	1.0	
7238.58	45.7	H	54.0	-8.3	AVG	55	2.1	
12053.75	45.7	V	54.0	-8.3	AVG	165	1.0	
9665.08	41.3	H	54.0	-12.7	AVG	172	1.0	
9632.00	41.2	V	54.0	-12.8	AVG	195	2.1	
4825.08	39.1	H	54.0	-14.9	AVG	195	1.0	
7235.17	58.8	V	74.0	-15.2	PK	29	2.1	
4826.67	57.1	V	74.0	-16.9	PK	354	2.0	
7238.58	52.8	H	74.0	-21.2	PK	55	2.1	
12053.75	51.7	V	74.0	-22.3	PK	165	1.0	
12043.33	51.1	H	74.0	-22.9	PK	132	1.0	
9665.08	46.2	H	74.0	-27.8	PK	172	1.0	
9632.00	45.5	V	74.0	-28.5	PK	195	2.1	
4825.08	45.1	H	74.0	-28.9	PK	195	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2b: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
Center Channel @ 2437 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps

Fundamental Signal 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	
2432.330	88.8	H	-	-	PK	16	2.3	
2435.740	91.0	V	-	-	PK	94	1.9	

Fundamental emission level @ 3m in 100kHz RBW:	91 dBµV/m	
Limit for emissions outside of restricted bands:	71 dBµV/m	Limit is -20dBc (Peak power measurement)

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
12172.67	44.6	V	54.0	-9.4	AVG	0	1.0	
12188.75	44.6	H	54.0	-9.4	AVG	0	1.0	
4874.33	41.9	V	54.0	-12.1	AVG	0	1.0	
7336.00	41.4	V	54.0	-12.6	AVG	111	0.0	
7332.50	41.4	H	54.0	-12.6	AVG	191	2.1	
9752.67	40.8	V	54.0	-13.2	AVG	86	1.0	
4875.00	38.8	H	54.0	-15.2	AVG	201	1.4	
9751.17	40.7	H	54.0	-19.9	AVG	0	1.0	
12188.75	49.8	H	74.0	-24.2	PK	0	1.0	
12172.67	49.3	V	74.0	-24.7	PK	0	1.0	
4874.33	48.8	V	74.0	-25.2	PK	0	1.0	
7332.50	46.0	H	74.0	-28.0	PK	191	2.1	
7336.00	45.8	V	74.0	-28.2	PK	111	0.0	
9752.67	45.8	V	74.0	-28.2	PK	86	1.0	
9751.17	45.3	H	74.0	-28.7	PK	0	1.0	
4875.00	44.2	H	74.0	-29.8	PK	201	1.4	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Elliott

EMC Test Data

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps

Fundamental Signal 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	
2460.770	89.4	V	-	-	PK	92	1.8	
2460.760	90.2	H	-	-	PK	17	1.0	

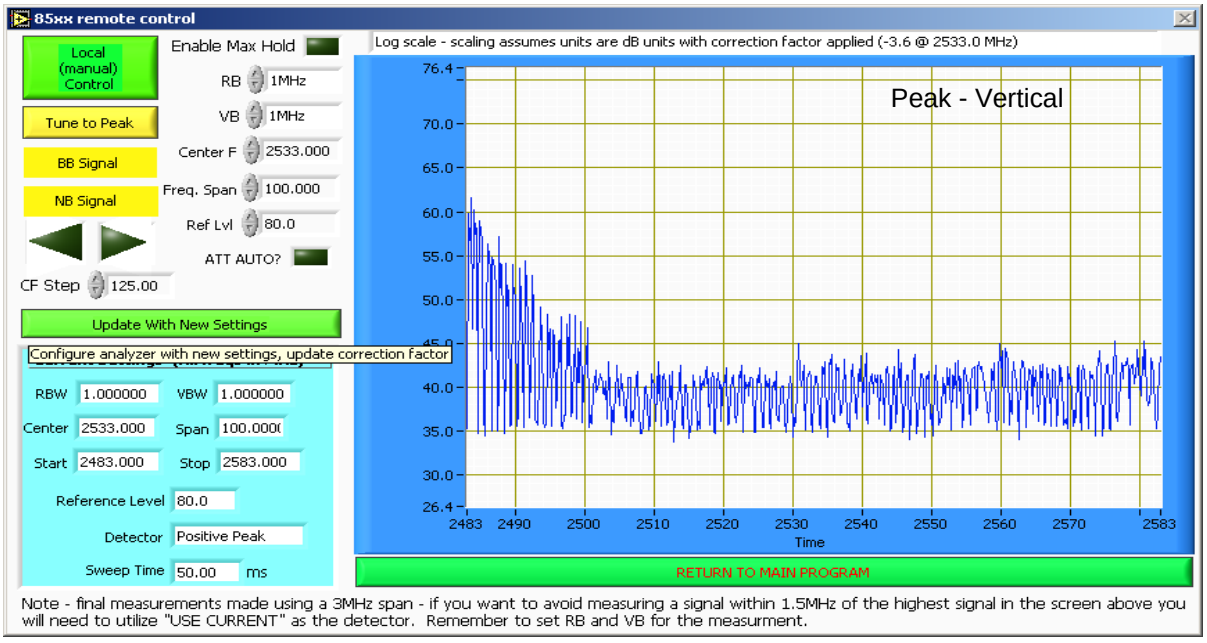
Fundamental emission level @ 3m in 100kHz RBW:	90.2 dBµV/m	
Limit for emissions outside of restricted bands:	70.2 dBµV/m	Limit is -20dBc (Peak power measurement)

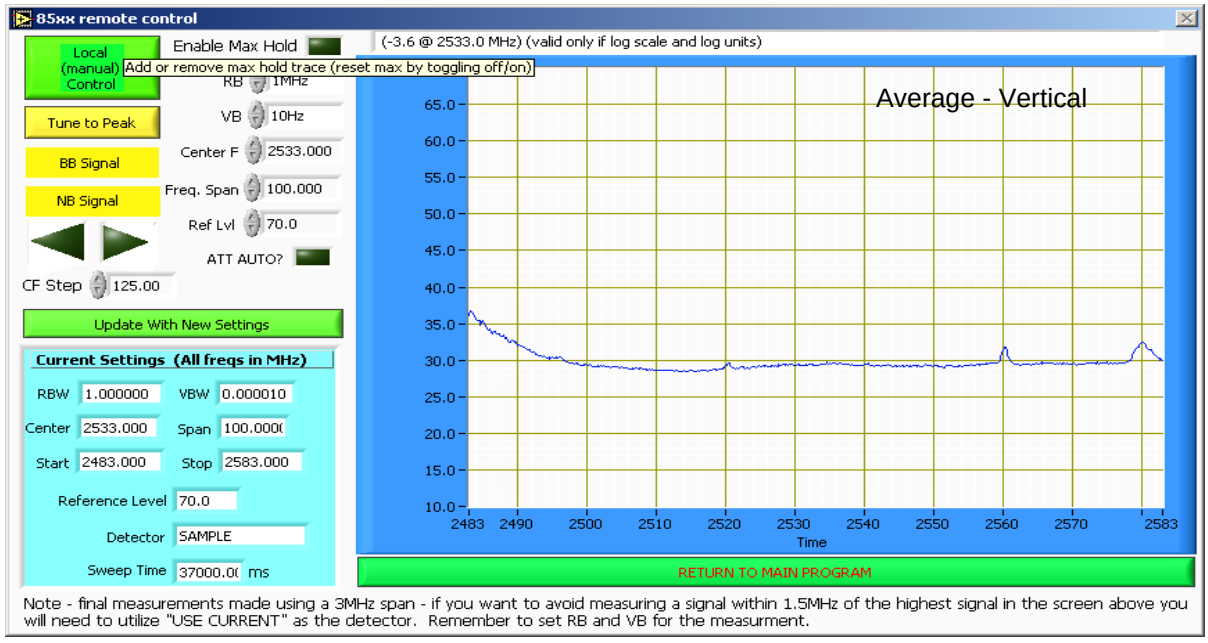
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.570	51.2	V	54.0	-2.8	AVG	103	1.0	
2483.500	49.5	H	54.0	-4.5	AVG	9	1.0	
2483.570	64.5	V	74.0	-9.5	PK	103	1.0	
2483.500	62.1	H	74.0	-11.9	PK	9	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

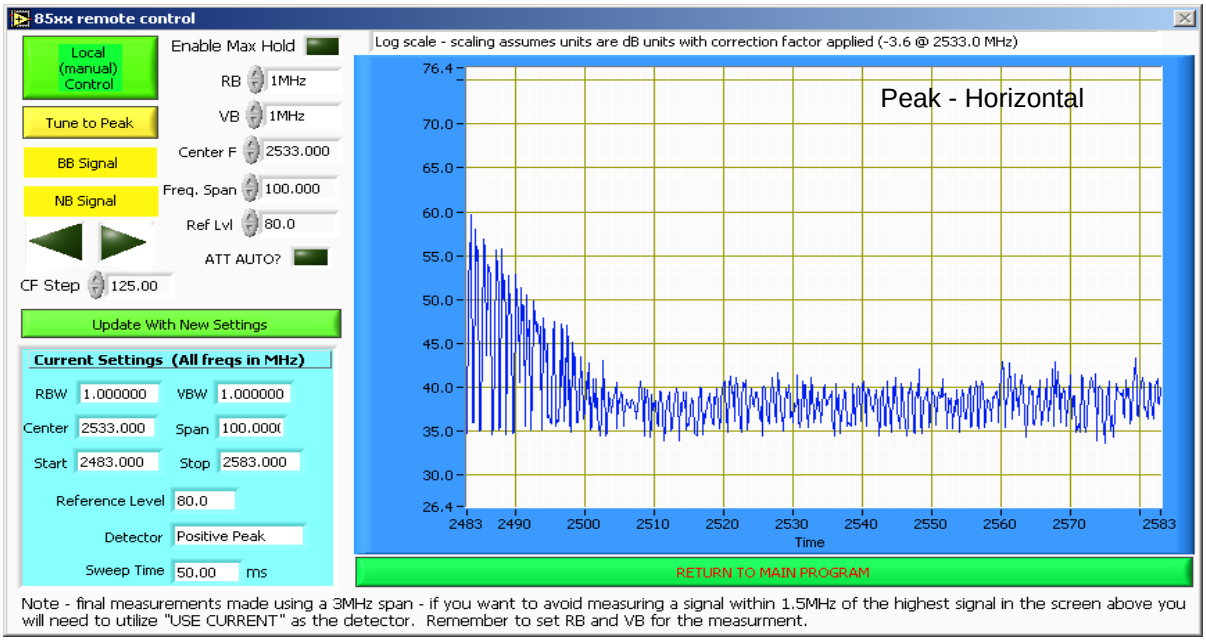
Run #2c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps

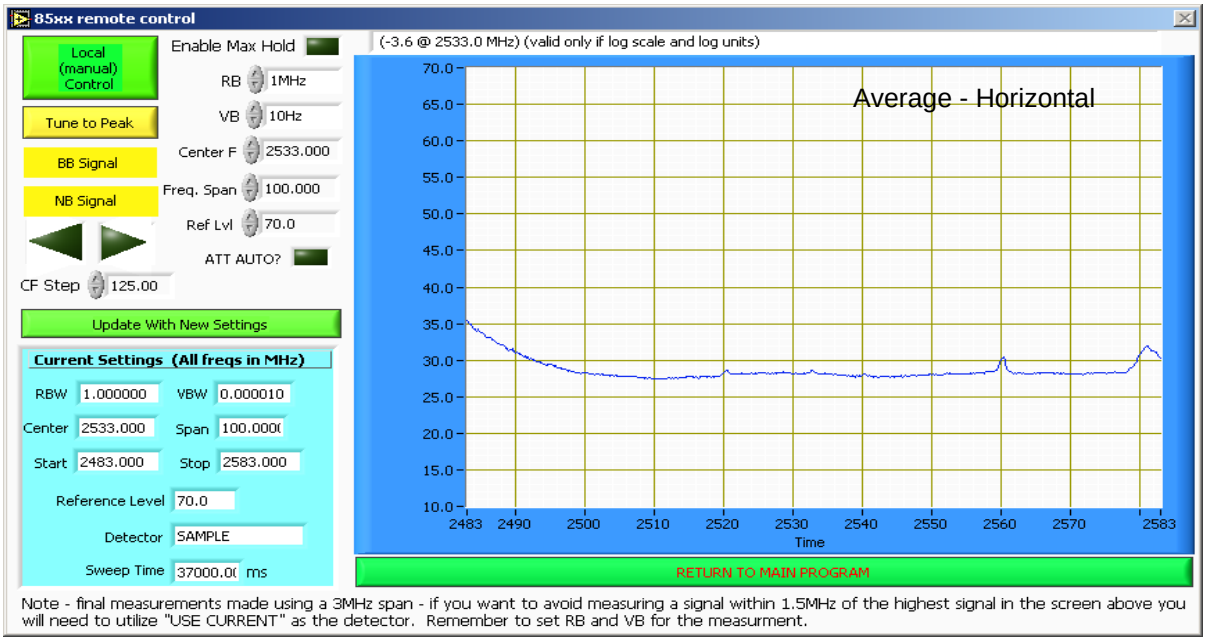




Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2c: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g
High Channel @ 2462 MHz,
Power Setting: 100%, Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4922.75	47.5	V	54.0	-6.5	AVG	255	2.0	
7382.75	46.9	V	54.0	-7.1	AVG	272	1.0	
7384.67	46.3	H	54.0	-7.7	AVG	264	1.6	
12279.67	43.5	V	54.0	-10.5	AVG	0	1.0	
9839.08	41.7	V	54.0	-12.3	AVG	307	1.0	
9830.92	41.6	H	54.0	-12.4	AVG	139	1.0	
4924.08	40.3	H	54.0	-13.7	AVG	205	2.0	
4922.75	54.9	V	74.0	-19.1	PK	255	2.0	
7382.75	53.7	V	74.0	-20.3	PK	272	1.0	
7384.67	52.6	H	74.0	-21.4	PK	264	1.6	
12279.67	48.3	V	74.0	-25.7	PK	0	1.0	
4924.08	46.6	H	74.0	-27.4	PK	205	2.0	
9830.92	46.4	H	74.0	-27.6	PK	139	1.0	
9839.08	46.1	V	74.0	-27.9	PK	307	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

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

Date of Test: 11/19/2007
Test Engineer: Joseph Cadigal/Rafael Varelas
Test Location: SVOATS #1
Config. Used: 1
Config Change: None
EUT Voltage: Powered from Host System

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 17.2 °C
Rel. Humidity: 70 %

Summary of Results

Run #1	TX Mode	Channel	Power Setting	Pass/Fail	Margin
1a	b	1	Full	Pass	52.2dBµV/m (407.4µV/m) @ 2387.5MHz (-1.8dB)
1b	b	6	Full	Pass	52.3dBµV/m (412.1µV/m) @ 4874.0MHz (-1.7dB)
1c	b	11	Full	Pass	53.8dBµV/m (489.8µV/m) @ 4924.0MHz (-0.2dB)
2a	g	1	Full	Pass	51.9dBµV/m (393.6µV/m) @ 2389.4MHz (-2.1dB)
2b	g	6	Full	Pass	44.0dBµV/m (158.5µV/m) @ 7310.7MHz (-10.0dB)
2c	g	11	Full	Pass	52.0dBµV/m (398.1µV/m) @ 2483.5MHz (-2.0dB)

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:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11b

Ambient Conditions: Temperature: 17 °C
Rel. Humidity: 50 %

Note:	All tests will be performed in data rate of 11Mbps. Average band edge plots are for reference only, final measurements made with VB=1khz to avoid desensitization at 10Hz which reduced signal level by 5.6dB.
Note:	Horizontal measurements were not taken due to previous test that showed vertical measurements were higher.

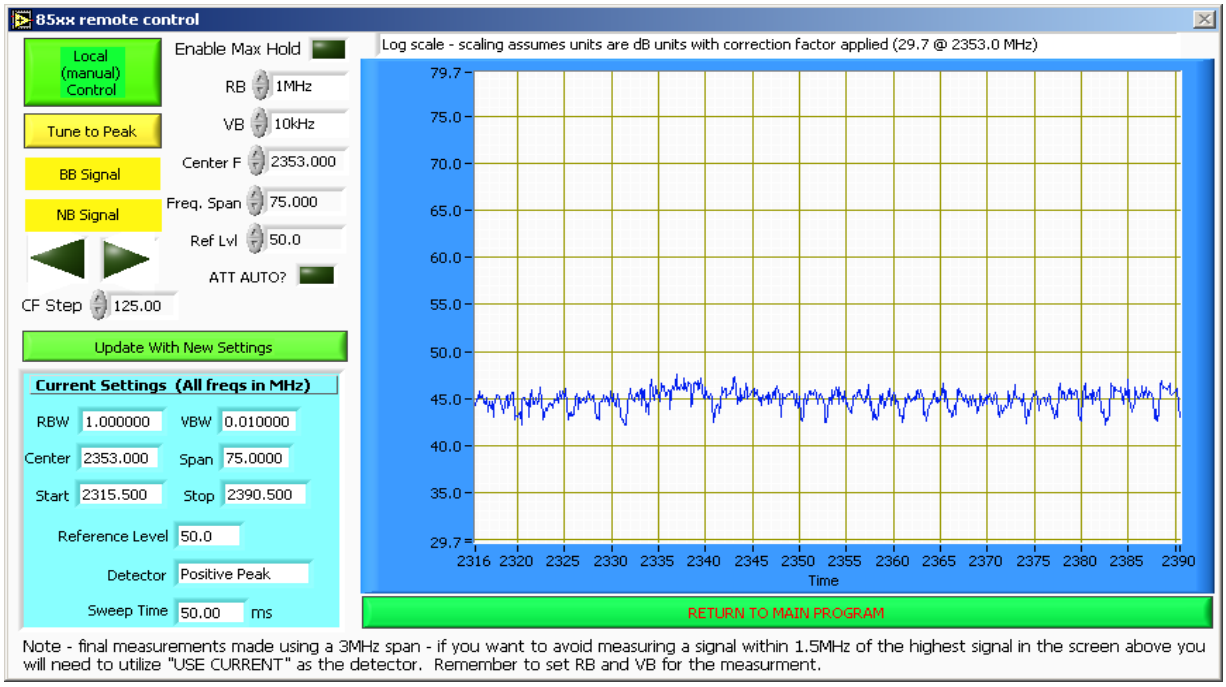
Run #1a: Low Channel @ 2412 MHz
Power Setting: 100%
Fundamental Signal Field Strength:

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.300	110.0	V	-	-	AVG	5	1.3	11Mbs
2410.300	112.4	V	-	-	PK	5	1.3	11Mbs

Fundamental emission level @ 3m in 100kHz RBW:	113.3	dBµV/m	
Limit for emissions outside of restricted bands:	93.3	dBµV/m	Limit is -20dBc (Peak power measurement)

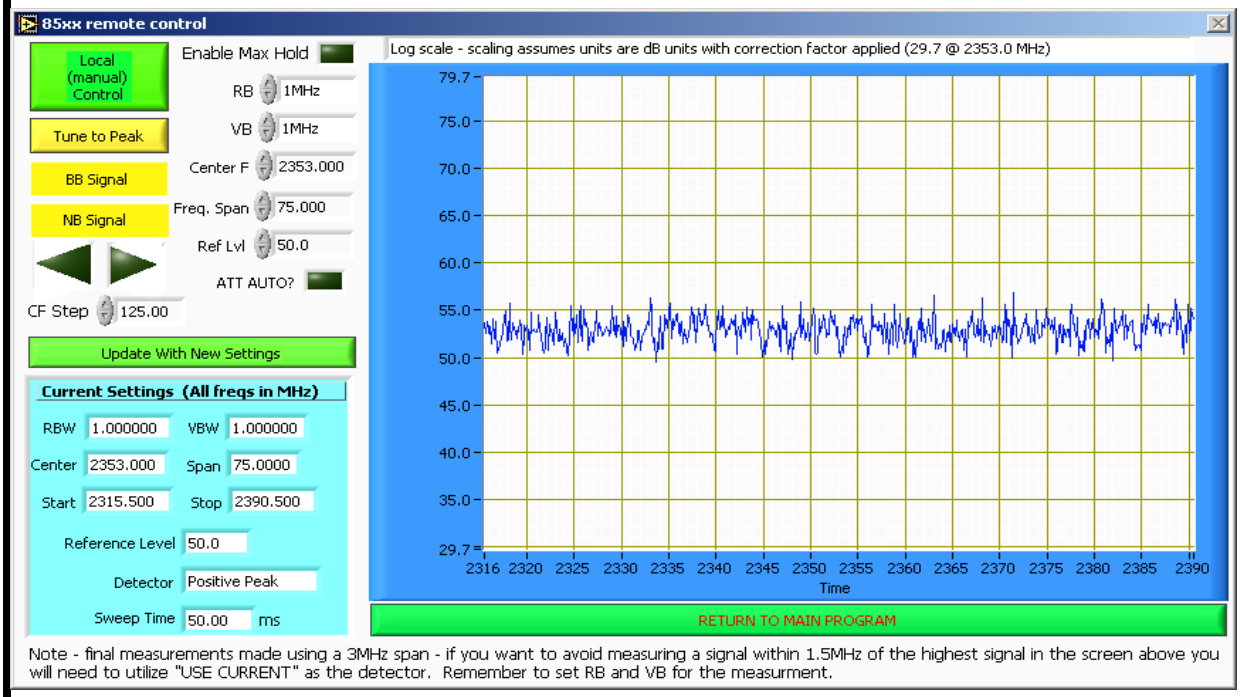
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Vertical -Average



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Vertical - Peak



Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2387.500	52.2	V	54.0	-1.8	AVG	116	1.3	
2387.500	58.7	V	74.0	-15.3	PK	116	1.3	

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.950	50.3	V	54.0	-3.7	AVG	19	1.2	
7234.690	48.5	V	54.0	-5.5	AVG	12	1.3	
4823.950	57.5	V	74.0	-16.5	PK	19	1.2	
7234.690	53.3	V	74.0	-20.7	PK	12	1.3	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1b: Center Channel @ 2437 MHz
Power Setting: 100%

Fundamental emission level @ 3m in 100kHz RBW:	104 dBμV/m
Limit for emissions outside of restricted bands:	84 dBμV/m

Limit is -20dBc (Peak power measurement)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.020	52.3	V	54.0	-1.7	AVG	9	1.3	
7309.770	49.5	V	54.0	-4.5	AVG	347	1.3	
4874.020	58.8	V	74.0	-15.2	PK	9	1.3	
7309.770	54.4	V	74.0	-19.6	PK	347	1.3	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

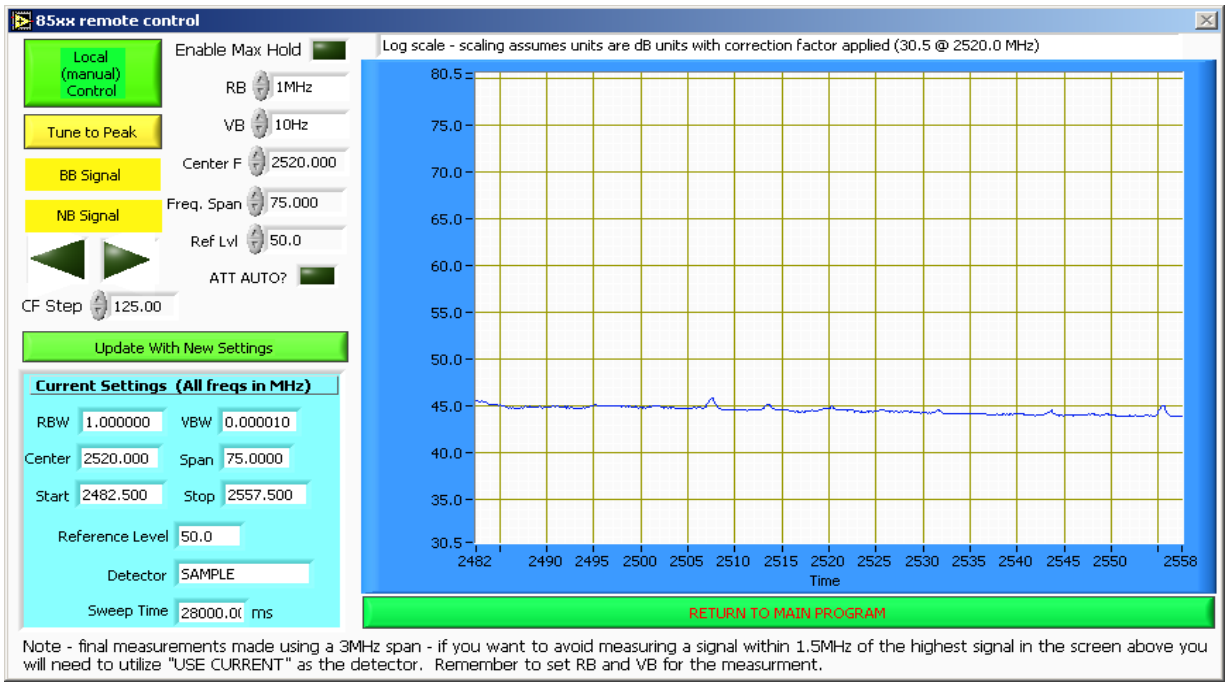
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1c: High Channel @ 2462 MHz
Power Setting: 100%
Fundamental Signal 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	
2464.500	103.7	V	-	-	AVG	78	1.3	
2464.500	112.3	V	-	-	PK	78	1.3	

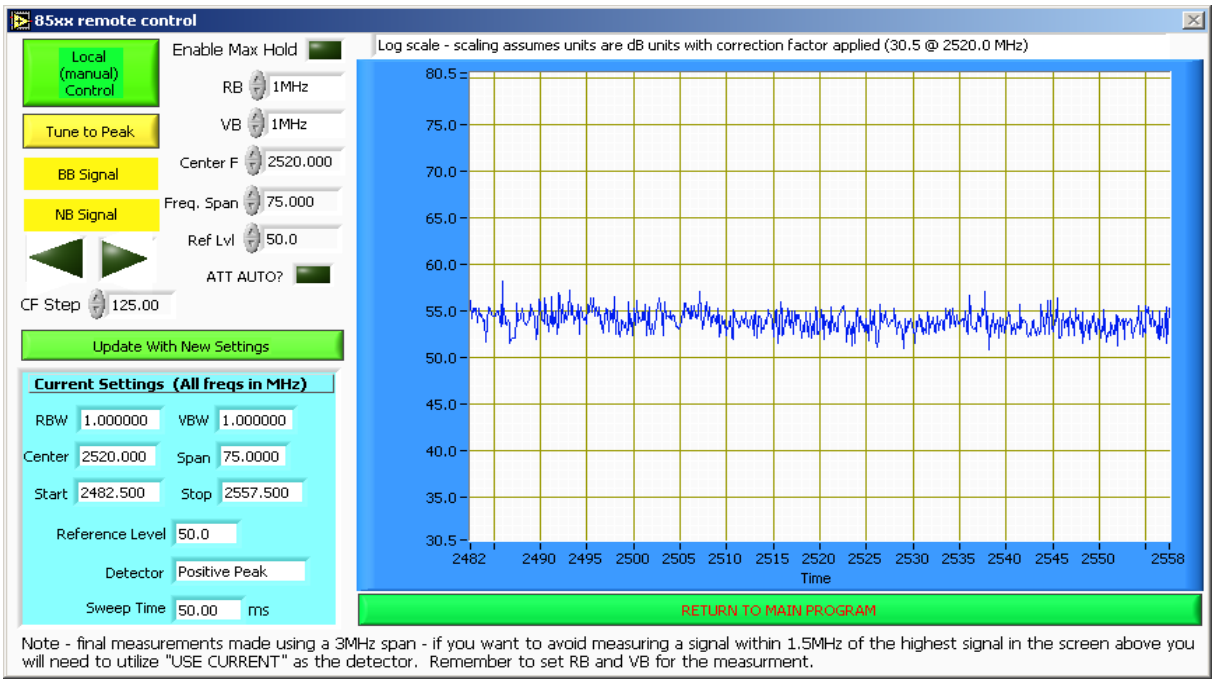
Fundamental emission level @ 3m in 100kHz RBW:	107 dBµV/m	
Limit for emissions outside of restricted bands:	87 dBµV/m	Limit is -20dBc (Peak power measurement)

Vertical - Average



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Vertical - Peak



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.510	52.1	V	54.0	-1.9	AVG	301	1.3	
2483.510	61.1	V	74.0	-12.9	PK	301	1.3	

Note 1:	Calculated by subtracting the marker delta values from the fundamental field strength measurements.

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.020	53.8	V	54.0	-0.2	AVG	157	1.5	
7384.770	51.6	V	54.0	-2.4	AVG	351	2.0	
4924.020	61.6	V	74.0	-12.4	PK	157	1.5	
7384.770	56.6	V	74.0	-17.4	PK	351	2.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2: Radiated Spurious Emissions, 30 - 25000 MHz. Operating Mode: 802.11g

Ambient Conditions: Temperature: 8 °C
Rel. Humidity: 71 %

Note:	All tests will be performed in data rate of 54Mbps. Average band edge plots are for reference only, final measurements made with VB=1khz to avoid desensitization at 10Hz which reduced signal level by 6.6dB.
Note:	Horizontal measurements were not taken due to previous test that showed vertical measurements were higher.

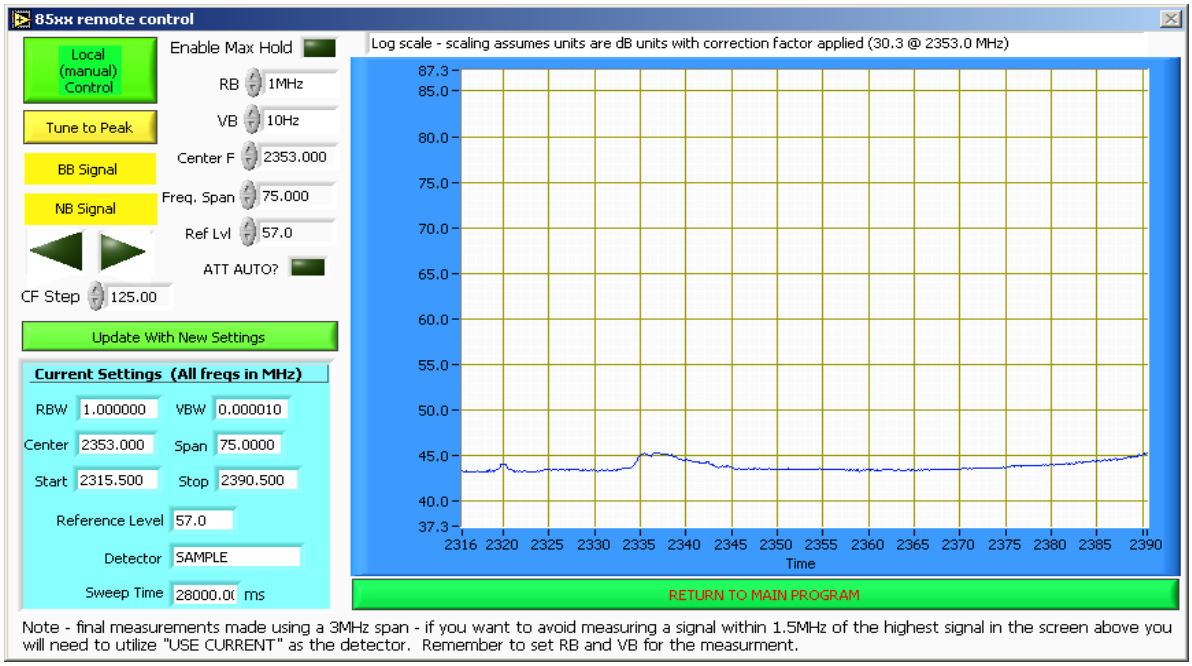
Run #2a: Low Channel @ 2412 MHz
Power Setting: 100%
Fundamental Signal Field Strength:

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.070	101.7	V	-	-	AVG	79	1.3	54Mbs
2410.070	110.6	V	-	-	PK	79	1.3	54Mbs

Fundamental emission level @ 3m in 100kHz RBW:	101.3	dBµV/m	
Limit for emissions outside of restricted bands:	81.3	dBµV/m	Limit is -20dBc (Peak power measurement)

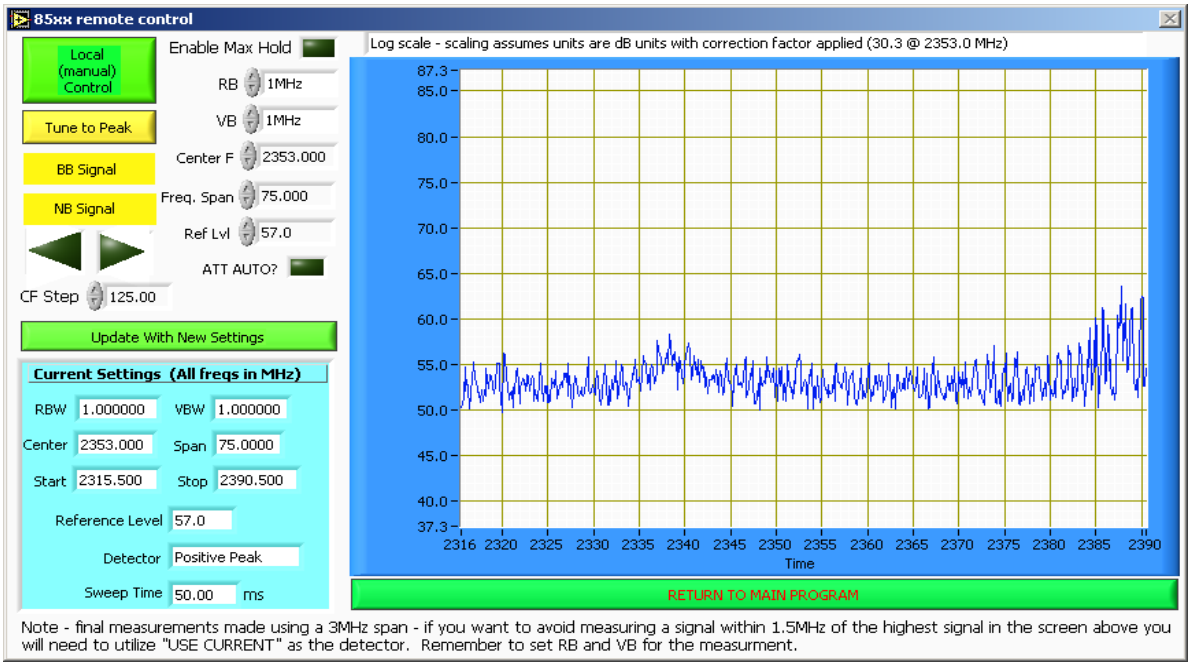
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Vertical -Average



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Vertical - Peak



Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.430	51.9	V	54.0	-2.1	Avg	79	1.3	
2389.580	64.5	V	74.0	-9.5	PK	79	1.3	

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7235.870	43.4	V	54.0	-10.6	AVG	286	1.3	
4822.750	41.3	V	54.0	-12.7	AVG	176	1.0	
7235.870	50.1	V	74.0	-23.9	PK	286	1.3	
4822.750	48.8	V	74.0	-25.2	PK	176	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #2b: Center Channel @ 2437 MHz
Power Setting: 100%

Fundamental emission level @ 3m in 100kHz RBW:	101.1 dBμV/m	
Limit for emissions outside of restricted bands:	81.1 dBμV/m	Limit is -20dBc (Peak power measurement)

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
7310.670	44.0	V	54.0	-10.0	AVG	331	1.0	
4873.960	42.6	V	54.0	-11.4	AVG	185	1.1	
7310.670	50.8	V	74.0	-23.2	PK	331	1.0	
4873.960	49.7	V	74.0	-24.3	PK	185	1.1	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

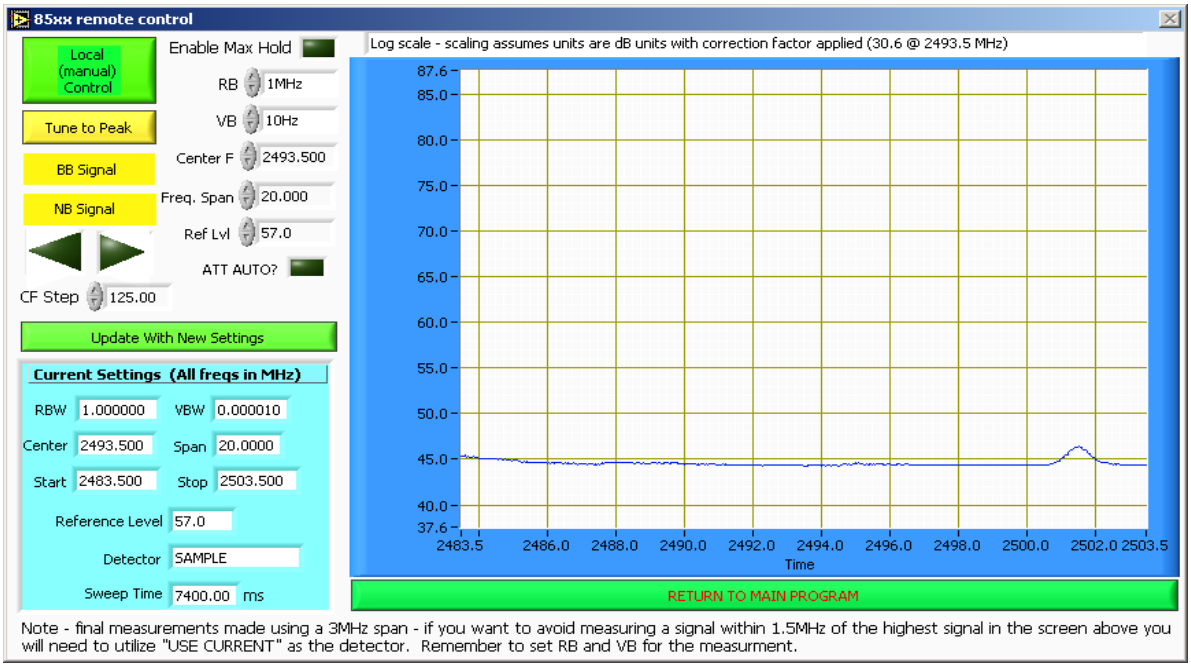
Run #2c: High Channel @ 2462 MHz
Power Setting: 100%
Fundamental Signal Field Strength:

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2460.400	93.2	V	-	-	AVG	185	1.0	
2460.400	108.7	V	-	-	PK	185	1.0	

Fundamental emission level @ 3m in 100kHz RBW:	99.7 dBµV/m
Limit for emissions outside of restricted bands:	79.7 dBµV/m

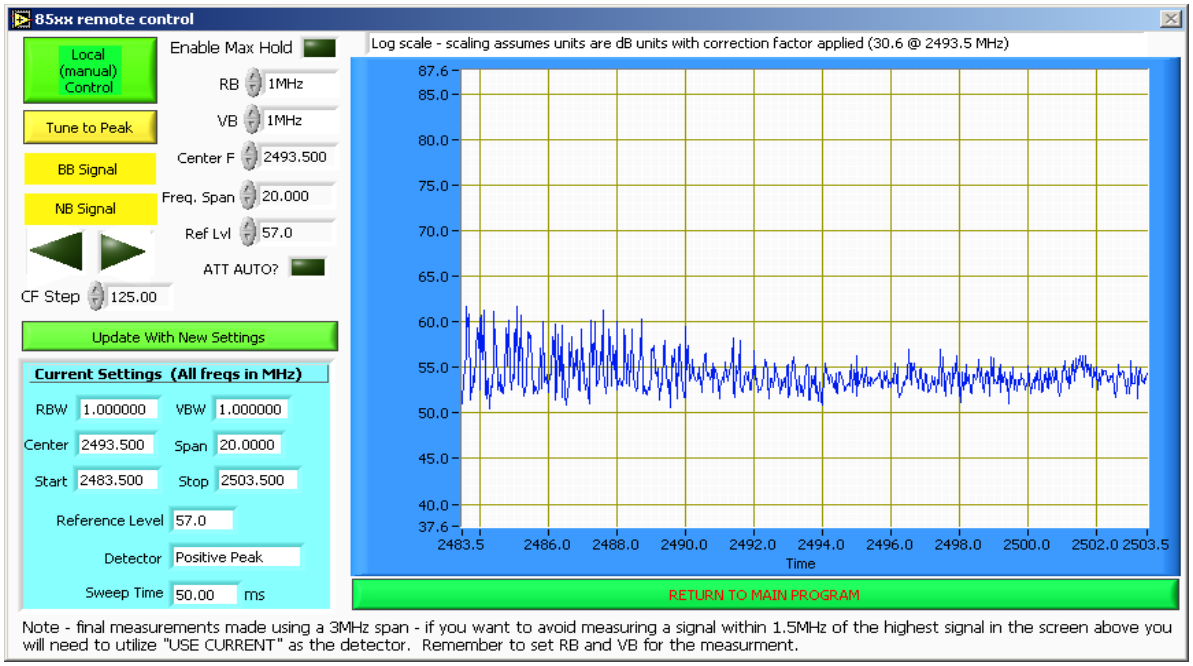
Limit is -20dBc (Peak power measurement)

Vertical - Average



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Vertical - Peak



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	52.0	V	54.0	-2.0	Avg	185	1.0	
2483.510	63.3	V	74.0	-10.7	PK	185	1.0	

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
7384.920	44.6	V	54.0	-9.4	AVG	166	1.0	
4921.920	44.2	V	54.0	-9.8	AVG	229	1.9	
4921.920	52.2	V	74.0	-21.8	PK	229	1.9	
7384.920	51.2	V	74.0	-22.8	PK	166	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

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

Date of Test: 11/27/2007 & 12/19/07
Test Engineer: Suhaila Khushzad
Test Location: SVOATS #2
Config. Used: 1
Config Change: None
EUT Voltage: Powered from Host System

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 11.7 °C
Rel. Humidity: 63 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11b Mode)	RE, 30 - 10000 MHz Spurious Emissions	RSS-GEN	Pass	41.4dBµV/m (117.5µV/m) @ 2187.3MHz (-12.6dB)
2 (802.11g Mode)	RE, 30 - 10000 MHz Spurious Emissions	RSS-GEN	Pass	38.1dBµV/m (80.4µV/m) @ 9724.3MHz (-15.9dB)
3 (802.11a - 5785 MHz)	RE, 30 - 16000 MHz - Spurious Emissions	RSS-GEN	Pass	38.2dBµV/m (81.3µV/m) @ 11569.3MHz (-15.8dB)

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:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1: Rx Mode Radiated Spurious Emissions, 30 - 10000 MHz. Operating Mode: 802.11b
Round Omni Antenna with 2.3dBi Gain, Data Rate 11 Mbps
Center Channel @ 2437 MHz
Other Spurious Emissions

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2187.330	41.4	H	54.0	-12.6	AVG	325	1.5	
1287.500	38.0	V	54.0	-16.0	AVG	317	1.0	
9676.500	36.9	H	54.0	-17.1	AVG	101	1.0	
3937.330	36.7	H	54.0	-17.3	AVG	114	1.0	
9643.000	36.5	V	54.0	-17.5	AVG	29	1.0	
7187.000	34.4	V	54.0	-19.6	AVG	251	1.0	
7163.500	34.0	H	54.0	-20.0	AVG	146	1.0	
2187.500	34.0	V	54.0	-20.0	AVG	26	1.0	
3497.000	32.5	V	54.0	-21.5	AVG	0	1.0	
4970.000	30.5	H	54.0	-23.5	AVG	150	2.0	
4863.500	30.5	V	54.0	-23.5	AVG	217	1.0	
9676.500	48.3	H	74.0	-25.7	PK	101	1.0	
3937.330	48.1	H	74.0	-25.9	PK	114	1.0	
9643.000	48.1	V	74.0	-25.9	PK	29	1.0	
1013.917	28.0	H	54.0	-26.0	AVG	306	1.0	
7187.000	46.2	V	74.0	-27.8	PK	251	1.0	
7163.500	45.5	H	74.0	-28.5	PK	146	1.0	
2187.330	43.4	H	74.0	-30.6	PK	325	1.5	
4970.000	42.8	H	74.0	-31.2	PK	150	2.0	
3497.000	42.2	V	74.0	-31.8	PK	0	1.0	
4863.500	41.8	V	74.0	-32.2	PK	217	1.0	
2187.500	40.3	V	74.0	-33.7	PK	26	1.0	
1013.917	33.5	H	74.0	-40.5	PK	306	1.0	
1287.500	33.0	V	74.0	-41.0	PK	317	1.0	
30.000	25.3	H	40.0	-14.7	QP	0	1.0	
30.000	25.0	V	40.0	-15.0	QP	360	1.0	
150.000	26.0	V	43.5	-17.5	QP	360	1.0	
290.000	27.0	H	46.0	-19.0	QP	330	1.0	
320.000	27.0	V	46.0	-19.0	QP	360	1.0	
250.000	26.0	H	46.0	-20.0	QP	360	1.0	
150.000	23.4	H	43.5	-20.1	QP	0	1.0	
708.000	24.5	V	46.0	-21.5	QP	360	1.0	
250.000	21.0	V	46.0	-25.0	QP	0	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 2: Rx Mode Radiated Spurious Emissions, 30 - 10000 MHz. Operating Mode: 802.11g
Round Omni Antenna with 2.3dBi Gain, Data Rate 54 Mbps
Center Channel @ 2437 MHz

Other Spurious Emissions

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
9724.33	38.1	V	54.0	-15.9	AVG	46	1.0	
12152.33	38.0	H	54.0	-16.0	AVG	0	1.0	
12144.16	37.9	V	54.0	-16.1	AVG	0	1.0	
9724.25	36.7	H	54.0	-17.3	AVG	130	1.0	
4851.58	35.3	H	54.0	-18.7	AVG	131	1.0	
7322.17	33.8	H	54.0	-20.2	AVG	2	1.0	
7308.33	33.4	V	54.0	-20.6	AVG	229	1.0	
4851.58	51.5	H	74.0	-22.5	PK	131	1.0	
4845.33	31.4	V	54.0	-22.6	AVG	356	2.4	
12144.16	49.4	V	74.0	-24.6	PK	0	1.0	
12152.33	49.4	H	74.0	-24.6	PK	0	1.0	
9724.33	48.5	V	74.0	-25.5	PK	46	1.0	
9724.25	48.3	H	74.0	-25.7	PK	130	1.0	
4845.33	48.2	V	74.0	-25.8	PK	356	2.4	
7322.17	45.3	H	74.0	-28.7	PK	2	1.0	
7308.33	44.1	V	74.0	-29.9	PK	229	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 3: Rx Mode Radiated Spurious Emissions, 30 - 16000 MHz. Operating Mode: 802.11a
Omni Antenna with 5dBi Gain, Data Rate 54 Mbps
Center Channel @ 5785 MHz

Date of Test: 1/22/2008 Config. Used: 1
Test Engineer: Rafael varelas Config Change: None
Test Location: SVOATS #1 EUT Voltage: Powered from Host System

Other Spurious Emissions

Frequency	Level	Pol	RSS-GEN		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11569.27	38.2	H	54.0	-15.8	AVG	157	1.8	
11571.15	38.1	V	54.0	-15.9	AVG	262	1.0	
5785.63	34.6	V	54.0	-19.4	AVG	28	1.0	
5785.21	33.2	H	54.0	-20.8	AVG	46	1.0	
11571.15	50.1	V	74.0	-23.9	PK	262	1.0	
11569.27	49.5	H	74.0	-24.5	PK	157	1.8	
5785.63	46.9	V	74.0	-27.1	PK	28	1.0	
5785.21	44.5	H	74.0	-29.5	PK	46	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

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

Date of Test: 12/19/2007
Test Engineer: Suhaila Khushzad
Test Location: SVOATS # 2
Config. Used: 1
Config Change: None
EUT Voltage: Powered form Host System

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 14.4 °C
Rel. Humidity: 53 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11b Mode)	RE, 30 - 10000 MHz - Spurious Emissions	RSS-GEN	Pass	37.7dBµV/m @ 12180.5MHz (-16.3dB)
2 (802.11g Mode)	RE, 30 - 10000 MHz - Spurious Emissions	RSS-GEN	Pass	37.9dBµV/m @ 12163.1MHz (-16.1dB)
3 (802.11a - 5785 MHz)	RE, 30 - 16000 MHz - Spurious Emissions	RSS-GEN	Pass	38.2dBµV/m (81.3µV/m) @ 11568.5MHz (-15.8dB)

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:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 1: Rx Mode Radiated Spurious Emissions, 30 - 10000 MHz. Operating Mode: 802.11b
Larson PCB Antenna with 3.8 dBi Gain, Data Rate 11 Mbps
Center Channel @ 2437 MHz

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
12180.50	37.7	V	54.0	-16.3	AVG	0	1.0	
12167.33	37.6	H	54.0	-16.4	AVG	0	1.0	
9728.83	36.6	V	54.0	-17.4	AVG	184	1.0	
9736.92	36.2	H	54.0	-17.8	AVG	29	1.0	
4851.50	34.5	H	54.0	-19.5	AVG	136	1.0	
7320.25	33.7	H	54.0	-20.3	AVG	151	1.0	
7320.42	33.7	V	54.0	-20.3	AVG	202	1.0	
4851.00	31.2	V	54.0	-22.8	AVG	37	1.0	
12180.50	49.3	V	74.0	-24.7	PK	0	1.0	
12167.33	49.2	H	74.0	-24.8	PK	0	1.0	
4851.50	48.5	H	74.0	-25.5	PK	136	1.0	
9728.83	48.5	V	74.0	-25.5	PK	184	1.0	
9736.92	47.4	H	74.0	-26.6	PK	29	1.0	
7320.25	45.5	H	74.0	-28.5	PK	151	1.0	
7320.42	45.2	V	74.0	-28.8	PK	202	1.0	
4851.00	44.9	V	74.0	-29.1	PK	37	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 2: Rx Mode Radiated Spurious Emissions, 30 - 10000 MHz. Operating Mode: 802.11g
Larson PCB Antenna with 3.8 dBi Gain, Data Rate 54 Mbps
Center Channel @ 2437 MHz

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
12163.10	37.9	H	54.0	-16.1	AVG	128	1.0	
12142.42	37.7	V	54.0	-16.3	AVG	14	1.0	
9727.17	36.5	H	54.0	-17.5	AVG	58	1.0	
9723.17	36.3	V	54.0	-17.7	AVG	0	1.0	
4851.25	35.3	H	54.0	-18.7	AVG	130	1.0	
7330.83	33.7	H	54.0	-20.3	AVG	0	1.0	
7331.00	33.6	V	54.0	-20.4	AVG	237	1.0	
4851.42	33.0	V	54.0	-21.0	AVG	196	1.9	
12163.10	50.2	H	74.0	-23.8	PK	128	1.0	
4851.42	49.5	V	74.0	-24.5	PK	196	1.9	
4851.25	48.9	H	74.0	-25.1	PK	130	1.0	
12142.42	48.7	V	74.0	-25.3	PK	14	1.0	
9723.17	48.2	V	74.0	-25.8	PK	0	1.0	
9727.17	48.1	H	74.0	-25.9	PK	58	1.0	
7330.83	45.9	H	74.0	-28.1	PK	0	1.0	
7331.00	45.0	V	74.0	-29.0	PK	237	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run # 3: Rx Mode Radiated Spurious Emissions, 30 - 16000 MHz. Operating Mode: 802.11a
Laird Antenna with 5dBi Gain, Data Rate 54 Mbps
Center Channel @ 5785 MHz

Date of Test: 1/22/2008
Test Engineer: Rafael Varelas
Test Location: SVOATS #1
Config. Used: 1
Config Change: None
EUT Voltage: Powered from Host System

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11568.50	38.2	H	54.0	-15.8	AVG	255	1.3	
11568.86	38.1	V	54.0	-15.9	AVG	146	1.0	
5786.25	33.2	H	54.0	-20.8	AVG	167	1.2	
5784.14	32.9	V	54.0	-21.1	AVG	8	1.0	
11568.50	49.9	H	74.0	-24.1	PK	255	1.3	
11568.86	49.6	V	74.0	-24.4	PK	146	1.0	
5786.25	45.9	H	74.0	-28.1	PK	167	1.2	
5784.14	43.8	V	74.0	-30.2	PK	8	1.0	

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

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

Date of Test: 2/28/2008
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #4
Config. Used: 1
Config Change: None
Host Unit Voltage 120V/60Hz

General Test Configuration

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

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

Ambient Conditions:

Temperature: 18.6 °C
Rel. Humidity: 41 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	15.6 dBm (36.3 mW)
2	6dB Bandwidth	15.247(a)	Pass	16.5 MHz
2	99% Bandwidth	RSS GEN	-	17.5 MHz
3	Power spectral Density (PSD)	15.247(d)	Pass	-8.3 dBm/3kHz
4	Spurious emissions	15.247(b)	Pass	More than 20dB below 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.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Output Power

Power Setting[2]	Frequency (MHz)	Output Power (dBm)[1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP[Note 2] dBm	EIRP[Note 2] W	Output Power (dBm)[3]	Output Power mW
Max	5745	15.6	36.3	5.0	Pass	20.6	0.115	7.5	5.6
Max	5785	14.6	28.6	5.0	Pass	19.6	0.091	5.3	3.4
Max	5805	15.3	34.0	5.0	Pass	20.3	0.108	6.0	4.0

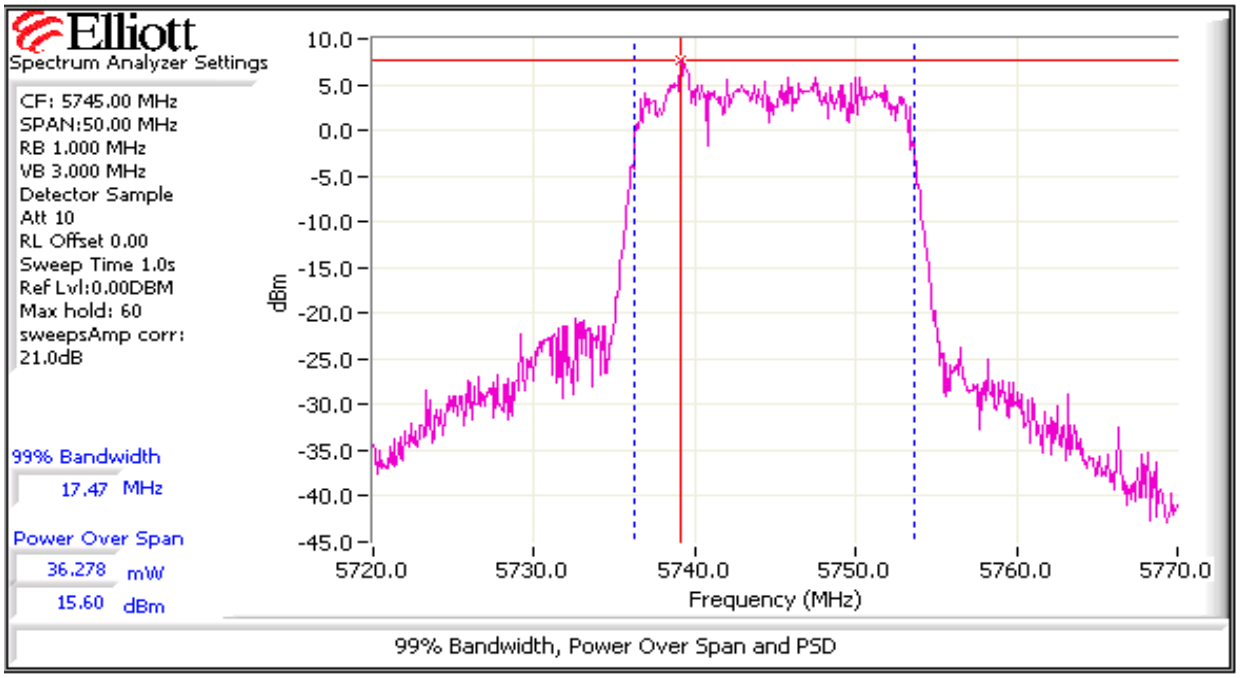
Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, max hold for at least 60 seconds (transmitted signal was not continuous) and power integration over 50MHz
Note 2:	Power setting - the software power setting used during testing, included for reference only.

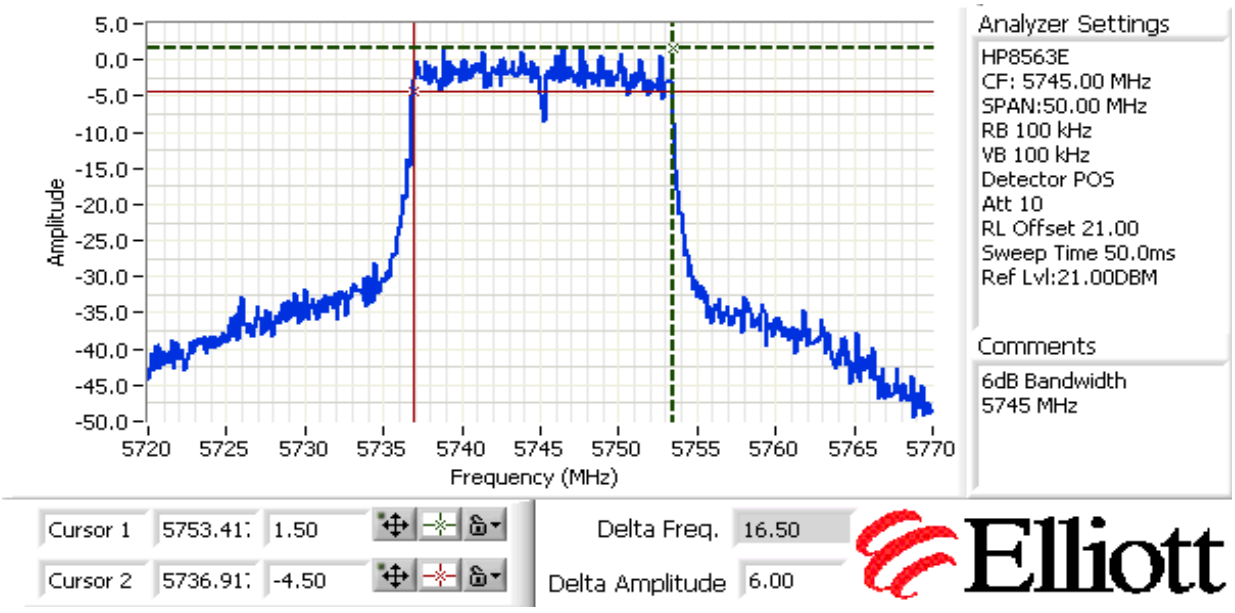
Run #2: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	Bandwidth (MHz) 99%
Max	5745	1.0MHz	16.5	17.5
Max	5785	1.0MHz	16.4	17.5
Max	5805	1.0MHz	16.4	17.5

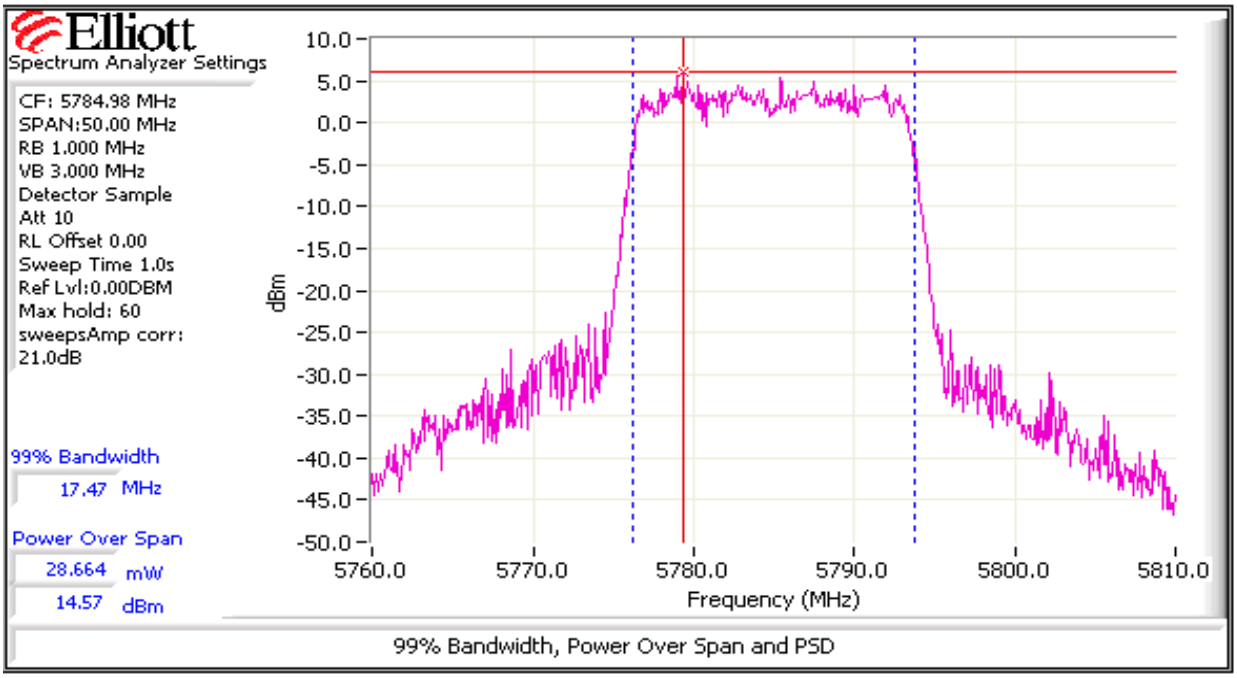
Note 1:	99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB

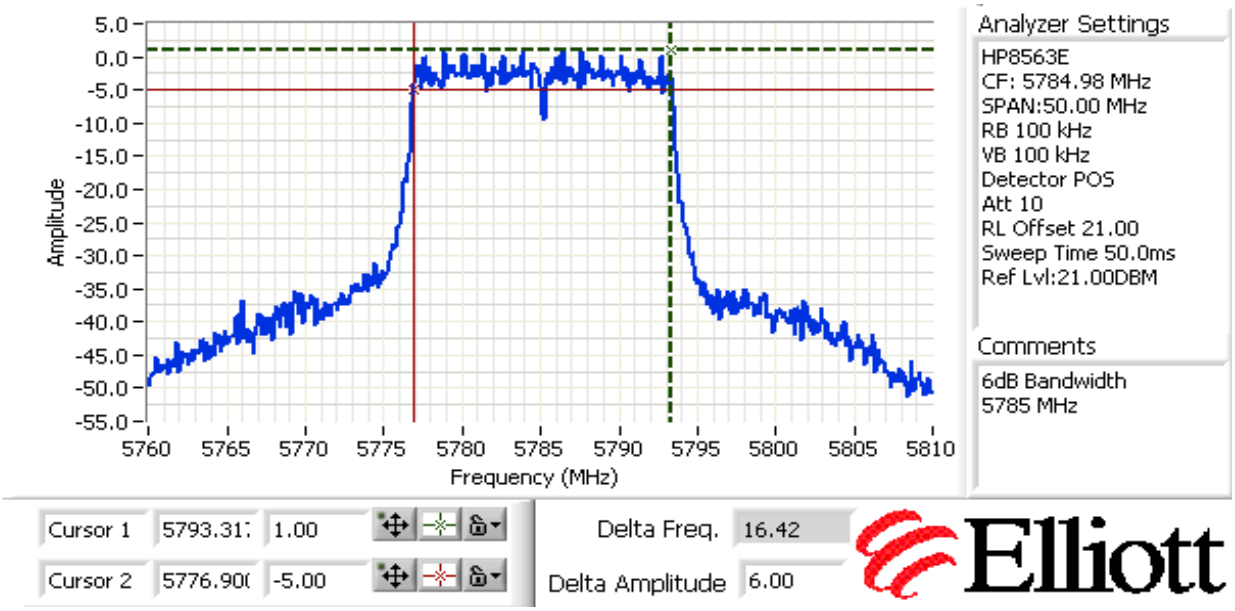
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



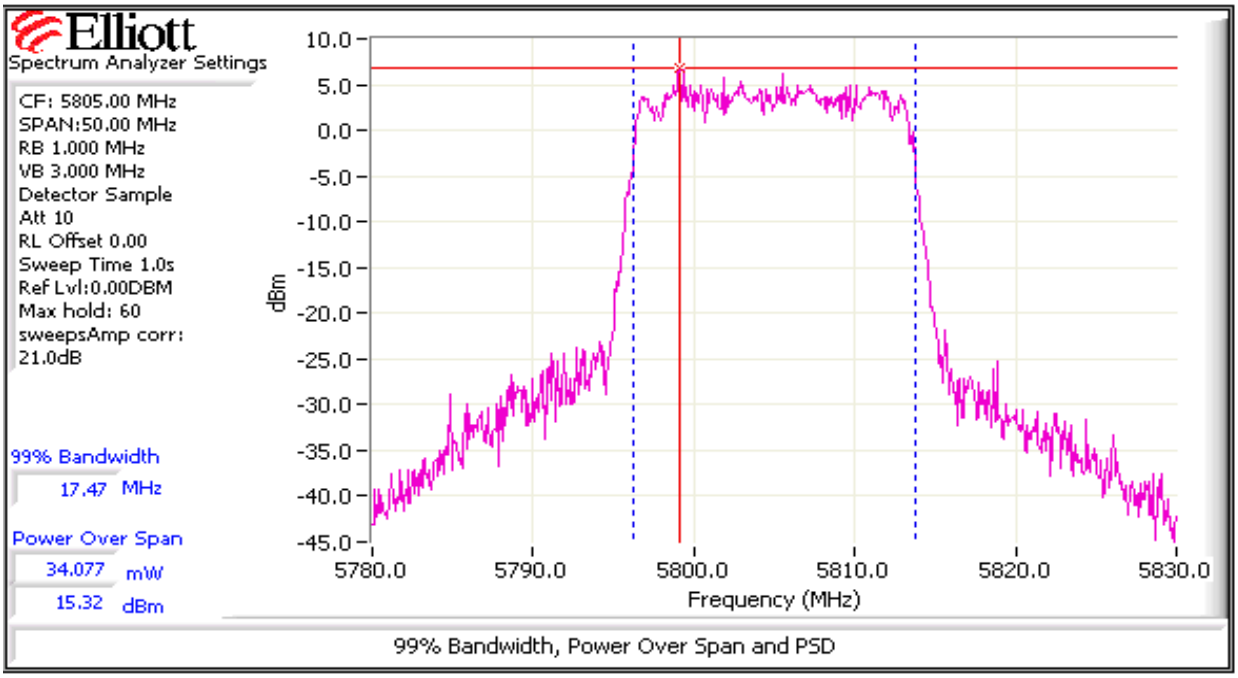


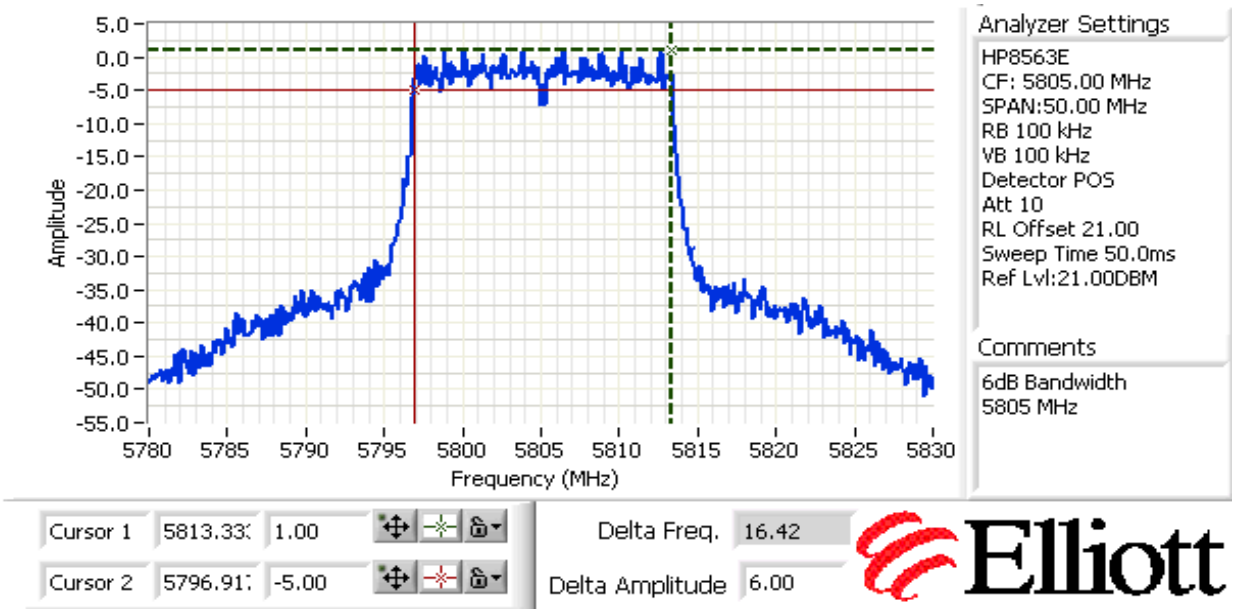
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



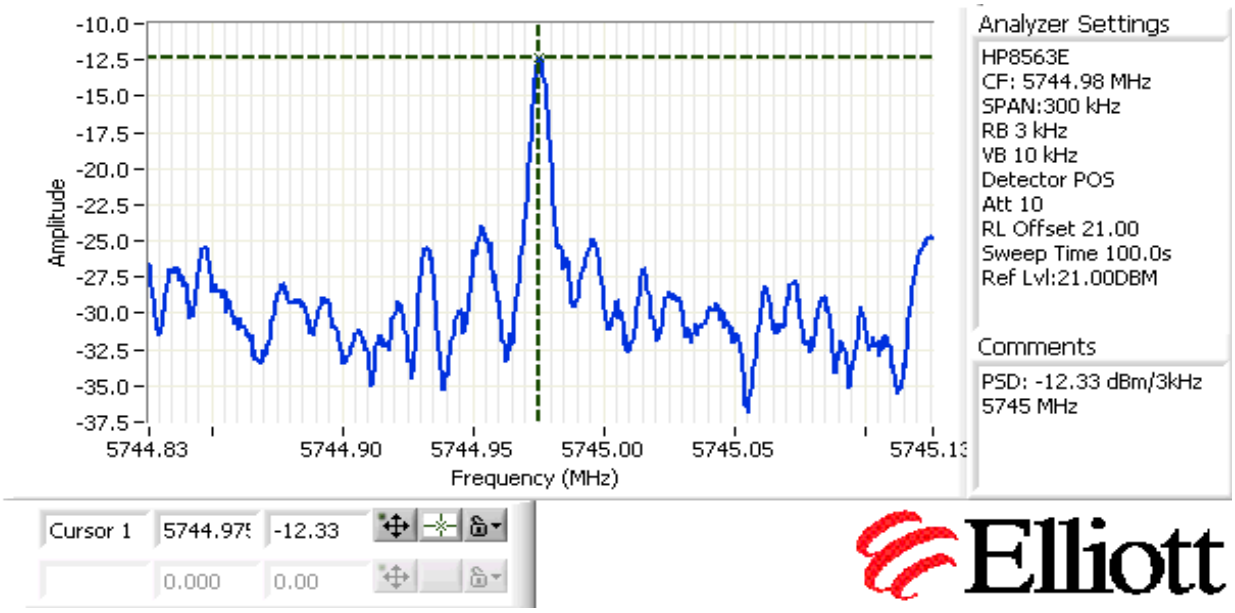


Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

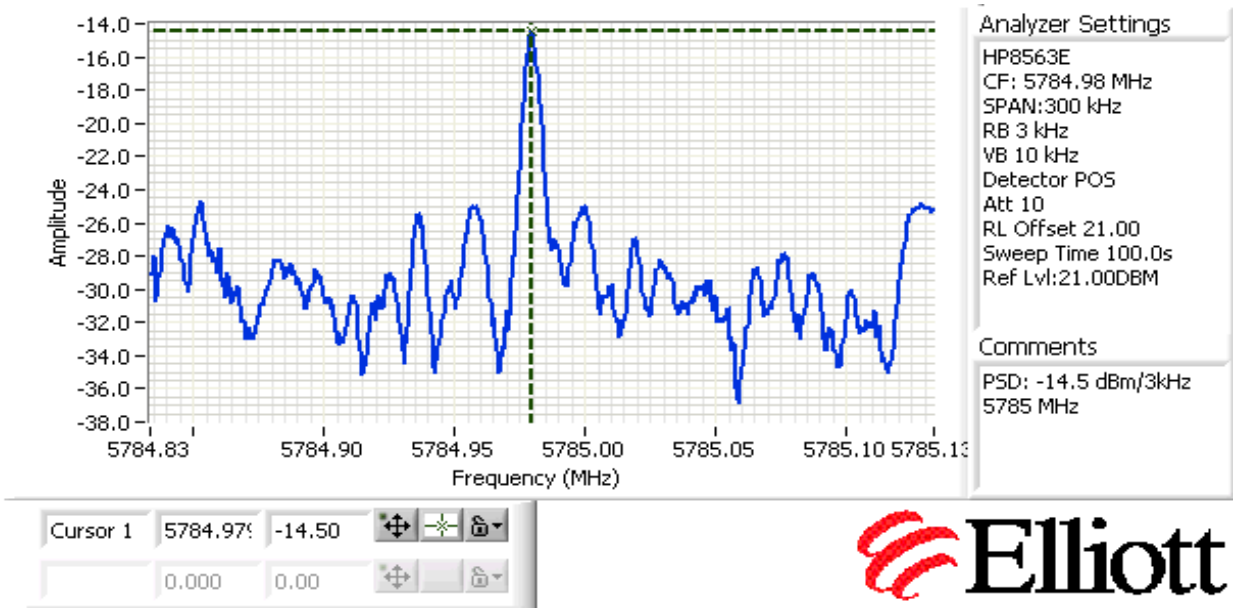
Run #3: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
Max	5744.97	-12.3	8.0	Pass
Max	5784.98	-14.5	8.0	Pass
Max	5804.98	-8.3	8.0	Pass

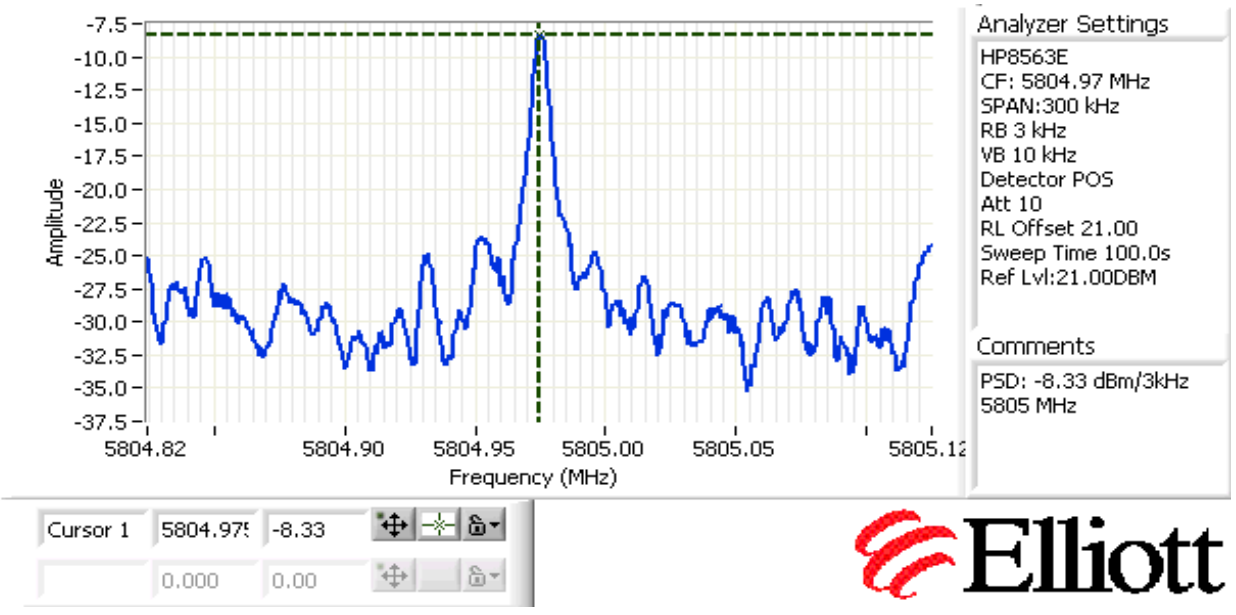
Note 1:	Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



Elliott



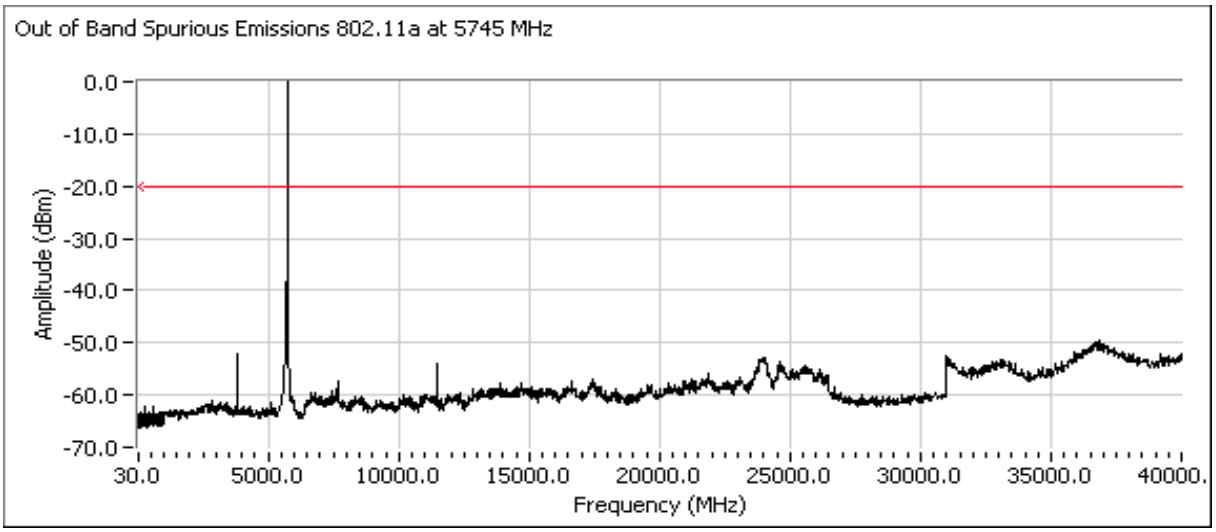
Elliott

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #4: Out of Band Spurious Emissions

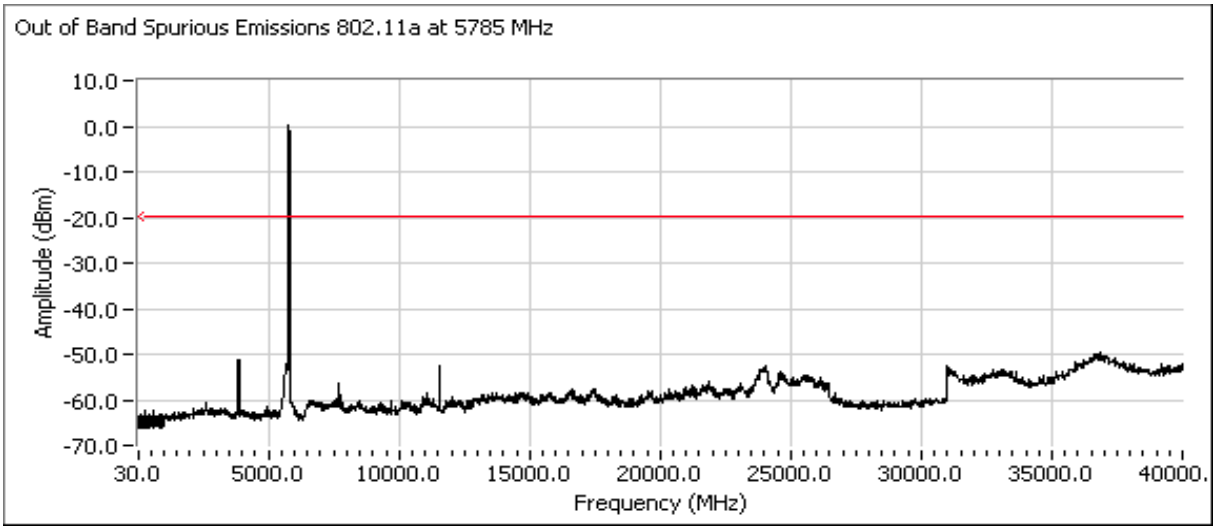
Frequency (MHz)	Limit	Result
5745	-20dBc	Pass
5785	-20dBc	Pass
5805	-20dBc	Pass

Plots for low channel, power setting(s) = Max

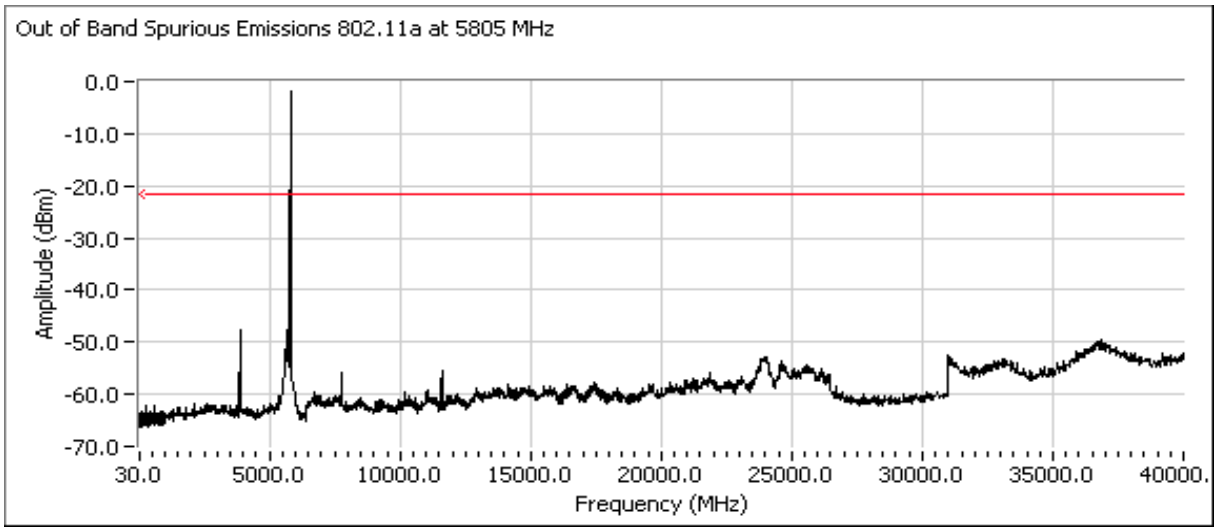


Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Plots for low channel, power setting(s) = Max



Plots for low channel, power setting(s) = Max



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, PSD, Bandwidth and Spurious Emissions (802.11g)

Test Specific Details

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

Date of Test: 1/14/2008
Test Engineer: Mehran Birgani
Test Location: Chamber #2
Config. Used: 1
Config Change: None
EUT Voltage: Power from host

General Test Configuration

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

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

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 42 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	24.1dBm (258.2mW)
2	6dB Bandwidth	15.247(a)	Pass	16.5 MHz
2	99% Bandwidth	RSS GEN	-	17.2 MHz
3	Power spectral Density (PSD)	15.247(d)	Pass	-10.9 dBm/3kHz
4	Spurious emissions	15.247(b)	Pass	More than 20dB below the 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.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Output Power

Power Setting[2]	Frequency (MHz)	Output Power (dBm)[1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP[Note 2] dBm	EIRP[Note 2] W	Output Power (dBm)[3]	Output Power mW
Max	2412	24.1	258.2	3.8	Pass	27.9	0.619	10.7	11.7
Max	2437	23.7	234.4	3.8	Pass	27.5	0.562	10.8	12.0
Max	2462	23.2	208.4	3.8	Pass	27.0	0.500	10.9	12.3

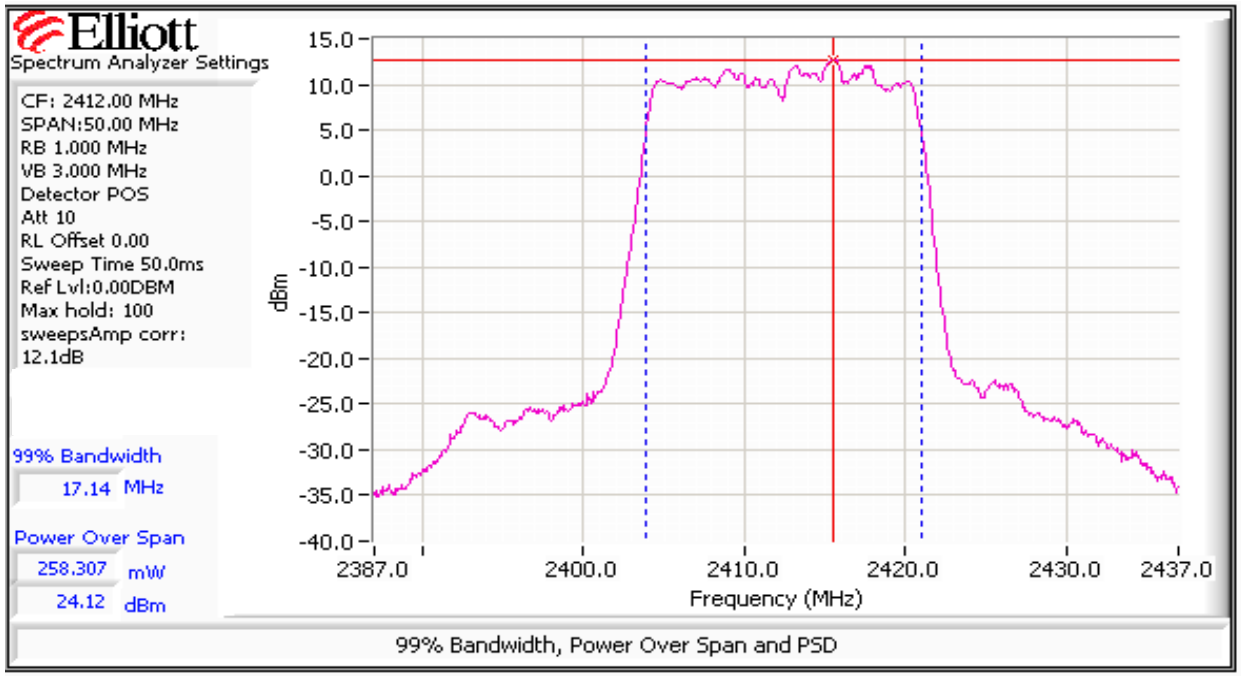
Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, peak detector, max hold (transmitted signal was not continuous) and power integration over 50 MHz. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for reference only.

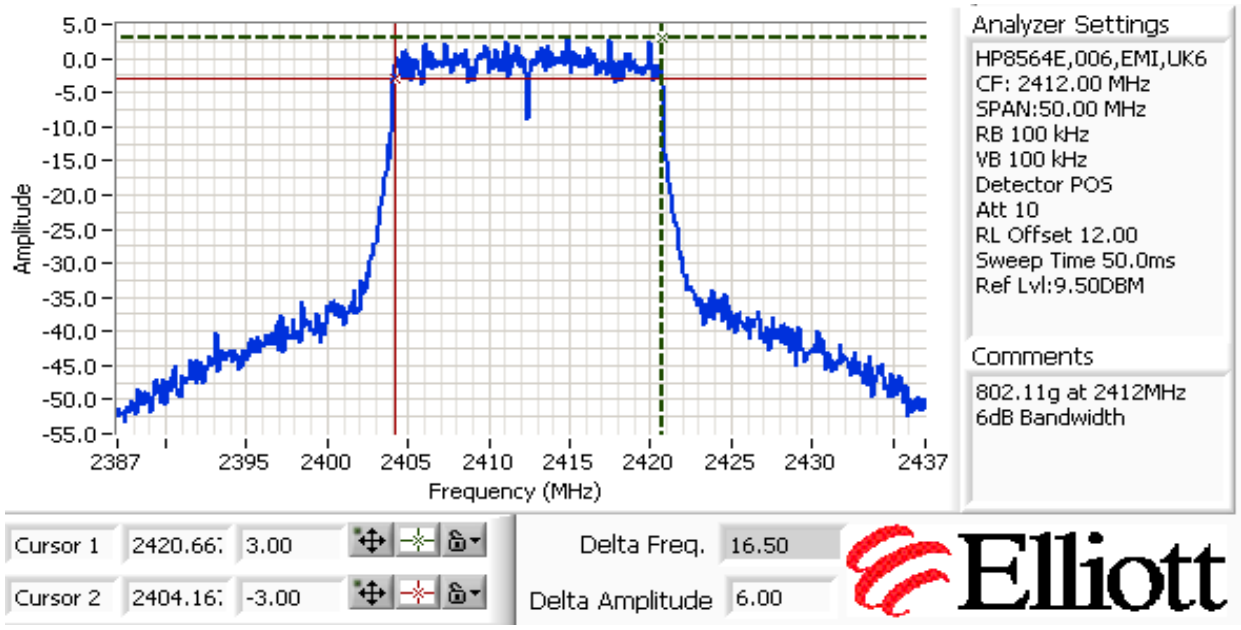
Run #2: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	Bandwidth (MHz) 99%
Max	2412	1MHz	16.5	17.1
Max	2437	1MHz	16.6	17.2
Max	2462	1MHz	16.5	17.1

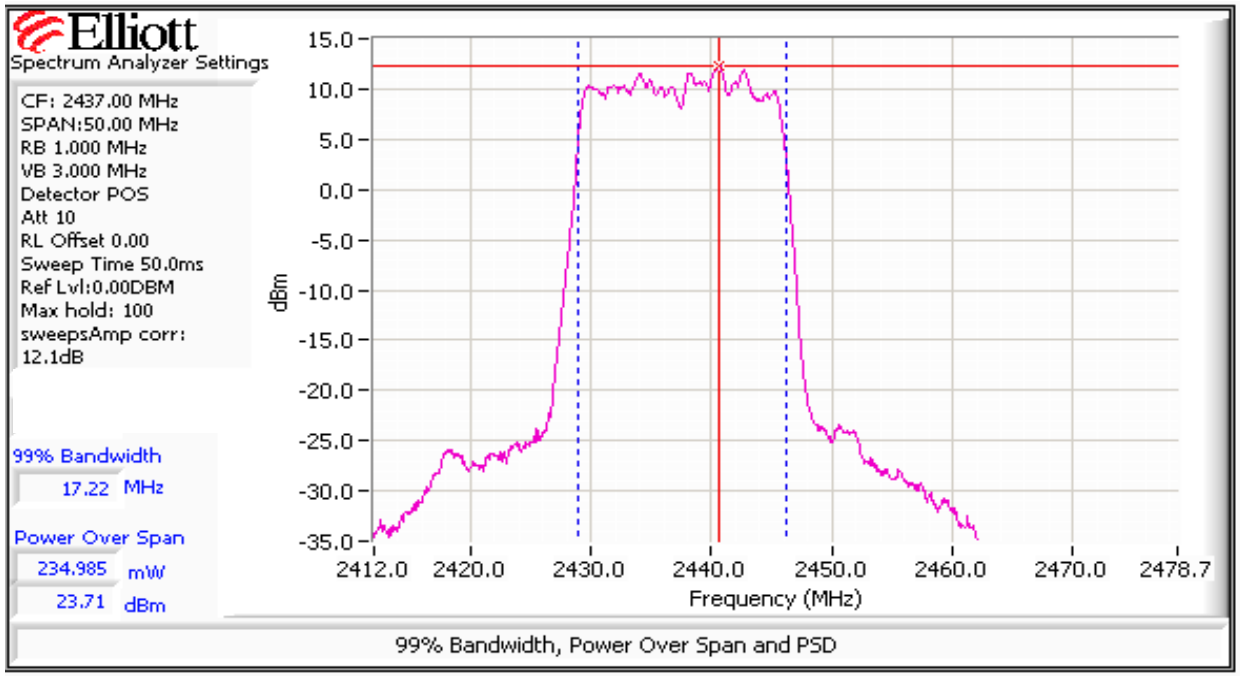
Note 1:	99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB

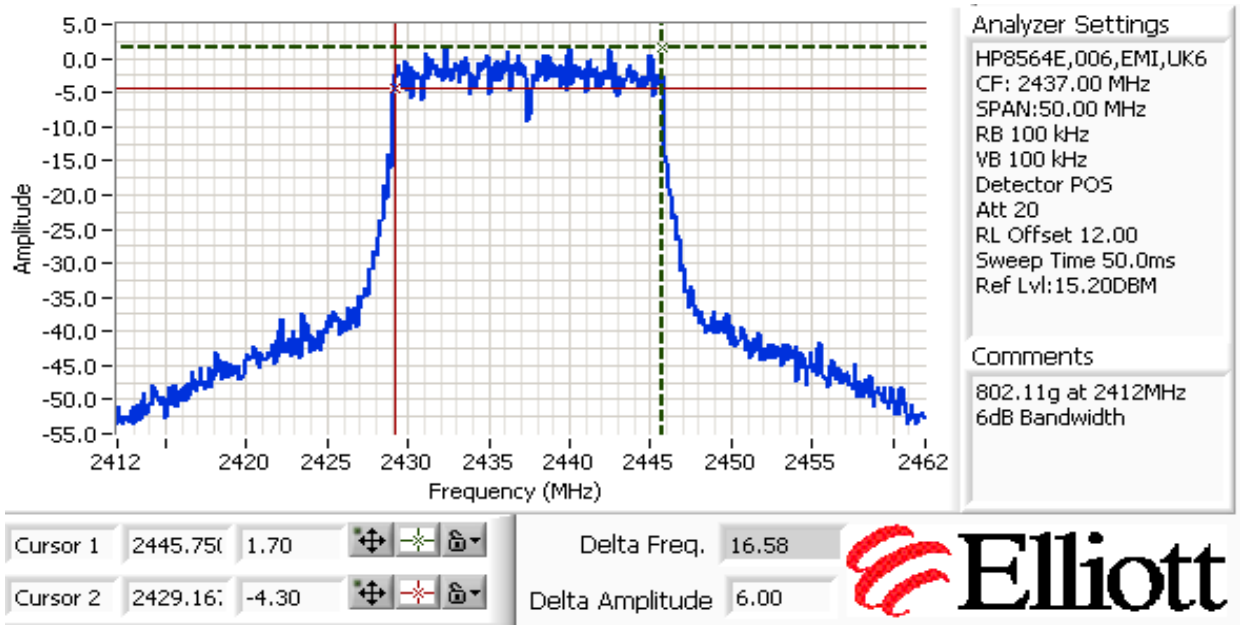
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



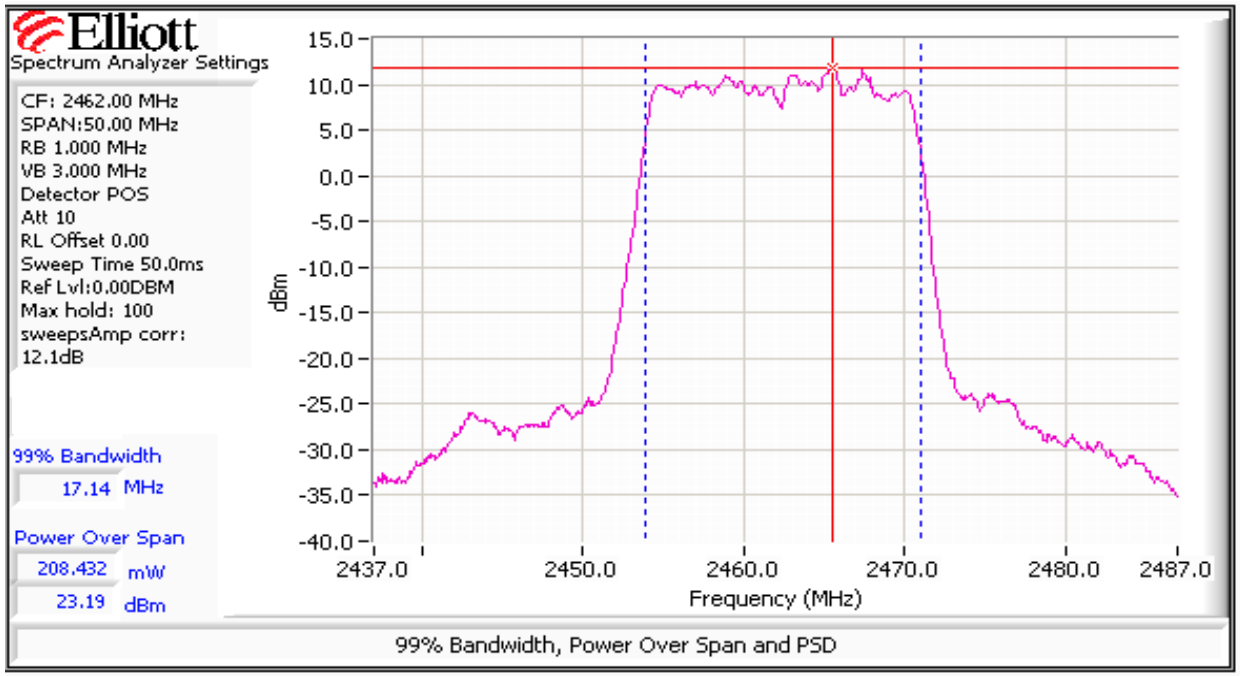


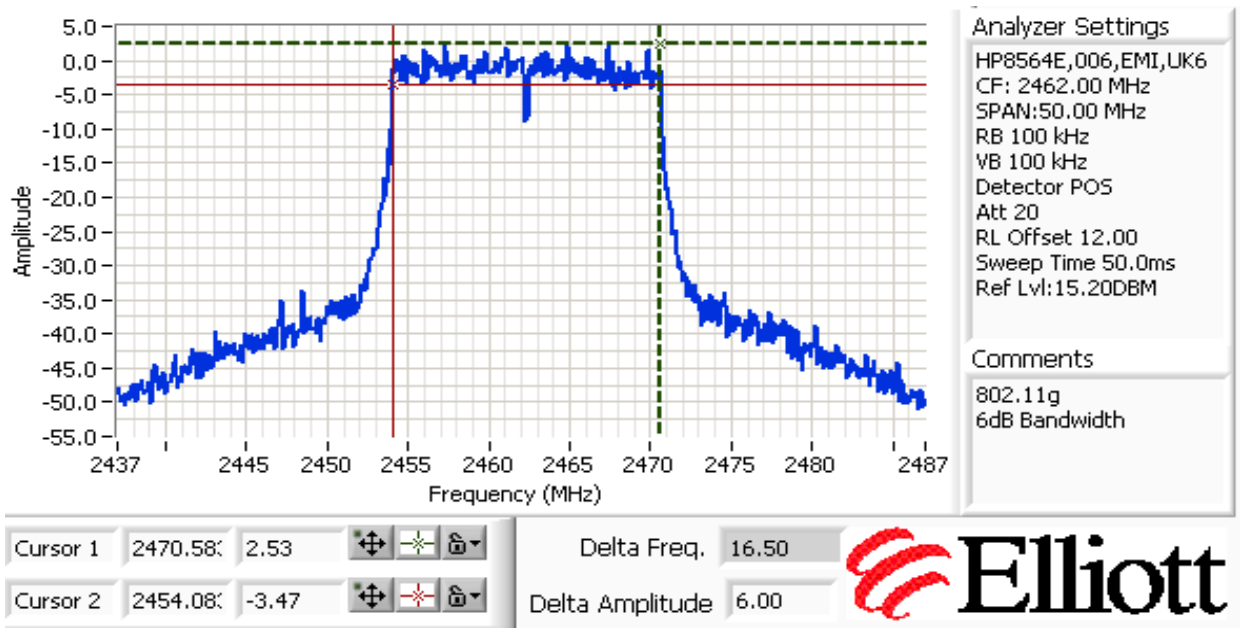
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



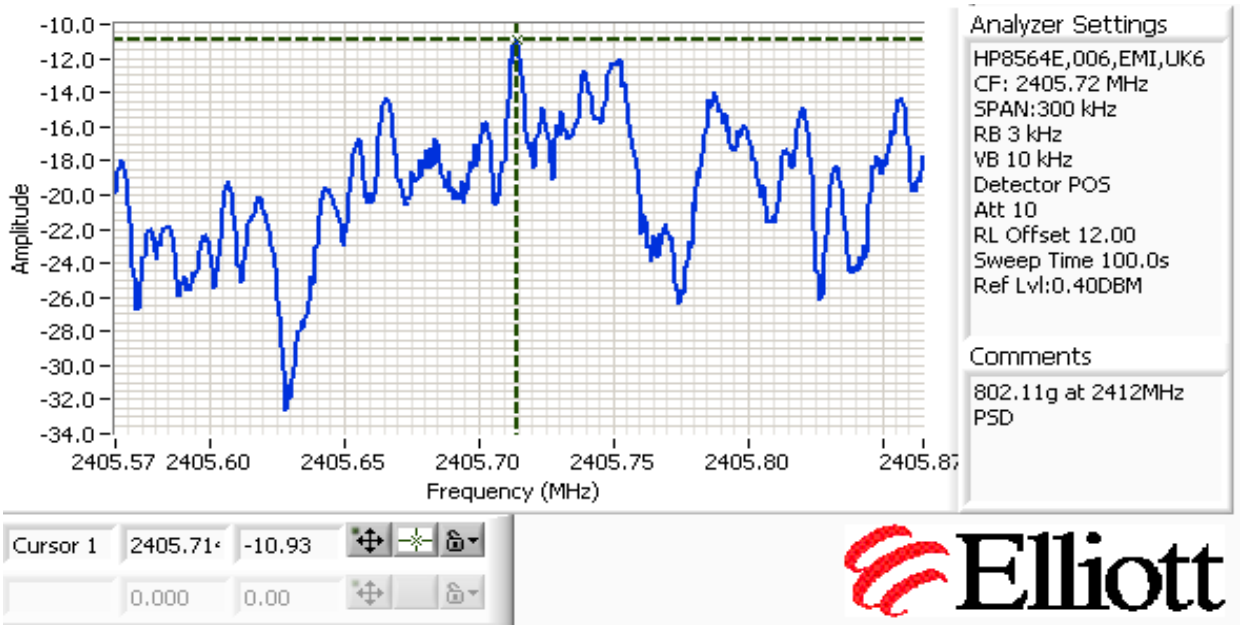


Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

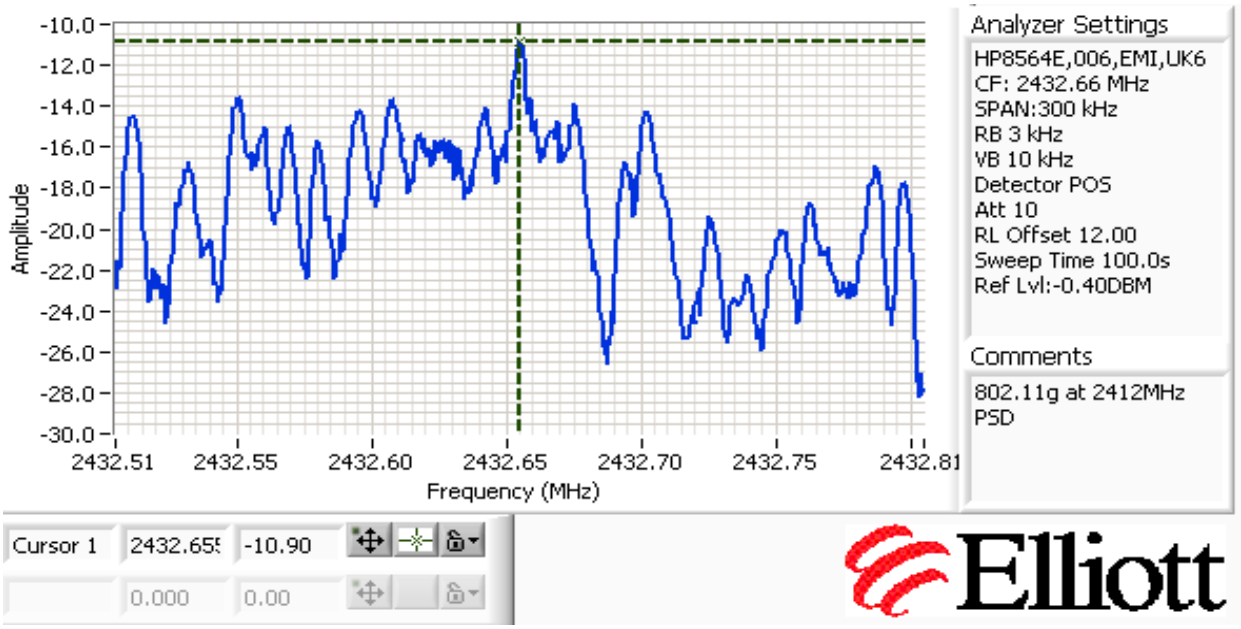
Run #3: Power spectral Density

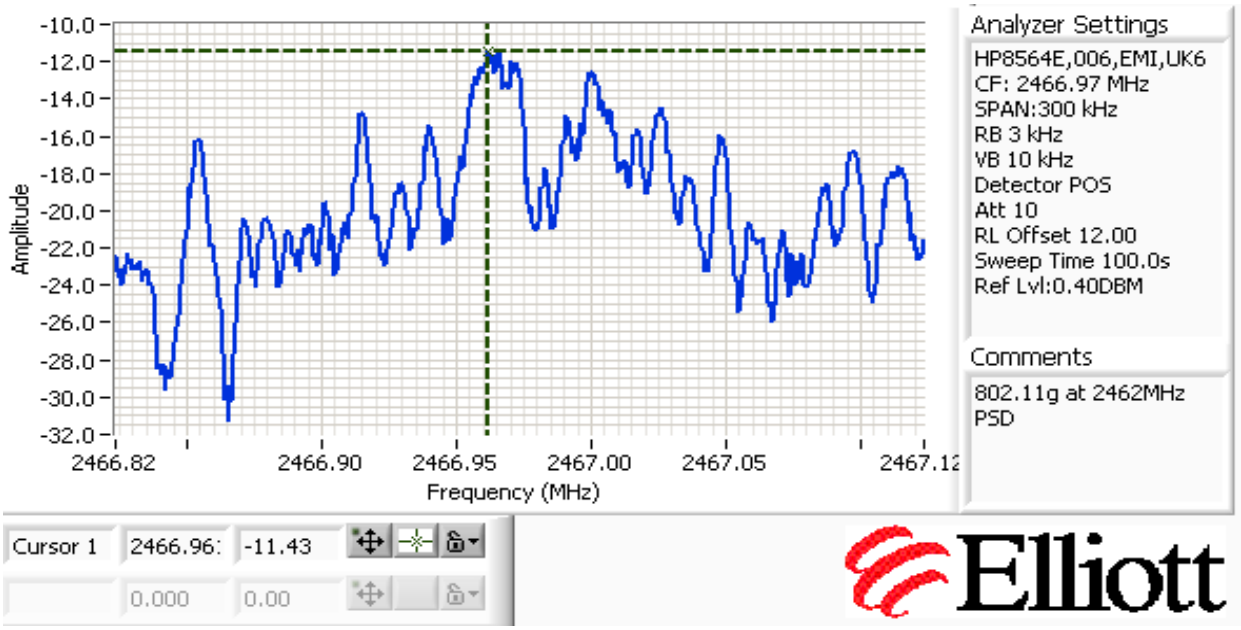
Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
Max	2412	-10.9	8.0	Pass
Max	2437	-10.9	8.0	Pass
Max	2462	-11.4	8.0	Pass

Note 1:	Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



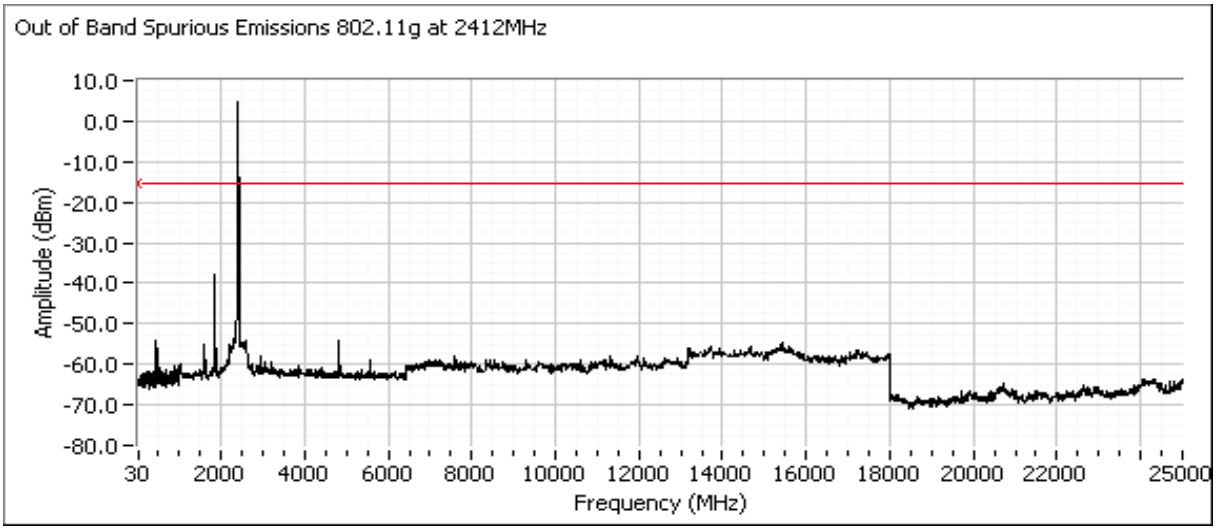


Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

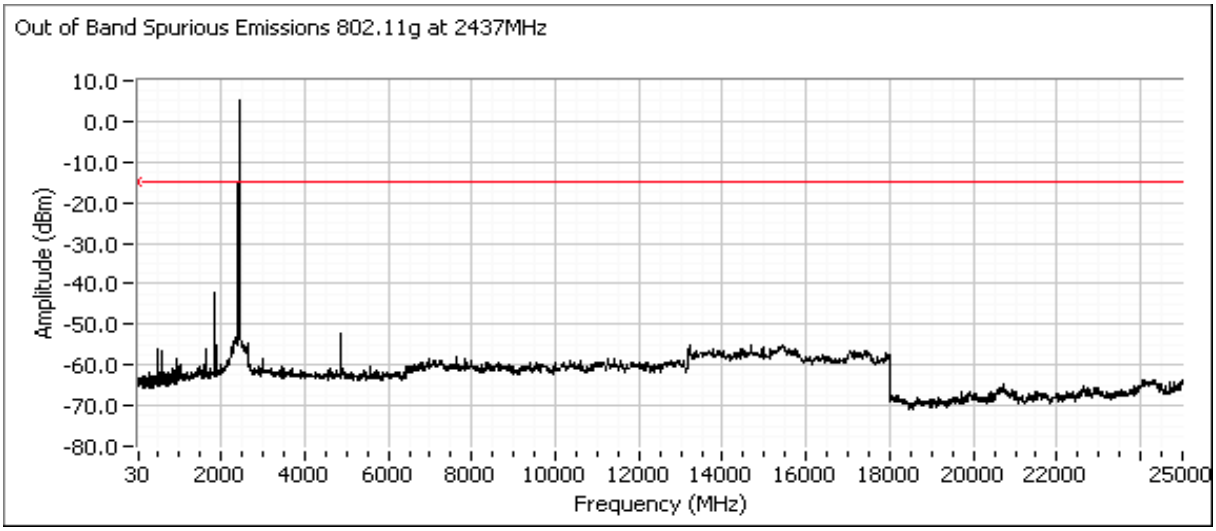
Run #4: Out of Band Spurious Emissions

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting(s) = Max

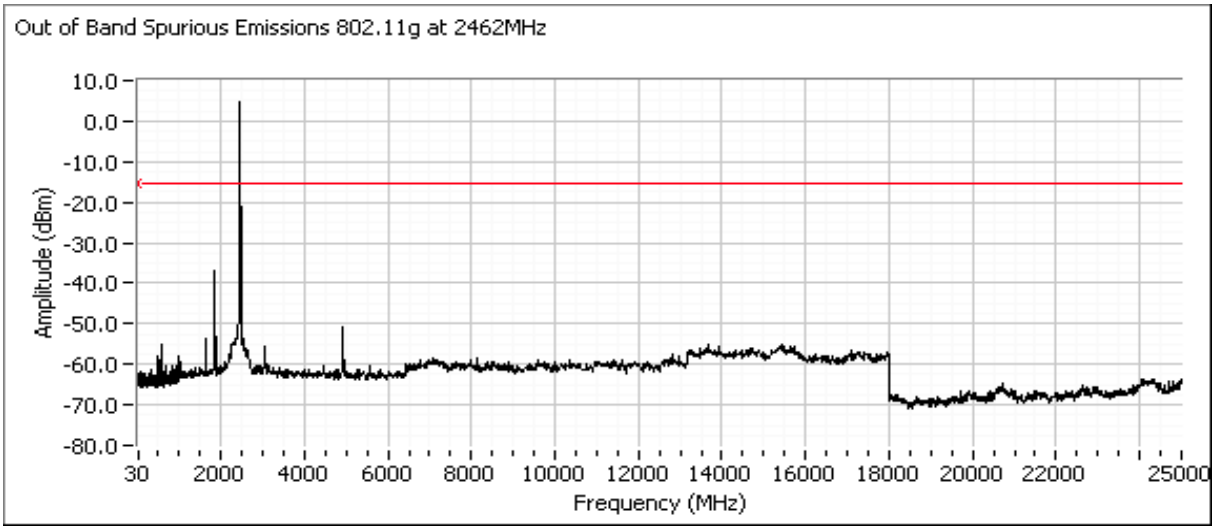


Plots for center channel, power setting(s) = Max



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Plots for high channel, power setting(s) = Max



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, PSD, Bandwidth and Spurious Emissions (802.11b)

Test Specific Details

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

Date of Test: 1/15/2008
Test Engineer: J. Caizzi & M. Birgani
Test Location: Chamber #2
Config. Used: 1
Config Change: None
EUT Voltage: Power from host

General Test Configuration

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

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

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 42 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	23.8dBm (241mW)
2	6dB Bandwidth	15.247(a)	Pass	9.1 MHz
2	99% Bandwidth	RSS GEN	-	12.8 MHz
3	Power spectral Density (PSD)	15.247(d)	Pass	7.5 dBm/3kHz
4	Spurious emissions	15.247(b)	Pass	More than 20dB below the 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.

Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #1: Output Power

Power Setting [2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP [Note 2] W	Output Power (dBm) [3]	Output Power mW
Max	2412	23.0	198.6	3.8	Pass	26.8	0.476	14.9	31.2
Max	2437	23.8	241.0	3.8	Pass	27.6	0.578	14.8	30.2
Max	2462	23.4	218.8	3.8	Pass	27.2	0.525	14.4	27.5

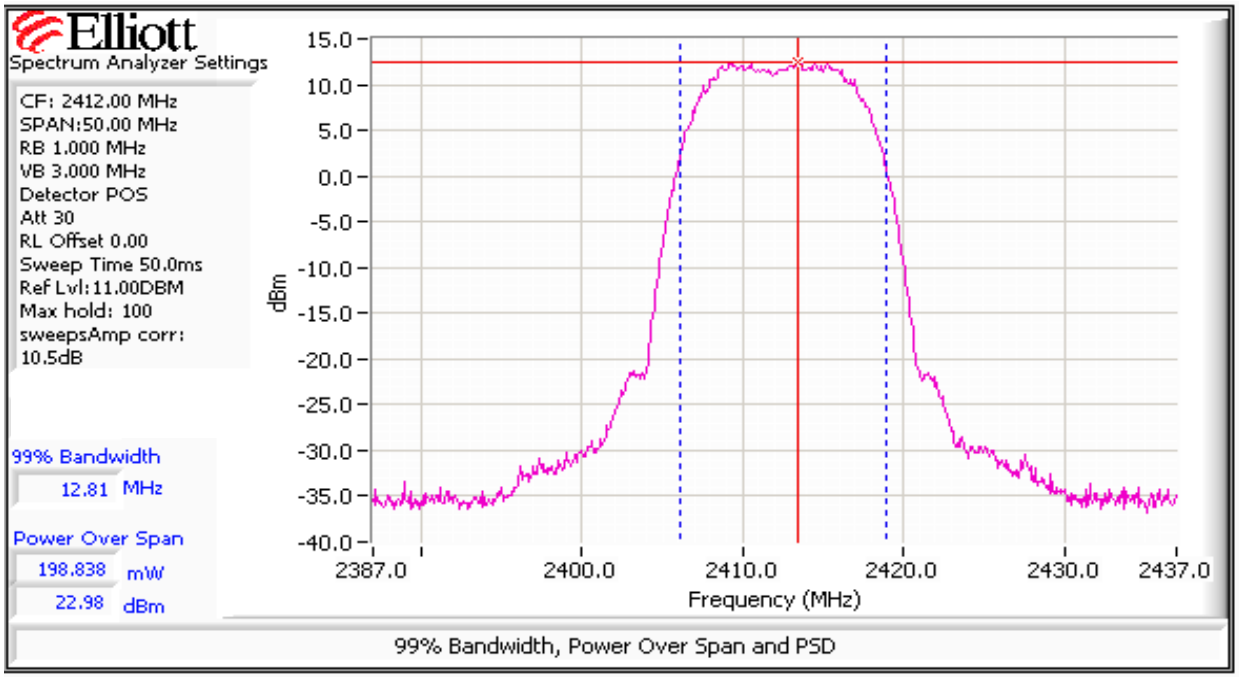
Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, peak detector, max hold (transmitted signal was not continuous) and power integration over 50 MHz. The output power limit is 30dBm.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power sensor and is included for reference only.

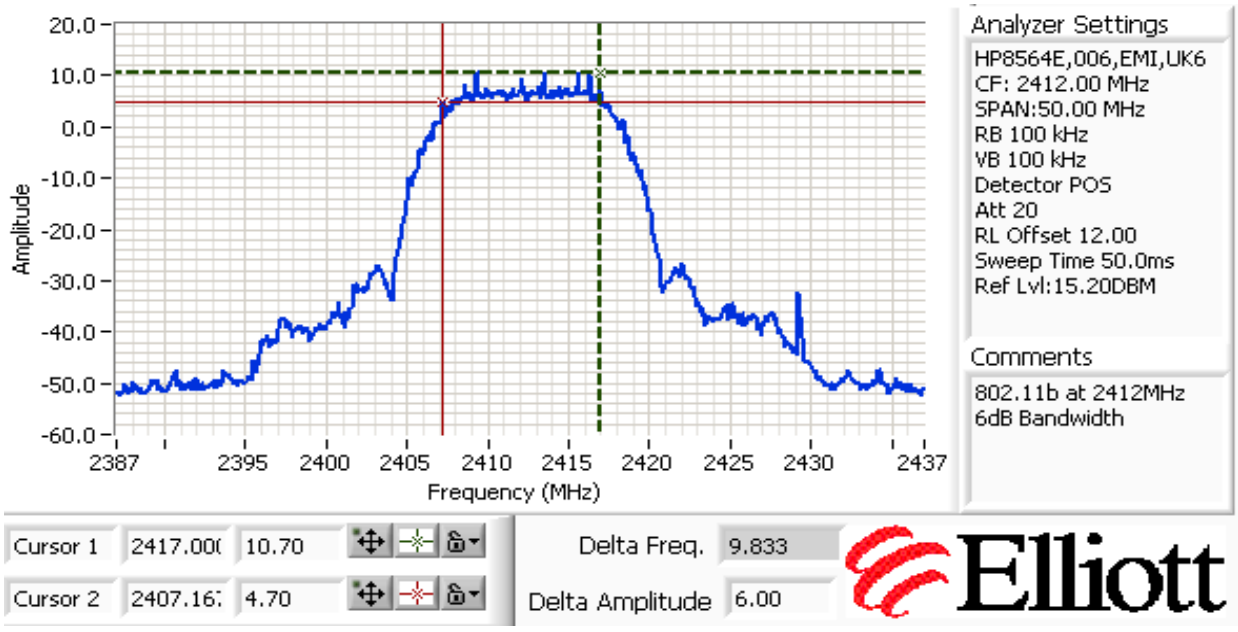
Run #2: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	Bandwidth (MHz) 99%
Max	2412	1MHz	10.3	12.8
Max	2437	1MHz	10.3	12.8
Max	2462	1MHz	9.1	12.7

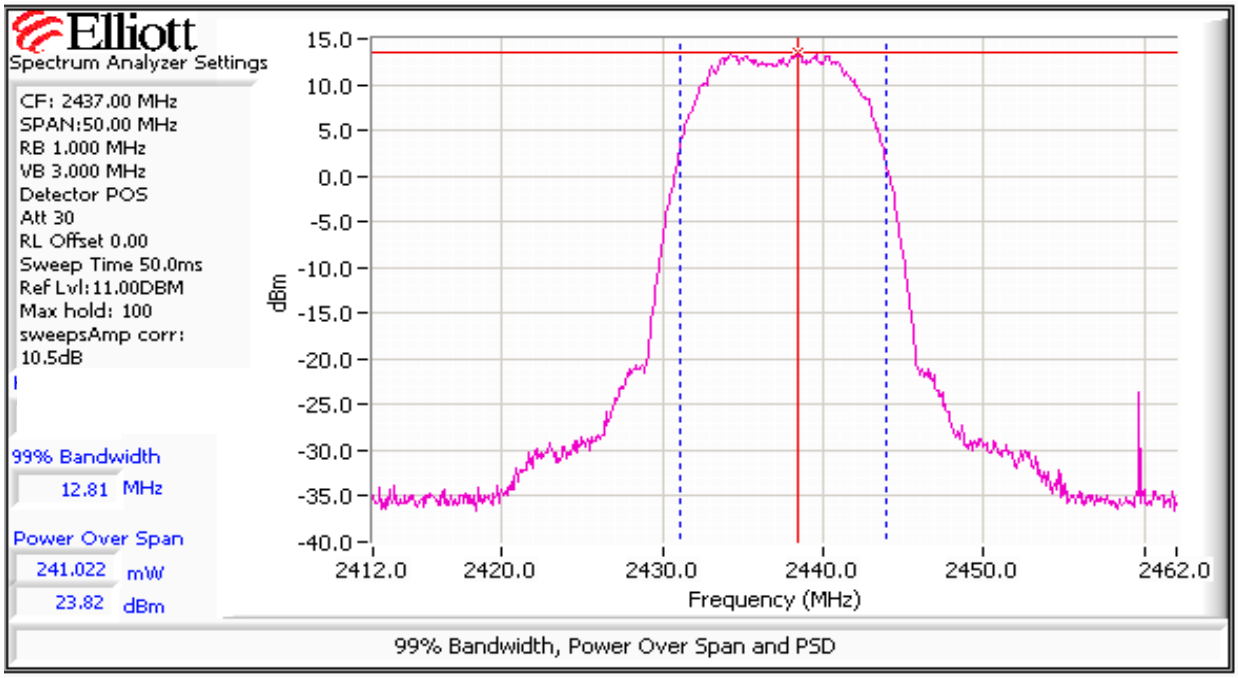
Note 1:	99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB

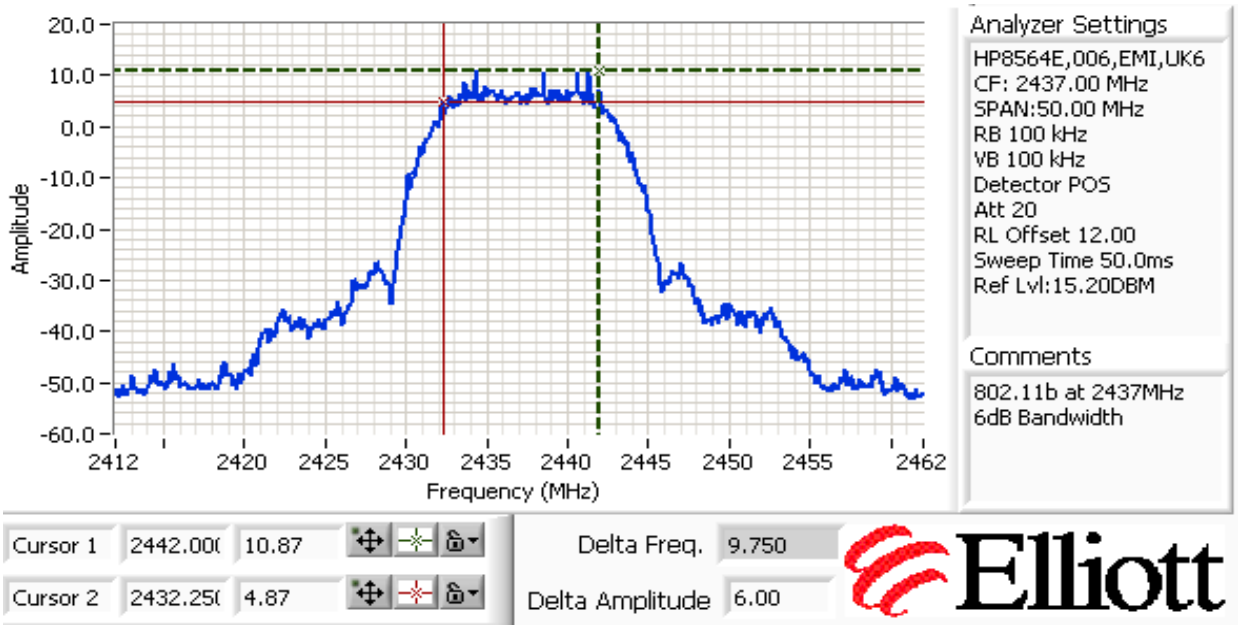
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A



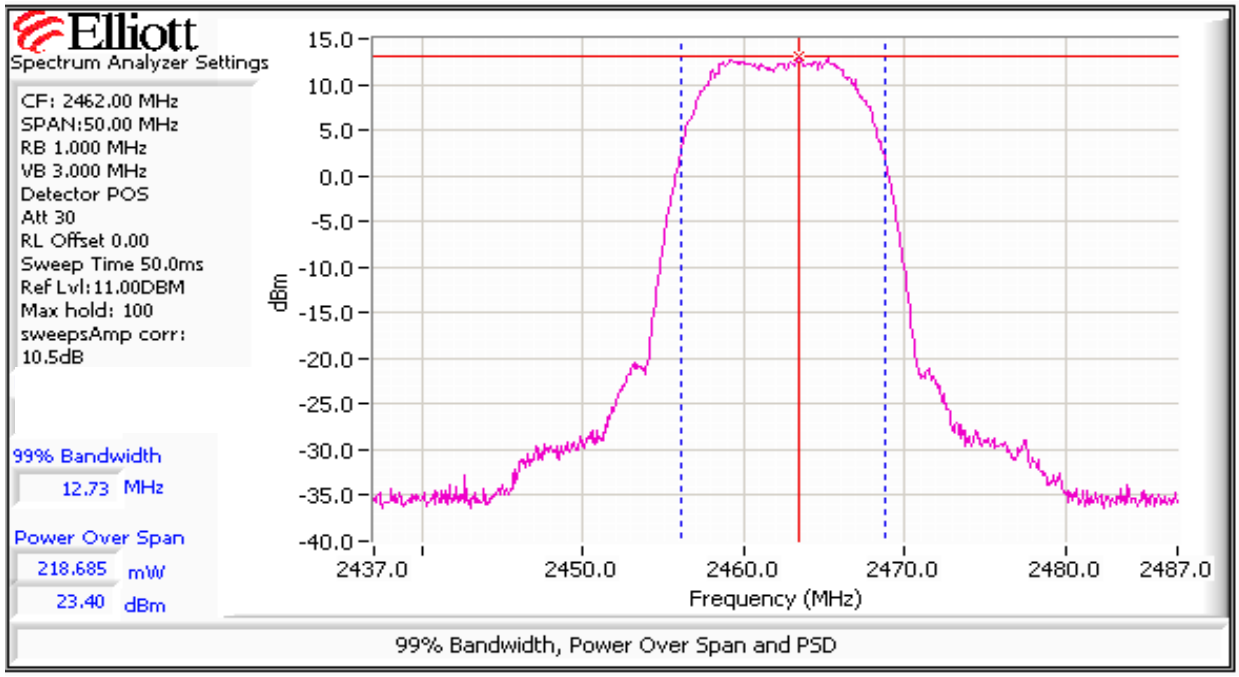


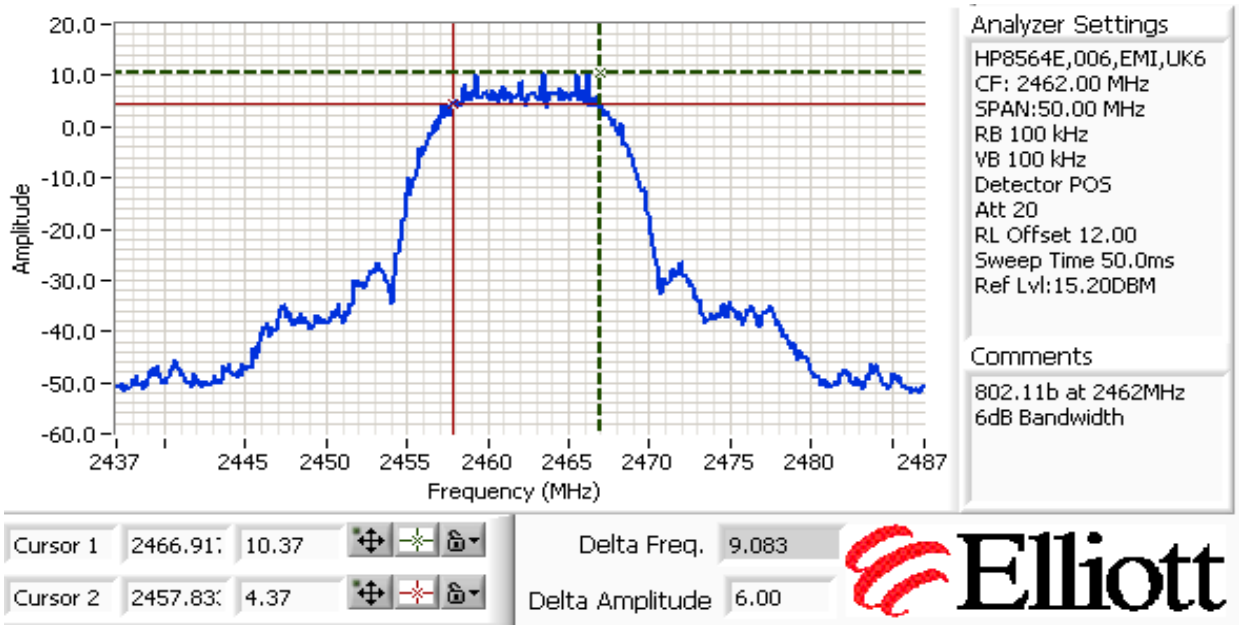
Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A





Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A





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		Account Manager:	Dean Eriksen
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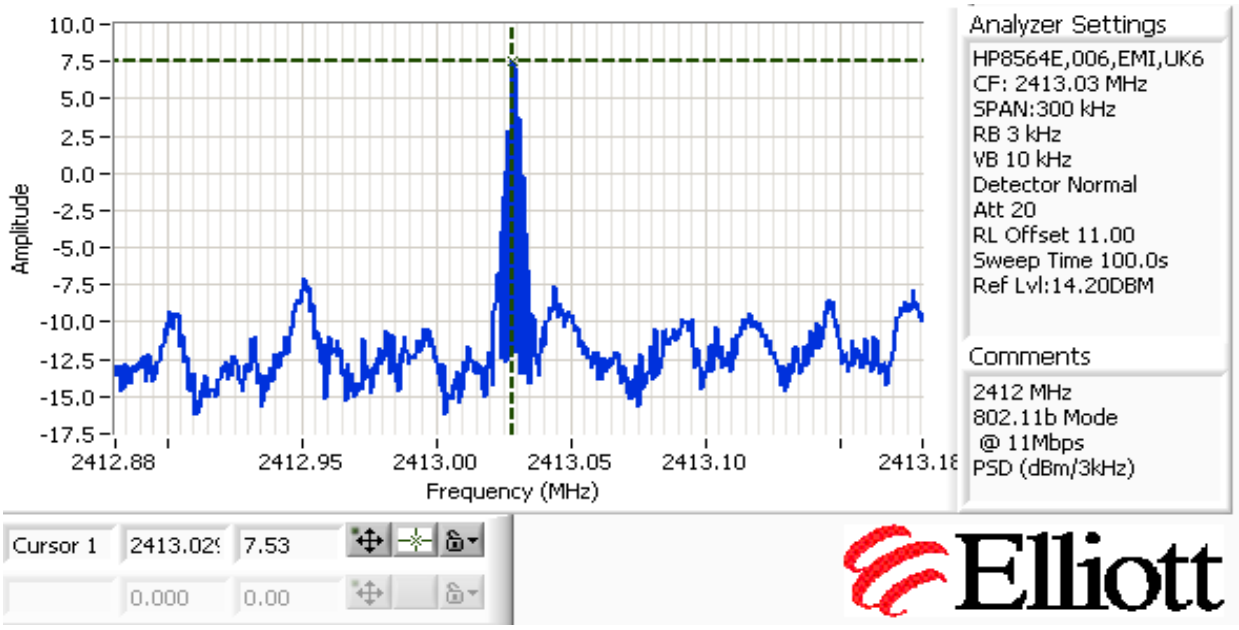
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Run #3: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
Max	2412	7.5	8.0	Pass
Max	2437	4.2	8.0	Pass
Max	2462	5.5	8.0	Pass

Note 1:	Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.



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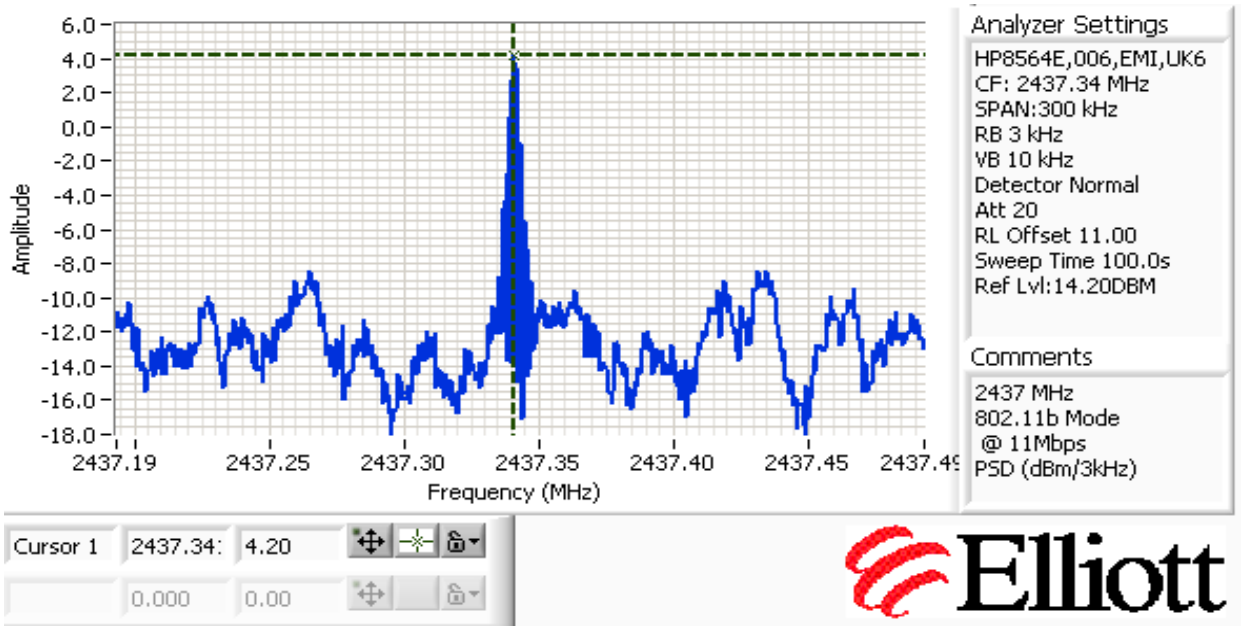
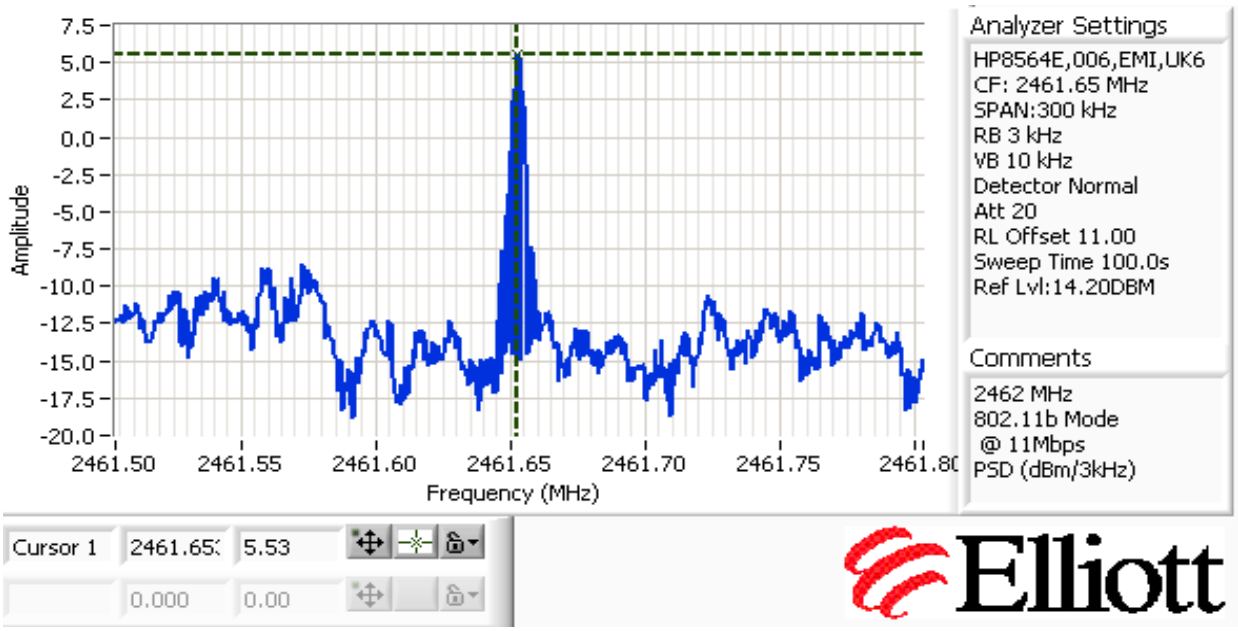
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A





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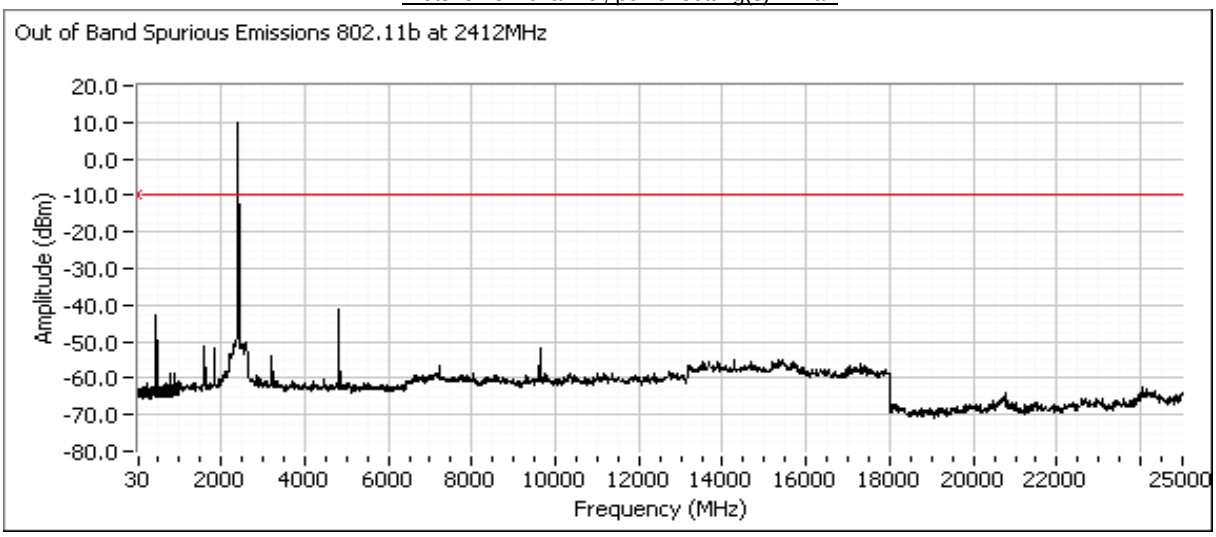
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

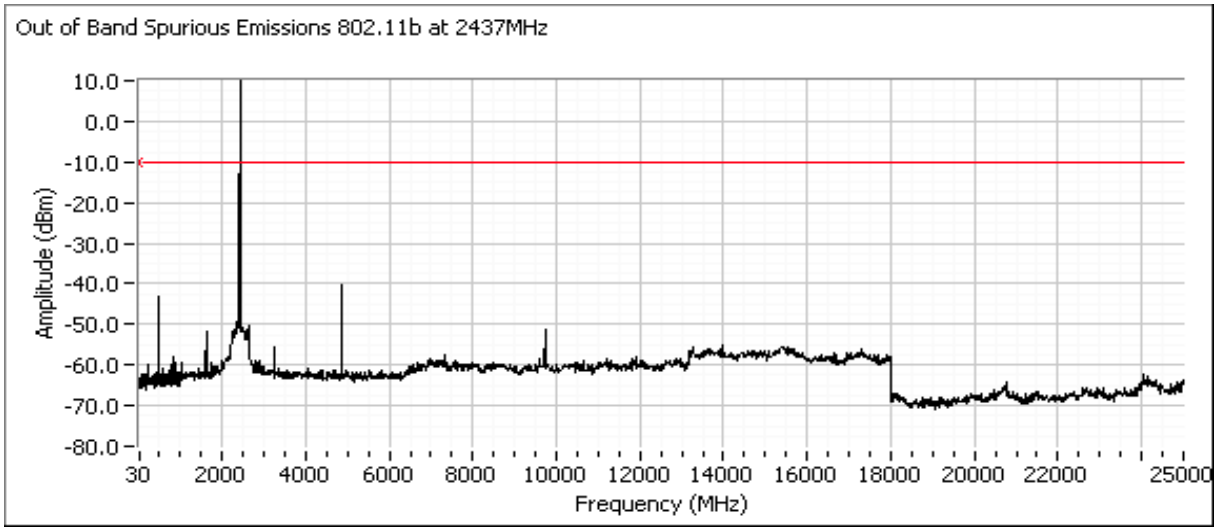
Run #4: Out of Band Spurious Emissions

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting(s) = Max



Plots for center channel, power setting(s) = Max



Client:	Summit Data Communications	Job Number:	J68959
Model:	SDC-CF10AG 802.11a/g Compact Flash Module with Antenna Connectors	T-Log Number:	T69413
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	15.247 / 15.E / RSS-210	Class:	N/A

Plots for high channel, power setting(s) = Max

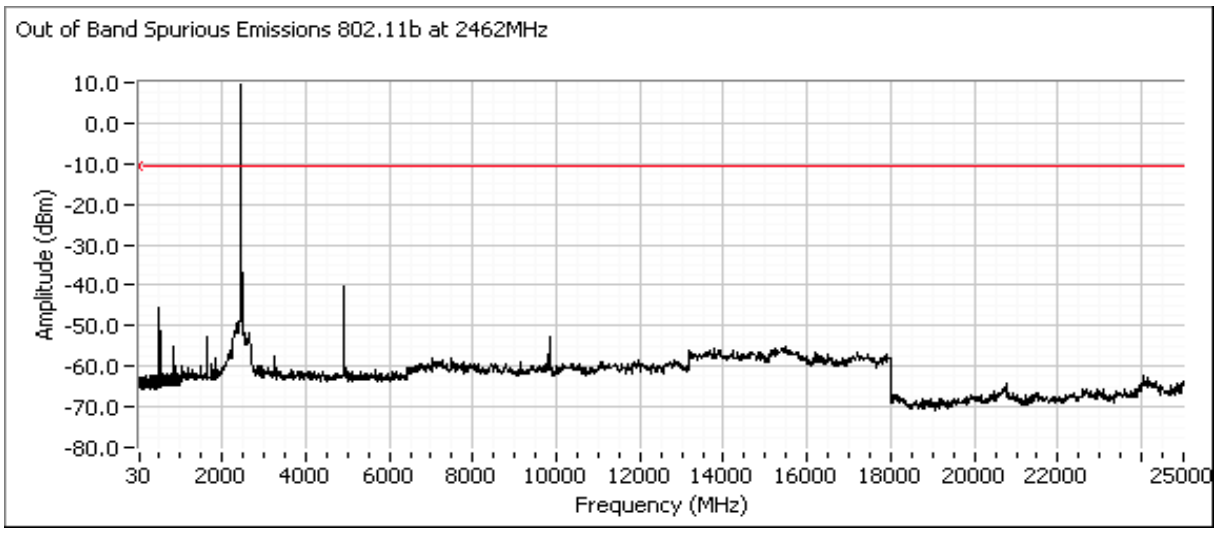


EXHIBIT 3: Photographs of Test Configurations

4 Pages

EXHIBIT 4: Proposed FCC ID Label & Label Location

EXHIBIT 5: Detailed Photographs of LXE Inc. Model 4831 Construction

4 Pages

EXHIBIT 6: Operator's Manual for LXE Inc. Model 4831

9 Pages

EXHIBIT 7: Block Diagram of LXE Inc. Model 4831

1 Page

EXHIBIT 8: Schematic Diagrams for LXE Inc. Model 4831

6 Pages

EXHIBIT 9: Theory of Operation for LXE Inc. Model 4831

1 Page

EXHIBIT 10: RF Exposure Information

4 Pages