*Test Report*
*LP0002 (100-06-28)*
*Summit Data Communications*
*Device Name: SDC-WB40NBT*
*Brand: Summit Data Communications*
*Model: SDC-WB40NBT*

| | |
|---|---|
| GRANTEE: | Summit Data Communications<br>526 South Main St. Suite 805<br>Akron, OH 44311 |
| TEST SITE: | Elliott Laboratories<br>41039 Boyce Road<br>Fremont, CA 94538 |
| REPORT DATE: | March 14, 2012 |
| FINAL TEST DATE: | October 19, 20 and 21 and November 19 and 24, 2010 and May 11, August 2, 4, 10, 12, 13, 16, 17, 18 19, 20, 23, 24, 26 and October 6, 7, 19, 20 and 26 and November 3, 4, 7, 8, 9, 15, 2011 |
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## *REVISION HISTORY*

| Rev# | Date | Comments | Modified By |
|---|---|---|---|
| - | 3-14-2012 | First release | |

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## *SCOPE*

An electromagnetic emissions test has been performed on the Summit Data Communications model SDC-WB40NBT pursuant to LP0002 (100-06-28) - Technical Regulations for Low-power Radio-frequency Devices. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4:2003 and LP0002 as outlined in Elliott Laboratories test procedures.

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant 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 Summit Data Communications model SDC-WB40NBT and therefore apply only to the tested sample. The sample was selected and prepared by Ron Seide of Summit Data Communications

## *OBJECTIVE*

The primary objective of the manufacturer is compliance with LP0002 (100-06-28) - Technical Regulations for Low-power Radio-frequency Devices for the radiated and conducted emissions of intentional radiators.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information for device approvals. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units that are subsequently manufactured.

## *SUMMARY OF RESULTS*

### *GENERAL REQUIREMENTS – APPLICABLE TO ALL BANDS*

| LP0002 Section | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|---|---|---|---|---|
| 2.10 (1) | Users/Operational Manual | - | Control, adjust, on/off operation will not cause violation | Complies |
| 2.10 (2) | Users/Operational Manual | - | Warnings against adjustments of the device | Complies |
| 2.10 (3) | Users/Operational Manual | - | Warnings against any replacement of components | Complies |
| 2.10 (4) | Users/Operational Manual | - | Full Contents of Article 14-17 | Complies |
| 5.12 | Channel Selection | Device was tested on the top, bottom and center channels in each band | Measurements on three channels in each band | N/A |

### *GENERAL TECHNICAL REQUIREMENTS*

| LP0002 Section | Description | Measured Value | Comments | Refer to: | Result |
|---|---|---|---|---|---|
| 2.3 | AC Conducted Emissions | 32.7dBµV @ 0.457MHz (-14.1dB) | AC conducted emissions shall meet the emissions limits detailed in 2.3 | | Complies |
| 3.10.1(4) | Antenna Gain | See EUT description | Antenna gains in excess of 6dBi may require reduction in output power, see appropriate rule part | - | Complies |
| 3.10.1 (4) | RF Connector | Module uses u.FL connectors | - | - | Complies |
| 5.20 | RF Exposure Requirements (minimum 20 cm separation) | 0.028 $mW/cm^2$ | MPE shall be less than 1 $mW/cm^2$ | | Complies |
| - | 99% bandwidth | DTS Operation:<br>802.11b: 12.8MHz<br>802.11g: 16.7MHz<br>2.4GHz, 802.11n20: 17.9MHz<br><br>802.11a: 16.9MHz<br>5GHz, 802.11n20: 18.2MHz<br><br>UNII Operation:<br>802.11a: 17.3MHz<br>802.11n20: 18.1MHz | Information only | | |

*DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)*

| LP0002 Section | Description | Measured Value | Comments | Refer to: | Result |
|---|---|---|---|---|---|
| 3.10.1 (2.3) | Output Power, 2400 - 2483.5 MHz | 802.11b: 15.2dBm (0.033 Watts)<br><br>802.11g: 12.6dBm (0.018 Watts)<br><br>802.11n20: 9.5dBm (0.009W)<br><br>EIRP = 0.066 W Note 1 | Maximum power is 1Watt, reduced by the amount in dB that the antenna gain exceeds 6dBi Note 1 | | Complies |
| 3.10.1 (1) | Digital Modulation | Systems uses OFDM / DSSS techniques | System must utilize a digital transmission technology | | Complies |
| 3.10.1 (6.2.2) | Power Spectral Density | 802.11b: -5.3dBm/3kHz<br><br>802.11g: -11.8dBm/3kHz<br><br>802.11n20: -14.4dBm/3kHz | Maximum permitted is 8dBm/3kHz | | Complies |
| 3.10.1 (6.2.1) | 6dB Bandwidth | 802.11b: 9.0MHz<br>802.11g: 15.1MHz<br>802.11n20: 15.1MHz | Minimum allowed is 500kHz | | Complies |
| 3.10.1 (5) | Antenna Port Spurious Emissions – 30MHz – 25 GHz | All spurious emissions < -20dBc or < -30dBc Note 2 | All spurious emissions < -20dBc. | | Complies |
| 3.10.1 (5) & 2.8 | Radiated Spurious Emissions – 30MHz – 25GHz | 53.9dBµV/m @ 2497.6MHz (-0.1dB) | Section 2.8 in restricted bands, all others below -20dBc / -30dBc (Note 2) | | Complies |
| 2.11 | Radiated Spurious Emissions – 30MHz – 25 GHz | 49.0dBµV/m @ 2994.7MHz (-5.0dB) | Receive mode emissions shall meet the emissions limits detailed in 2.8 | | Complies |

Note 1: Maximum antenna gain is 3.0, which is below 6dBi therefore the limit is 1 Watt (30dBm).
Note 2: For those modes that were tested using a peak power meter, a limit of -20dBc was used. For those modes that were tested using the averaging method described in LP0002 3.10.1 (2.3), a limit of -30dBc was used. Refer to the test data in the appendix for details

*DIGITAL TRANSMISSION SYSTEMS (5725-5850 MHz)*

| LP0002 Section | Description | Measured Value | Comments | Refer to: | Result |
|---|---|---|---|---|---|
| 3.10.1 (2.3) | Output Power (multipoint systems) | 802.11a: 7.9dBm (0.006 Watts)<br><br>802.11n20: 10.6dBm (0.012 Watts)<br><br>EIRP = 0.052 W Note 1 | Maximum power is 1Watt, reduced by the amount in dB that the antenna gain exceeds 6dBi Note 1 | | Complies |
| 3.10.1 (1) | Digital Modulation | Systems uses OFDM / DSSS techniques | System must utilize a digital transmission technology | | Complies |
| 3.10.1 (6.2.2) | Power Spectral Density | 802.11a: -11.8dBm/3kHz<br><br>802.11n20: -10.2dBm/3kHz | Maximum permitted is 8dBm/3kHz | | Complies |
| 3.10.1 (6.2.1) | 6dB Bandwidth | 802.11a: 15.0MHz<br>802.11n20: 16.8MHz | Minimum allowed is 500kHz | | Complies |
| 3.10.1 (5) | Antenna Port Spurious Emissions – 30MHz – 25 GHz | All spurious emissions < -20dBc or < -30dBc Note 2 | All spurious emissions < -20dBc. | | Complies |
| 3.10.1 (5) & 2.8 | Radiated Spurious Emissions – 30MHz – 25GHz | 53.8dBµV/m @ 11608.7MHz (-0.2dB) | Section 2.8 in restricted bands, all others below -20dBc / -30dBc (Note 2) | | Complies |
| 2.11 | Radiated Spurious Emissions – 30MHz – 25 GHz | 49.0dBµV/m @ 2994.7MHz (-5.0dB) | Receive mode emissions shall meet the emissions limits detailed in 2.8 | | Complies |

Note 1: Maximum antenna gain is 6.5dBi, which exceeds 6dBi therefore the limit is 0.89 Watt (29.5dBm).
Note 2: For those modes that were tested using a peak power meter, a limit of -20dBc was used. For those modes that were tested using the averaging method described in LP0002 3.10.1 (2.3), a limit of -30dBc was used. Refer to the test data in the appendix for details.

*UNII DEVICES, SECTION 4.7*

| **Requirements Specific To Operation in the 5.25 – 5.35 GHz Band** | | | | | |
|---|---|---|---|---|---|
| LP0002 Section | Description | Measured Value | Comments | Refer to: | Result |
| 4.7.5 | Indoor Use | - | Device restricted to indoor use in this band | | Complies |
| 4.7.2(1) | 26dB Bandwidth | 22.2MHz | N/A – limits output power if < 20MHz | | N/A |
| 4.7.2(1) | Output Power | 802.11a: 14.2dBm (0.026W)<br><br>n20: 13.2dBm (0.021W)<br><br>(Max eirp: 0.118W) | 17 dBm / 50mW (eirp < 30dBm) | | Complies |
| 4.7.2(1) | Power Spectral Density | 802.11a: 3.1dBm/MHz<br><br>802.11n20: 1.7dBm/MHz | 4.0 dBm/MHz | | Complies |
| Note 1: Maximum antenna gain is 6.5dBi therefore the limit is 44.7mW (16.5dBm). | | | | | |

| **Requirements Specific To Operation in the 5.47 – 5.725 GHz Band** | | | | | |
|---|---|---|---|---|---|
| LP0002 Section | Description | Measured Value | Comments | Refer to: | Result |
| 4.7.2(2) | 26dB Bandwidth | 22.3MHz | N/A – limits output power if < 20MHz | | N/A |
| 4.7.2(2) | Output Power | 802.11a: 15.0dBm (0.031W)<br><br>802.11n20: 13.2dBm (0.021W)<br><br>(Max eirp: 0.140W) | 23.5 dBm / 223.9mW (eirp < 30dBm) | | Complies |
| 4.7.2(2) | Power Spectral Density | 802.11a: 4.0 dBm/MHz<br><br>802.11n20: 2.1dBm/MHz | 11 dBm/MHz | | Complies |
| 4.7.3 | 5.60-5.65 GHz Slave use only | 20dB bandwidth of all channels falls outside the band. | Applies to Master devices only | | N/A |
| Note 1: Maximum antenna gain is 6.5dBi therefore the limit is 44.7mW (16.5dBm). | | | | | |

| Requirements for All U-NII Devices | | | | | |
|---|---|---|---|---|---|
| LP0002 Section | Description | Measured Value | Comments | Refer to: | Result |
| 4.7.1 (1) | Modulation | OFDM modulation is used | Digital modulation is required | - | Complies |
| 4.7.3(4)/2.8 | Spurious Emissions below 1GHz | No emissions below 1 GHz related to the transmitter were detected | Refer to Standard | | Complies |
| 4.7.3/2.8 | Spurious Emissions above 1GHz | 53.8dBµV/m @ 5350.1MHz (-0.2dB) | Refer to Standard | | Complies |
| 4.7.2(6) | Peak Excursion Ratio | 11.8 dB | < 13dB | | Complies |
| 4.7.7 | Frequency Stability | Frequency stability is better than 10ppm (Operational Description) | Refer to Standard | | Complies |
| 4.7.4(2.1) | Transmit Power Control | TPC is not required as the device operates at below 500mW eirp | The U-NII device shall have the capability to operate with a mean EIRP value lower than 24dBm (250mW) | | Complies |
| 2.11 | Radiated Spurious Emissions – 30MHz – 25 GHz | 51.8dBµV/m @ 2994.7MHz (-2.2dB) | Receive mode emissions shall meet the emissions limits detailed in 2.8 | | Complies |
| 4.7.4(2.2) | Dynamic frequency Selection (device without radar detection) | Refer to separate test report, reference R86361 | Channel move time < 10s Channel closing transmission time < 260ms | | Complies |
| 4.7.4(1) | Operation in the absence of information to transmit | Operation is discontinued in the absence of information | Device shall automatically discontinue operation in the absence of information to transmit | | Complies |

## *MEASUREMENT UNCERTAINTIES*

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

| Measurement Type | Measurement Unit | Frequency Range | Expanded Uncertainty |
|---|---|---|---|
| RF power, conducted (power meter) | dBm | 25 to 7000 MHz | ± 0.52 dB |
| RF power, conducted (Spectrum analyzer) | dBm | 25 to 7000 MHz | ± 0.7 dB |
| Conducted emission of transmitter | dBm | 25 to 26500 MHz | ± 0.7 dB |
| Conducted emission of receiver | dBm | 25 to 26500 MHz | ± 0.7 dB |
| Radiated emission (substitution method) | dBm | 25 to 26500 MHz | ± 2.5 dB |
| Radiated emission (field strength) | dBµV/m | 25 to 1000 MHz | ± 3.6 dB |
| | | 1000 to 40000 MHz | ± 6.0 dB |
| Conducted Emissions (AC Power) | dBµV | 0.15 to 30 MHz | ± 2.4 dB |

## *DEVIATIONS FROM THE STANDARD*

All measurements were made in accordance with the requirements of the LP0002 (100-06-28) standard and ANSI C63.4 test methods and procedures.

## *EQUIPMENT UNDER TEST (EUT) DETAILS*

### *GENERAL*

The Summit Data Communications model SDC-WB40NBT is an 802.11abgn 1x1 with Bluetooth 2.1 module.

The sample was received on October 19, 2010 and tested on October 19, 20 and 21 and November 19 and 24, 2010 and May 11, August 2, 4, 10, 12, 13, 16, 17, 18 19, 20, 23, 24, 26 and October 6, 7, 19, 20 and 26 and November 3, 4, 7, 8, 9, 15, 2011. The EUT consisted of the following component(s):

| Company | Model | Description | Serial Number | FCC ID |
|---|---|---|---|---|
| Summit | SDC-WB40NBT | 802.11abgn 1x with BT | Prototype | TWG-SDCWB40NBT |

### *OTHER EUT DETAILS*

The EUT supports single transmit chain operation. The EUT supports 20MHz operation only.

### *ANTENNA SYSTEM*

Monopole Antenna - 2.4 and 5GHz bands - Huber+Suhner, SOA 2459/360/5/0/V_C, 3dBi (2.4GHz), 6.5dBi (5GHz)
Dipole Antenna #1 - 2.4 and 5GHz bands - Larsen, R380.500.314, 1.6dBi (2.4GHz), 5dBi (5GHz)
Dipole Antenna #2 - 2.4 GHz only - Cisco Air-Ant 4941 2dBi(2.4GHz)
Magnetic Dipole - 2.4GHz and 5GHz bands – Ethertronics, 2.5dBi (2.4GHz), 5dBi (5GHz)

In the 2.4GHz range, the Huber+Suhner (H&S), Cisco and Ethertronics antennas were tested as they represented the highest gain antennas of each available type.

In the 5GHz range, the H&S, Larsen, and Ethertronics antennas were tested as the represented the highest gain antennas of each available type.

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

### *ENCLOSURE*

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

### *MODIFICATIONS*

No modifications were made to the EUT during the time the product was at Elliott.

*SUPPORT EQUIPMENT*

The following equipment was used as support equipment for testing:

| Company | Model | Description | Serial Number | FCC ID |
|---|---|---|---|---|
| Lenovo | Inspiron 1545 | Laptop Computer (Note 1) | 953R2K1 | DoC |
| GME | GFP181U-A330 | AC/DC Adapter (Note 2) | 1005-000194 | - |
| - | - | Battery Pack (Note 3) | - | - |

Note 1 - Used to configure the EUT and then disconnected prior to testing
Note 2 – Used for AC conducted emissions only
Note 3 – Used for radiated spurious emissions tests

*EUT INTERFACE PORTS*

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

| Port | Connected To | Cable(s) | | |
|---|---|---|---|---|
| | | Description | Shielded or Unshielded | Length(m) |
| AC/DC Adapter – DC out | WB40 | 2wire | Unshielded | 1.5m |
| Battery Pack | WB40 | 2wire | Unshielded | 0.1m |

*EUT OPERATION*

During testing, the EUT was configured to transmit continuously at the lowest data rate for the mode as this resulted in the highest output power.

## *TEST SITE*

### *GENERAL INFORMATION*

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

| Site | Registration Numbers | | Location |
|---|---|---|---|
| | FCC | Canada | |
| Chamber 3 | 769238 | 2845B-3 | 41039 Boyce Road<br>Fremont,<br>CA 94538-2435 |
| Chamber 4 | 211948 | 2845B-4 | |
| Chamber 5 | 211948 | 2845B-5 | |
| Chamber 7 | A2LA accreditation | 2845B-7 | |
| All test sites are covered under the A2LA accreditation and the lab code US0027 for measurements against LP0002. | | | |

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. The test site(s) contain separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003 and LP0002.

### *CONDUCTED EMISSIONS CONSIDERATIONS*

Conducted emissions testing is performed in conformance with ANSI C63.4:2003 and LP0002. 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 16-1-1 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.

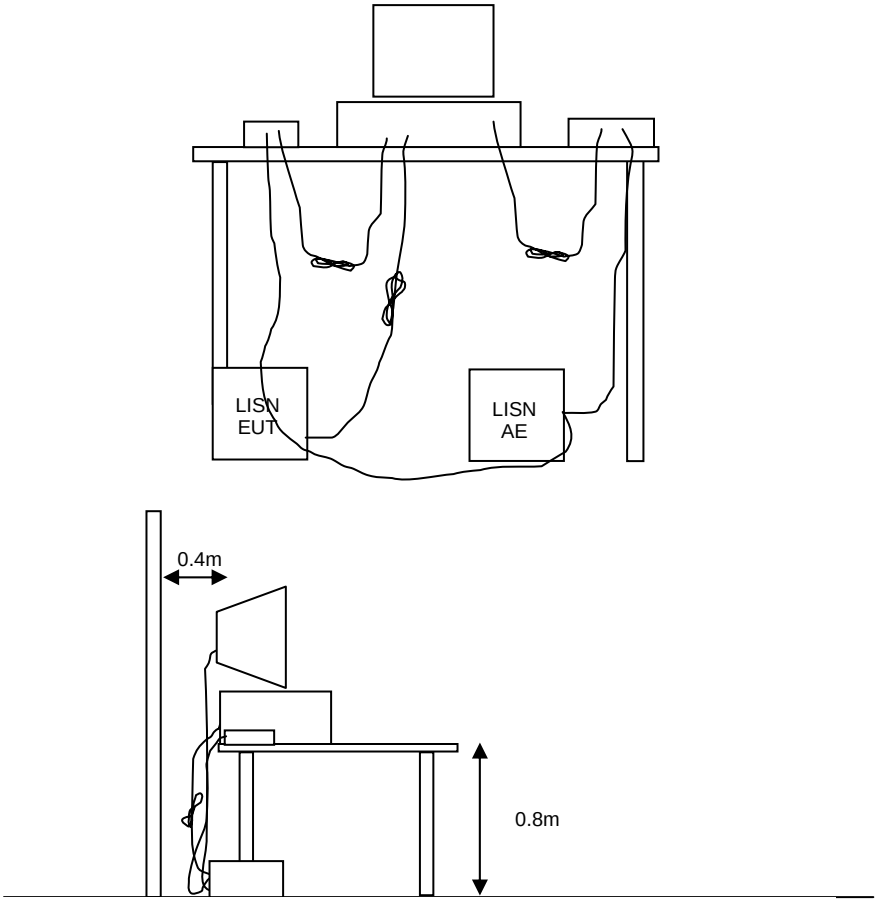



**Figure 1 Typical Conducted Emissions Test Configuration**

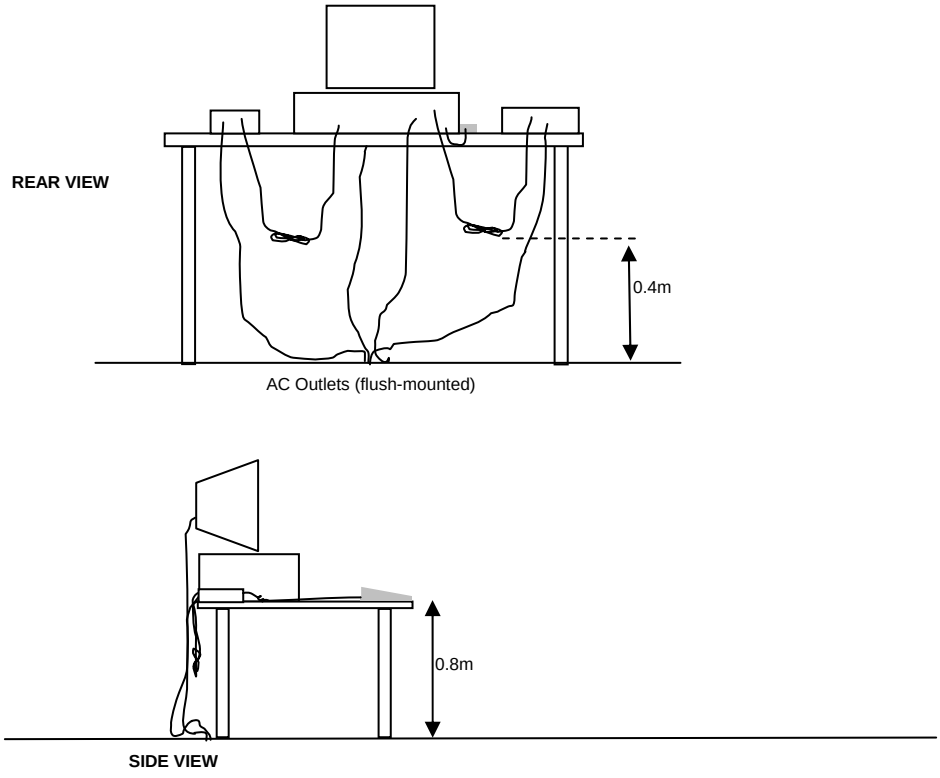
*RADIATED EMISSIONS*

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

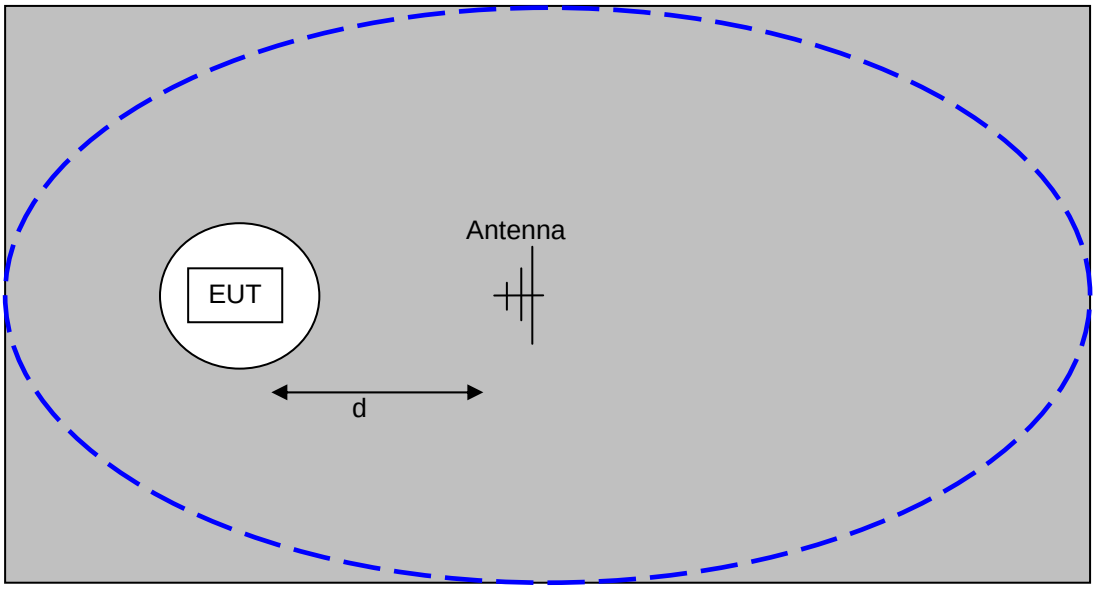
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

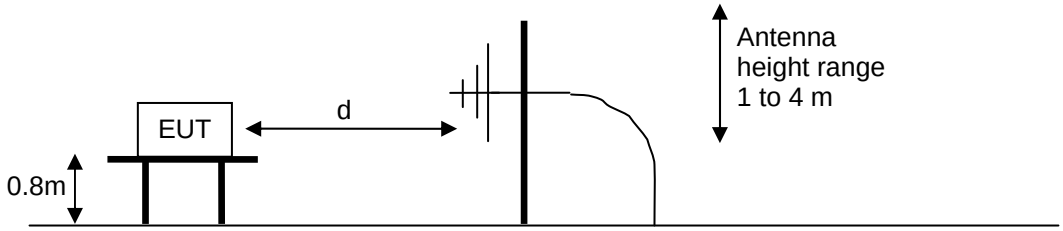
When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



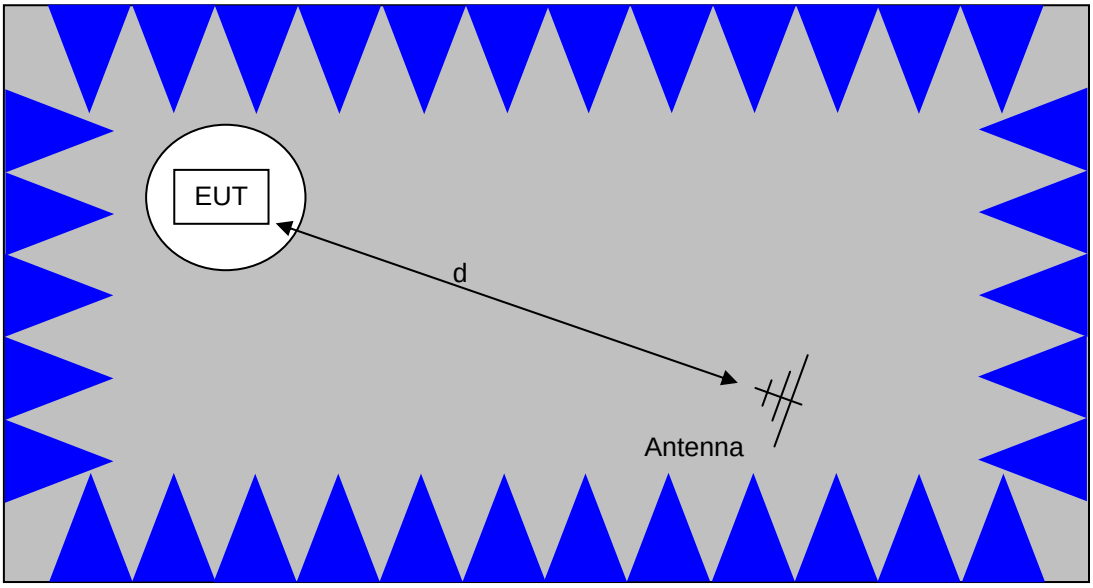

Typical Test Configuration for Radiated Field Strength Measurements




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.

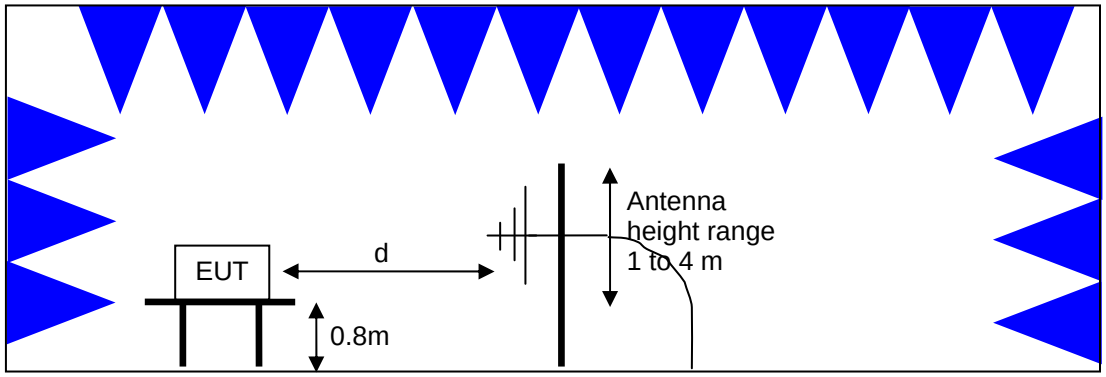



Test Configuration for Radiated Field Strength Measurements
OATS- Plan and Side Views




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.

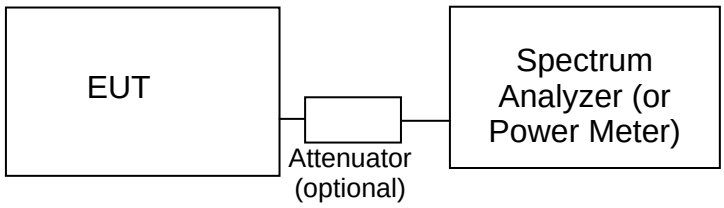
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.




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

*CONDUCTED EMISSIONS FROM ANTENNA PORT*

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




Test Configuration for Antenna Port Measurements

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

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

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

*BANDWIDTH MEASUREMENTS*

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4 and LP0002. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

*SPECIFICATION LIMITS AND SAMPLE CALCULATIONS*

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

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

*CONDUCTED EMISSIONS SPECIFICATION LIMITS: LP0002 SECTION 2.3*

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 RADIATED EMISSIONS SPECIFICATION LIMITS, LP0002 SECTION 2.8*

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1], the limits for all emissions from a low power device operating under the general rules of LP0002 and the limits for receiver spurious emissions. Note that receivers operating below 30 MHz are exempt from these requirements and receiver spurious limits do not apply below 30MHz.

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

*OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS (LP0002 3.10.1)*

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.

[1] The restricted bands are detailed in LP0002 section 2.7

*OUTPUT POWER LIMITS – FHSS SYSTEMS (LP0002 3.10.1)*

The table below shows the limits for output power based on the number of channels available for the hopping system.

| Operating Frequency (MHz) | Number of Channels | Output Power |
|---|---|---|
| 902 – 928 | ≥ 50 | 1 Watt (30 dBm) |
| 902 – 928 | 25 to 49 | 0.25 Watts (24 dBm) |
| 2400 – 2483.5 | ≥ 75 | 1 Watt (30 dBm) |
| 2400 – 2483.5 | < 75 | 0.125 Watts (21 dBm) |
| 5725 – 5850 | 75 | 1 Watt (30 dBm) |

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.

*TRANSMITTER RADIATED SPURIOUS EMISSIONS LIMITS (LP0002 3.10.1)*

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in section 2.8 of LP0002. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB for digitally modulated devices when the average output power is measured rather than peak output power).

*OUTPUT POWER LIMITS FOR UNII DEVICES(LP0002 4.7)*

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 |
|---|---|---|
| 5250 – 5350 | 50mW (17 dBm) | 4 dBm/MHz |
| 5470 – 5725 | 250 mW (24 dBm) | 11 dBm/MHz |
| 5725 – 5825 | 1 Watts (30 dBm) | 17 dBm/MHz |

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

The peak excursion envelope is limited to 13dB.

*SPURIOUS EMISSIONS LIMITS –UNII DEVICES (LP0002 4.7.2)*

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of –27dBm/MHz, which is a field strength of 68.3dBuV/m/MHz at a distance of 3m. For devices operating in the 5725-5850Mhz bands under the LELAN/UNII rules, the limit within 10MHz of the allocated band is increased to –17dBm/MHz.

*SAMPLE CALCULATIONS - CONDUCTED EMISSIONS*

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

$$R_r - S = M$$

where:

$R_r$ = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

*SAMPLE CALCULATIONS - RADIATED EMISSIONS*

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

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

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

where:

$F_d$ = Distance Factor in dB

$D_m$ = Measurement Distance in meters

$D_s$ = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

$R_r$ = Receiver Reading in dBuV/m

$F_d$ = Distance Factor in dB

$R_c$ = Corrected Reading in dBuV/m

$L_s$ = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

*SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION*

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

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

where P is the eirp (Watts)

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

## *APPENDIX A TEST EQUIPMENT CALIBRATION DATA*

T80878

**Radiated Emissions, 1000 - 26,500 MHz, 19-Oct-10**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 5/26/2011 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 786 | 12/11/2011 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 7/12/2011 |

**TX Spurious Emissions, 20-Oct-10**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 5/26/2011 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 786 | 12/11/2011 |
| Hewlett Packard | Head (Inc W1-W4, 1143, 2198) Red | 84125C | 1145 | 1/13/2011 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 7/12/2011 |
| A.H. Systems | Spare System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2162 | 1/19/2011 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 2249 | 10/11/2011 |

**Radio (Radiated BE), 21-Oct-10**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| EMCO | Antenna, Horn, 1-18GHz | 3115 | 868 | 6/8/2012 |
| Rohde & Schwarz | Power Meter, Single Channel | NRVS | 1422 | 11/10/2010 |
| Rohde & Schwarz | Power Sensor 100 uW - 10 Watts | NRV-Z53 | 1555 | 2/5/2011 |
| Rohde & Schwarz | Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz | 20dB, 10W, Type N | 1556 | 2/5/2011 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 1771 | 8/26/2011 |

**Radiated Emissions, 1000 - 26,500 MHz, 11-May-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 5/26/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 5/14/2011 |
| Hewlett Packard | Head (Inc W1-W4, 1742 , 1743) Blue | 84125C | 1620 | 5/9/2012 |
| A.H. Systems | Blue System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2159 | 3/23/2012 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 2249 | 10/11/2011 |

**Radiated Emissions, 1000 - 26,000 MHz, 02-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | Head (Inc flex cable, 1143, 2198) Red | 84125C | 1145 | 2/17/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/12/2011 |

| | | | | |
|---|---|---|---|---|
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 1683 | 8/10/2011 |
| A.H. Systems | Purple System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2160 | 2/9/2012 |

**Radiated Emissions, 30 - 26,500 MHz, 10-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18GHz | 3115 | 868 | 6/8/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/12/2011 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 2238 | 10/1/2011 |

**Radiated Emissions, 30 - 40,000MHz, 19-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 9/12/2011 |
| Micro-Tronics | Band Reject Filter, 5725-5875 MHz | BRC50705-02 | 2241 | 10/1/2011 |

**Radiated Spurious Emissions, 1 - 26.5 GHz, 19-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 487 | 7/6/2012 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 2238 | 10/1/2011 |

**Radiated Emissions, 1000 - 18,000 MHz, 20-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 487 | 7/6/2012 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 2238 | 10/1/2011 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radiated Emissions, 1000 - 26,500 MHz, 23-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 5/18/2012 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 8/9/2012 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 1561 | 6/22/2012 |
| Hewlett Packard | Head (Inc W1-W4, 1742 , 1743) Blue | 84125C | 1620 | 5/9/2012 |
| A.H. Systems | Blue System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2159 | 3/23/2012 |
| Micro-Tronics | Band Reject Filter, 2400-2500 MHz | BRM50702-02 | 2249 | 10/11/2011 |

**Radio Antenna Port (Power and Spurious Emissions), 23-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radio Antenna Port (Power and Spurious Emissions), 24-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 8/9/2012 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | 1538 | 11/2/2011 |

**Radiated Emissions, 1000 - 26,500 MHz, 03-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/15/2012 |

**Radio Antenna Port (Power and Spurious Emissions), 04-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/15/2012 |

**Radiated Spurious Emissions, 1000 - 18,000 MHz, 04-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 785 | 5/18/2012 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 8/9/2012 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 1561 | 6/22/2012 |
| Micro-Tronics | Band Reject Filter, 5725-5875 MHz | BRC50705-02 | 2241 | 10/4/2012 |

**Radio Antenna Port (Power and Spurious Emissions), 04-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 8/9/2012 |

**Radiated Emissions, 1000 - 18,000 MHz, 07-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Narda West | High Pass Filter, 8 GHz | HPF 180 | 821 | 3/23/2012 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 2199 | 2/23/2012 |
| Micro-Tronics | Band Reject Filter, 5725-5875 MHz | BRC50705-02 | 2241 | 10/4/2012 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radiated Emissions, 1000 - 40000MHz, 08-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | Head (Inc flex cable, 1143, 2198) Red | 84125C | 1145 | 2/17/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/15/2012 |
| A.H. Systems | Purple System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2160 | 2/9/2012 |

**Radiated Emissions, 1000 - 40000MHz, 09-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | Head (Inc flex cable, 1143, 2198) Red | 84125C | 1145 | 2/17/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/15/2012 |
| A.H. Systems | Purple System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2160 | 2/9/2012 |

T80880

**Radio (2nd Harmonic), 19-Nov-10**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/15/2010 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | High Pass filter, 8.2 GHz | P/N 84300-80039 | 1156 | 6/25/2011 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 4/14/2011 |
| Rohde & Schwarz | Power Meter, Single Channel | NRVS | 1422 | 7/19/2011 |
| Rohde & Schwarz | Power Sensor 100 uW - 10 Watts | NRV-Z53 | 1555 | 2/5/2011 |
| Rohde & Schwarz | Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz | 20dB, 10W, Type N | 1556 | 2/5/2011 |

**Radio Antenna Port (Power and Spurious Emissions), 24-Nov-10**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 4/14/2011 |
| Rohde & Schwarz | Power Sensor 100 uW - 10 Watts | NRV-Z53 | 1555 | 2/5/2011 |
| Rohde & Schwarz | Attenuator, 20 dB , 50 ohm, 10W, DC-18 GHz | 20dB, 10W, Type N | 1556 | 2/5/2011 |
| Rohde & Schwarz | Power Meter, Dual Channel | NRVD | 1787 | 12/4/2010 |

**Radiated Emissions, 1000 - 18,000 MHz, 04-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Red) | 3115 | 1142 | 8/2/2012 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/12/2011 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2251 | 10/21/2011 |

**Radiated Emissions, 30 - 40,000 MHz, 12-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| Narda West | High Pass Filter, 8 GHz | HPF 180 | 821 | 3/23/2012 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Micro-Tronics | Band Reject Filter, 5470-5725 MHz | BRC50704-02 | 1730 | 8/5/2012 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radiated Emissions, 1000 - 40,000 MHz, 13-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| Narda West | High Pass Filter, 8 GHz | HPF 180 | 821 | 3/23/2012 |
| Hewlett Packard | Head (Inc flex cable, 1143, 2198) Red | 84125C | 1145 | 2/17/2012 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Micro-Tronics | Band Reject Filter, 5470-5725 MHz | BRC50704-02 | 1730 | 8/5/2012 |
| A.H. Systems | Purple System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2160 | 2/9/2012 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radiated Emissions, 1000 - 40,000 MHz, 16-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| Hewlett Packard | Head (Inc flex cable, 1143, 2198) Red | 84125C | 1145 | 2/17/2012 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Micro-Tronics | Band Reject Filter, 5470-5725 MHz | BRC50704-02 | 1681 | 5/3/2012 |
| A.H. Systems | Purple System Horn, 18-40GHz | SAS-574, p/n: 2581 | 2160 | 2/9/2012 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2251 | 10/21/2011 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radiated Emissions, 1000 - 18,000 MHz, 17-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| Narda West | High Pass Filter, 8 GHz | HPF 180 | 821 | 3/23/2012 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2239 | 10/1/2011 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radiated Emissions, 1000 - 18,000 MHz, 18-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| EMCO | Antenna, Horn, 1-18 GHz (SA40-Blu) | 3115 | 1386 | 9/21/2012 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BRC50703-02 | 2239 | 10/1/2011 |
| Micro-Tronics | Band Reject Filter, 5470-5725 MHz | BRC50704-02 | 2240 | 10/1/2011 |
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, (SA40) Purple | 8564E (84125C) | 2415 | 7/28/2012 |

**Radio Antenna Port (Power and Spurious Emissions), 24-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 9 kHz - 40 GHz, FT (SA40) Blue | 8564E (84125C) | 1393 | 8/9/2012 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | 1538 | 11/2/2011 |

**Radio Antenna Port (Power and Spurious Emissions), 26-Aug-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/15/2012 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | 1756 | 4/6/2012 |

**Radiated Emissions, 1000 - 18,000 MHz, 15-Nov-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| Hewlett Packard | Microwave Preamplifier, 1-26.5GHz | 8449B | 263 | 12/8/2011 |
| Hewlett Packard | SpecAn 30 Hz -40 GHz, SV (SA40) Red | 8564E (84125C) | 1148 | 8/15/2012 |
| EMCO | Antenna, Horn, 1-18 GHz | 3115 | 1561 | 6/22/2012 |
| Micro-Tronics | Band Reject Filter, 5725-5875 MHz | BRC50705-02 | 1682 | 3/23/2012 |

T83198

**Conducted Emissions - AC Power Ports, 16-Dec-11**

| Manufacturer | Description | Model | Asset # | Cal Due |
|---|---|---|---|---|
| EMCO | LISN, 10 kHz-100 MHz, 25A | 3825/2 | 1292 | 3/1/2012 |
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | 1756 | 4/6/2012 |

## *APPENDIX B TEST DATA LOG SHEETS*

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | - |
| Emissions Standard(s): | FCC 15.247/RSS-210 | Class: | - |
| Immunity Standard(s): | - | Environment: | - |

# EMC Test Data

For The

# Summit Data Communications

Model

SDC-WB40 (1x1 802.11abg + BT 2.1)

Date of Last Test:

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

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

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #1 | 802.11b Chain A | #1 2412MHz | H&S | - | Restricted Band Edge at 2390 MHz | 15.209 | 44.0dBµV/m @ 2387.3MHz (-10.0dB) |
| | | #11 2462MHz | H&S | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 53.9dBµV/m @ 2497.6MHz (-0.1dB) |
| Run # 2 | 802.11g Chain A | #1 2412MHz | H&S | - | Restricted Band Edge at 2390 MHz | 15.209 | 48.1dBµV/m @ 2390.0MHz (-5.9dB) |
| | | #11 2462MHz | H&S | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 52.3dBµV/m @ 2483.5MHz (-1.7dB) |
| Run # 3 | 802.11n20 Chain A | #1 2412MHz | H&S | - | Restricted Band Edge at 2390 MHz | 15.209 | 47.9dBµV/m @ 2390.0MHz (-6.1dB) |
| | | #11 2462MHz | H&S | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 45.9dBµV/m @ 2483.5MHz (-8.1dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1, Band Edge Field Strength - 802.11b, Chain A

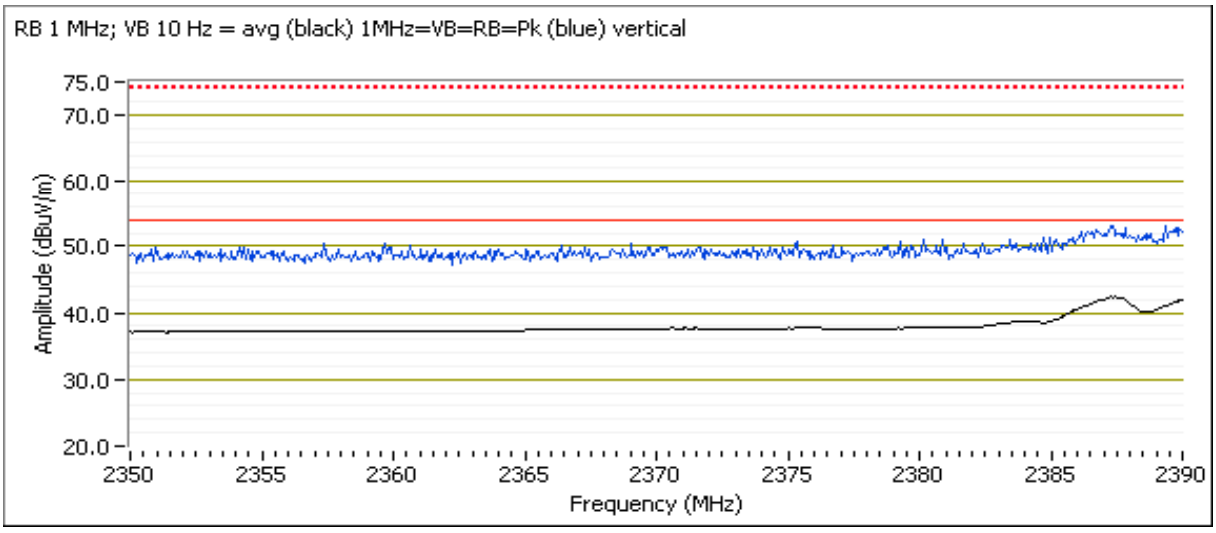
Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

Date of Test: 11/2/2011 Test Location: FT Chamber#5

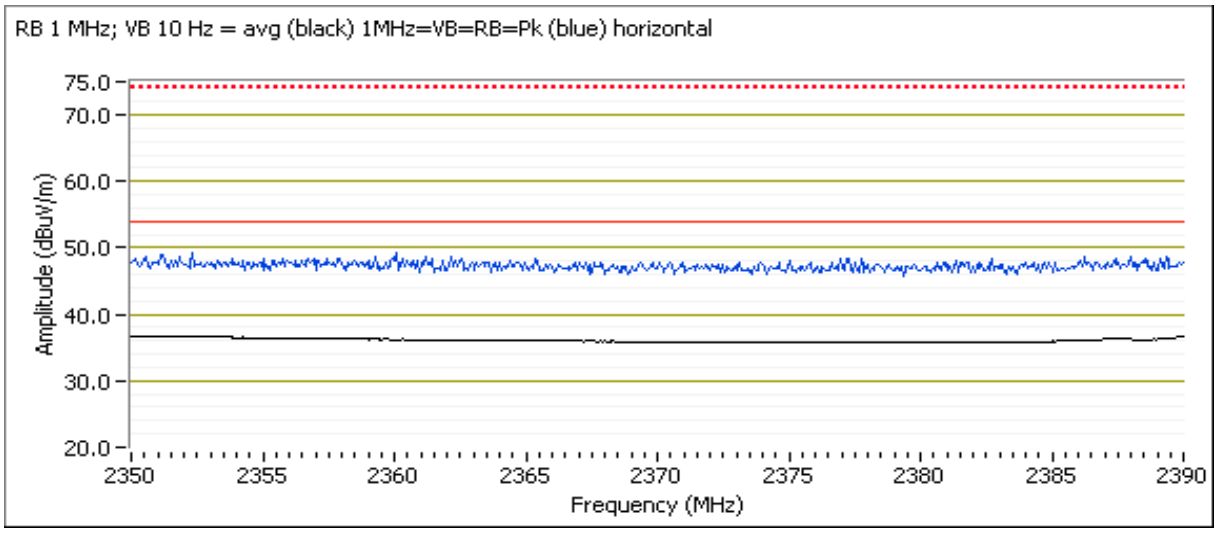
Test Engineer: Joseph Cadigal Config Change: none

*2390 MHz 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 | |
| 2387.330 | 44.0 | V | 54.0 | -10.0 | AVG | 37 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.930 | 52.8 | V | 74.0 | -21.2 | PK | 37 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2350.070 | 38.5 | H | 54.0 | -15.5 | AVG | 320 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2357.930 | 49.8 | H | 74.0 | -24.2 | PK | 320 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

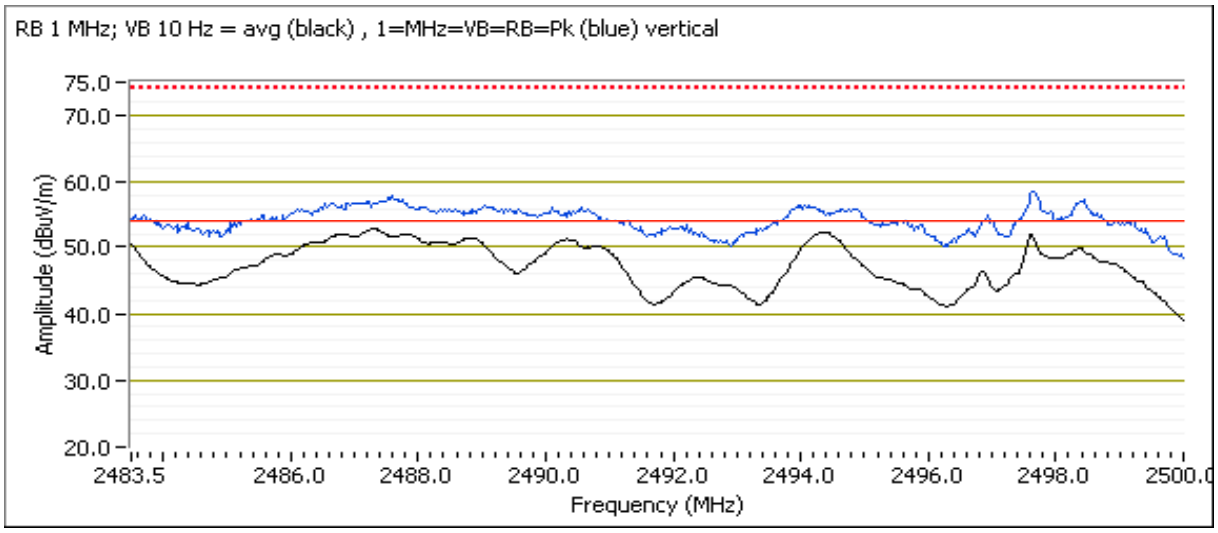
Run #1b, EUT on Channel #11 2462MHz - 802.11b, Chain A

Date of Test: 8/18/2011 Test Location: FT Chamber#7

Test Engineer: Joseph Cadigal Config Change: none

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2497.580 | 53.9 | V | 54.0 | -0.1 | AVG | 96 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2497.640 | 58.9 | V | 74.0 | -15.1 | PK | 96 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.500 | 39.2 | H | 54.0 | -14.8 | AVG | 58 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 2486.850 | 46.0 | H | 74.0 | -28.0 | PK | 58 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2, Band Edge Field Strength - 802.11g, Chain A

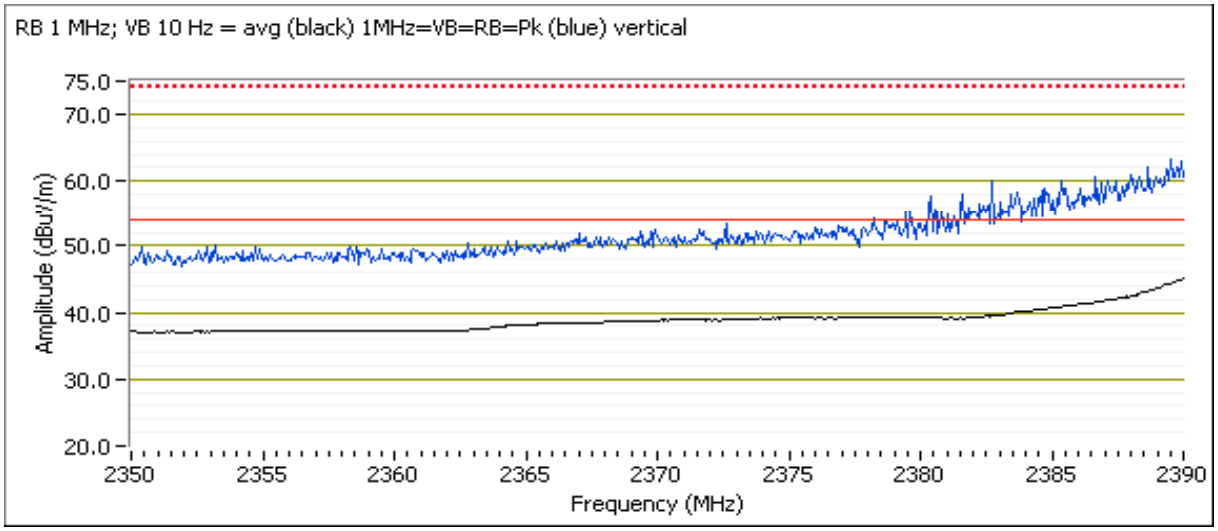
Date of Test: 11/2/2011 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

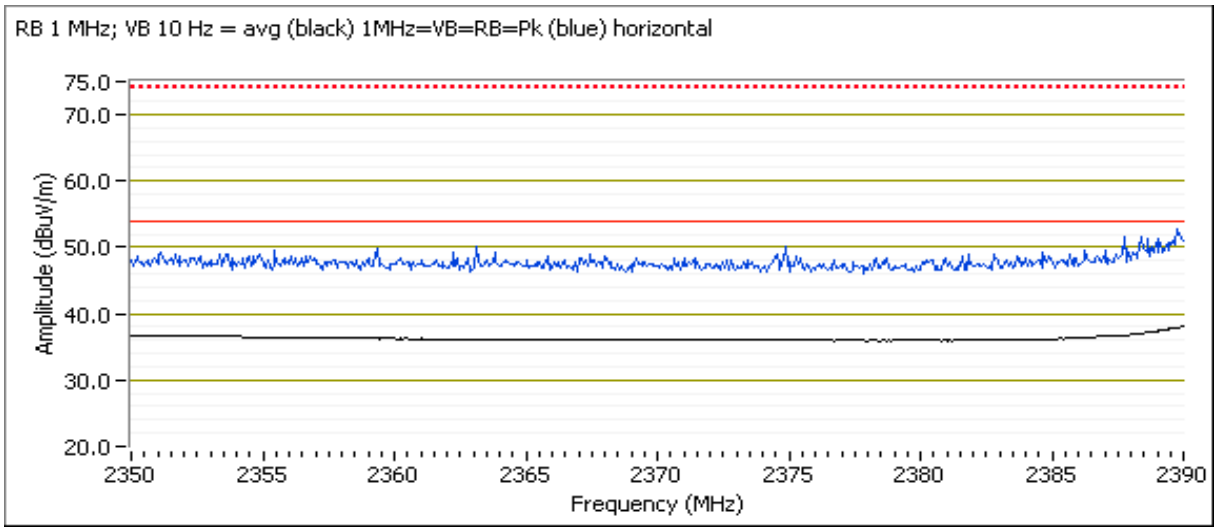
Run # 2a, EUT on Channel #1 2412MHz - 802.11g, Chain A

*2390 MHz 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 | |
| 2390.000 | 48.1 | V | 54.0 | -5.9 | AVG | 37 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.870 | 63.3 | V | 74.0 | -10.7 | PK | 37 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2390.000 | 40.1 | H | 54.0 | -13.9 | AVG | 311 | 1.7 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.800 | 52.3 | H | 74.0 | -21.7 | PK | 311 | 1.7 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |




Run # 2b, EUT on Channel #11 2462MHz - 802.11g, Chain A

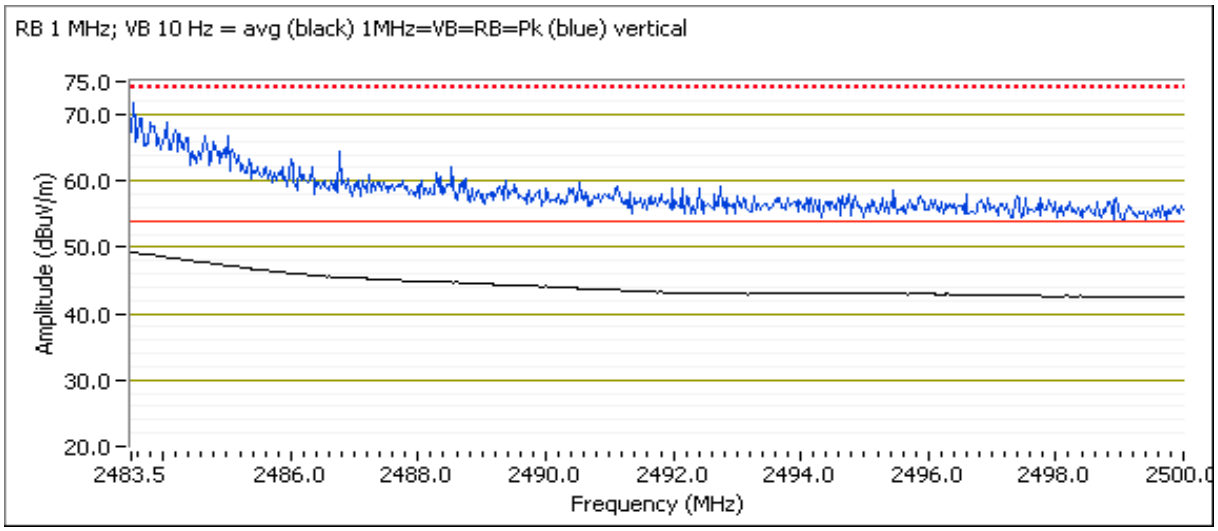
Date of Test: 11/2/2011 Test Location: FT Chamber#5

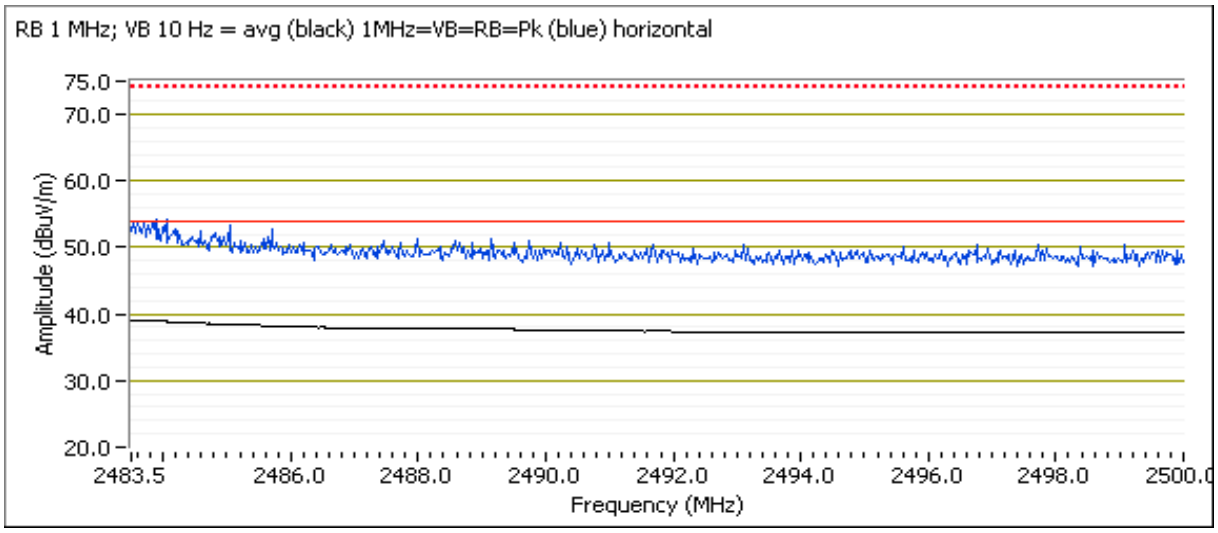
Test Engineer: Joseph Cadigal Config Change: none

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 52.3 | V | 54.0 | -1.7 | AVG | 44 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.890 | 69.6 | V | 74.0 | -4.4 | PK | 44 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.860 | 41.3 | H | 54.0 | -12.7 | AVG | 61 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2484.100 | 54.6 | H | 74.0 | -19.4 | PK | 61 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

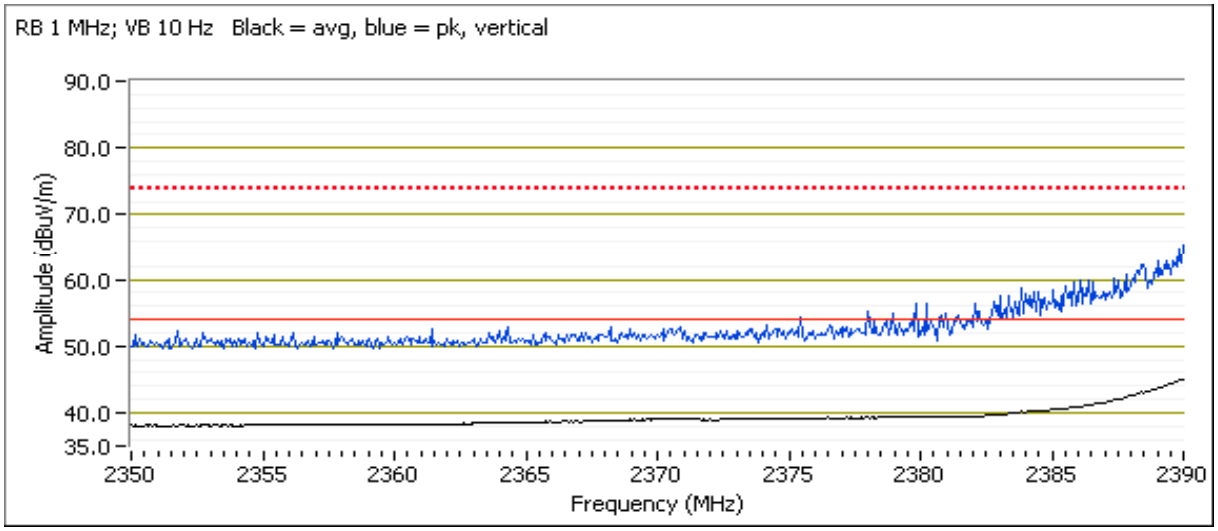
Run # 3, Band Edge Field Strength - 802.11n20, Chain A

Date of Test: 8/19/2011 Test Location: FT5
Test Engineer: John Caizzi Config Change: none

Run # 3a, EUT on Channel #1, 2412MHz - 802.11n20, Chain A

*2390 MHz 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 | |
| 2390.000 | 47.9 | V | 54.0 | -6.1 | AVG | 213 | 1.05 | |
| 2389.400 | 62.5 | V | 74.0 | -11.5 | PK | 213 | 1.05 | |

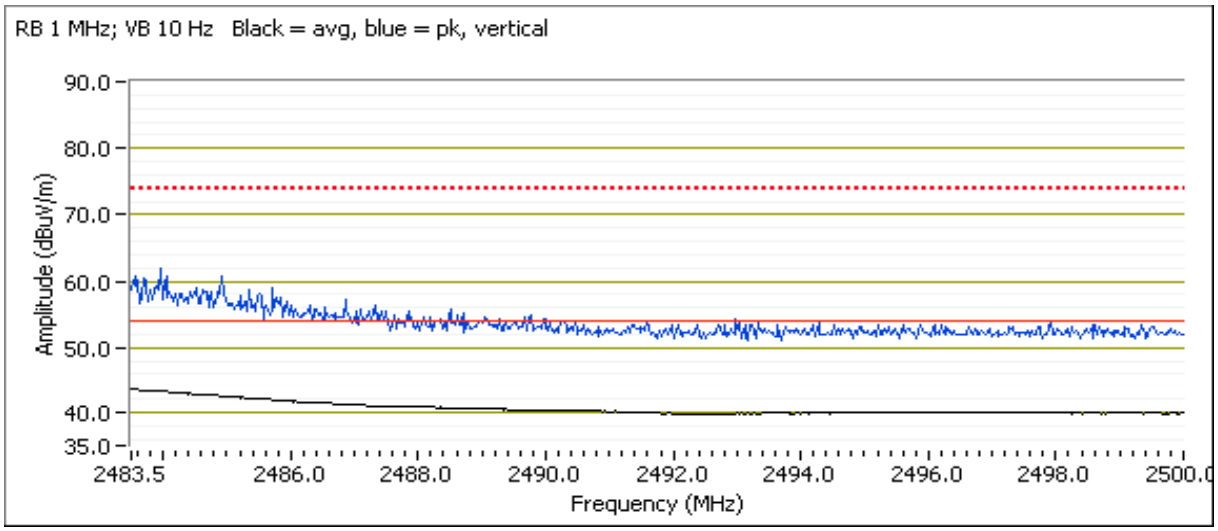


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3b, EUT on Channel #11 2462MHz - 802.11n20, Chain A

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 45.9 | V | 54.0 | -8.1 | AVG | 215 | 1.25 | |
| 2485.230 | 59.9 | V | 74.0 | -14.1 | PK | 215 | 1.25 | |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

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

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #1 | 802.11b Chain A | #1 2412MHz | H&S | - | Radiated Emissions, 1 - 26 GHz | FCC 15.209 / 15.247 | 53.1dBµV/m @ 4823.9MHz (-0.9dB) |
| | | #6 2437MHz | | - | | | 53.7dBµV/m @ 4873.9MHz (-0.3dB) |
| | | #11 2462MHz | | - | | | 53.0dBµV/m @ 4924.0MHz (-1.0dB) |
| Scans on center channel in both OFDM modes to determine the worst case | | | | | | | |
| Run # 2 | 802.11g Chain A | #6 2437MHz | H&S | - | Radiated Emissions, 1 - 26 GHz | FCC 15.209 / 15.247 | 47.2dBµV/m @ 2989.2MHz (-6.8dB) |
| | 802.11n20 Chain A | #6 2437MHz | | - | | | 48.3dBµV/m @ 2989.2MHz (-5.7dB) |
| Top and bottom channels in worst case OFDM mode: | | | | | | | |
| Run # 3 | 802.11n20 Chain A | #1 2412MHz | H&S | - | Radiated Emissions, 1 - 26 GHz | FCC 15.209 / 15.247 | 47.7dBµV/m @ 2994.8MHz (-6.3dB) |
| | | #11 2462MHz | | - | | | 48.1dBµV/m @ 2994.8MHz (-5.9dB) |
| Receiver Spurious Emissions | | | | | | | |
| Run # 4 | Receive | #6, Chain A | H&S | - | Radiated Emissions, 1 - 7.5 GHz | RSS 210 | 48.2dBµV/m @ 2994.7MHz (-5.8dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: H&S

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1, Radiated Spurious Emissions, 1-26GHz, 802.11b, Chain A

Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

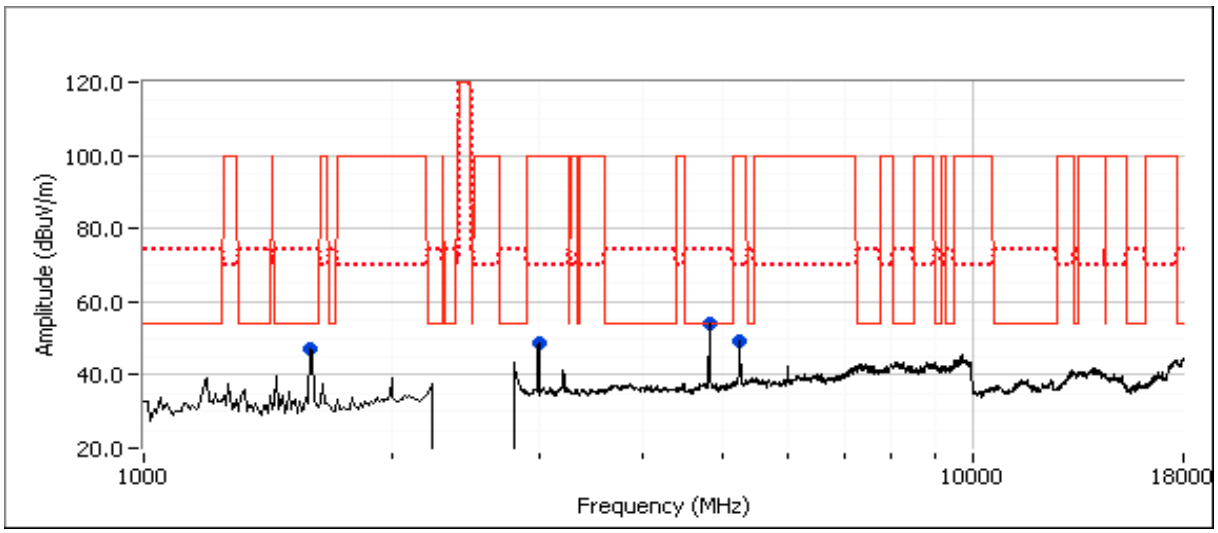
Date of Test: 11/2/2011 Test Location: FT5

Test Engineer: Joseph Cadigal Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4823.940 | 53.1 | V | 54.0 | -0.9 | AVG | 270 | 2.5 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.710 | 44.3 | V | 54.0 | -9.7 | AVG | 166 | 1.0 | RB 1 MHz;VB 10 Hz;Pk, note 1 |
| 5242.240 | 39.4 | V | 54.0 | -14.6 | AVG | 157 | 1.0 | RB 1 MHz;VB 10 Hz;Pk, note 1 |
| 1594.970 | 59.1 | V | 74.0 | -14.9 | PK | 153 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 4824.040 | 55.5 | V | 74.0 | -18.5 | PK | 270 | 2.5 | RB 1 MHz;VB 3 MHz;Pk |
| 5244.370 | 53.0 | V | 74.0 | -21.0 | PK | 157 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 1 |
| 1593.410 | 30.7 | V | 54.0 | -23.3 | AVG | 153 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.770 | 49.4 | V | 74.0 | -24.6 | PK | 166 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 1 |

| | |
|---|---|
| Note 1: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1b: EUT on Channel #6 2437MHz - 802.11b, Chain A

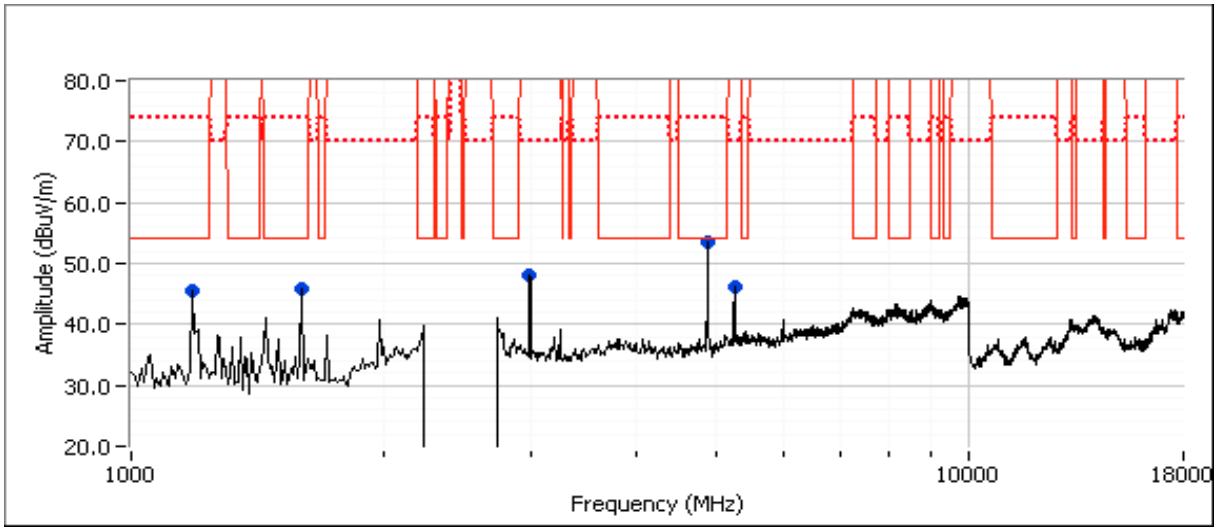
Date of Test: 8/19/2011 Test Location: FT5

Test Engineer: John Caizzi Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2989.170 | 48.2 | V | 54.0 | -5.8 | Peak | 201 | 1.0 | Note 3 |
| 5253.330 | 46.3 | V | 54.0 | -7.7 | Peak | 270 | 1.0 | Note 3 |
| 4873.930 | 53.7 | V | 54.0 | -0.3 | AVG | 272 | 1.87 | |
| 4873.970 | 55.3 | V | 74.0 | -18.7 | PK | 272 | 1.87 | |
| 1189.400 | 43.9 | H | 54.0 | -10.1 | AVG | 159 | 1.86 | |
| 1195.200 | 42.7 | H | 74.0 | -31.3 | PK | 159 | 1.86 | |
| 1597.160 | 33.4 | V | 54.0 | -20.6 | AVG | 158 | 1.00 | |
| 1593.100 | 53.2 | V | 74.0 | -20.8 | PK | 158 | 1.00 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50 cm from the device indicated there were no signifcant emissions in this frequency range. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1c: EUT on Channel #11, 2462MHz - 802.11b, Chain A

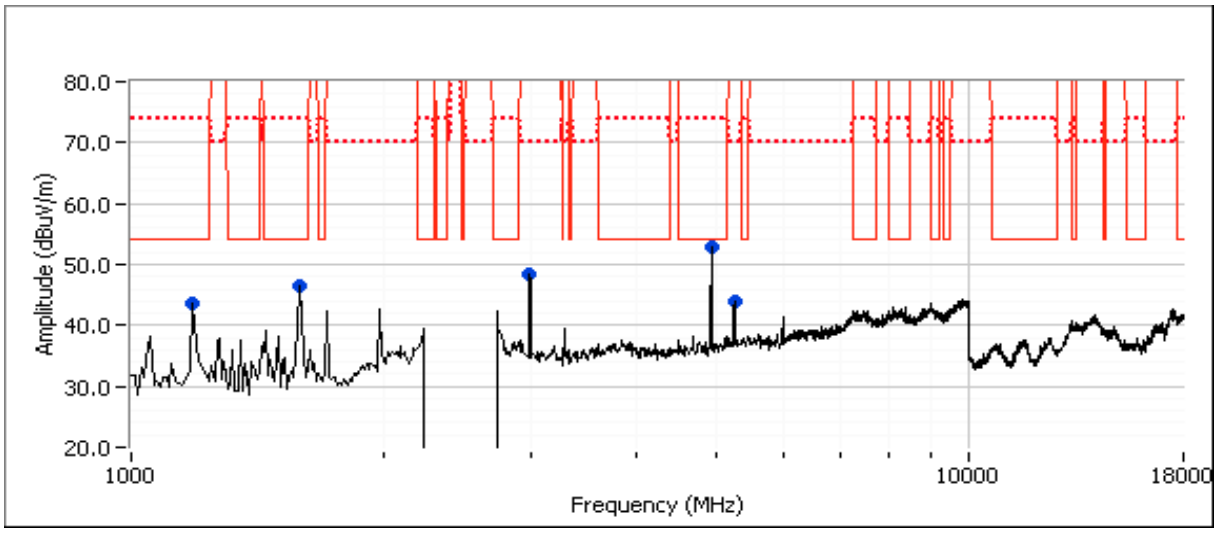
Date of Test: 8/19/2011 Test Location: FT5

Test Engineer: John Caizzi Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2989.170 | 48.5 | V | 54.0 | -5.5 | Peak | 197 | 1.0 | Note 3 |
| 5244.170 | 44.0 | V | 54.0 | -10.0 | Peak | 214 | 1.0 | Note 3 |
| 4923.950 | 53.0 | V | 54.0 | -1.0 | AVG | 76 | 1.63 | |
| 4923.950 | 54.6 | V | 74.0 | -19.4 | PK | 76 | 1.63 | |
| 1585.540 | 37.3 | H | 54.0 | -16.7 | AVG | 41 | 1.06 | |
| 1598.340 | 38.9 | H | 74.0 | -35.1 | PK | 41 | 1.06 | |
| 1189.060 | 38.3 | V | 54.0 | -15.7 | AVG | 264 | 1.00 | |
| 1196.660 | 46.4 | V | 74.0 | -27.6 | PK | 264 | 1.00 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2, Radiated Spurious Emissions, 1-26GHz, 802.11g, 802.11n20, Chain A

Date of Test: 8/19/2011 Test Location: FT5

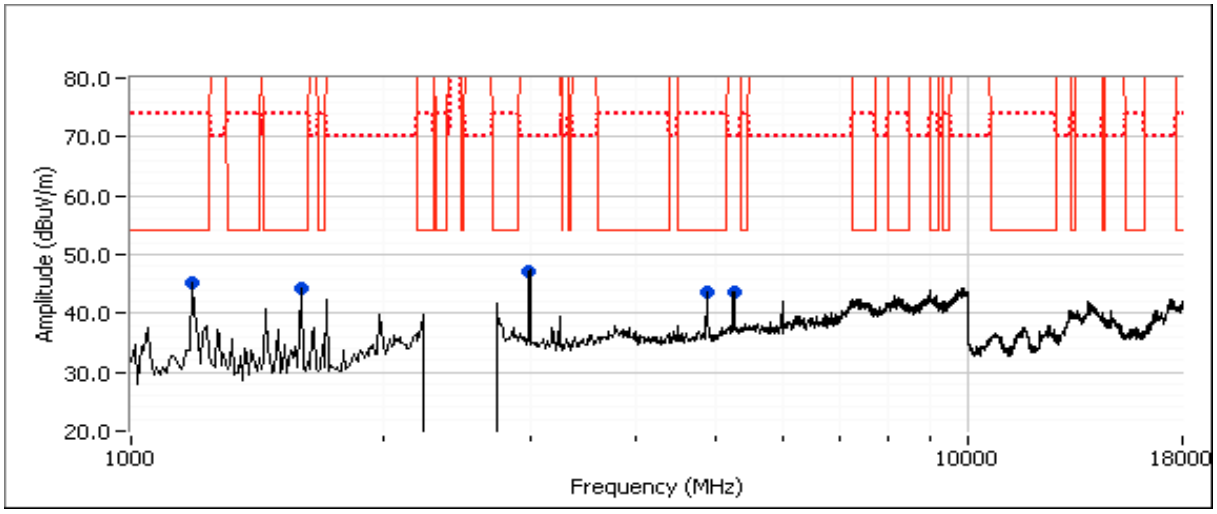
Test Engineer: John Caizzi Config Change: none

Run # 2a, EUT on Channel #6 2437MHz - 802.11g, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2989.170 | 47.2 | V | 54.0 | -6.8 | Peak | 128 | 1.3 | Note 2 |
| 1189.200 | 44.6 | V | 54.0 | -9.4 | AVG | 73 | 1.00 | |
| 5244.170 | 43.5 | V | 54.0 | -10.5 | Peak | 268 | 1.0 | Note 2 |
| 4874.500 | 37.3 | V | 54.0 | -16.7 | AVG | 261 | 1.61 | |
| 1189.000 | 37.2 | V | 54.0 | -16.8 | AVG | 206 | 1.00 | |
| 1585.430 | 35.2 | V | 54.0 | -18.8 | AVG | 204 | 1.00 | |
| 1594.830 | 54.7 | V | 74.0 | -19.3 | PK | 204 | 1.00 | |
| 4874.270 | 49.0 | V | 74.0 | -25.0 | PK | 261 | 1.61 | |
| 1196.530 | 48.0 | V | 74.0 | -26.0 | PK | 206 | 1.00 | |
| 1198.200 | 45.4 | V | 74.0 | -28.6 | PK | 73 | 1.00 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Signal is not in restricted band, but the lower restricted band limit was used. |



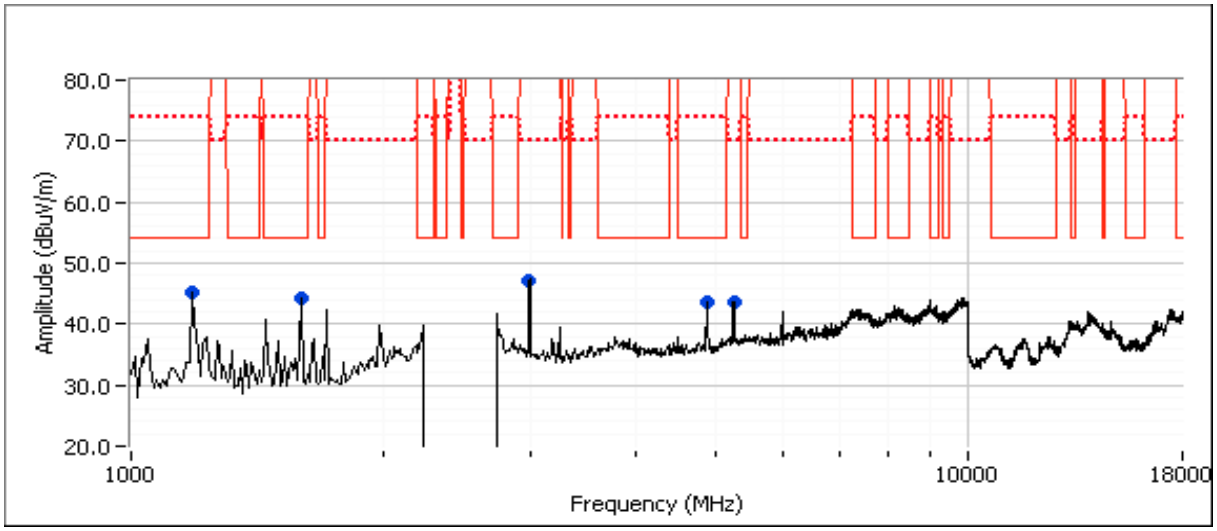
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2b: EUT on Channel #6 2437MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2989.170 | 48.3 | V | 54.0 | -5.7 | Peak | 201 | 1.0 | Note 3 |
| 1188.800 | 44.4 | H | 54.0 | -9.6 | AVG | 322 | 1.26 | |
| 5235.000 | 43.6 | V | 54.0 | -10.4 | Peak | 266 | 1.0 | Note 3 |
| 4875.870 | 34.0 | V | 54.0 | -20.0 | AVG | 247 | 1.00 | |
| 1597.300 | 32.8 | V | 54.0 | -21.2 | AVG | 152 | 1.00 | |
| 1595.560 | 52.1 | V | 74.0 | -21.9 | PK | 152 | 1.00 | |
| 4868.300 | 45.9 | V | 74.0 | -28.1 | PK | 247 | 1.00 | |
| 1189.970 | 43.2 | H | 74.0 | -30.8 | PK | 322 | 1.26 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50 cm from the device indicated there were no signifcant emissions in this frequency range |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3, Radiated Spurious Emissions, 1-26GHz, 802.11n20, Chain A

Date of Test: 8/19/2011 Test Location: FT Chamber #5

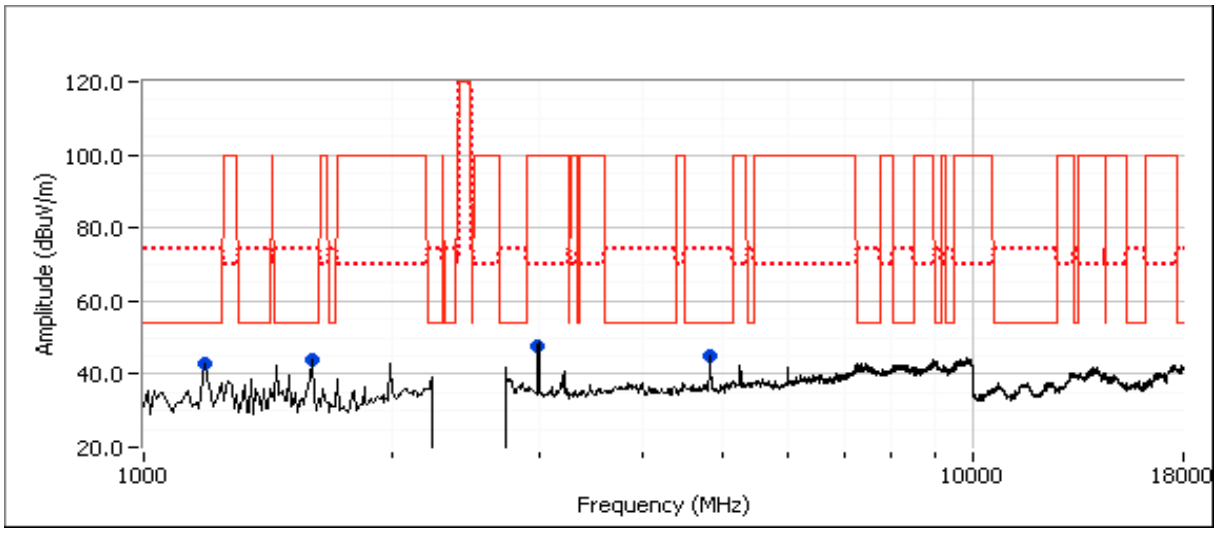
Test Engineer: Rafael Varelas Config Change: None

Run # 3a, EUT on Channel #1 2412MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.840 | 47.7 | V | 54.0 | -6.3 | Peak | 191 | 1.3 | Note 3 - peak vs average limit |
| 1188.890 | 39.0 | V | 54.0 | -15.0 | AVG | 238 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4822.950 | 37.1 | V | 54.0 | -16.9 | AVG | 239 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.650 | 51.5 | V | 74.0 | -22.5 | PK | 32 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 4819.690 | 49.2 | V | 74.0 | -24.8 | PK | 239 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.400 | 28.8 | V | 54.0 | -25.2 | AVG | 32 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 1190.990 | 37.5 | V | 74.0 | -36.5 | PK | 238 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



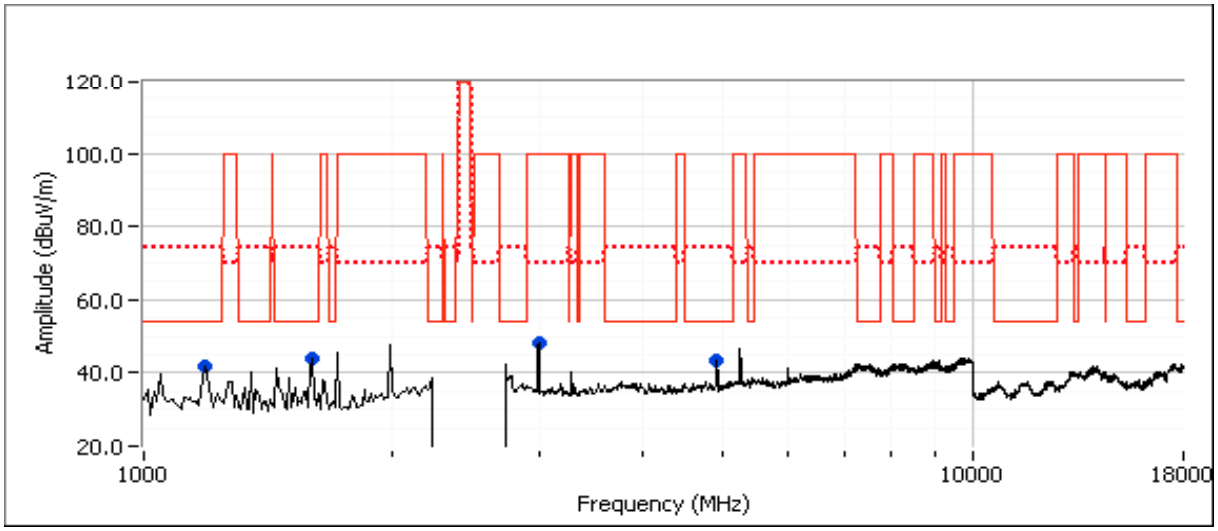
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3c: , EUT on Channel #11 2462MHz - 802.11g, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.760 | 48.1 | V | 54.0 | -5.9 | Peak | 199 | 1.0 | Note 3 - peak vs average limit |
| 1188.890 | 41.1 | V | 54.0 | -12.9 | AVG | 351 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4922.740 | 36.9 | V | 54.0 | -17.1 | AVG | 88 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.240 | 35.0 | V | 54.0 | -19.0 | AVG | 206 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.280 | 54.6 | V | 74.0 | -19.4 | PK | 206 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 4923.890 | 48.9 | V | 74.0 | -25.1 | PK | 88 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 1186.610 | 39.8 | V | 74.0 | -34.2 | PK | 351 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

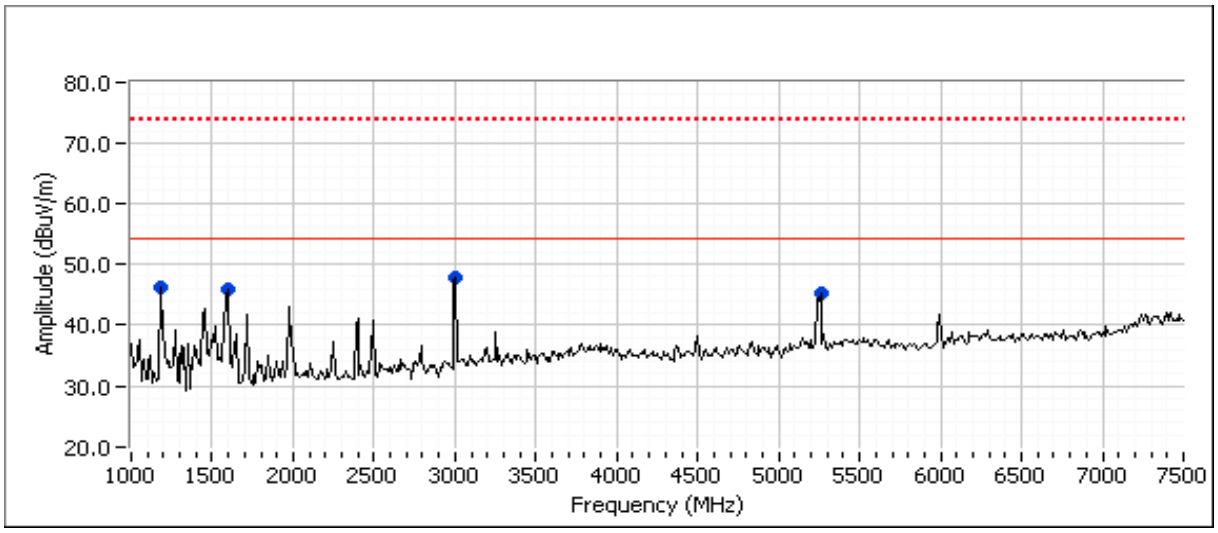
Run # 4, Radiated Spurious Emissions, 1-7.5GHz, Receive, Chain A

Date of Test: 8/19/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

Run # 4a, EUT on Channel #6 2437MHz - Receive, Chain A

| Frequency | Level | Pol | RSS 210 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.670 | 48.2 | V | 54.0 | -5.8 | AVG | 196 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.740 | 52.2 | V | 74.0 | -21.8 | PK | 196 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5239.920 | 37.4 | V | 54.0 | -16.6 | AVG | 270 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5242.450 | 53.0 | V | 74.0 | -21.0 | PK | 270 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1598.250 | 31.4 | V | 54.0 | -22.6 | AVG | 145 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.940 | 46.8 | V | 74.0 | -27.2 | PK | 145 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.780 | 41.8 | H | 54.0 | -12.2 | AVG | 131 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1187.650 | 45.3 | H | 74.0 | -28.7 | PK | 131 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

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

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #1 | 802.11b Chain A | #1 2412MHz | Ethertronics | - | Restricted Band Edge at 2390 MHz | 15.209 | 42.4dBµV/m @ 2387.1MHz (-11.6dB) |
| | | #11 2462MHz | Ethertronics | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 39.5dBµV/m @ 2483.5MHz (-14.5dB) |
| Run # 2 | 802.11g Chain A | #1 2412MHz | Ethertronics | - | Restricted Band Edge at 2390 MHz | 15.209 | 44.0dBµV/m @ 2389.8MHz (-10.0dB) |
| | | #11 2462MHz | Ethertronics | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 41.2dBµV/m @ 2483.6MHz (-12.8dB) |
| Run # 3 | 802.11n20 Chain A | #1 2412MHz | Ethertronics | - | Restricted Band Edge at 2390 MHz | 15.209 | 39.7dBµV/m @ 2390.0MHz (-14.3dB) |
| | | #11 2462MHz | Ethertronics | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 39.2dBµV/m @ 2483.5MHz (-14.8dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1, Band Edge Field Strength - 802.11b, Chain A

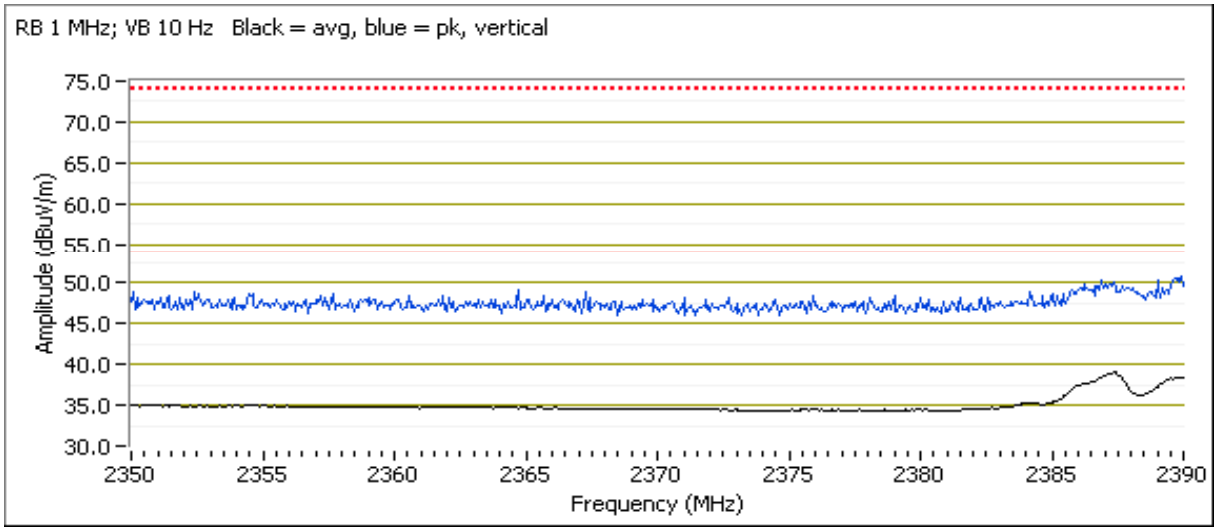
Date of Test: 8/19/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

*2390 MHz 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 | |
| 2387.070 | 42.4 | V | 54.0 | -11.6 | AVG | 299 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2386.810 | 51.4 | V | 74.0 | -22.6 | PK | 299 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2387.150 | 41.7 | H | 54.0 | -12.3 | AVG | 339 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.780 | 50.8 | H | 74.0 | -23.2 | PK | 339 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

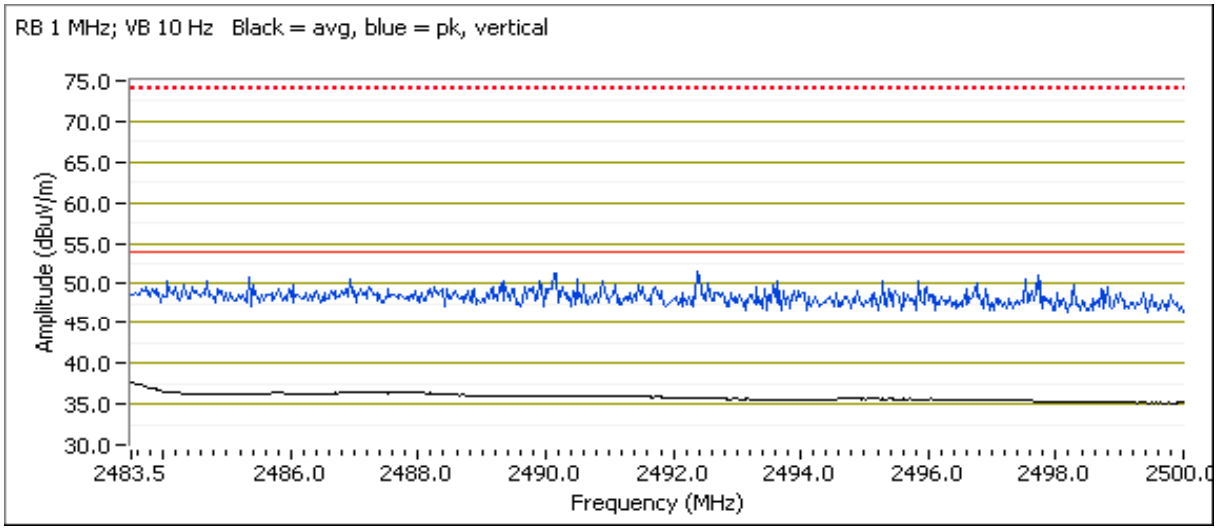


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1b, EUT on Channel #11 2462MHz - 802.11b, Chain A

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 39.5 | V | 54.0 | -14.5 | AVG | 3 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 2492.050 | 51.7 | V | 74.0 | -22.3 | PK | 3 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.510 | 38.2 | H | 54.0 | -15.8 | AVG | 0 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.600 | 49.6 | H | 74.0 | -24.4 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2, Band Edge Field Strength - 802.11g, Chain A

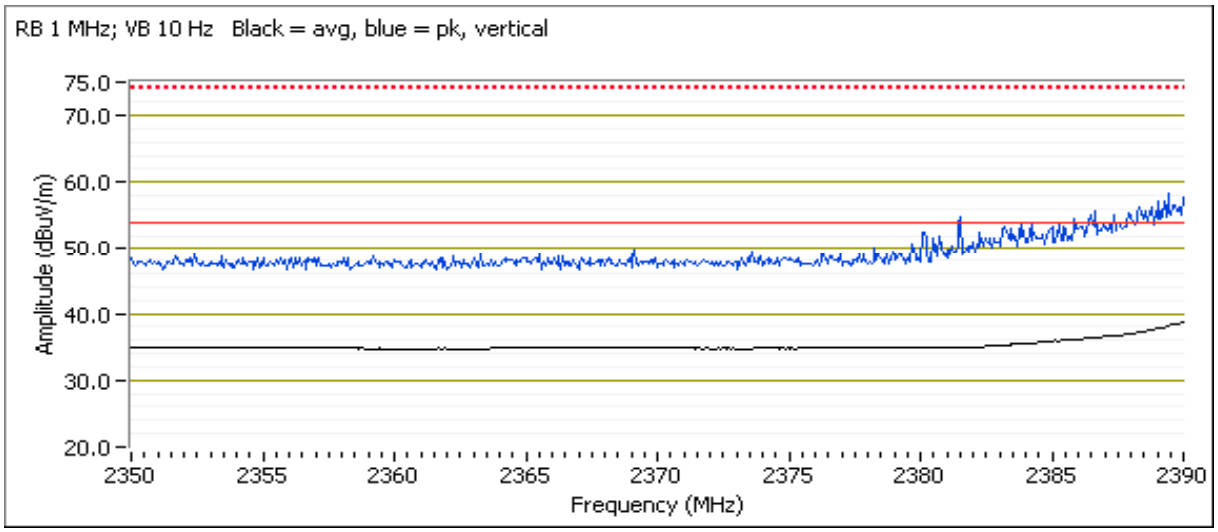
Date of Test: 8/19/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

Run # 2a, EUT on Channel #1 2412MHz - 802.11g, Chain A

*2390 MHz 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 | |
| 2389.820 | 44.0 | V | 54.0 | -10.0 | AVG | 0 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2388.720 | 58.4 | V | 74.0 | -15.6 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2389.940 | 40.8 | H | 54.0 | -13.2 | AVG | 354 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.570 | 55.1 | H | 74.0 | -18.9 | PK | 354 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

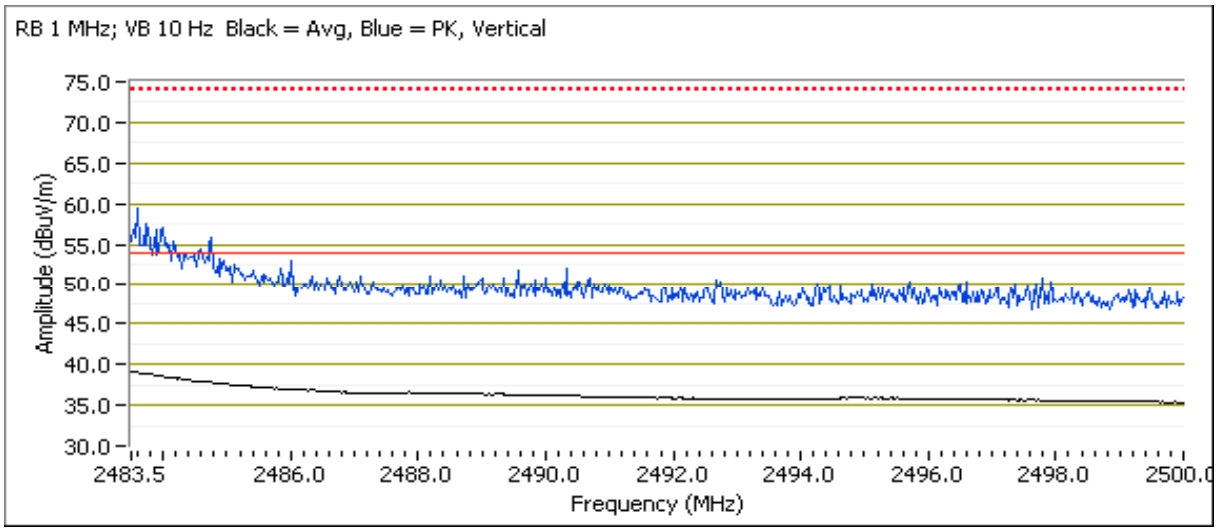


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2b, EUT on Channel #11 2462MHz - 802.11g, Chain A

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.550 | 41.2 | V | 54.0 | -12.8 | AVG | 360 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.880 | 58.0 | V | 74.0 | -16.0 | PK | 360 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.500 | 39.4 | H | 54.0 | -14.6 | AVG | 360 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.860 | 54.2 | H | 74.0 | -19.8 | PK | 360 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3, Band Edge Field Strength - 802.11n20, Chain A

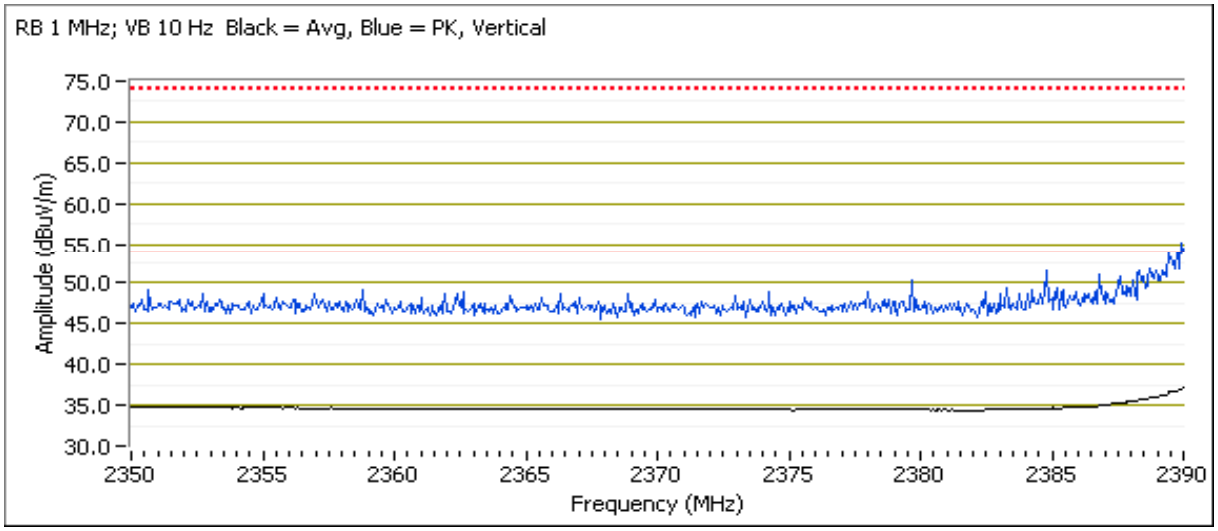
Date of Test: 8/19/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

Run # 3a, EUT on Channel #1 2412MHz - 802.11n20, Chain A

*2390 MHz 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 | 39.7 | V | 54.0 | -14.3 | AVG | 1 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.860 | 53.0 | V | 74.0 | -21.0 | PK | 1 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2389.990 | 38.7 | H | 54.0 | -15.3 | AVG | 0 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.510 | 53.6 | H | 74.0 | -20.4 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

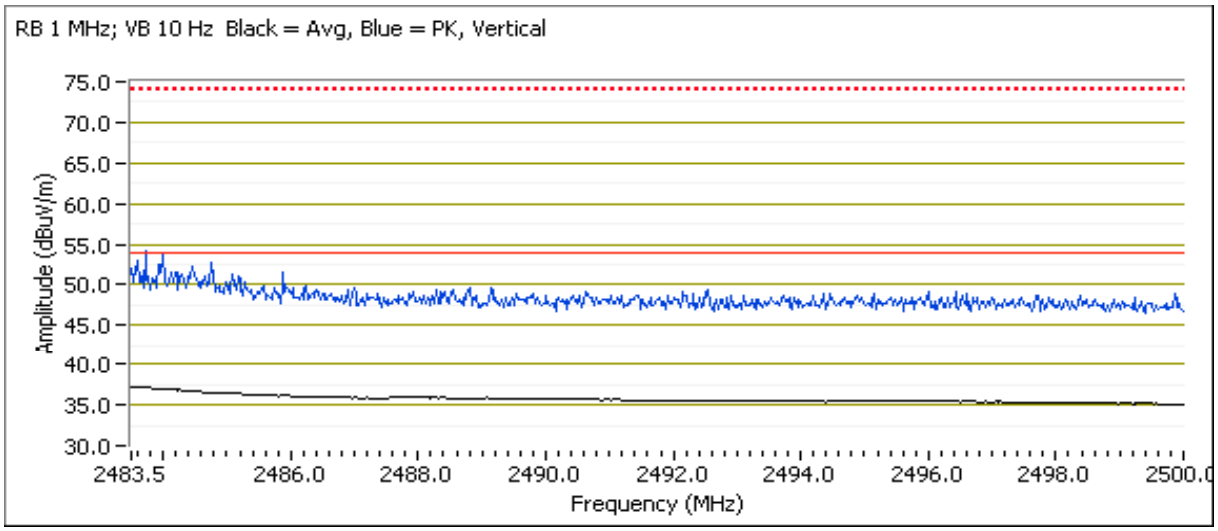


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3b, EUT on Channel #11 2462MHz - 802.11n20, Chain A

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 39.2 | V | 54.0 | -14.8 | AVG | 0 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.580 | 52.1 | V | 74.0 | -21.9 | PK | 0 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.590 | 38.3 | H | 54.0 | -15.7 | AVG | 0 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 2485.160 | 50.2 | H | 74.0 | -23.8 | PK | 0 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

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

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #1 | 802.11b Chain A | #1 2412MHz | Ethertronics | - | Radiated Emissions, 1 - 26 GHz | FCC 15.209 / 15.247 | 53.2dBµV/m @ 4823.9MHz (-0.8dB) |
| | | #6 2437MHz | Ethertronics | - | | | 53.5dBµV/m @ 4873.9MHz (-0.5dB) |
| | | #11 2462MHz | Ethertronics | - | | | 46.3dBµV/m @ 2994.7MHz (-7.7dB) |
| Scans on center channel in all three OFDM modes to determine the worst case | | | | | | | |
| Run # 2 | 802.11g Chain A | #6 2437MHz | Ethertronics | - | Radiated Emissions, 1 - 26 GHz | FCC 15.209 / 15.247 | 48.3dBµV/m @ 2994.5MHz (-5.7dB) |
| | 802.11n20 Chain A | #6 2437MHz | Ethertronics | - | | | 47.6dBµV/m @ 2994.5MHz (-6.4dB) |
| Top and bottom channels in worst case OFDM mode: | | | | | | | |
| Run # 3 | 802.11g Chain A | #1 2412MHz | Ethertronics | - | Radiated Emissions, 1 - 26 GHz | FCC 15.209 / 15.247 | 47.8dBµV/m @ 2994.5MHz (-6.2dB) |
| | | #11 2462MHz | Ethertronics | - | | | 47.5dBµV/m @ 2994.5MHz (-6.5dB) |
| Receiver Spurious Emissions | | | | | | | |
| Run # 4 | Receive | #6, Chain A | Ethertronics | - | Radiated Emissions, 1 - 7.5 GHz | RSS 210 | 45.2dBµV/m @ 1585.4MHz (-8.8dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

## Modifications Made During Testing

No modifications were made to the EUT during testing

## Deviations From The Standard

No deviations were made from the requirements of the standard.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: Ethertronics

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1, Radiated Spurious Emissions, 1-26GHz, 802.11b, Chain A

Date of Test: 8/22/2011 Test Location: FT Chamber #7

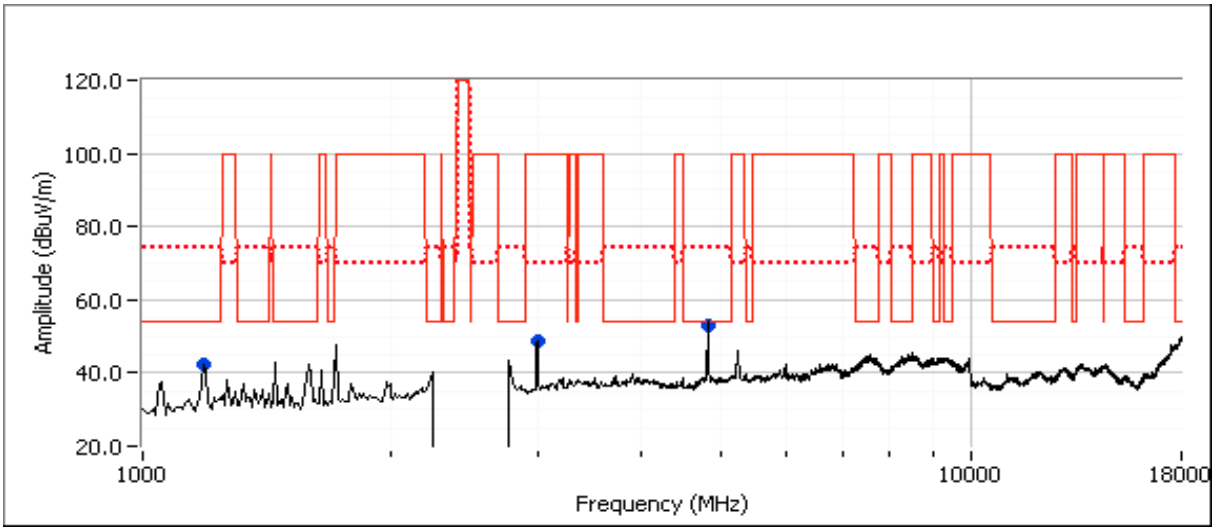
Test Engineer: Rafael Varelas Config Change: None

Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4823.920 | 53.2 | V | 54.0 | -0.8 | AVG | 186 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.590 | 48.9 | V | 54.0 | -5.1 | Peak | 180 | 1.0 | Note 3 - peak vs average limit |
| 1188.890 | 40.1 | H | 54.0 | -13.9 | AVG | 90 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4823.950 | 55.3 | V | 74.0 | -18.7 | PK | 186 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1195.450 | 46.3 | H | 74.0 | -27.7 | PK | 90 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1b: , EUT on Channel #6 2437MHz - 802.11b, Chain A

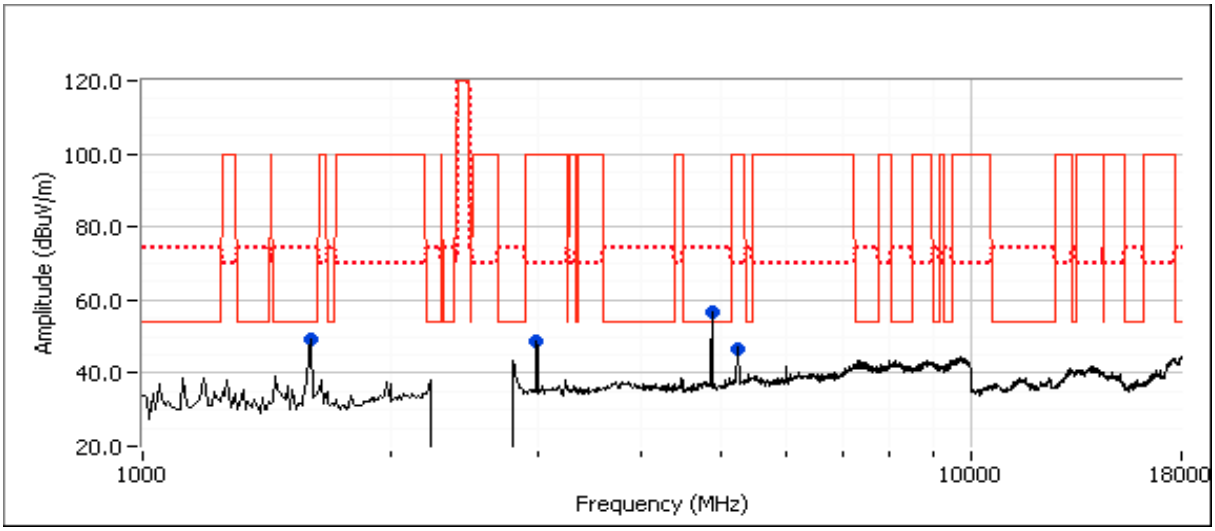
Date of Test: 11/2/2011 Test Location: FT5

Test Engineer: Joseph Cadigal Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4873.940 | 53.5 | V | 54.0 | -0.5 | AVG | 37 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.720 | 45.6 | V | 54.0 | -8.4 | AVG | 160 | 1.0 | RB 1 MHz;VB 10 Hz;Pk, note 3 |
| 1597.740 | 58.1 | V | 74.0 | -15.9 | PK | 160 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 4873.900 | 56.1 | V | 74.0 | -17.9 | PK | 37 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1598.110 | 33.5 | V | 54.0 | -20.5 | AVG | 160 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 5221.840 | 33.4 | V | 54.0 | -20.6 | AVG | 229 | 1.0 | RB 1 MHz;VB 10 Hz;Pk, note 3 |
| 2994.680 | 50.1 | V | 74.0 | -23.9 | PK | 160 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 5221.780 | 45.1 | V | 74.0 | -28.9 | PK | 229 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1c: , EUT on Channel #11 2462MHz - 802.11b, Chain A

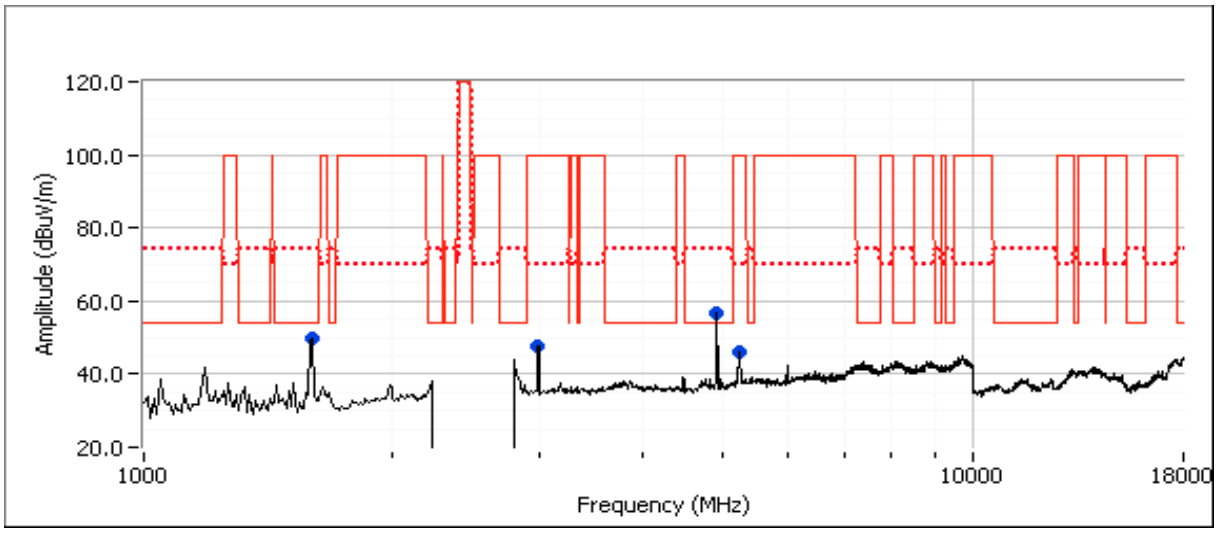
Date of Test: 11/2/2011 Test Location: FT5

Test Engineer: Joseph Cadigal Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.740 | 46.3 | V | 54.0 | -7.7 | AVG | 159 | 1.0 | RB 1 MHz;VB 10 Hz;Pk, note 3 |
| 4920.940 | 44.7 | V | 54.0 | -9.3 | AVG | 51 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 1594.450 | 59.8 | V | 74.0 | -14.2 | PK | 168 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1594.340 | 34.6 | V | 54.0 | -19.4 | AVG | 168 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5221.750 | 33.8 | V | 54.0 | -20.2 | AVG | 159 | 1.0 | RB 1 MHz;VB 10 Hz;Pk, note 3 |
| 2994.530 | 51.2 | V | 74.0 | -22.8 | PK | 159 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 4920.990 | 49.8 | V | 74.0 | -24.2 | PK | 51 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 5219.360 | 45.3 | V | 74.0 | -28.7 | PK | 159 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |

| | |
|---|---|
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2, Radiated Spurious Emissions, 1-26GHz, 802.11g, 802.11n20, Chain A

Date of Test: 8/22/2011 Test Location: FT Chamber #7

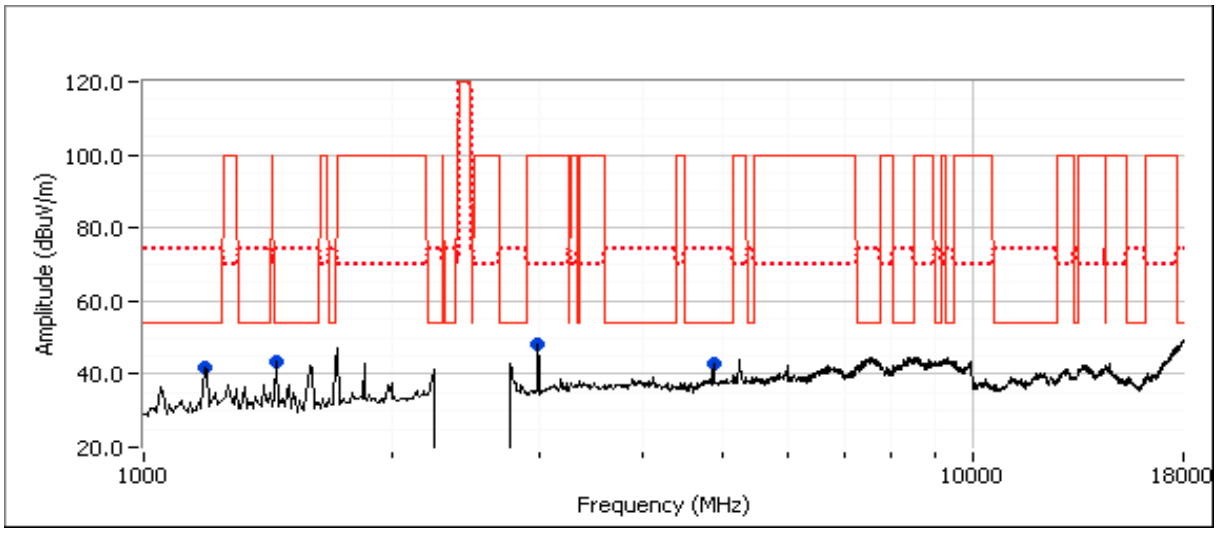
Test Engineer: Rafael Varelas Config Change: None

Run # 2a, EUT on Channel #6 2437MHz - 802.11g, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.510 | 48.3 | V | 54.0 | -5.7 | Peak | 192 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 1189.110 | 40.7 | H | 54.0 | -13.3 | AVG | 328 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4875.750 | 38.2 | V | 54.0 | -15.8 | AVG | 181 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4874.920 | 50.0 | V | 74.0 | -24.0 | PK | 181 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1448.470 | 29.2 | H | 54.0 | -24.8 | AVG | 248 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1197.080 | 49.0 | H | 74.0 | -25.0 | PK | 328 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1446.630 | 37.3 | H | 74.0 | -36.7 | PK | 248 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



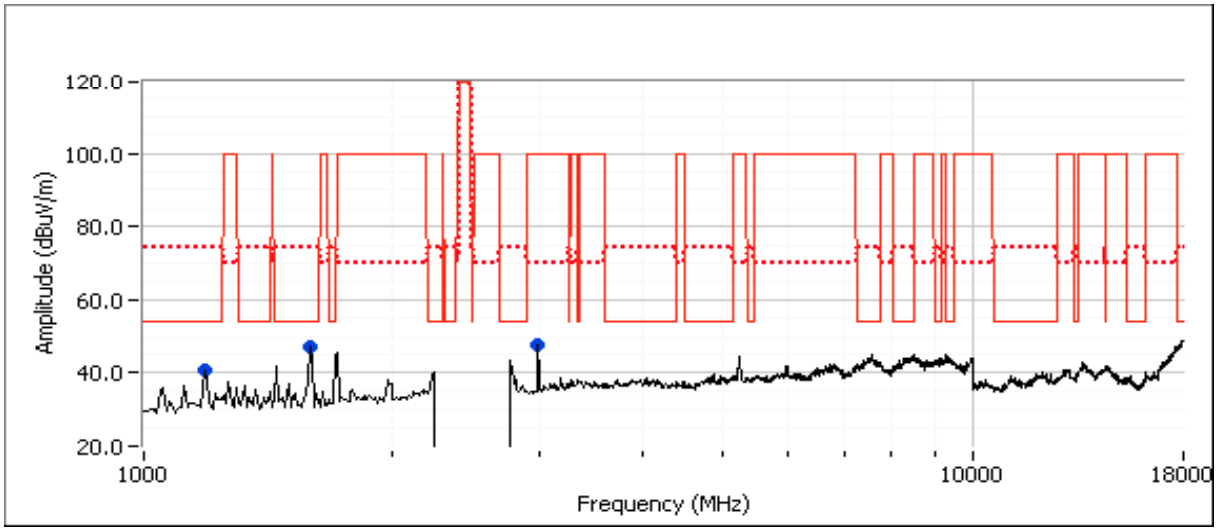
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2b: , EUT on Channel #6 2437MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.510 | 47.6 | V | 54.0 | -6.4 | Peak | 152 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 1188.910 | 40.2 | V | 54.0 | -13.8 | AVG | 288 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1594.720 | 55.2 | V | 74.0 | -18.8 | PK | 196 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.150 | 32.3 | V | 54.0 | -21.7 | AVG | 196 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1189.740 | 37.0 | V | 74.0 | -37.0 | PK | 288 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3, Radiated Spurious Emissions, 1-26GHz, 802.11g, Chain A

Date of Test: 8/22/2011 Test Location: FT Chamber #7

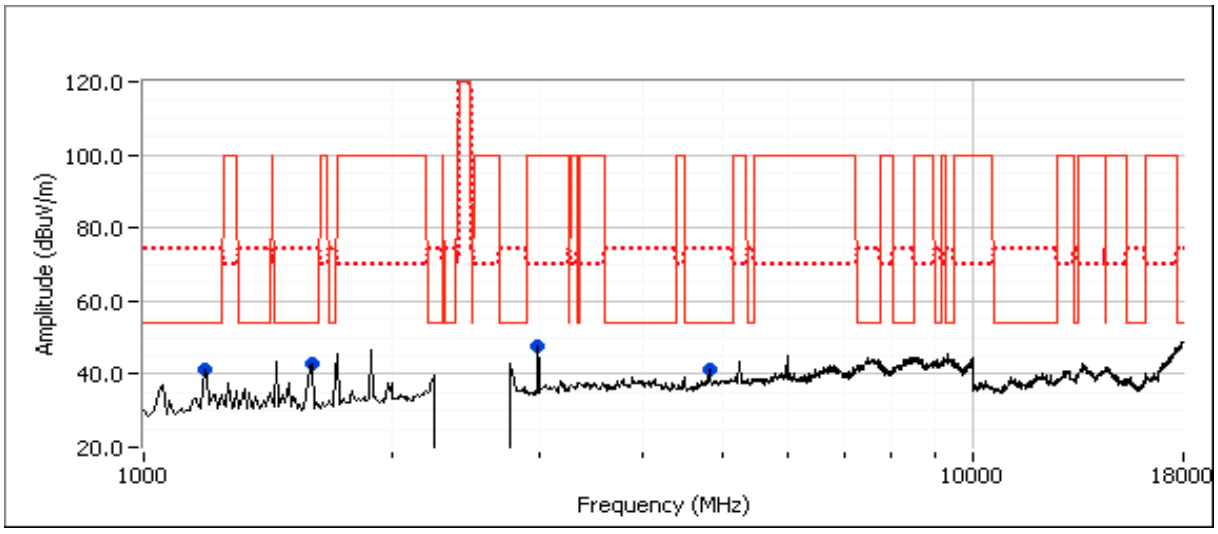
Test Engineer: Rafael Varelas Config Change: None

Run # 3a, EUT on Channel #1 2412MHz - 802.11g, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.510 | 47.8 | V | 54.0 | -6.2 | Peak | 144 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 1189.220 | 38.7 | V | 54.0 | -15.3 | AVG | 123 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4825.200 | 35.8 | V | 54.0 | -18.2 | AVG | 26 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1593.410 | 53.0 | V | 74.0 | -21.0 | PK | 147 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1593.780 | 31.5 | V | 54.0 | -22.5 | AVG | 147 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4825.700 | 48.5 | V | 74.0 | -25.5 | PK | 26 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.940 | 44.2 | V | 74.0 | -29.8 | PK | 123 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



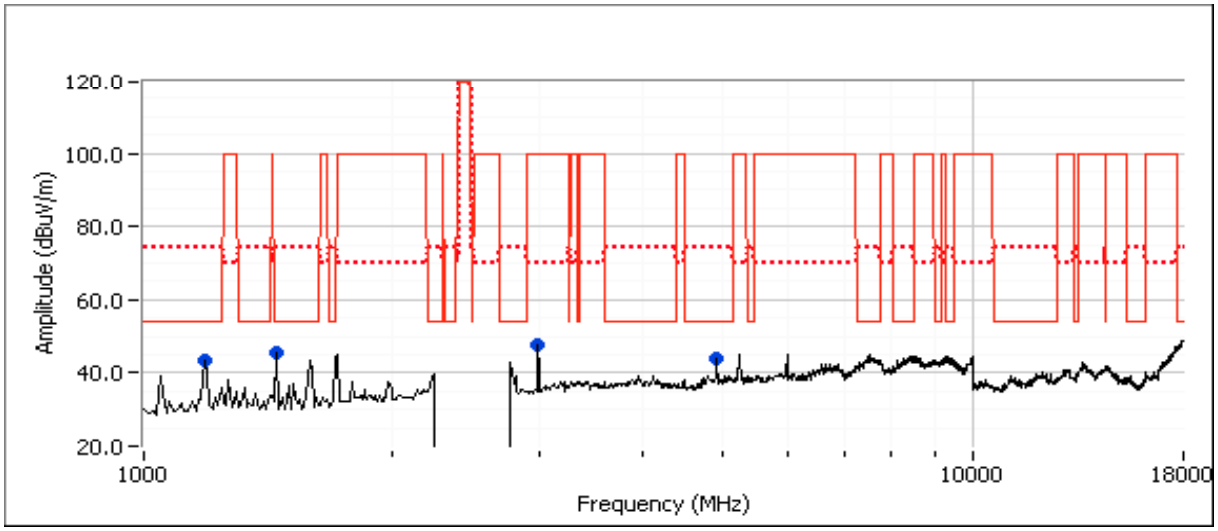
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3c: , EUT on Channel #11 2462MHz - 802.11g, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.510 | 47.5 | V | 54.0 | -6.5 | Peak | 190 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 1453.210 | 46.0 | H | 54.0 | -8.0 | AVG | 106 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4925.000 | 38.9 | V | 54.0 | -15.1 | AVG | 18 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.740 | 36.6 | H | 54.0 | -17.4 | AVG | 112 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4924.300 | 50.3 | V | 74.0 | -23.7 | PK | 18 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1452.410 | 48.5 | H | 74.0 | -25.5 | PK | 106 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1189.840 | 36.1 | H | 74.0 | -37.9 | PK | 112 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Signal is not in restricted band, but the lower restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

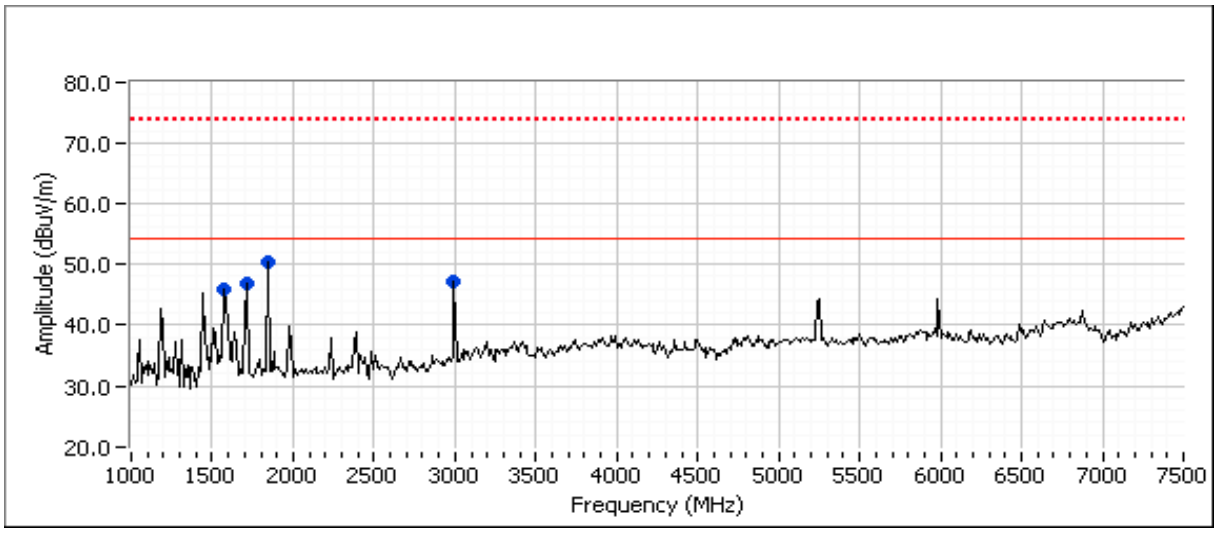
Run # 4, Radiated Spurious Emissions, 1-7.5GHz, Receive, Chain A

Date of Test: 8/22/2011 Test Location: FT Chamber #7

Test Engineer: Rafael Varelas Config Change: None

Run # 4a, EUT on Channel #6 2437MHz - Receive, Chain A

| Frequency | Level | Pol | RSS 210 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1585.380 | 45.2 | H | 54.0 | -8.8 | AVG | 248 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1586.210 | 44.1 | H | 74.0 | -29.9 | PK | 248 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.680 | 46.7 | V | 54.0 | -7.3 | AVG | 143 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.650 | 50.3 | V | 74.0 | -23.7 | PK | 143 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1849.490 | 29.5 | V | 54.0 | -24.5 | AVG | 127 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1849.190 | 38.9 | V | 74.0 | -35.1 | PK | 127 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1717.530 | 42.7 | V | 54.0 | -11.3 | AVG | 150 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1717.870 | 38.2 | V | 74.0 | -35.8 | PK | 150 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

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

SCU:

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #1 | 802.11b Chain A | #1 2412MHz | Cisco | - | Restricted Band Edge at 2390 MHz | 15.209 | 42.3dBµV/m @ 2390.0MHz (-11.7dB) |
| | | #11 2462MHz | Cisco | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 49.4dBµV/m @ 2483.5MHz (-4.6dB) |
| Run # 2 | 802.11g Chain A | #1 2412MHz | Cisco | - | Restricted Band Edge at 2390 MHz | 15.209 | 53.6dBµV/m @ 2390.0MHz (-0.4dB) |
| | | #11 2462MHz | Cisco | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 72.5dBµV/m @ 2483.7MHz (-1.5dB) |
| Run # 3 | 802.11n20 Chain A | #1 2412MHz | Cisco | - | Restricted Band Edge at 2390 MHz | 15.209 | 45.9dBµV/m @ 2389.9MHz (-8.1dB) |
| | | #11 2462MHz | Cisco | - | Restricted Band Edge at 2483.5 MHz | 15.209 | 50.1dBµV/m @ 2483.5MHz (-3.9dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1, Band Edge Field Strength - 802.11b, Chain A

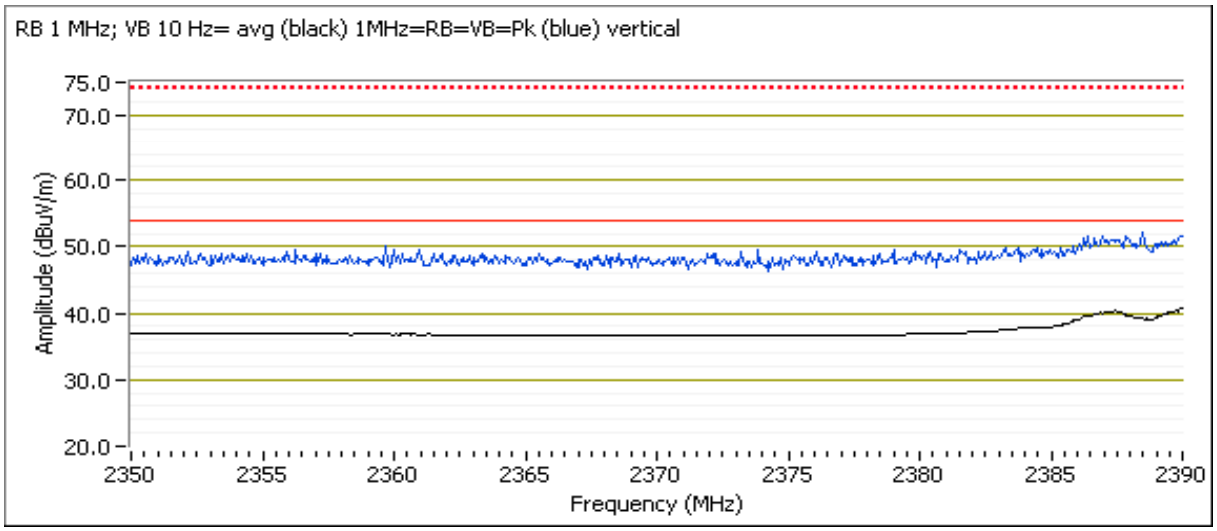
Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

Date of Test: 11/7/2011 Test Location: FT Chamber #4

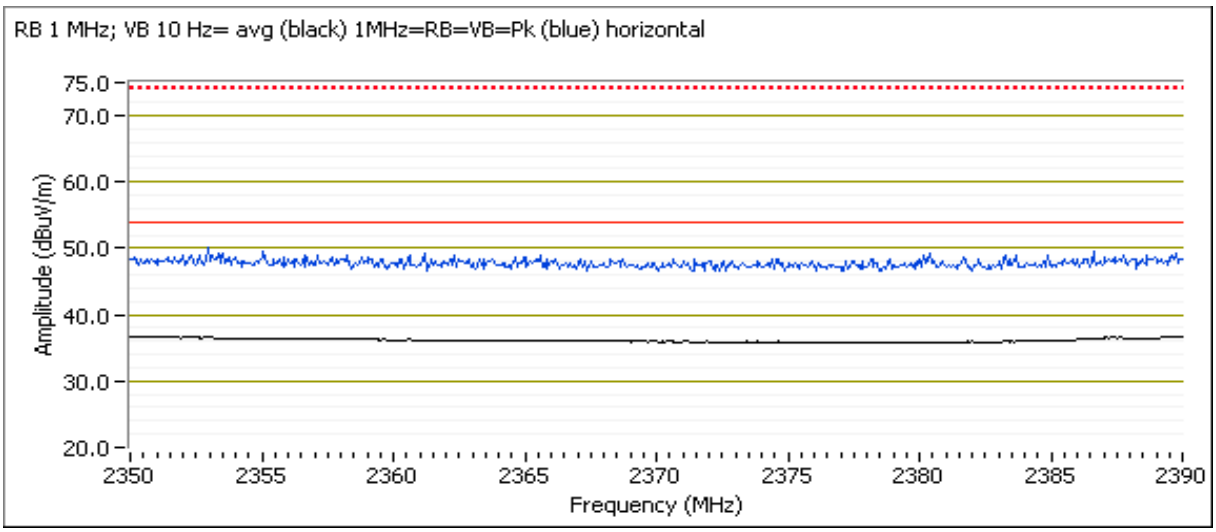
Test Engineer: Joseph Cadigal Config Change: None

*2390 MHz 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 | |
| 2390.000 | 42.3 | V | 54.0 | -11.7 | AVG | 231 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.730 | 52.2 | V | 74.0 | -21.8 | PK | 231 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2389.730 | 38.5 | H | 54.0 | -15.5 | AVG | 117 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2351.130 | 49.6 | H | 74.0 | -24.4 | PK | 117 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

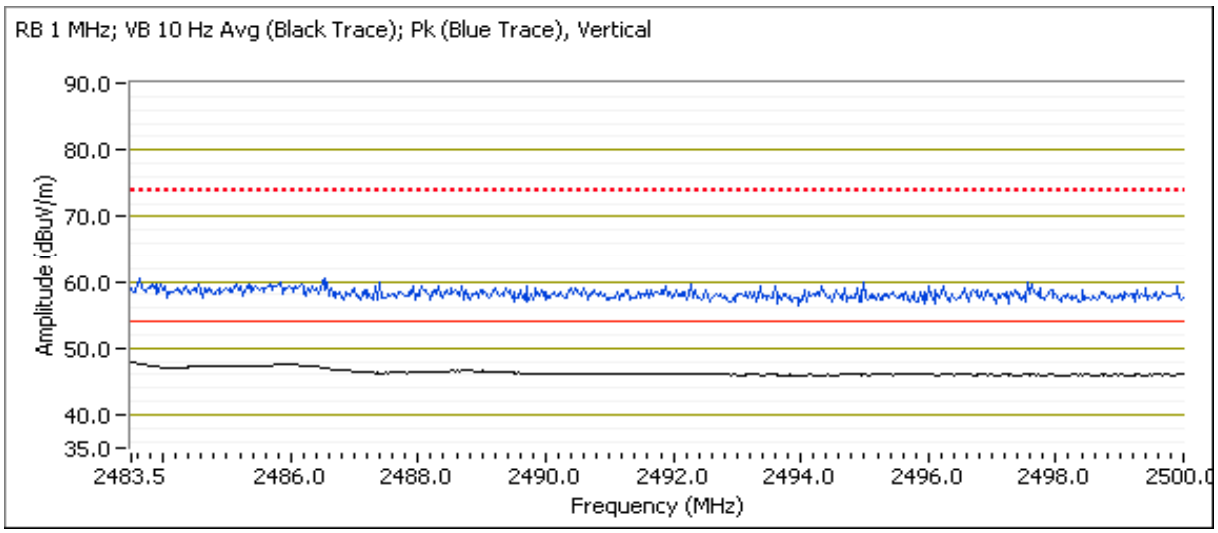
Run #1b, EUT on Channel #11 2462MHz - 802.11b, Chain A

Date of Test: 8/1/2011 Test Location: FT Chamber #4

Test Engineer: Rafael Varelas Config Change: None

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.510 | 49.4 | V | 54.0 | -4.6 | AVG | 175 | 1.5 | RB 1 MHz;VB 10 Hz;Pk |
| 2488.730 | 60.1 | V | 74.0 | -13.9 | PK | 175 | 1.5 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.580 | 47.6 | H | 54.0 | -6.4 | AVG | 160 | 0.9 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.610 | 59.4 | H | 74.0 | -14.6 | PK | 160 | 0.9 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2, Band Edge Field Strength - 802.11g, Chain A

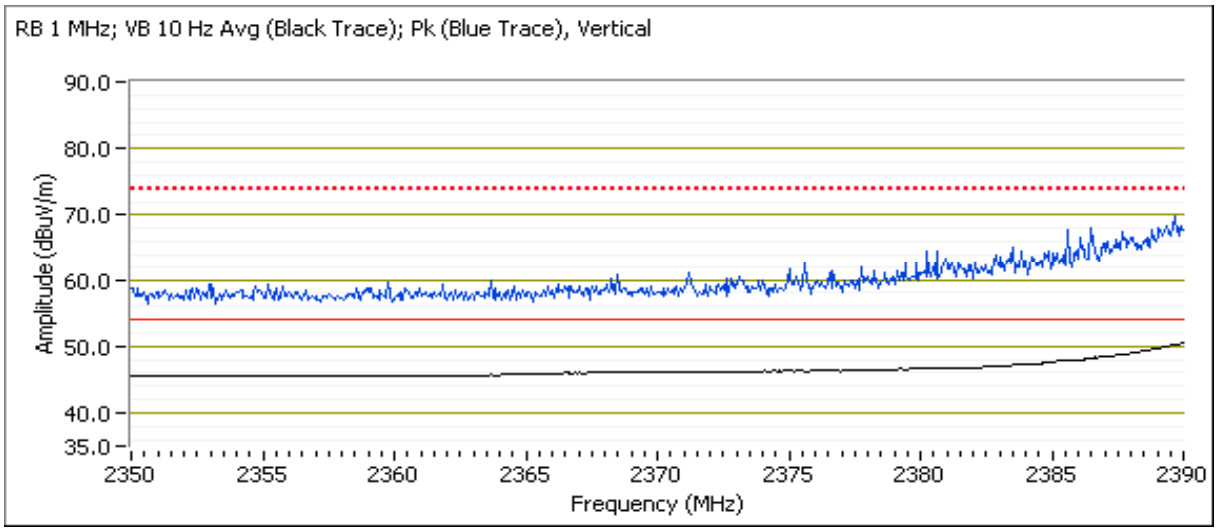
Date of Test: 8/1/2011 Test Location: FT Chamber #4

Test Engineer: Rafael Varelas Config Change: None

Run # 2a, EUT on Channel #1 2412MHz - 802.11g, Chain A

*2390 MHz 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 | |
| 2390.000 | 53.6 | V | 54.0 | -0.4 | AVG | 259 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.870 | 71.1 | V | 74.0 | -2.9 | PK | 259 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 2389.970 | 48.0 | H | 54.0 | -6.0 | AVG | 236 | 0.9 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.400 | 60.6 | H | 74.0 | -13.4 | PK | 236 | 0.9 | RB 1 MHz;VB 3 MHz;Pk |

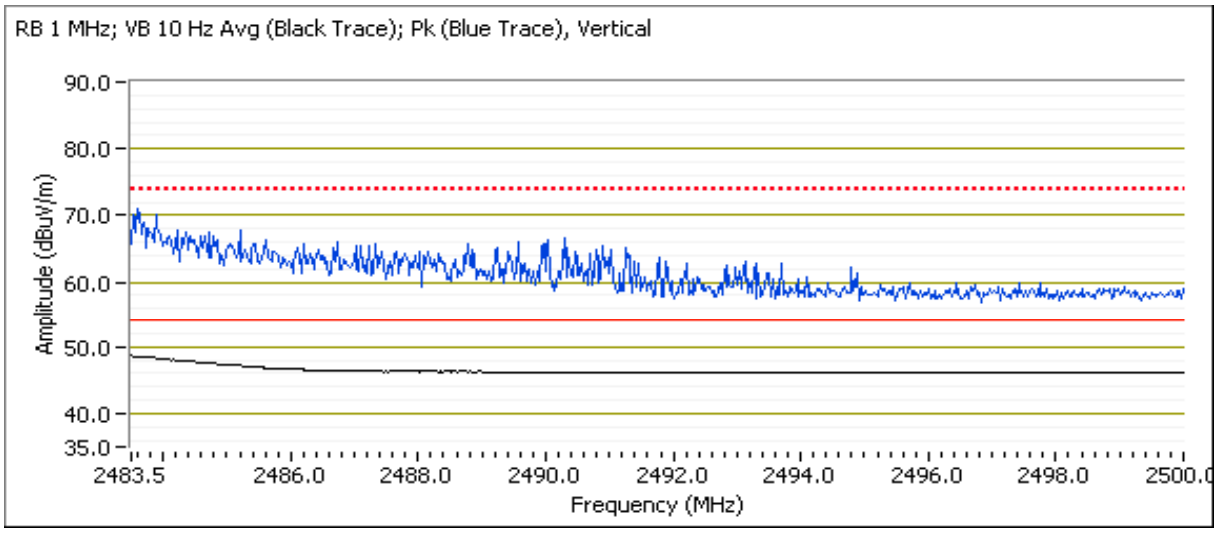


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2b, EUT on Channel #11 2462MHz - 802.11g, Chain A

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 51.0 | V | 54.0 | -3.0 | AVG | 176 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.650 | 72.5 | V | 74.0 | -1.5 | PK | 176 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.700 | 47.5 | H | 54.0 | -6.5 | AVG | 261 | 0.9 | RB 1 MHz;VB 10 Hz;Pk |
| 2483.990 | 59.6 | H | 74.0 | -14.4 | PK | 261 | 0.9 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3, Band Edge Field Strength - 802.11n20, Chain A

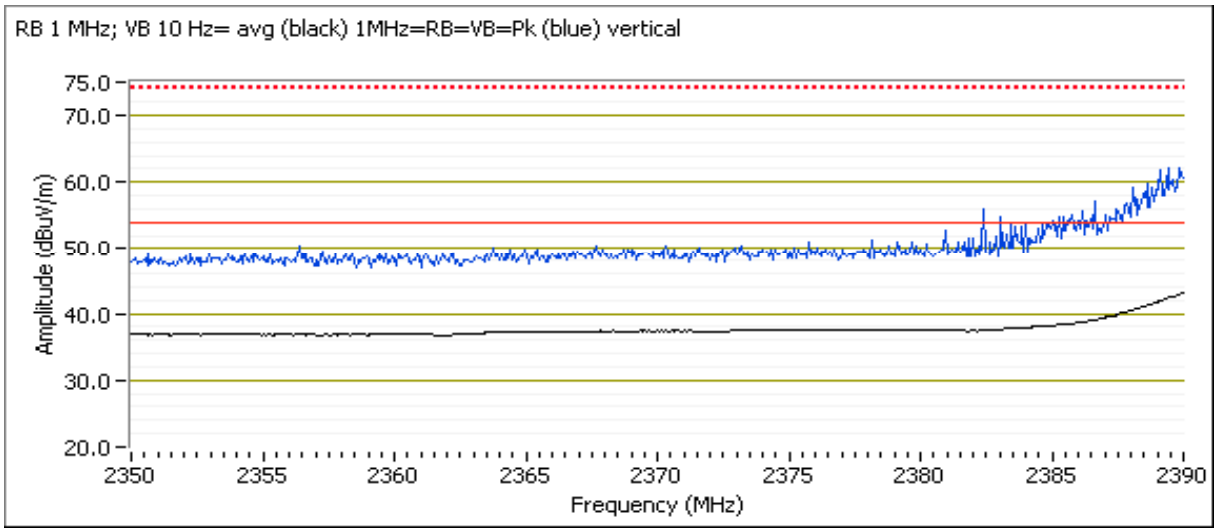
Date of Test: 11/7/2011 Test Location: FT Chamber #4

Test Engineer: Jospeh Cadigal Config Change: none

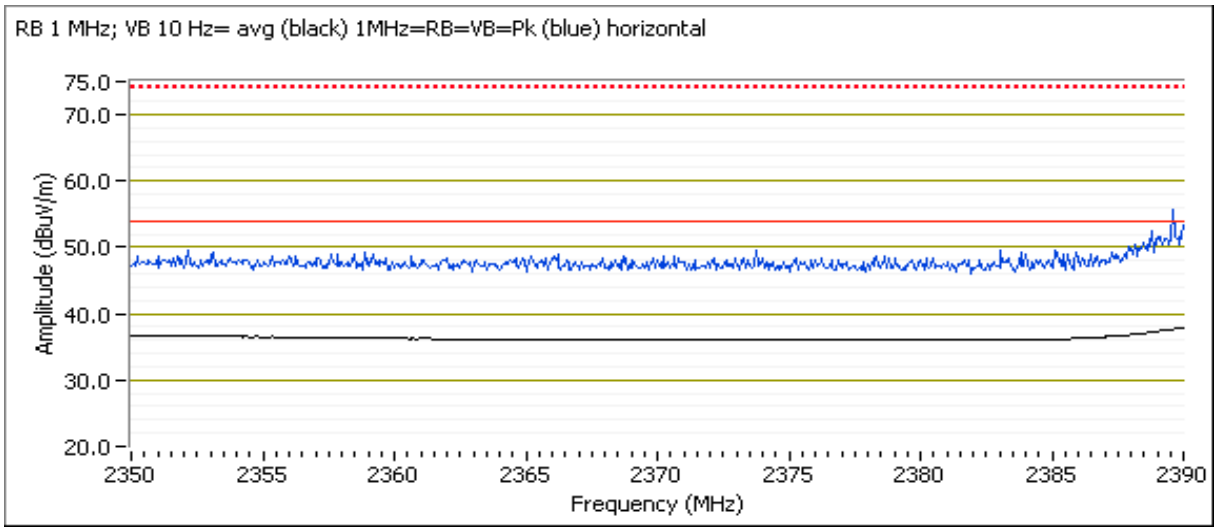
Run # 3a, EUT on Channel #1 2412MHz - 802.11n20, Chain A

*2390 MHz 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 | |
| 2389.930 | 45.9 | V | 54.0 | -8.1 | AVG | 225 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.870 | 59.5 | V | 74.0 | -14.5 | PK | 225 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2389.930 | 40.0 | H | 54.0 | -14.0 | AVG | 115 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2389.200 | 53.9 | H | 74.0 | -20.1 | PK | 115 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

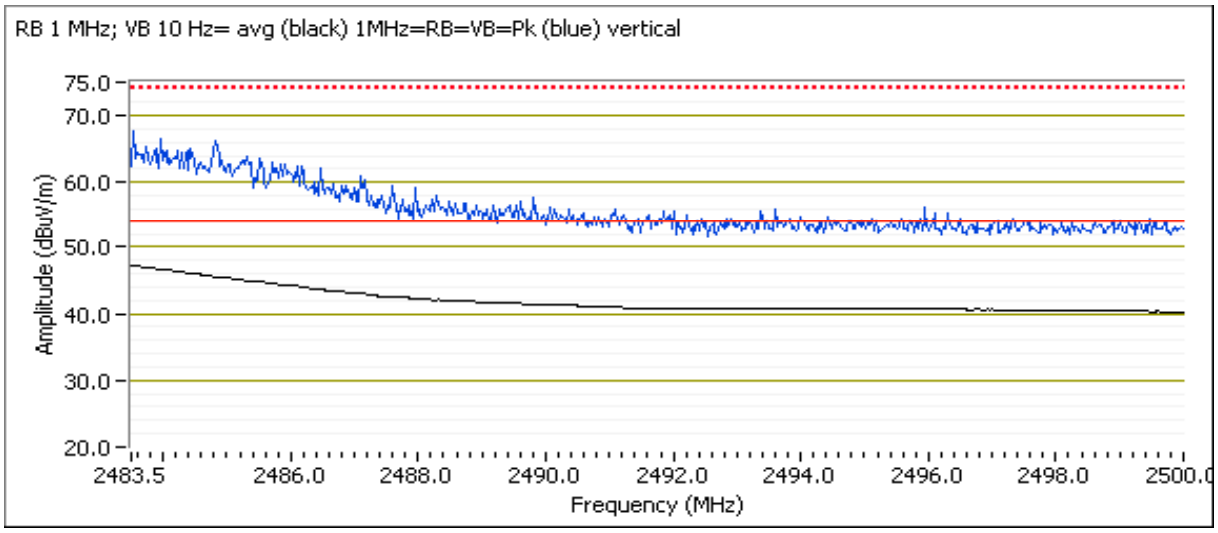
Run # 3b, EUT on Channel #11 2462MHz - 802.11n20, Chain A

Date of Test: 11/7/2011 Test Location: FT Chamber #4

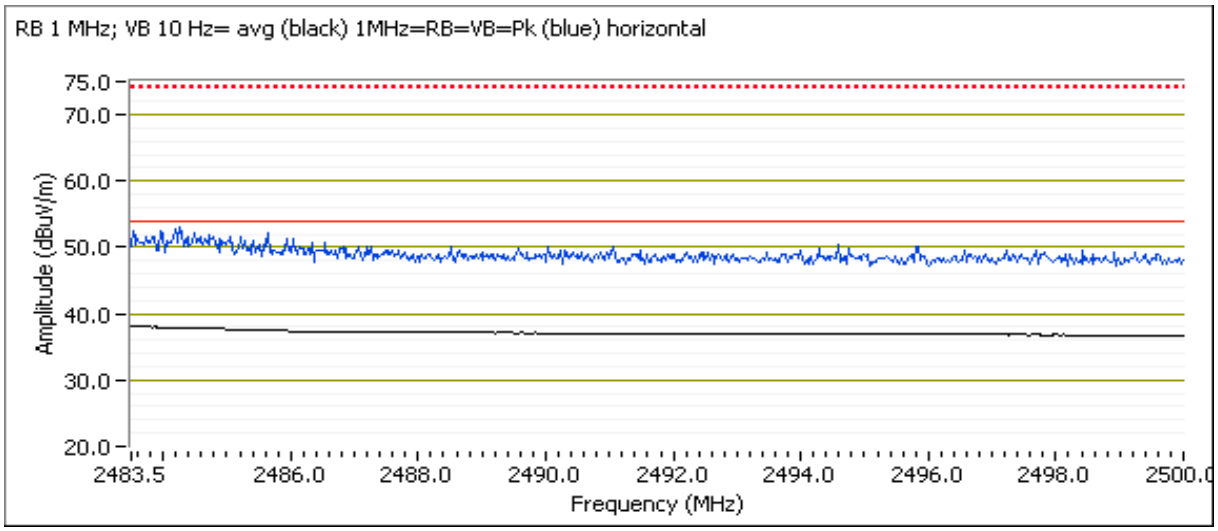
Test Engineer: Jospeh Cadigal Config Change: none

*2483.5 MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 50.1 | V | 54.0 | -3.9 | AVG | 221 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2484.320 | 65.5 | V | 74.0 | -8.5 | PK | 221 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2483.550 | 40.1 | H | 54.0 | -13.9 | AVG | 115 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2484.270 | 52.4 | H | 74.0 | -21.6 | PK | 115 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

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

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #1 | 802.11b Chain A | #1 2412MHz | Cisco | - | Radiated Emissions 1 - 26 GHz | FCC 15.209 / 15.247 | 49.4dBµV/m @ 4824.0MHz (-4.6dB) |
| | | #6 2437MHz | Cisco | - | | | 40.5dBµV/m @ 4874.0MHz (-13.5dB) |
| | | #11 2462MHz | Cisco | - | | | 46.5dBµV/m @ 4924.0MHz (-7.5dB) |
| Scans on center channel in all two OFDM modes to determine the worst case | | | | | | | |
| Run # 2 | 802.11g Chain A | #6 2437MHz | Cisco | - | Radiated Emissions 1 - 26 GHz | FCC 15.209 / 15.247 | 58.2dBµV/m @ 1597.2MHz (-15.8dB) |
| | 802.11n20 Chain A | #6 2437MHz | Cisco | - | | | 39.4dBµV/m @ 1196.8MHz (-14.6dB) |
| Top and bottom channels in worst case OFDM mode: | | | | | | | |
| Run # 3 | 802.11n20 Chain A | #1 2412MHz | Cisco | - | Radiated Emissions 1 - 26 GHz | FCC 15.209 / 15.247 | 49.8dBµV/m @ 2994.7MHz (-20.2dB) |
| | | #11 2462MHz | Cisco | - | | | 40.7dBµV/m @ 1197.9MHz (-13.3dB) |
| Receiver Spurious Emissions | | | | | | | |
| Run # 4 | Receive | #6 Chain A | Cisco | - | Radiated Emissions 1 - 7.5 GHz | RSS 210 | 49.0dBµV/m @ 2994.7MHz (-5.0dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: Cisco

Run #1, Radiated Spurious Emissions, 1-26GHz, 802.11b, Chain A

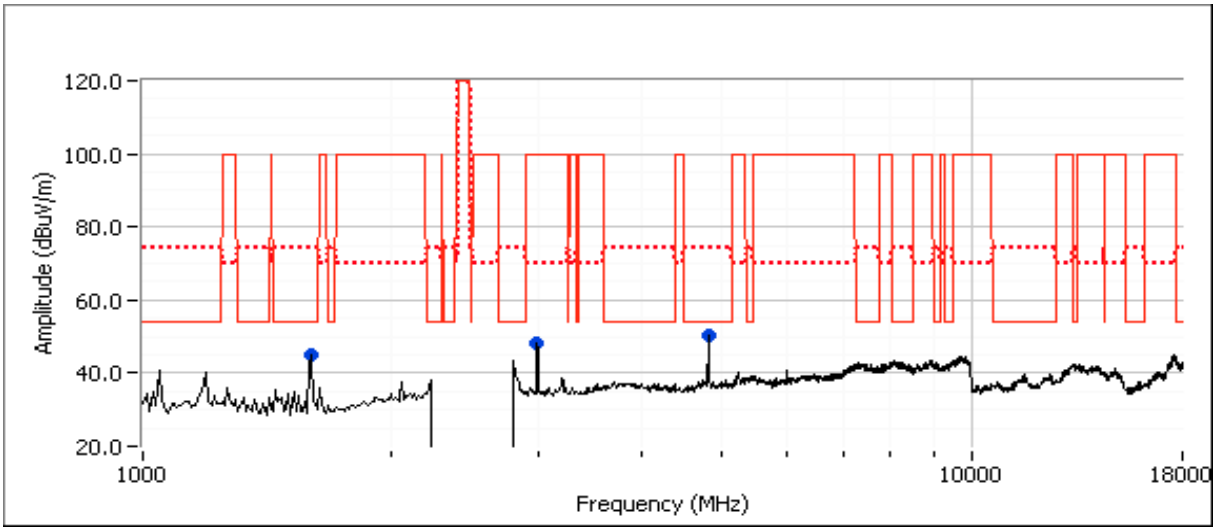
Date of Test: 8/1/2011 Test Location: FT Chamber #4
Test Engineer: Rafael Varelas Config Change: None

Run #1a, EUT on Channel #1 2412MHz - 802.11b, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4824.020 | 49.4 | V | 54.0 | -4.6 | AVG | 163 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4823.830 | 54.1 | V | 74.0 | -19.9 | PK | 163 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1594.350 | 32.3 | V | 54.0 | -21.7 | AVG | 112 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.760 | 57.7 | V | 74.0 | -16.3 | PK | 112 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.570 | 52.4 | V | - | - | PK | 149 | 1.0 | Note 3 |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



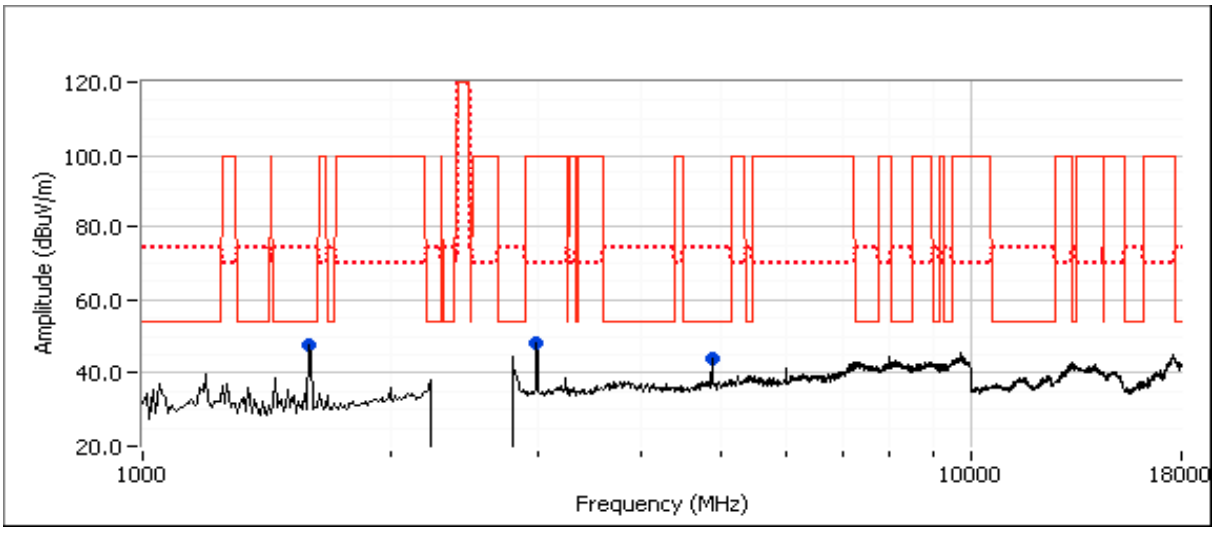
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1b: , EUT on Channel #6 2437MHz - 802.11b, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4874.020 | 40.5 | V | 54.0 | -13.5 | AVG | 302 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 4873.830 | 47.3 | V | 74.0 | -26.7 | PK | 302 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |
| 1596.920 | 32.1 | V | 54.0 | -21.9 | AVG | 141 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1595.000 | 56.1 | V | 74.0 | -17.9 | PK | 141 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.610 | 48.0 | V | - | - | PK | 149 | 1.0 | Note 3 |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



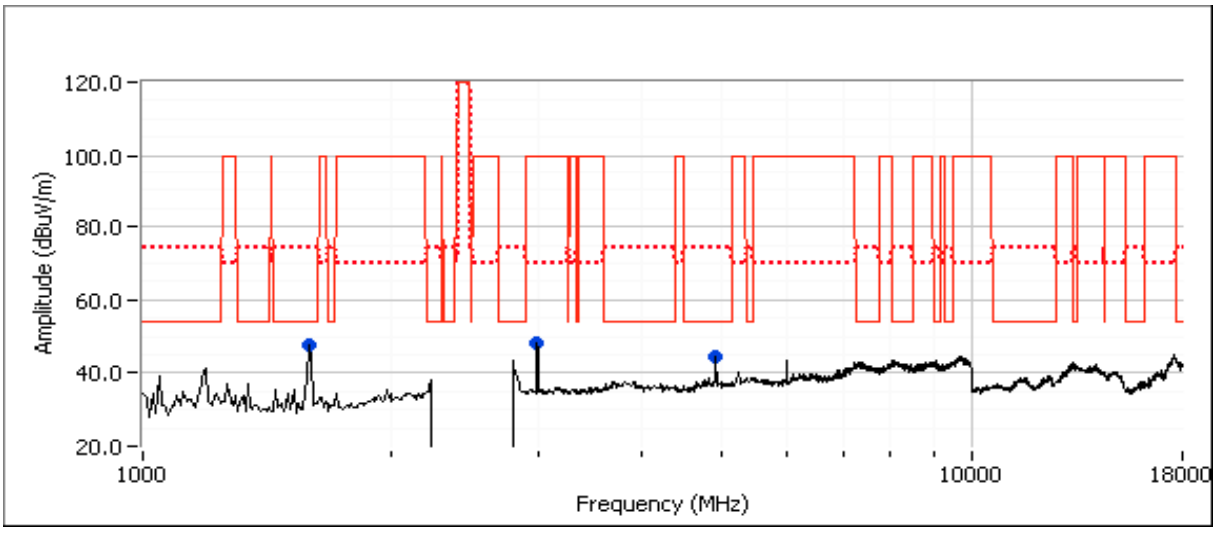
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #1c: , EUT on Channel #11 2462MHz - 802.11b, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4924.040 | 46.5 | V | 54.0 | -7.5 | AVG | 48 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4924.120 | 50.5 | V | 74.0 | -23.5 | PK | 48 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1585.500 | 27.9 | V | 54.0 | -26.1 | AVG | 105 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1587.850 | 42.8 | V | 74.0 | -31.2 | PK | 105 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.400 | 48.2 | V | - | - | PK | 89 | 1.0 | Note 3 |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2, Radiated Spurious Emissions, 1-26GHz, 802.11g, 802.11n20, 802.11n40, Chain A

Date of Test: 8/1/2011 Test Location: FT Chamber #4

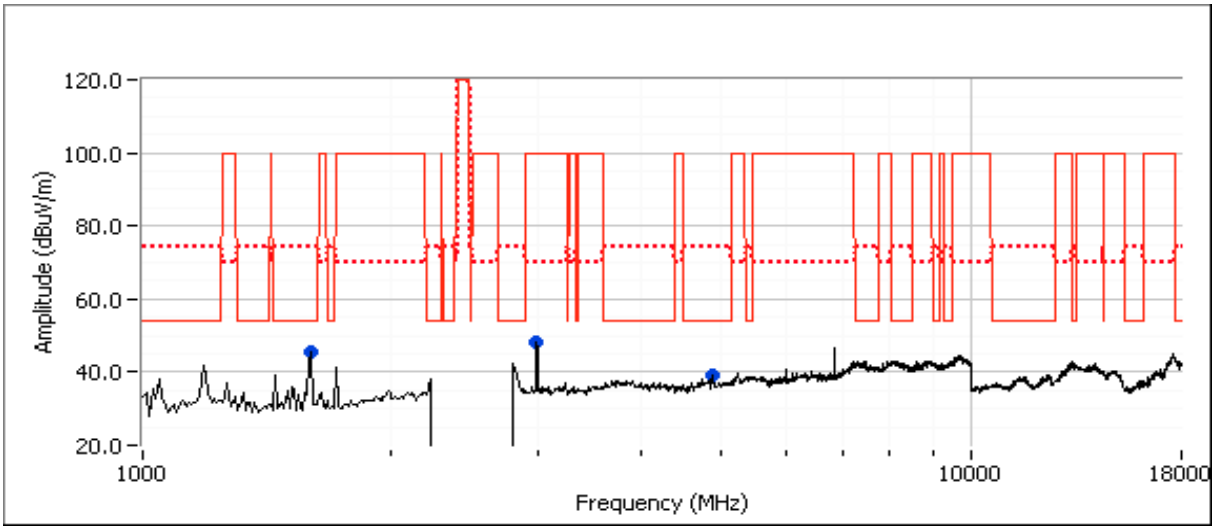
Test Engineer: Rafael Varelas Config Change: None

Run # 2a, EUT on Channel #6 2437MHz - 802.11g, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1597.330 | 32.6 | V | 54.0 | -21.4 | AVG | 140 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.160 | 58.2 | V | 74.0 | -15.8 | PK | 140 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 4873.260 | 35.9 | V | 54.0 | -18.1 | AVG | 271 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 4878.620 | 47.4 | V | 74.0 | -26.6 | PK | 271 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2989.170 | 48.0 | V | - | - | PK | 146 | 1.0 | Note 3 |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



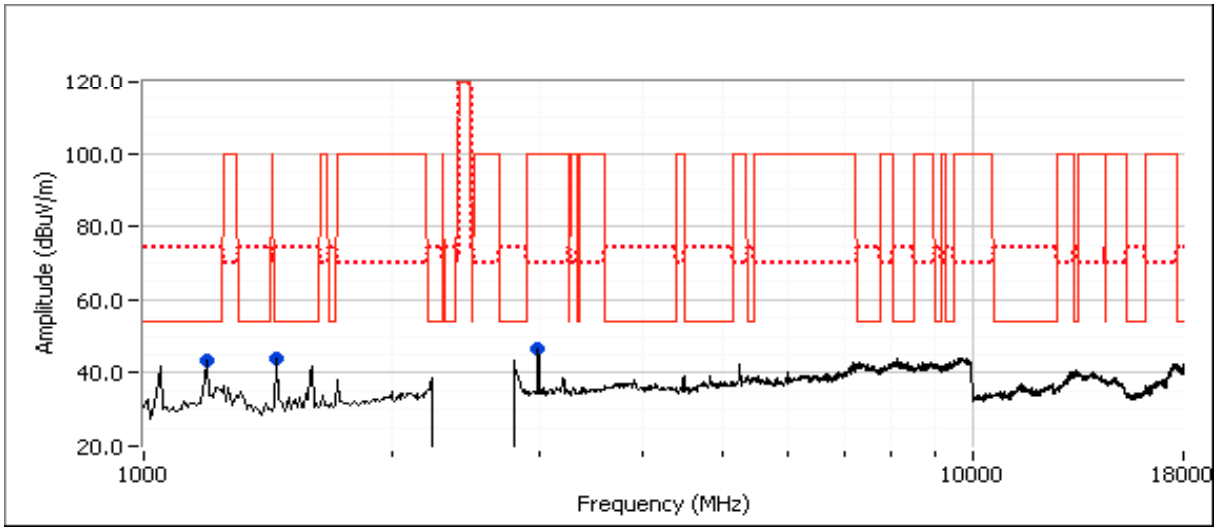
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 2b: , EUT on Channel #6 2437MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1196.840 | 39.4 | V | 54.0 | -14.6 | AVG | 277 | 1.5 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.490 | 55.8 | V | 74.0 | -18.2 | PK | 196 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.700 | 49.7 | H | - | - | PK | 266 | 1.0 | Note 3 |
| 1597.290 | 33.0 | V | 54.0 | -21.0 | AVG | 196 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1197.740 | 51.7 | V | 74.0 | -22.3 | PK | 277 | 1.5 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 26GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3, Radiated Spurious Emissions, 1-26GHz, 802.11n 20MHz, Chain A

Date of Test: 8/2/2011 Test Location: FT Chamber #7

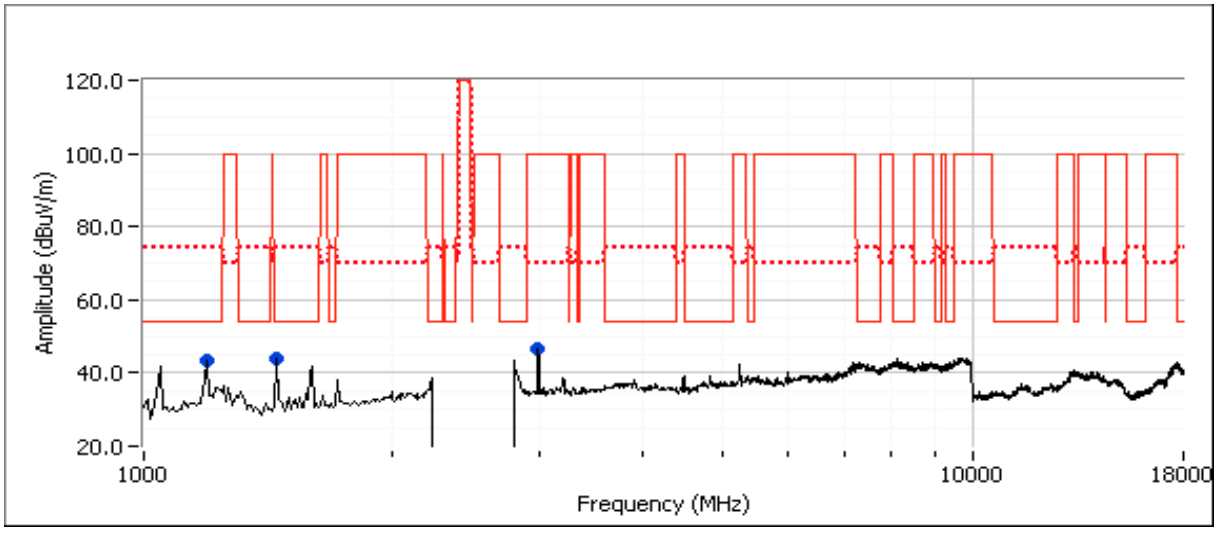
Test Engineer: M. Birgani Config Change:

Run # 3a, EUT on Channel #1 2412MHz - 802.11n 20MHz, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1453.030 | 44.0 | H | 54.0 | -10.0 | AVG | 15 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1197.360 | 40.3 | V | 54.0 | -13.7 | AVG | 156 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1202.460 | 55.6 | V | 74.0 | -18.4 | PK | 156 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.730 | 49.8 | H | - | - | PK | 266 | 1.0 | Note 3 |
| 1456.220 | 51.2 | H | 74.0 | -22.8 | PK | 15 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



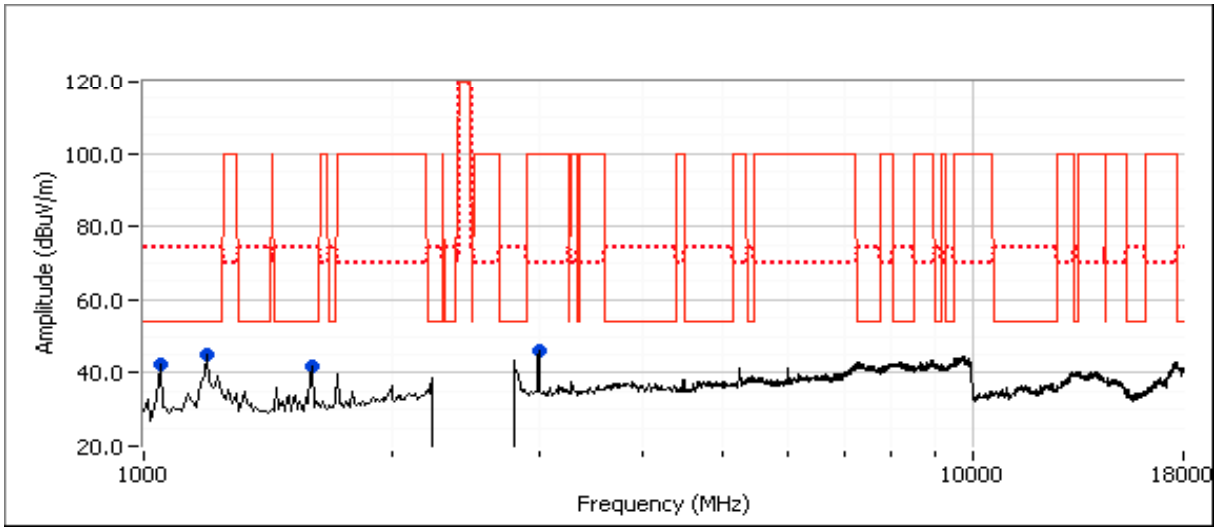
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 3c: , EUT on Channel #11 2462MHz - 802.11n 20MHz, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1197.870 | 40.7 | V | 54.0 | -13.3 | AVG | 283 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.040 | 58.0 | V | 74.0 | -16.0 | PK | 188 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.390 | 34.0 | V | 54.0 | -20.0 | AVG | 188 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1194.610 | 53.9 | V | 74.0 | -20.1 | PK | 283 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.770 | 49.6 | H | - | - | PK | 269 | 1.0 | Note 3 |
| 1030.000 | 28.6 | V | 54.0 | -25.4 | AVG | 204 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1032.070 | 39.4 | V | 74.0 | -34.6 | PK | 204 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, refer to antenna port measurements. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

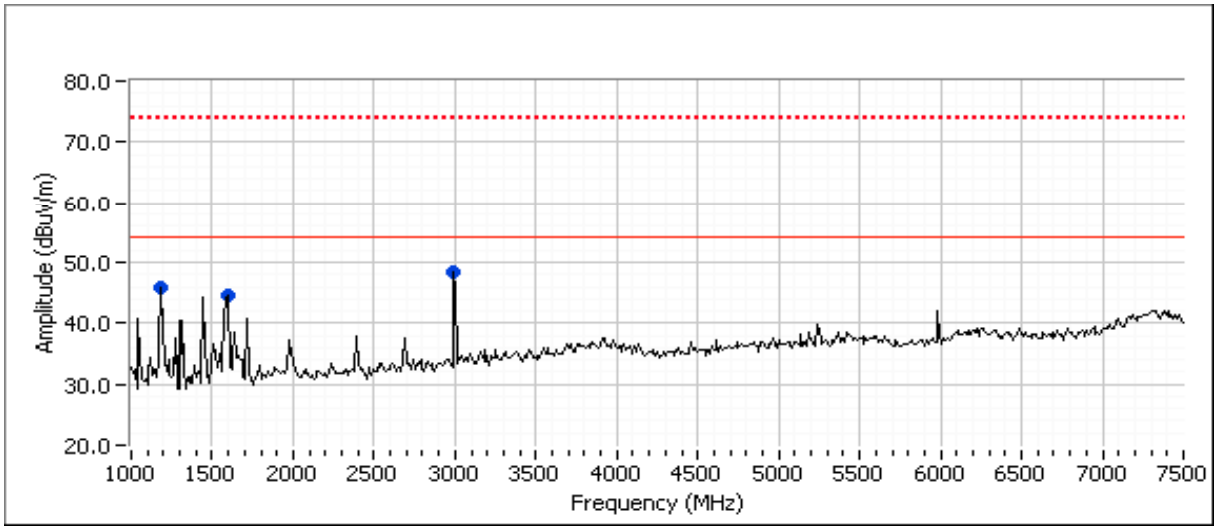
Run # 4, Radiated Spurious Emissions, 1-7.5GHz, Receive, Chain A

Date of Test: 8/1/2011 Test Location: FT Chamber #4

Test Engineer: Rafael Varelas Config Change: None

Run # 4a, EUT on Channel #6 2437MHz - Receive, Chain A

| Frequency | Level | Pol | RSS 210 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.700 | 49.0 | V | 54.0 | -5.0 | AVG | 148 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.700 | 51.2 | V | 74.0 | -22.8 | PK | 148 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.810 | 47.6 | V | 54.0 | -6.4 | AVG | 276 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.570 | 49.6 | V | 74.0 | -24.4 | PK | 276 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |
| 1593.950 | 35.0 | V | 54.0 | -19.0 | AVG | 124 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1594.510 | 55.6 | V | 74.0 | -18.4 | PK | 124 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

## Summary of Results - Device Operating in the 5725 - 5850 MHz Band

SCU:

| Run # | Mode | Channel | Antenna | Measured Power | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run # 1 | 802.11n20 Chain A | #149 5745MHz | H&S | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15.247 | 50.1dBµV/m @ 2392.9MHz (-3.9dB) |
| | | #157 5785MHz | H&S | - | | | 49.6dBµV/m @ 2390.8MHz (-4.4dB) |
| | | #161 5805MHz | H&S | - | | | 48.6dBµV/m @ 2994.7MHz (-5.4dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: H&S

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1, Radiated Spurious Emissions, 1-40GHz, Chain A

Date of Test: 11/7/2011 Test Location: FT Chamber#4

Test Engineer: Joseph Cadigal Config Change: none

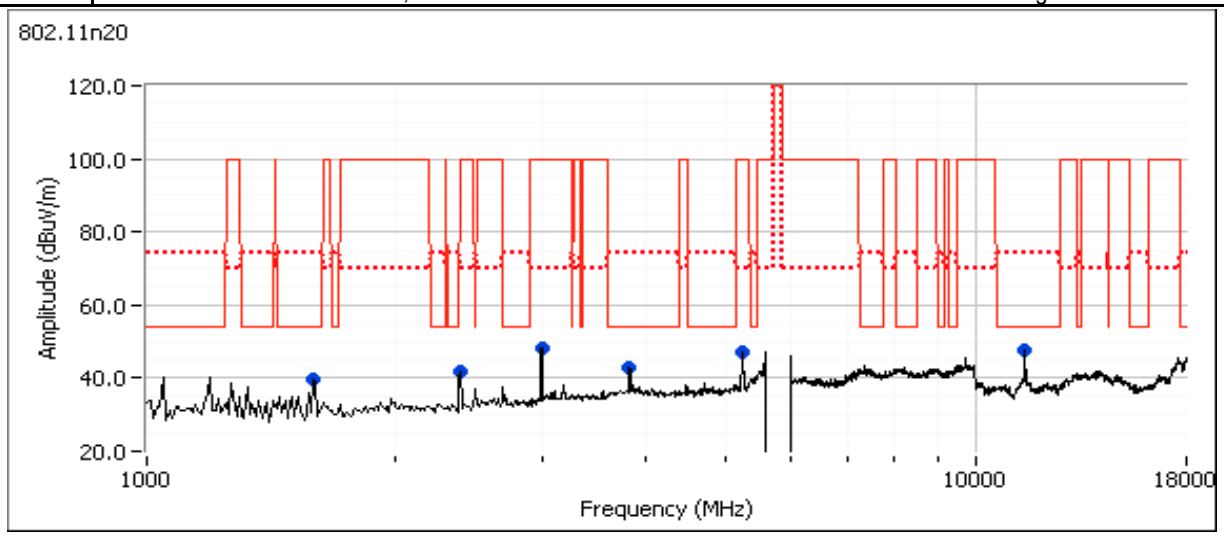
Run # 1a, EUT on Channel #149, 5745MHz - 802.11n20, Chain A

WB40

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2392.880 | 50.1 | V | 54.0 | -3.9 | PK | 179 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 5240.650 | 49.0 | V | 54.0 | -5.0 | PK | 169 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 2994.700 | 43.7 | V | 54.0 | -10.3 | PK | 119 | 1.3 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 11490.170 | 39.0 | H | 54.0 | -15.0 | AVG | 344 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 3820.210 | 32.4 | V | 54.0 | -21.6 | AVG | 247 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 11491.060 | 51.6 | H | 74.0 | -22.4 | PK | 344 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |
| 1593.310 | 27.8 | V | 54.0 | -26.2 | AVG | 333 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 3820.800 | 44.2 | V | 74.0 | -29.8 | PK | 247 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1595.170 | 43.5 | V | 74.0 | -30.5 | PK | 333 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, the restricted band limit was used. Peak measurement vs average limit. |



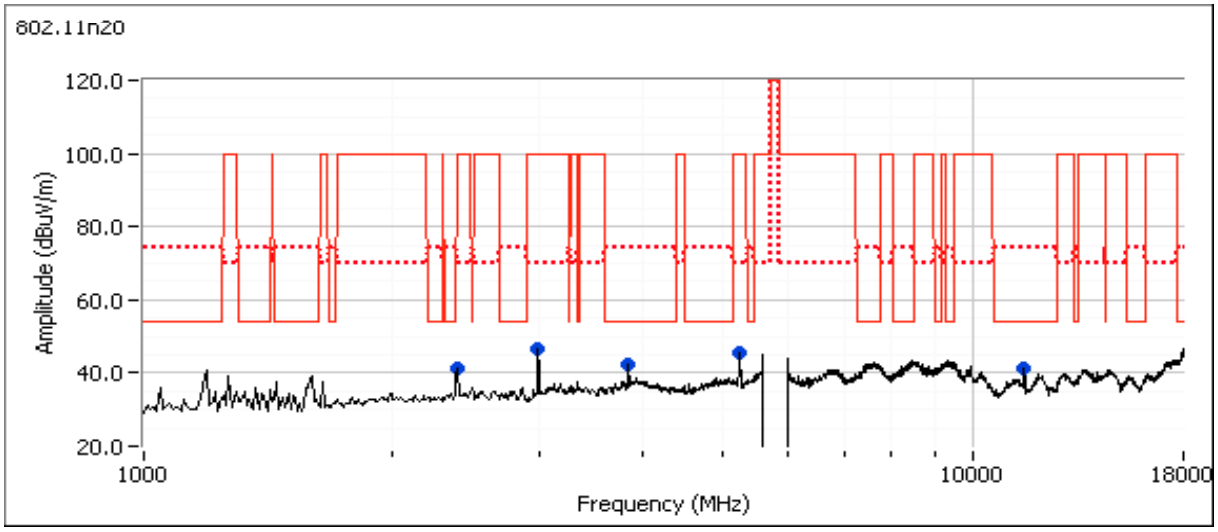
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1b: , EUT on Channel #157 5785MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2390.830 | 49.6 | V | 54.0 | -4.4 | PK | 297 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 2994.580 | 48.2 | V | 54.0 | -5.8 | PK | 126 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 5246.460 | 46.1 | V | 54.0 | -7.9 | PK | 159 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 3856.520 | 32.0 | V | 54.0 | -22.0 | AVG | 94 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 11567.060 | 28.8 | V | 54.0 | -25.2 | AVG | 268 | 1.9 | RB 1 MHz;VB 10 Hz;Pk |
| 3856.350 | 42.6 | V | 74.0 | -31.4 | PK | 94 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |
| 11568.710 | 40.2 | V | 74.0 | -33.8 | PK | 268 | 1.9 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 40GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range |
| Note 3: | Emission in non-restricted band, the restricted band limit was used. Peak measurement vs average limit. |



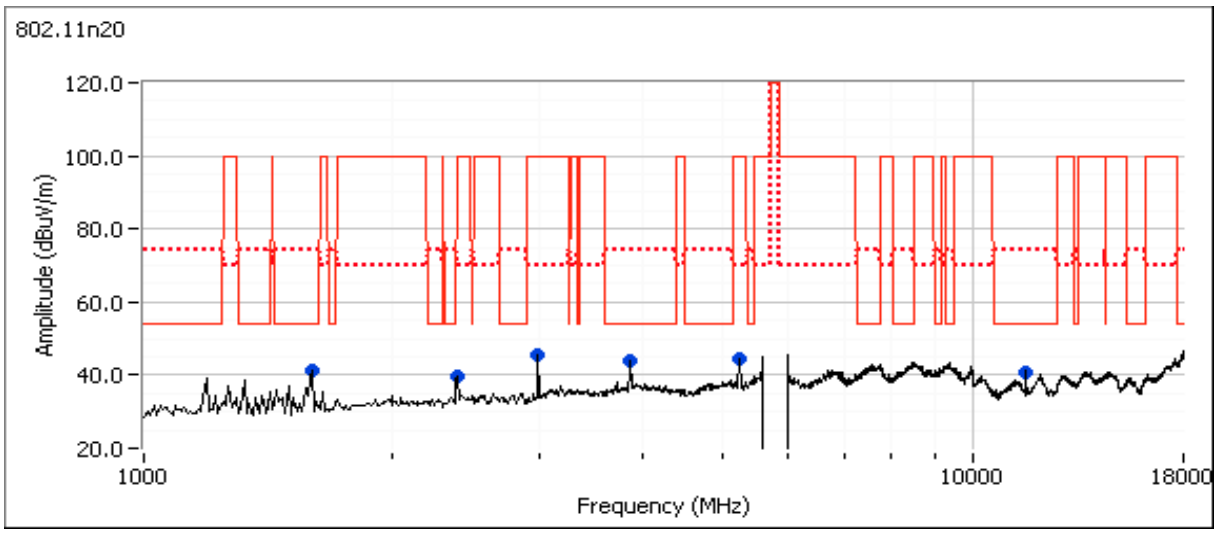
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1c: , EUT on Channel #161 5805MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.710 | 48.6 | V | 54.0 | -5.4 | PK | 120 | 1.3 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 5220.750 | 43.6 | V | 54.0 | -10.4 | PK | 177 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 2389.970 | 31.9 | V | 54.0 | -22.1 | AVG | 309 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 3869.940 | 31.8 | V | 54.0 | -22.2 | AVG | 79 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.770 | 48.7 | V | 74.0 | -25.3 | PK | 331 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2389.970 | 48.4 | V | 74.0 | -25.6 | PK | 309 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 11585.190 | 28.1 | V | 54.0 | -25.9 | AVG | 86 | 2.2 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.860 | 27.2 | V | 54.0 | -26.8 | AVG | 331 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 3871.180 | 43.1 | V | 74.0 | -30.9 | PK | 79 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 11587.880 | 38.9 | V | 74.0 | -35.1 | PK | 86 | 2.2 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, the restricted band limit was used. Peak measurement vs average limit. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

## Summary of Results - Device Operating in the 5725 - 5850 MHz Band

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run # 1 | 802.11n20 Chain A | #149 5745MHz | Larsen | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15.247 | 46.5dBµV/m @ 2392.5MHz (-7.5dB) |
| | | #157 5785MHz | Larsen | - | | | 52.5dBµV/m @ 11568.9MHz (-1.5dB) |
| | | #161 5805MHz | Larsen | - | | | 53.8dBµV/m @ 11608.7MHz (-0.2dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: Larsen

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1, Radiated Spurious Emissions, 1-40GHz, Chain A

Date of Test: 11/8/2011 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

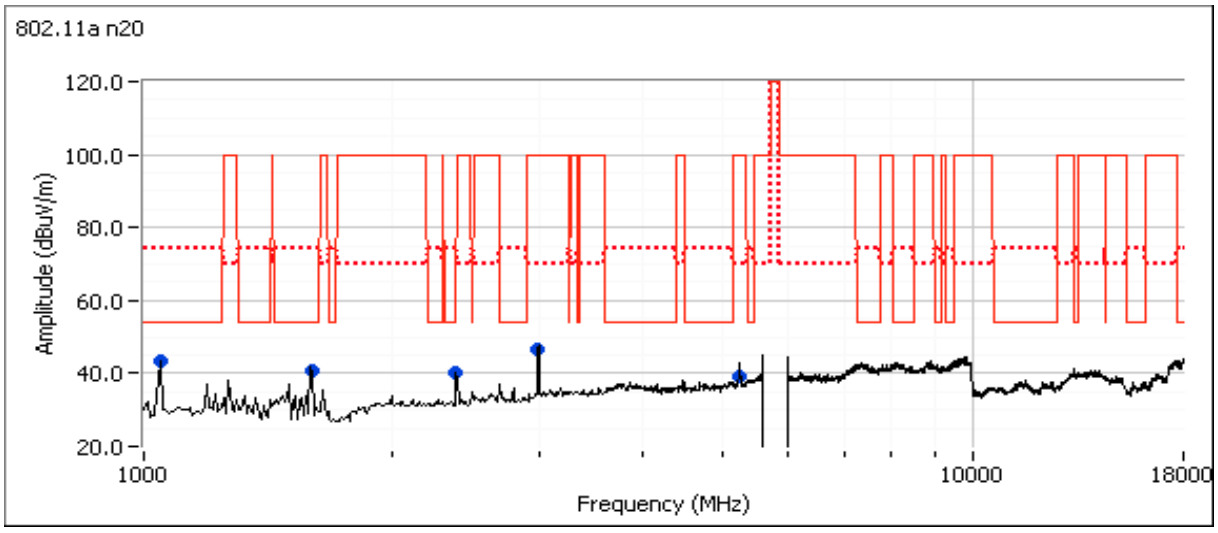
Run # 1a, EUT on Channel #149, 5745MHz - 802.11n20, Chain A

WB40

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2392.460 | 46.5 | V | 54.0 | -7.5 | PK | 360 | 1.6 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 5233.360 | 45.5 | H | 54.0 | -8.5 | PK | 206 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 2987.850 | 43.7 | V | 54.0 | -10.3 | PK | 156 | 1.0 | RB 1 MHz;VB 3 MHz;Pk, note 3 |
| 1597.320 | 51.8 | V | 74.0 | -22.2 | PK | 146 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.210 | 29.9 | V | 54.0 | -24.1 | AVG | 146 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1049.960 | 27.3 | V | 54.0 | -26.7 | AVG | 242 | 1.9 | RB 1 MHz;VB 10 Hz;Pk |
| 1048.620 | 40.8 | V | 74.0 | -33.2 | PK | 242 | 1.9 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 3: | Emission in non-restricted band, the restricted band limit was used. Peak measurement vs average limit. |



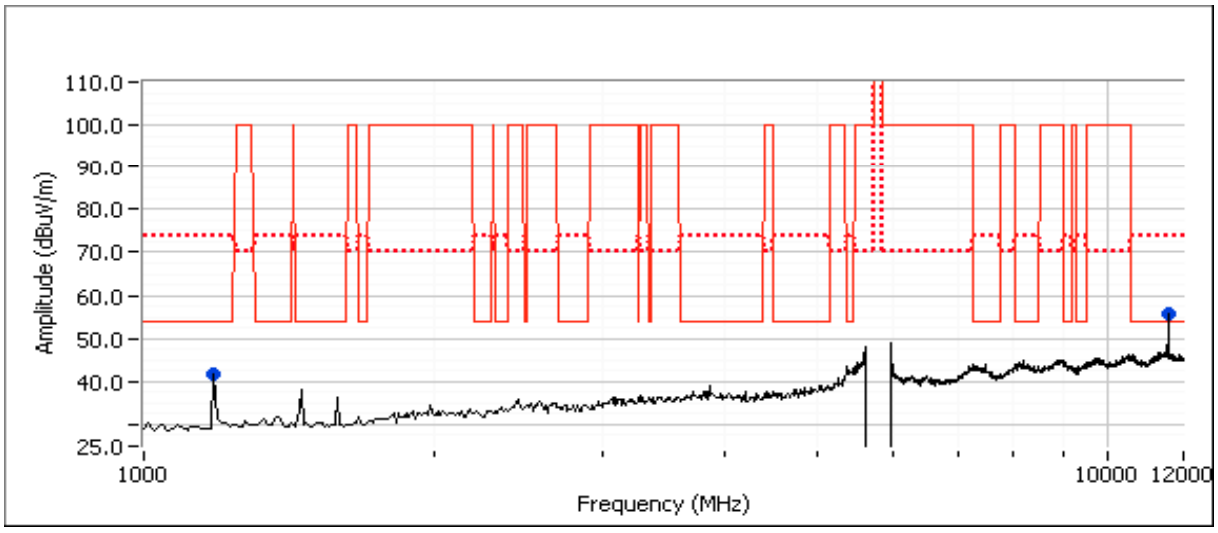
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1b: , EUT on Channel #157 5785MHz - 802.11n20, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 11568.910 | 52.5 | V | 54.0 | -1.5 | AVG | 341 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 11571.410 | 64.1 | V | 74.0 | -9.9 | PK | 341 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1189.050 | 40.6 | V | 54.0 | -13.4 | AVG | 199 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1187.560 | 44.1 | V | 74.0 | -29.9 | PK | 199 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 12 - 40GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1c: , EUT on Channel #161 5805MHz - 802.11n20, Chain A

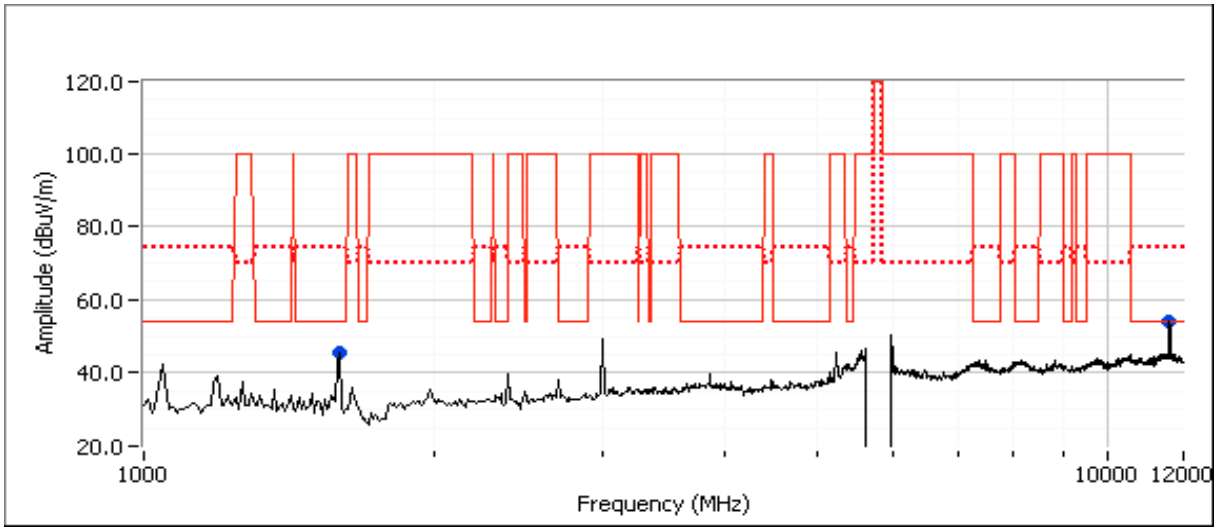
Date of Test: 11/14/2011 Test Location: FT Chamber#5

Test Engineer: Rafael Varelas Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 11608.700 | 53.8 | V | 54.0 | -0.2 | AVG | 353 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 11608.470 | 67.5 | V | 74.0 | -6.5 | PK | 353 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.320 | 33.8 | V | 54.0 | -20.2 | AVG | 163 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.050 | 56.3 | V | 74.0 | -17.7 | PK | 163 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions

## Summary of Results - Device Operating in the 5725 - 5850 MHz Band

New Module #2011-1259, Laptop #2011-2312

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run # 1 | 802.11n20 Chain A | #149 5745MHz | Ethertronics | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15.247 | 49.9dBµV/m @ 11490.4MHz (-4.1dB) |
| | | #157 5785MHz | Ethertronics | - | | | 44.5dBµV/m @ 1188.4MHz (-9.5dB) |
| | | #161 5805MHz | Ethertronics | - | | | 47.5dBµV/m @ 1453.2MHz (-6.5dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: Ethertronics

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1, Radiated Spurious Emissions, 1-40GHz, 802.11n20, Chain A

Run # 1a, EUT on Channel #149 5745MHz - 802.11n20, Chain A

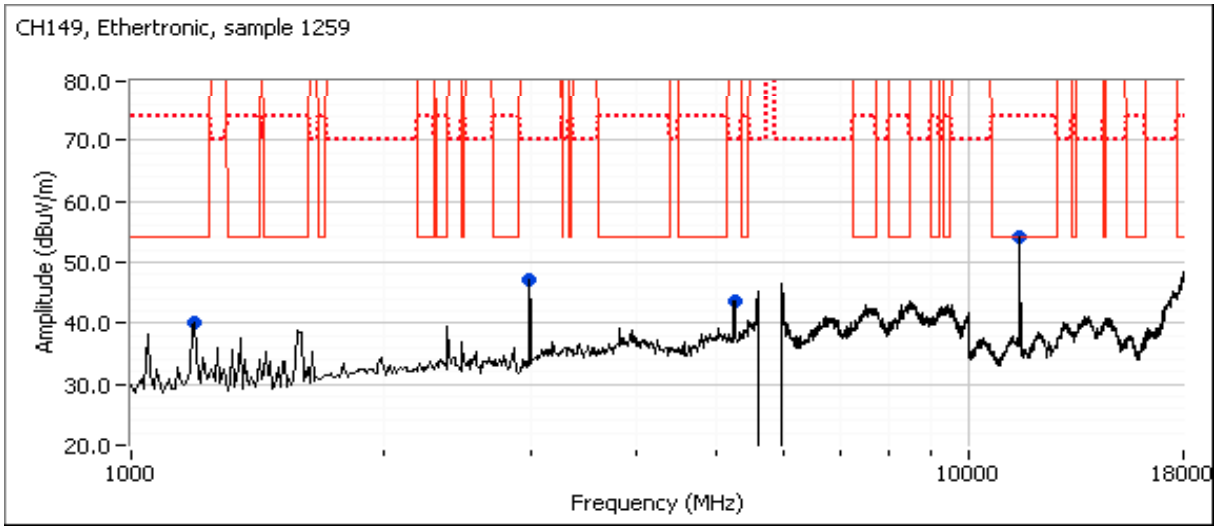
Date of Test: 11/4/2011 Test Location: FT4

Test Engineer: John Caizzi Config Change: none

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 11490.400 | 49.9 | H | 54.0 | -4.1 | AVG | 16 | 1.0 | |
| 11485.730 | 60.2 | H | 74.0 | -13.8 | PK | 16 | 1.0 | |
| 1197.900 | 31.9 | V | 54.0 | -22.1 | AVG | 264 | 1.0 | |
| 1197.100 | 45.9 | V | 74.0 | -28.1 | PK | 264 | 1.0 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Emission is not in restricted band, but the more stringent restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1b: , EUT on Channel #157 5785MHz - 802.11n20, Chain A

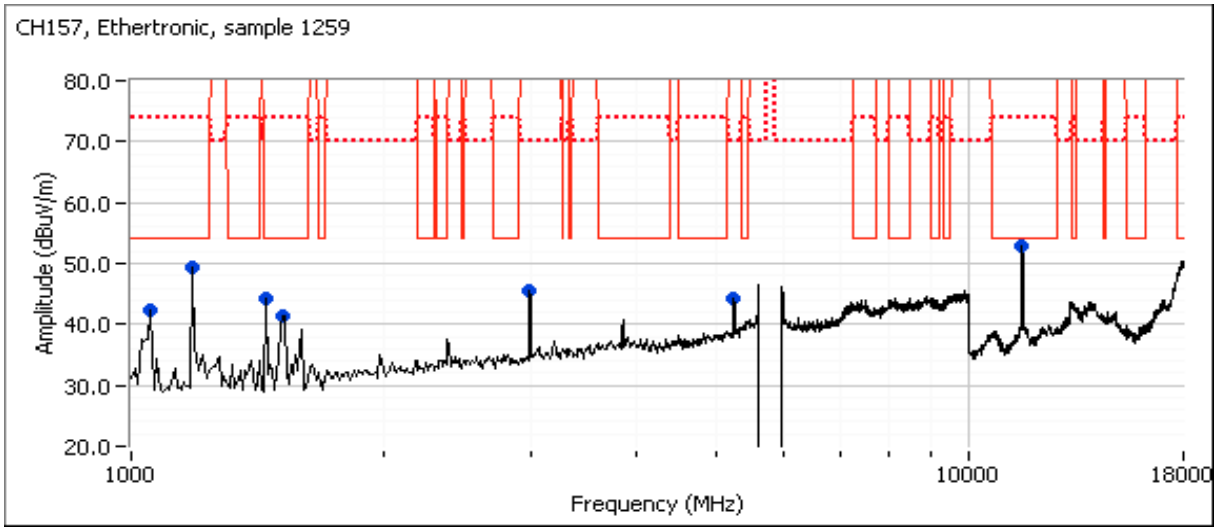
Date of Test: 11/7/2011 Test Location: FT5

Test Engineer: Jack Liu Config Change: non

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1188.400 | 44.5 | H | 54.0 | -9.5 | AVG | 207 | 1.3 | |
| 1188.400 | 35.4 | H | 74.0 | -38.6 | PK | 207 | 1.3 | |
| 1453.170 | 43.0 | H | 54.0 | -11.0 | AVG | 24 | 1.6 | |
| 1453.570 | 46.0 | H | 74.0 | -28.0 | PK | 24 | 1.6 | |
| 11569.800 | 38.9 | V | 54.0 | -15.1 | AVG | 257 | 1.6 | |
| 11571.470 | 51.5 | V | 74.0 | -22.5 | PK | 257 | 1.6 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Scans made between 18 - 40GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no signifcant emissions in this frequency range |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run # 1c: , EUT on Channel #161 5805MHz - 802.11n20, Chain A

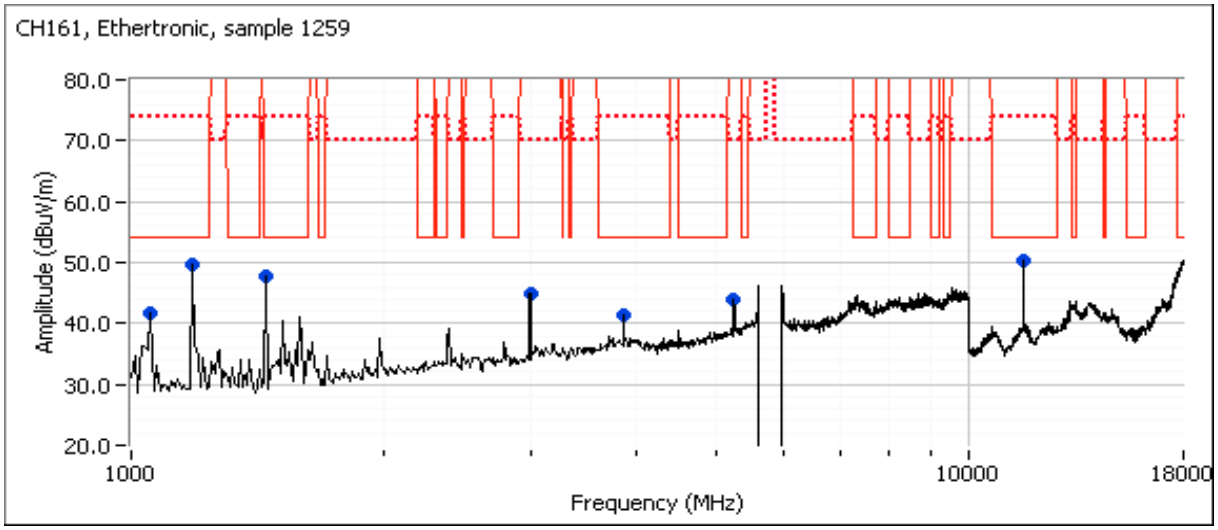
Date of Test: 11/7/2011 Test Location: FT5

Test Engineer: Jack Liu Config Change: non

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | 15.209/15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1453.240 | 47.5 | H | 54.0 | -6.5 | AVG | 29 | 1.0 | |
| 1189.460 | 45.2 | H | 54.0 | -8.8 | AVG | 221 | 1.9 | |
| 11607.730 | 36.6 | V | 54.0 | -17.4 | AVG | 254 | 1.2 | |
| 11608.600 | 48.6 | V | 74.0 | -25.4 | PK | 254 | 1.2 | |
| 1455.900 | 44.9 | H | 74.0 | -29.1 | PK | 29 | 1.0 | |
| 1199.800 | 39.3 | H | 74.0 | -34.7 | PK | 221 | 1.9 | |

| | |
|---|---|
| Note 1: | For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -30dBc for peak measurements in a measurement bandwidth of 100kHz. |
| Note 2: | Emission is not in restricted band, but the more stringent restricted band limit was used. |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS-GEN Radiated Spurious Emissions

## Summary of Results - Device Operating in the 5725 - 5850 MHz Band

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Receiver Spurious Emissions | | | | | | | |
| Run # 3 | Receive Chain A | #157, Chain A | Ethertronics | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 48.0dBµV/m @ 1585.1MHz (-6.0dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: Ethertronics

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

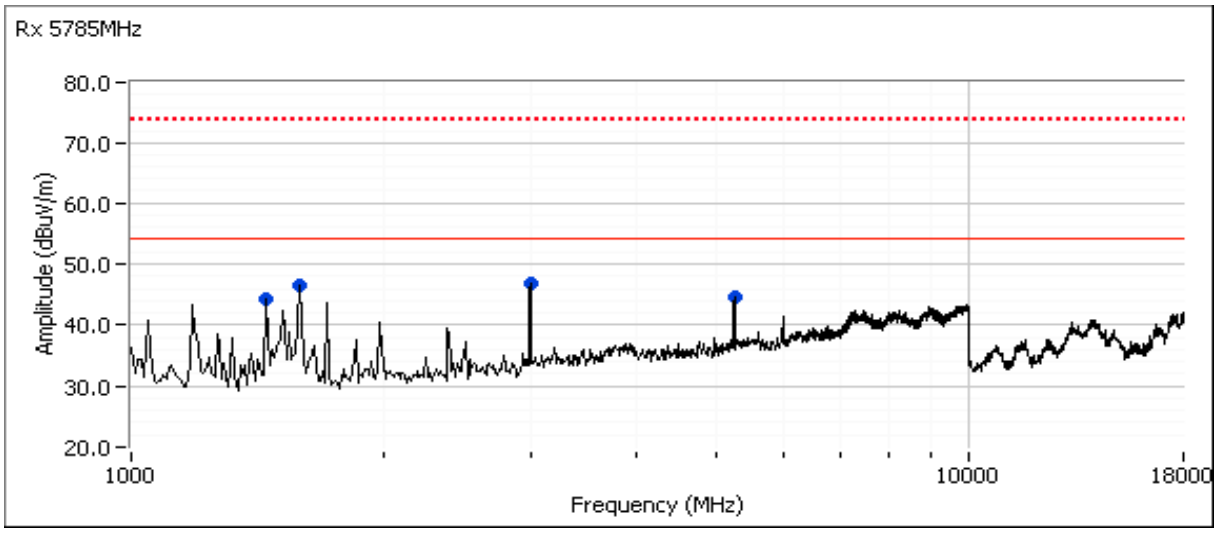
Run # 3, Radiated Spurious Emissions, 1-18GHz, Receive, Chain A

Date of Test: 8/18/2011 Test Location: FT Chamber#7

Test Engineer: Joseph Cadigal Config Change: none

Run # 3a, EUT on Channel #157, 5785MHz - Receive, Chain A

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1585.080 | 48.0 | H | 54.0 | -6.0 | AVG | 289 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.680 | 45.6 | V | 54.0 | -8.4 | AVG | 170 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1452.780 | 43.5 | H | 54.0 | -10.5 | AVG | 289 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5242.150 | 33.5 | V | 54.0 | -20.5 | AVG | 243 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1586.060 | 52.3 | H | 74.0 | -21.7 | PK | 289 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.810 | 49.7 | V | 74.0 | -24.3 | PK | 170 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1454.240 | 49.2 | H | 74.0 | -24.8 | PK | 289 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5241.840 | 47.1 | V | 74.0 | -26.9 | PK | 243 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS-GEN Radiated Spurious Emissions

## Summary of Results - Device Operating in the 5725 - 5850 MHz Band

SCU: v3.03.01

| Run # | Mode | Channel | Antenna | Measured Power | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Receiver Spurious Emissions | | | | | | | |
| Run # 3 | Receive Chain A | #157, Chain A | H&S | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 45.1dBµV/m @ 2994.7MHz (-8.9dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: H&S

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

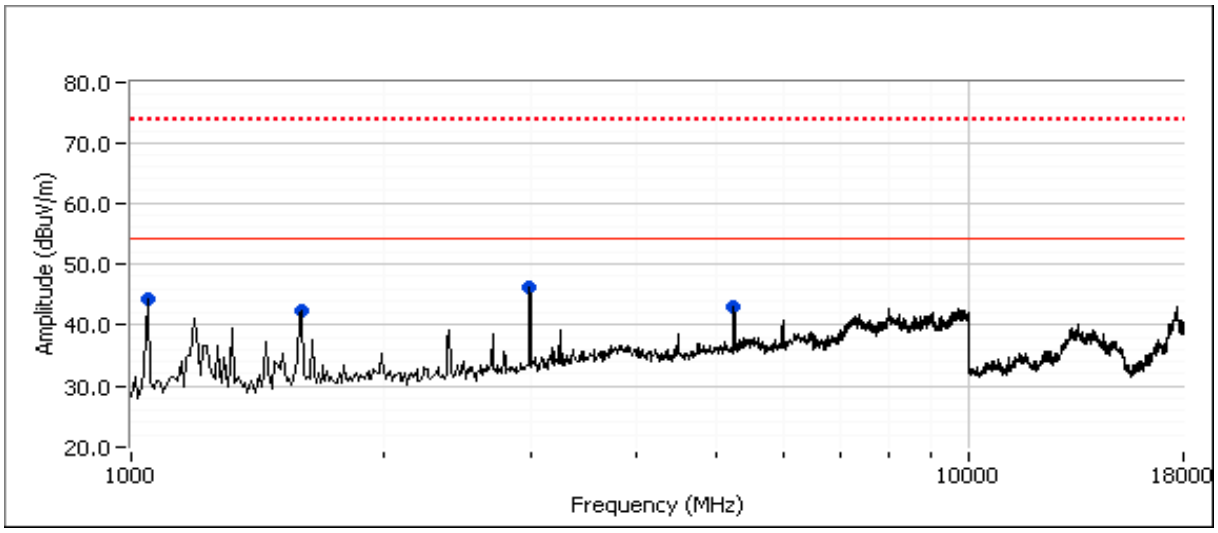
Run # 3, Radiated Spurious Emissions, 1-18GHz, Receive, Chain A

Date of Test: 8/2/2011 Test Location: FT Chamber#7

Test Engineer: Joseph Cadigal Config Change: none

Run # 3a, EUT on Channel #157, 5785MHz - Receive, Chain A

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.690 | 45.1 | V | 54.0 | -8.9 | AVG | 190 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 1599.570 | 59.1 | V | 74.0 | -14.9 | PK | 173 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.360 | 36.7 | V | 54.0 | -17.3 | AVG | 173 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5240.460 | 36.7 | V | 54.0 | -17.3 | AVG | 180 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.780 | 51.1 | V | 74.0 | -22.9 | PK | 190 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |
| 5240.800 | 50.5 | V | 74.0 | -23.5 | PK | 180 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1048.970 | 29.9 | V | 54.0 | -24.1 | AVG | 226 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1048.220 | 47.3 | V | 74.0 | -26.7 | PK | 226 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS-GEN Radiated Spurious Emissions

## Summary of Results - Device Operating in the 5725 - 5850 MHz Band

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Receiver Spurious Emissions | | | | | | | |
| Run # 3 | Receive Chain A | #157, Chain A | Larsen | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 45.8dBµV/m @ 2994.7MHz (-8.2dB) |

## Test Specific Details

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

## General Test Configuration

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

## Ambient Conditions:

Temperature: 20-25 °C
Rel. Humidity: 40-50 %

## 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.

## Notes:

Preliminary testing showed no emissions below 1 GHz related to the radio
Antenna: Larsen

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

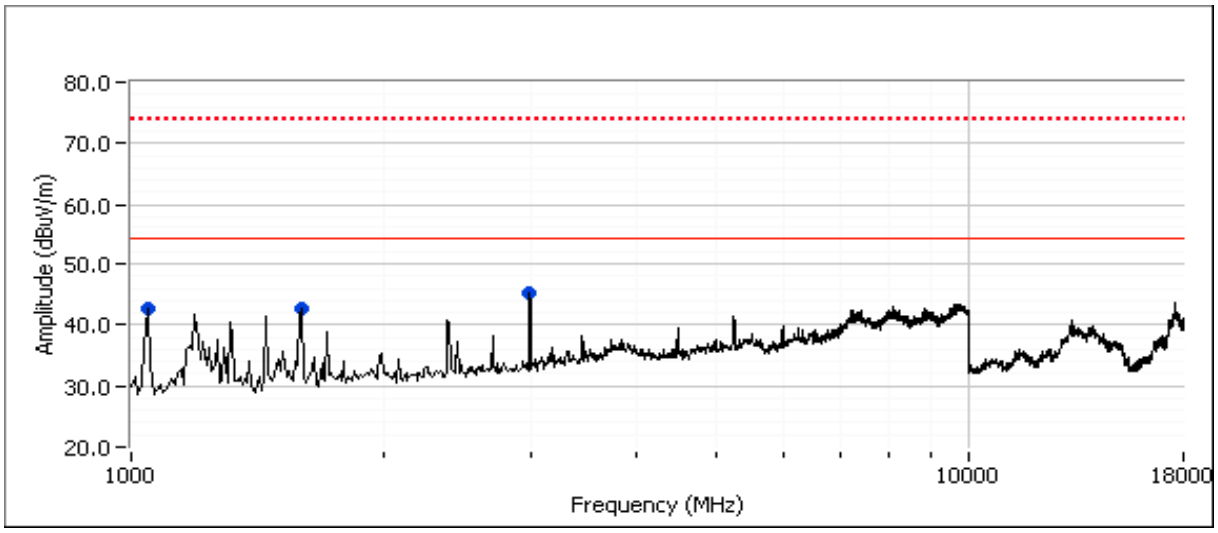
Run # 3, Radiated Spurious Emissions, 1-18GHz, Receive, Chain A

Date of Test: 8/2/2011 Test Location: FT Chamber #7

Test Engineer: Rafael Varelas Config Change: None

Run # 3a, EUT on Channel #157, 5785MHz - Receive, Chain A

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.690 | 45.8 | H | 54.0 | -8.2 | AVG | 261 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.610 | 49.9 | H | 74.0 | -24.1 | PK | 261 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1596.760 | 37.4 | V | 54.0 | -16.6 | AVG | 160 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 1595.230 | 58.7 | V | 74.0 | -15.3 | PK | 160 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 1047.990 | 32.2 | V | 54.0 | -21.8 | AVG | 175 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 1047.850 | 51.2 | V | 74.0 | -22.8 | PK | 175 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

## Power, PSD, Bandwidth and Spurious Emissions (802.11b Mode)

### 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: 8/23/2011
Test Engineer: John Caizzi / Rafael Varelas
Test Location: FT4 and Lab #4

Config. Used: 2
Config Change: no antennas
EUT Voltage: 3.3 VDC

### General Test Configuration

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

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

### Ambient Conditions:

Temperature: 23 °C
Rel. Humidity: 37 %

### Summary of Results

| Run # | Pwr setting | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|---|
| 1 | - | Output Power | 15.247(b) | Pass | 15.2 dBm |
| 2 | - | Power spectral Density (PSD) | 15.247(d) | Pass | -5.3 dBm/3kHz |
| 3 | - | Minimum 6dB Bandwidth | 15.247(a) | Pass | 9.0 MHz |
| 3 | - | 99% Bandwidth | RSS GEN | - | 12.8 MHz |
| 4 | - | Spurious emissions | 15.247(b) | Pass | All emissions < -30 dBc |

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

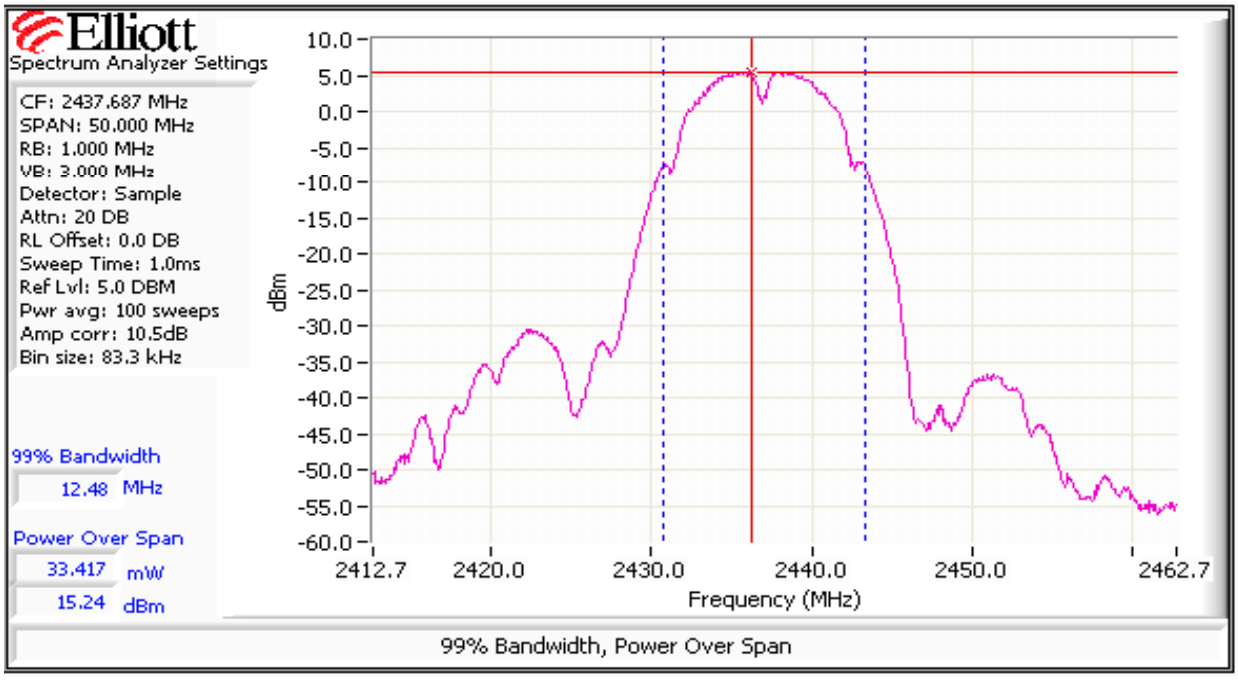
No deviations were made from the requirements of the standard.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/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 |
|---|---|---|---|---|---|---|---|---|---|
| - | 2412 | 14.5 | 27.9 | 3.0 | Pass | 17.5 | 0.056 | 14.5 | 28.2 |
| - | 2437 | 15.2 | 33.1 | 3.0 | Pass | 18.2 | 0.066 | 15.4 | 34.7 |
| - | 2462 | 14.4 | 27.5 | 3.0 | Pass | 17.4 | 0.055 | 15.9 | 38.9 |

| | |
|---|---|
| Note 1: | Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the PSA analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc. |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |
| Note 3: | Power measured with a peak power meter for reference purposes only @ 100%. |

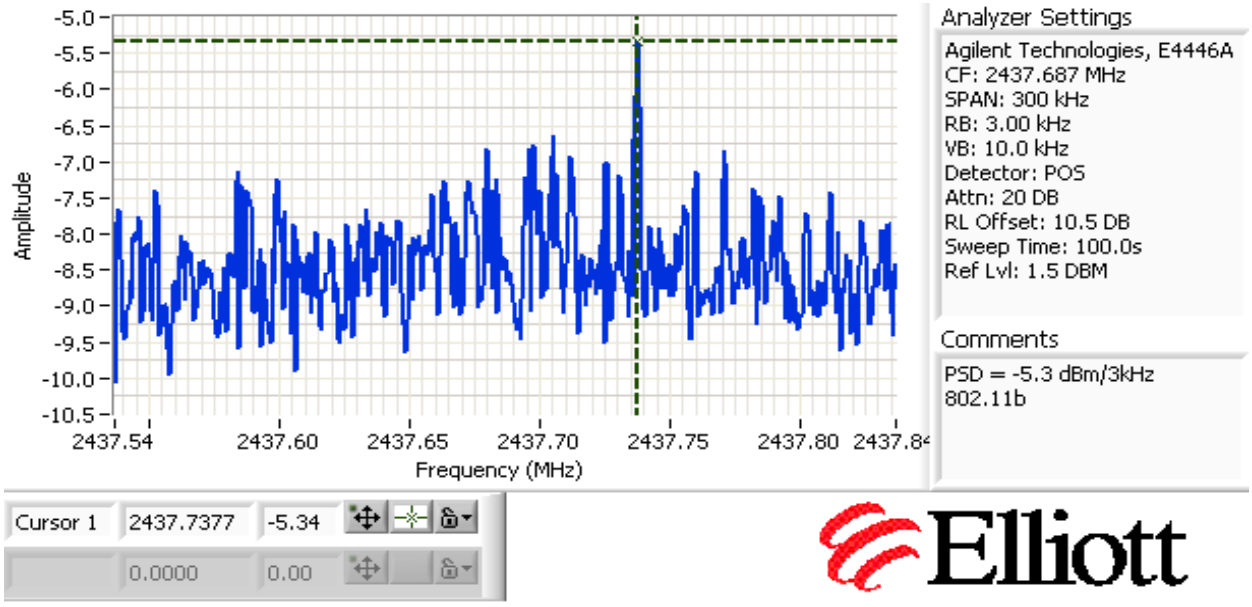


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #2: Power spectral Density

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) Note 1 | Limit dBm/3kHz | Result |
|---|---|---|---|---|
| - | 2412.697 | -7.5 | 8.0 | Pass |
| - | 2437.7377 | -5.3 | 8.0 | Pass |
| - | 2461.1764 | -6.2 | 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. |

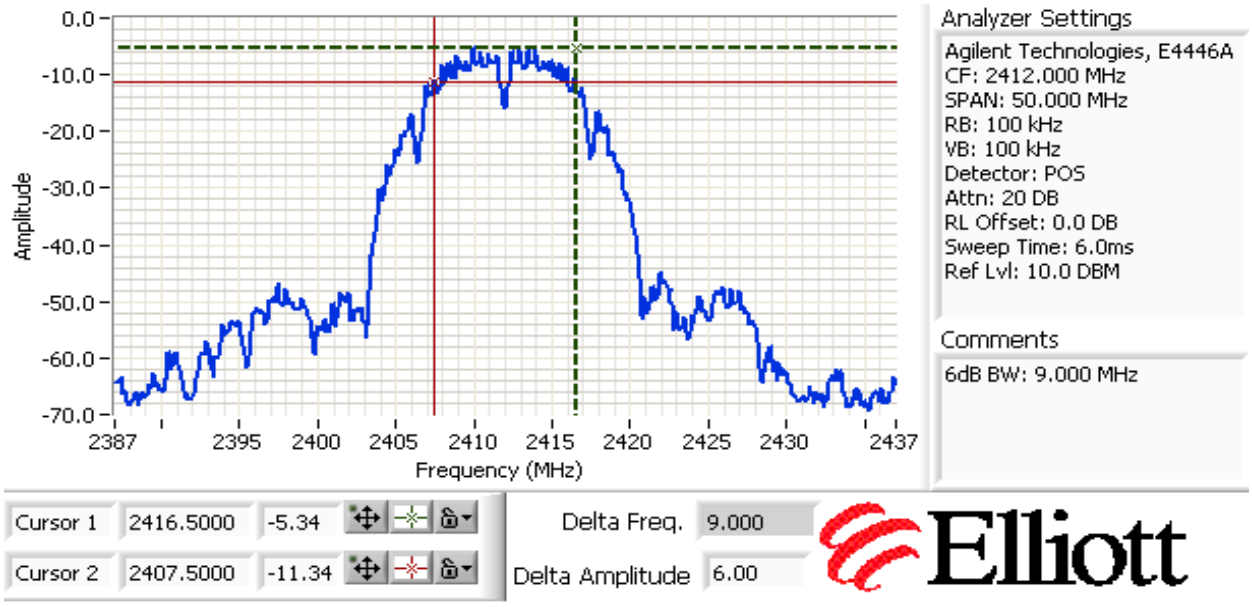


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #3: Signal Bandwidth

| Power Setting | Frequency (MHz) | Resolution Bandwidth | Bandwidth (MHz) 6dB | 99% |
|---|---|---|---|---|
| - | 2412 | 100kHz | 9.0 | 12.8 |
| - | 2437 | 100kHz | 9.1 | 12.5 |
| - | 2462 | 100kHz | 9.1 | 12.7 |

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

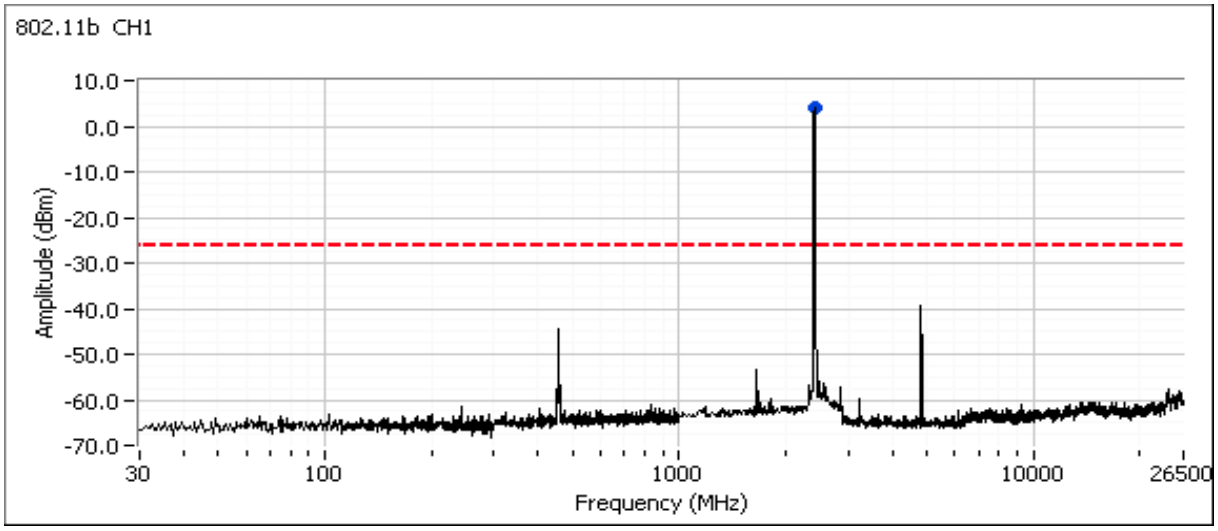



Run #4: Out of Band Spurious Emissions

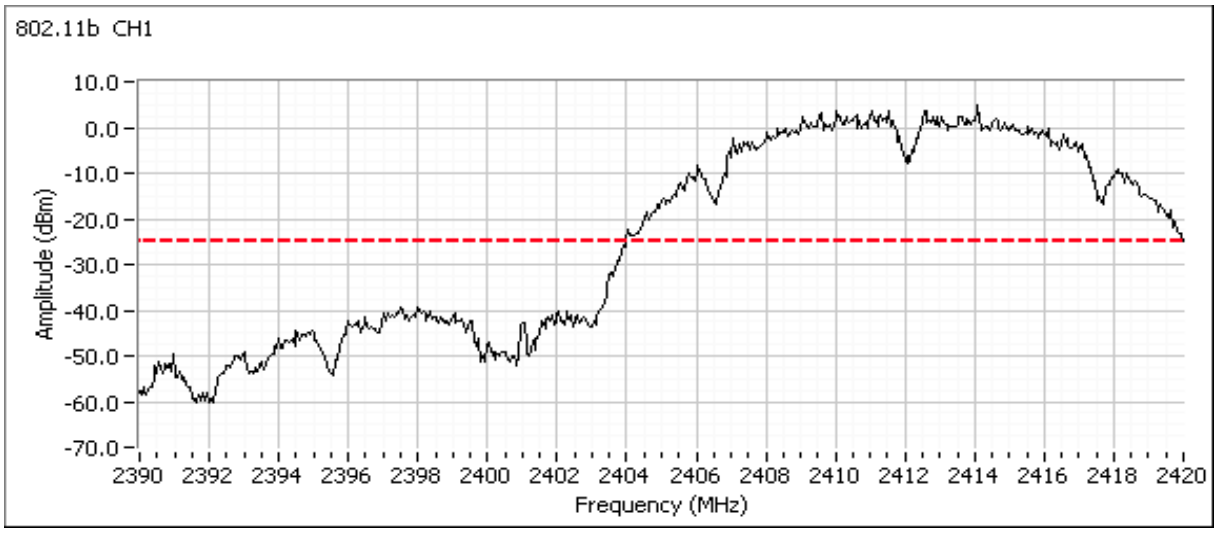
| Frequency (MHz) | Limit | Result |
|---|---|---|
| 2412 | -30dBc | Pass |
| 2437 | -30dBc | Pass |
| 2462 | -30dBc | Pass |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plots for low channel, power setting = default

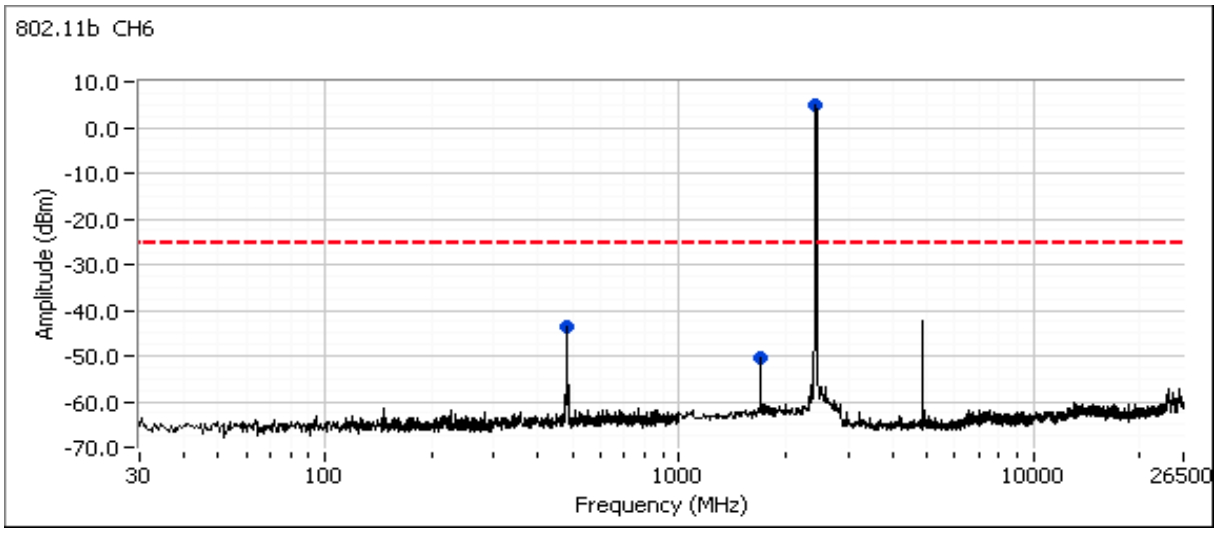



Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

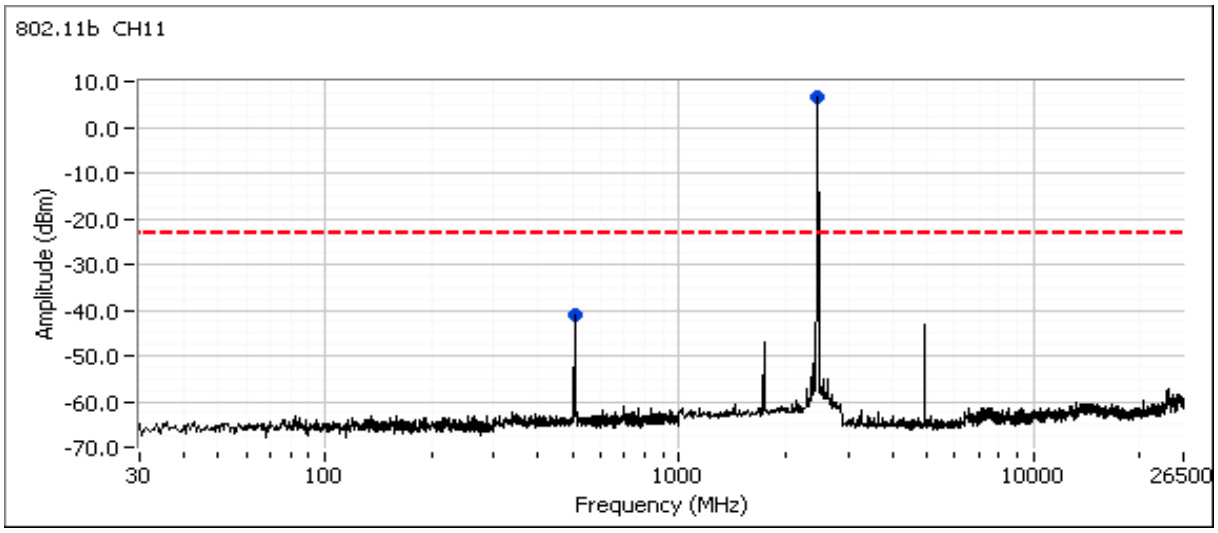


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plots for center channel, power setting = default




Plots for high channel, power setting = default



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

## Power, PSD, Bandwidth and Spurious Emissions (802.11g Mode)

### 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: 8/23/2011
Test Engineer: John Caizzi / Rafael Varelas
Test Location: FT4 and Lab #4

Config. Used: 2
Config Change: no antennas
EUT Voltage: 3.3 VDC

### General Test Configuration

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

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

### Ambient Conditions:

Temperature: 23 °C
Rel. Humidity: 37 %

### Summary of Results

| Run # | Pwr setting | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|---|
| 1 | - | Output Power | 15.247(b) | Pass | 12.6 dBm |
| 2 | - | Power spectral Density (PSD) | 15.247(d) | Pass | -11.8 dBm/3kHz |
| 3 | - | Minimum 6dB Bandwidth | 15.247(a) | Pass | 15.1 MHz |
| 3 | - | 99% Bandwidth | RSS GEN | - | 16.7 MHz |
| 4 | - | Spurious emissions | 15.247(b) | Pass | All emissions < -30 dBc |

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

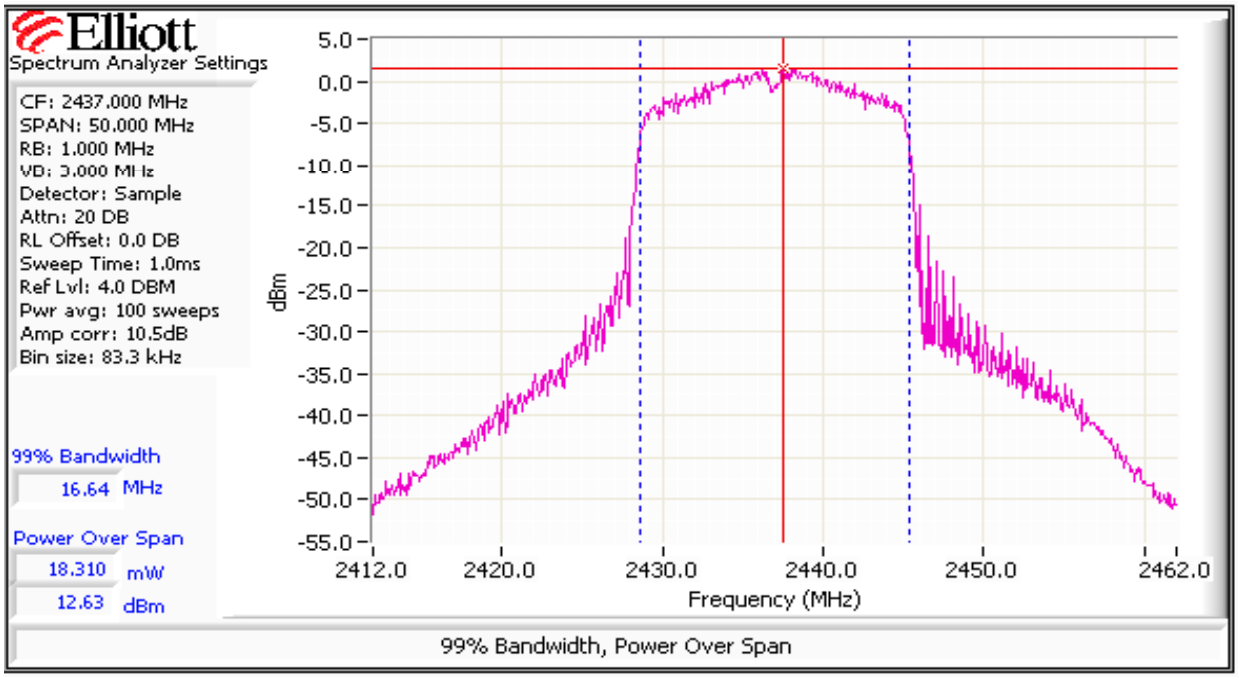
No deviations were made from the requirements of the standard.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/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 |
|---|---|---|---|---|---|---|---|---|---|
| - | 2412 | 11.9 | 15.5 | 3.0 | Pass | 14.9 | 0.031 | 17.9 | 61.7 |
| - | 2437 | 12.6 | 18.2 | 3.0 | Pass | 15.6 | 0.036 | 18.1 | 64.6 |
| - | 2462 | 10.4 | 11.0 | 3.0 | Pass | 13.4 | 0.022 | 19.5 | 89.1 |

| | |
|---|---|
| Note 1: | Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the PSA analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc. |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |
| Note 3: | Power measured with a peak power meter for reference purposes only @ 100%. |

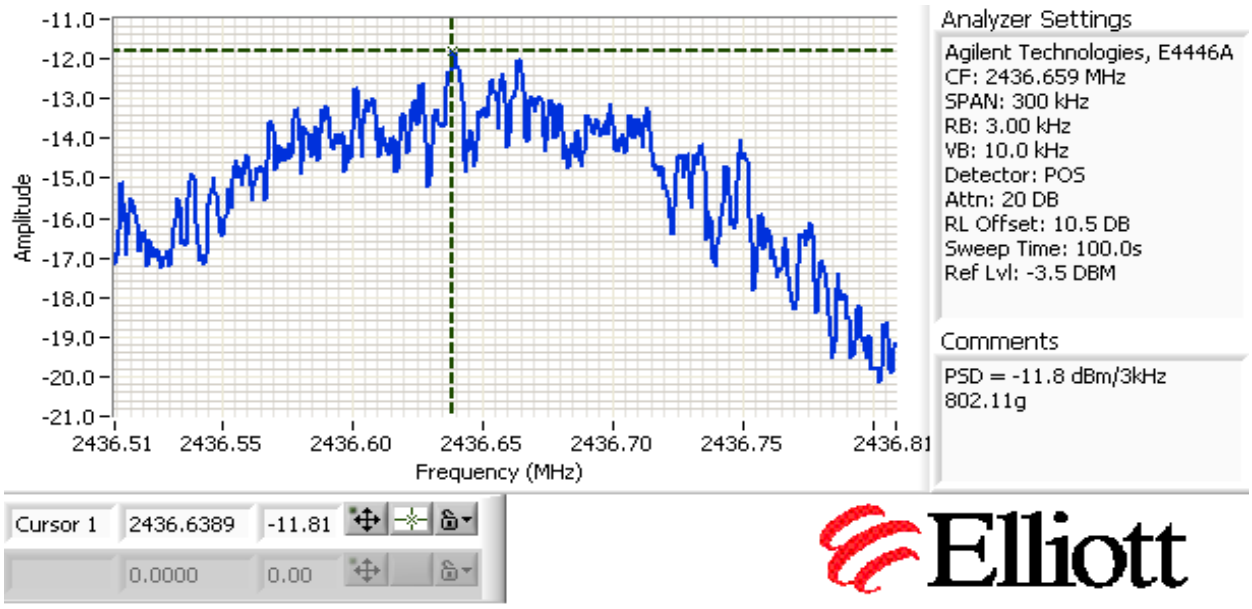


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #2: Power spectral Density

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) Note 1 | Limit dBm/3kHz | Result |
|---|---|---|---|---|
| - | 2414.4868 | -13.1 | 8.0 | Pass |
| - | 2436.6389 | -11.8 | 8.0 | Pass |
| - | 2459.4993 | -14.1 | 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. |

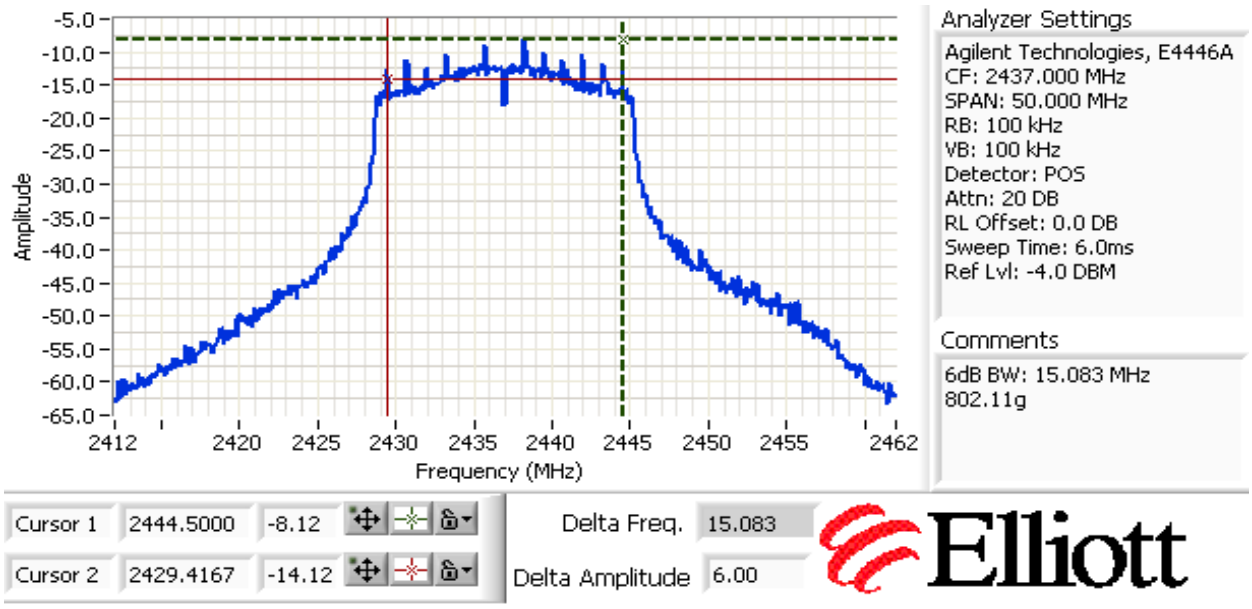


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #3: Signal Bandwidth

| Power Setting | Frequency (MHz) | Resolution Bandwidth | Bandwidth (MHz) 6dB | 99% |
|---|---|---|---|---|
| - | 2412 | 100kHz | 15.2 | 16.6 |
| - | 2437 | 100kHz | 15.1 | 16.6 |
| - | 2462 | 100kHz | 15.1 | 16.7 |

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

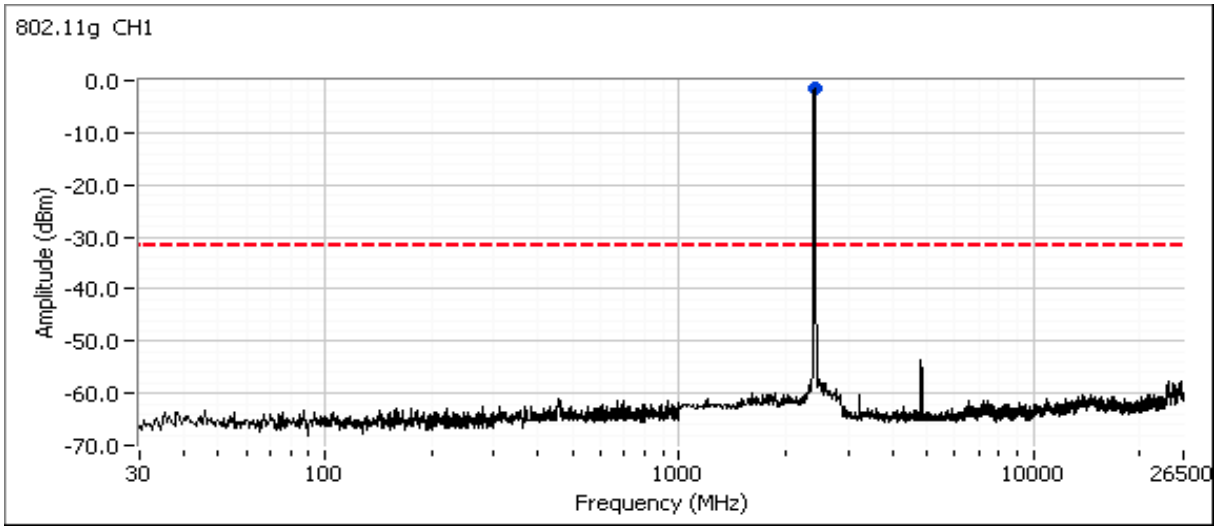



Run #4: Out of Band Spurious Emissions

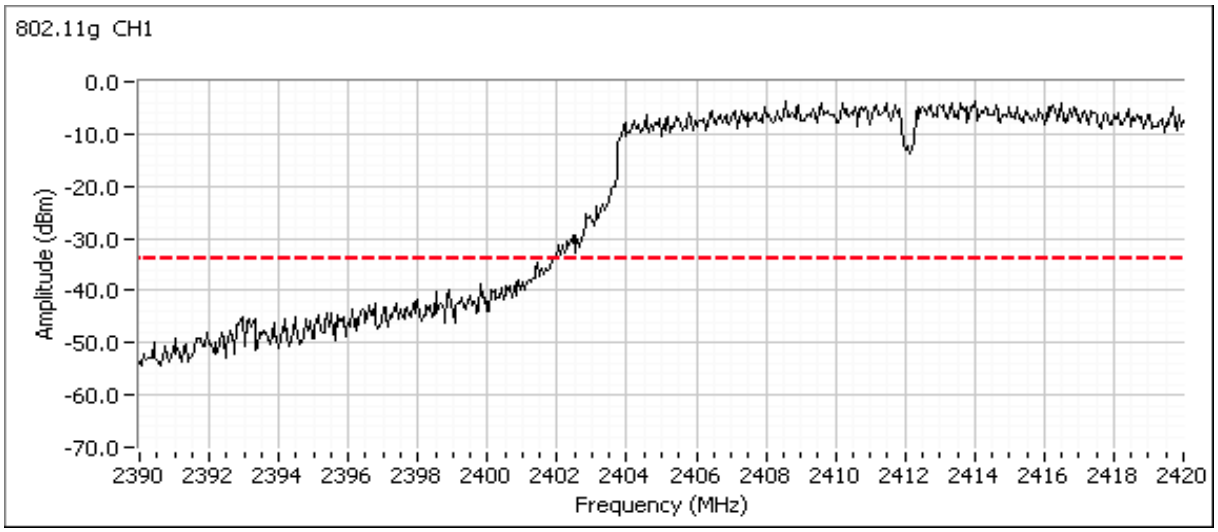
| Frequency (MHz) | Limit | Result |
|---|---|---|
| 2412 | -30dBc | Pass |
| 2437 | -30dBc | Pass |
| 2462 | -30dBc | Pass |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plots for low channel, power setting = default

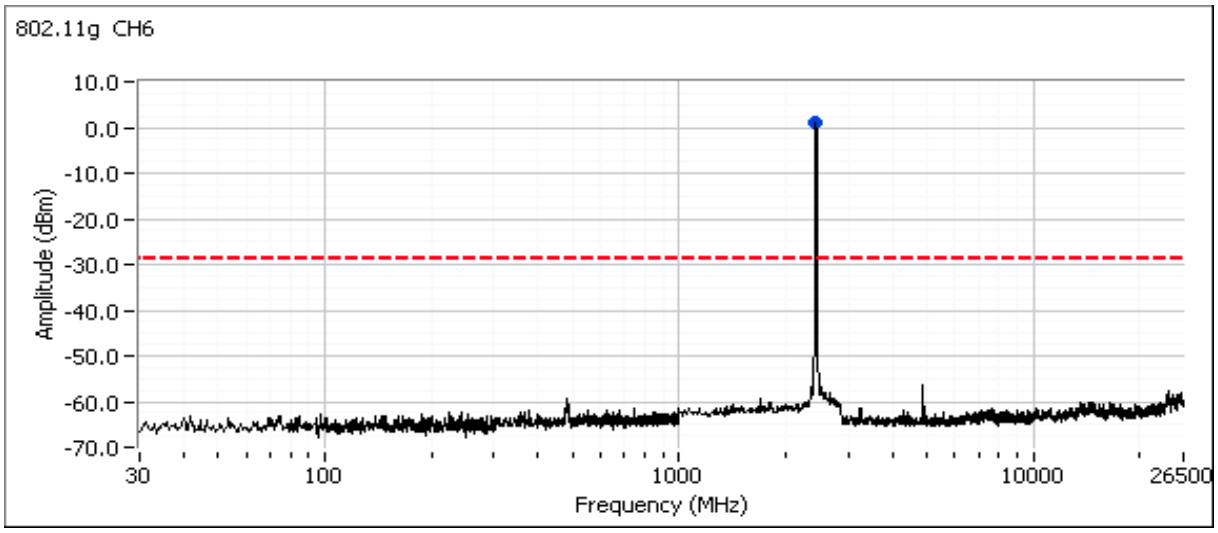



Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

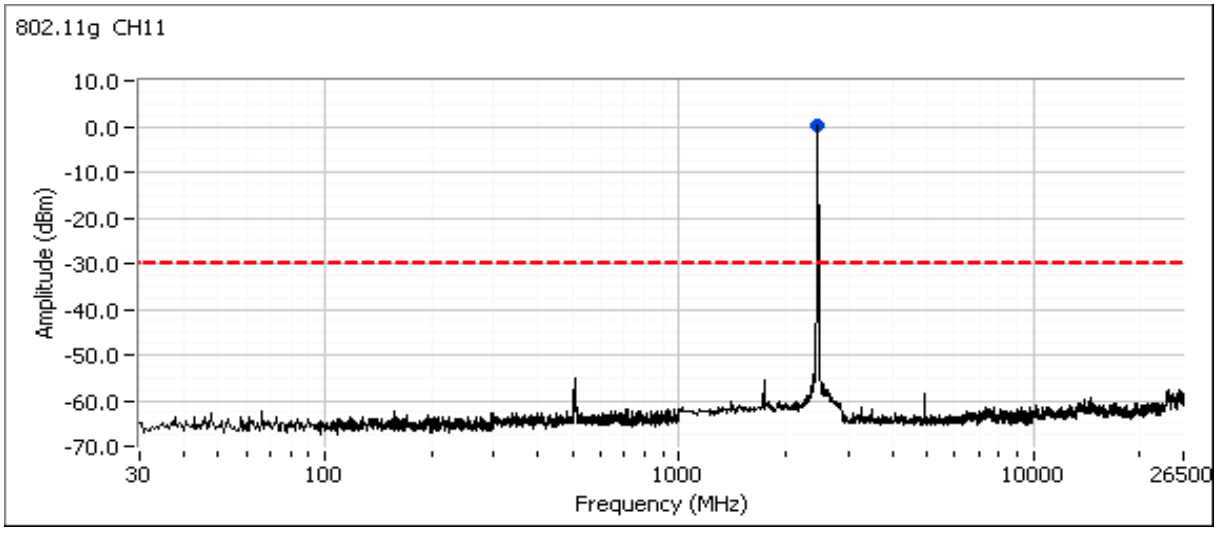


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plots for center channel, power setting = default




Plots for high channel, power setting = default



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

## Power, PSD, Bandwidth and Spurious Emissions (802.11n20 Mode)

### 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: 8/23/2011
Test Engineer: John Caizzi / Rafael Varelas
Test Location: FT4 and Lab #4

Config. Used: 2
Config Change: no antennas
EUT Voltage: 3.3 VDC

### General Test Configuration

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

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

### Ambient Conditions:

Temperature: 23 °C
Rel. Humidity: 37 %

### Summary of Results

| Run # | Pwr setting | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|---|
| 1 | - | Output Power | 15.247(b) | Pass | 9.5 dBm |
| 2 | - | Power spectral Density (PSD) | 15.247(d) | Pass | -14.4 dBm/3kHz |
| 3 | - | Minimum 6dB Bandwidth | 15.247(a) | Pass | 15.1 MHz |
| 3 | - | 99% Bandwidth | RSS GEN | - | 17.9 MHz |
| 4 | - | Spurious emissions | 15.247(b) | Pass | All emissions < -30 dBc |

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

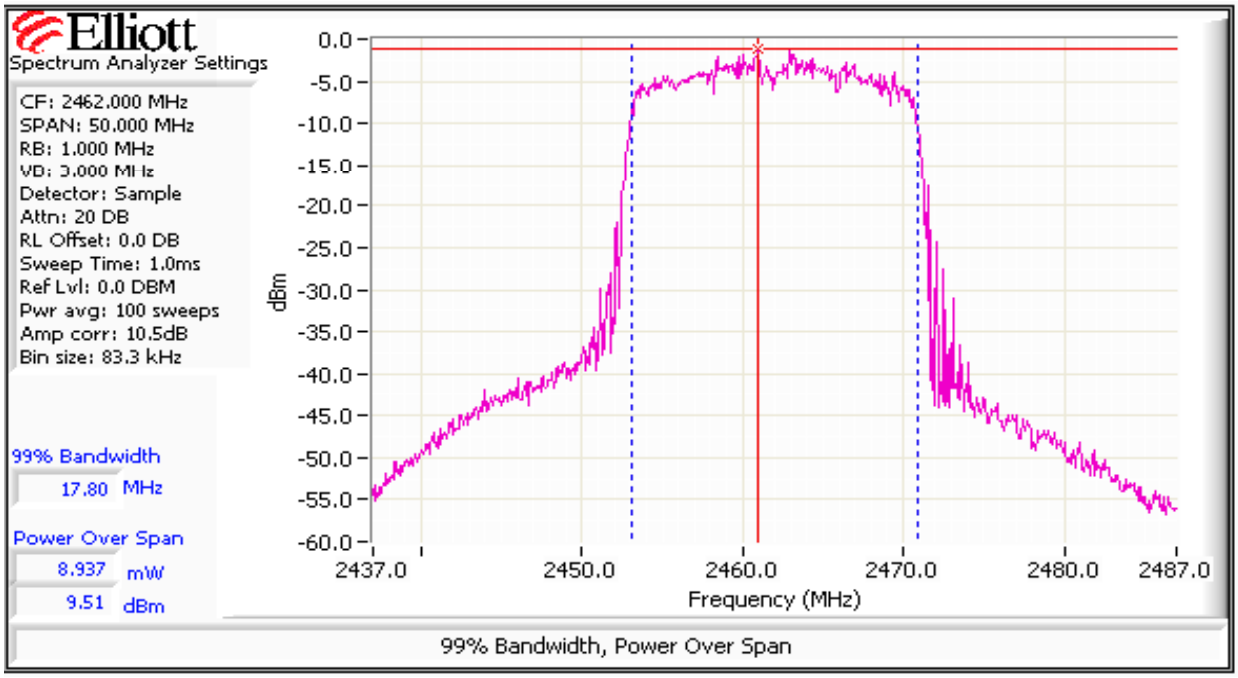
No deviations were made from the requirements of the standard.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/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 |
|---|---|---|---|---|---|---|---|---|---|
| - | 2412 | 7.9 | 6.2 | 3.0 | Pass | 10.9 | 0.012 | 15.0 | 31.6 |
| - | 2437 | 8.9 | 7.8 | 3.0 | Pass | 11.9 | 0.015 | 15.6 | 36.3 |
| - | 2462 | 9.5 | 8.9 | 3.0 | Pass | 12.5 | 0.018 | 17.4 | 55.0 |

| | |
|---|---|
| Note 1: | Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the PSA analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc. |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |
| Note 3: | Power measured with a peak power meter for reference purposes only @ 100%. |

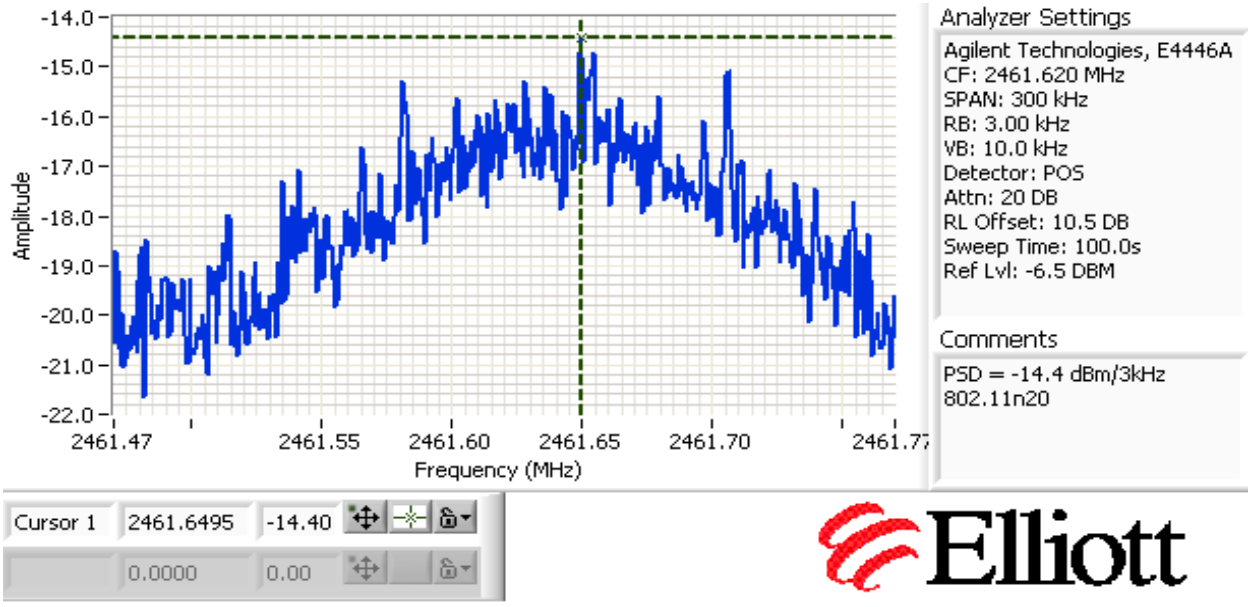


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #2: Power spectral Density

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) Note 1 | Limit dBm/3kHz | Result |
|---|---|---|---|---|
| - | 2411.651 | -14.5 | 8.0 | Pass |
| - | 2436.6503 | -14.6 | 8.0 | Pass |
| - | 2461.6495 | -14.4 | 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. |

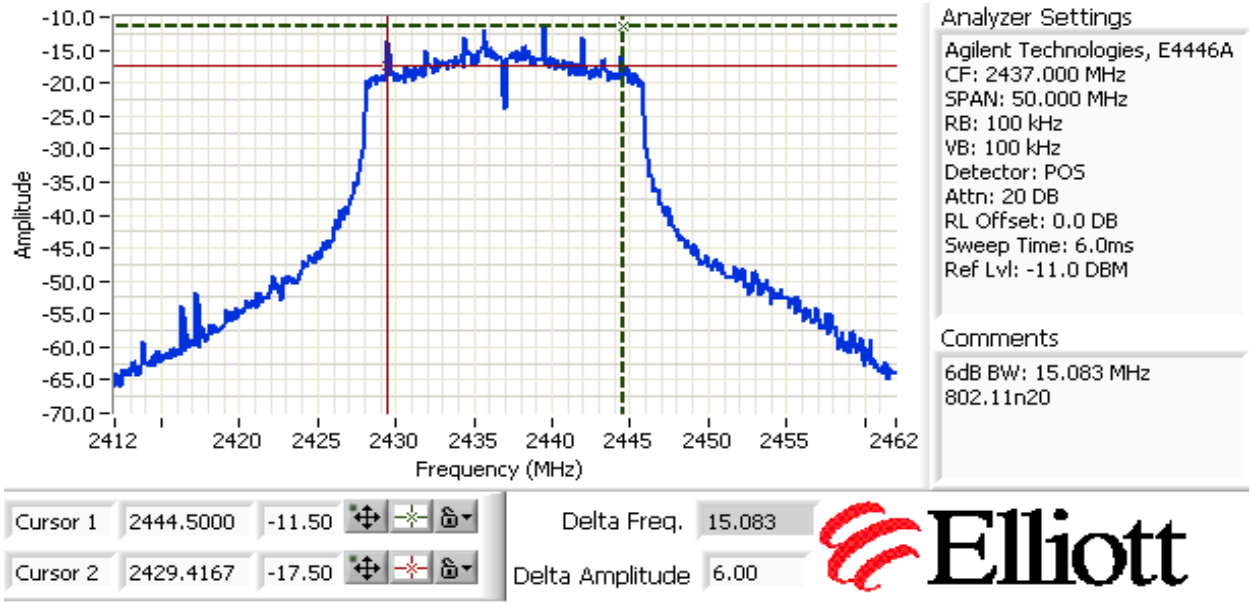


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #3: Signal Bandwidth

| Power Setting | Frequency (MHz) | Resolution Bandwidth | Bandwidth (MHz) 6dB | 99% |
|---|---|---|---|---|
| - | 2412 | 100kHz | 15.4 | 17.8 |
| - | 2437 | 100kHz | 15.1 | 17.9 |
| - | 2462 | 100kHz | 15.1 | 17.8 |

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

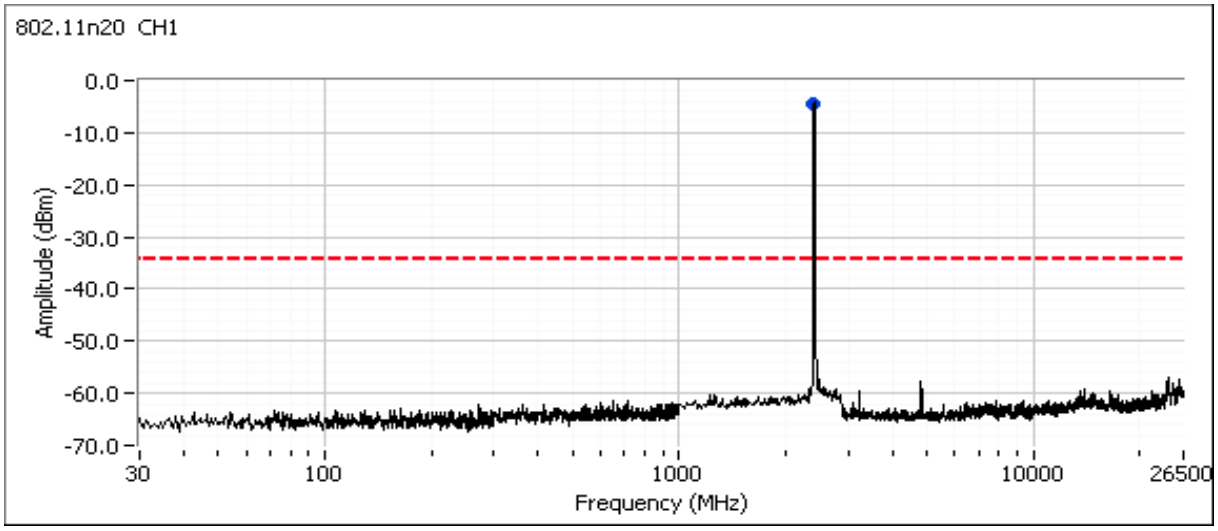



Run #4: Out of Band Spurious Emissions

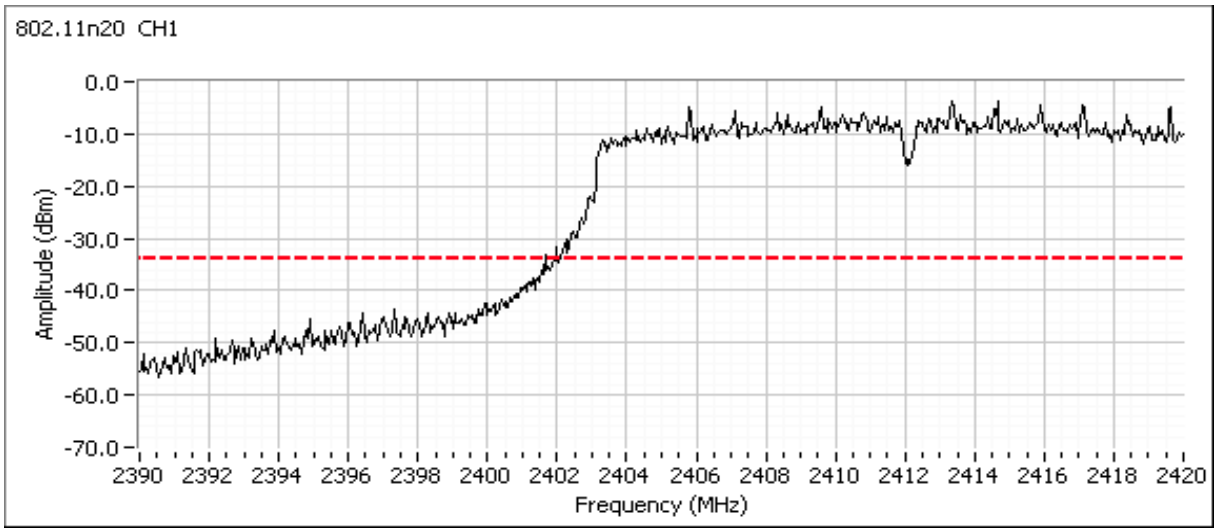
| Frequency (MHz) | Limit | Result |
|---|---|---|
| 2412 | -30dBc | Pass |
| 2437 | -30dBc | Pass |
| 2462 | -30dBc | Pass |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plots for low channel, power setting = default

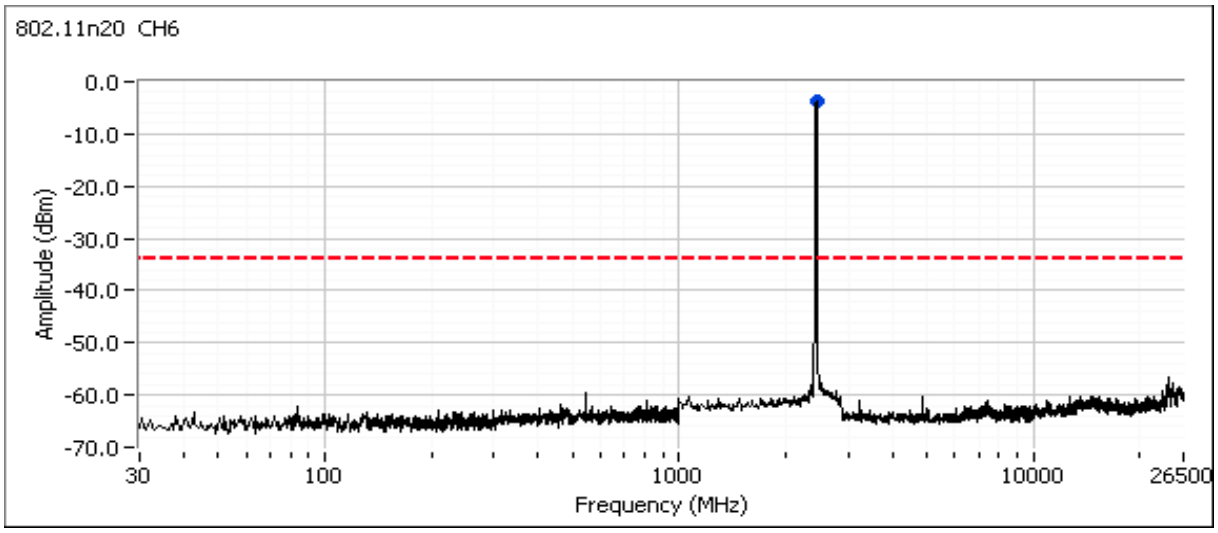



Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

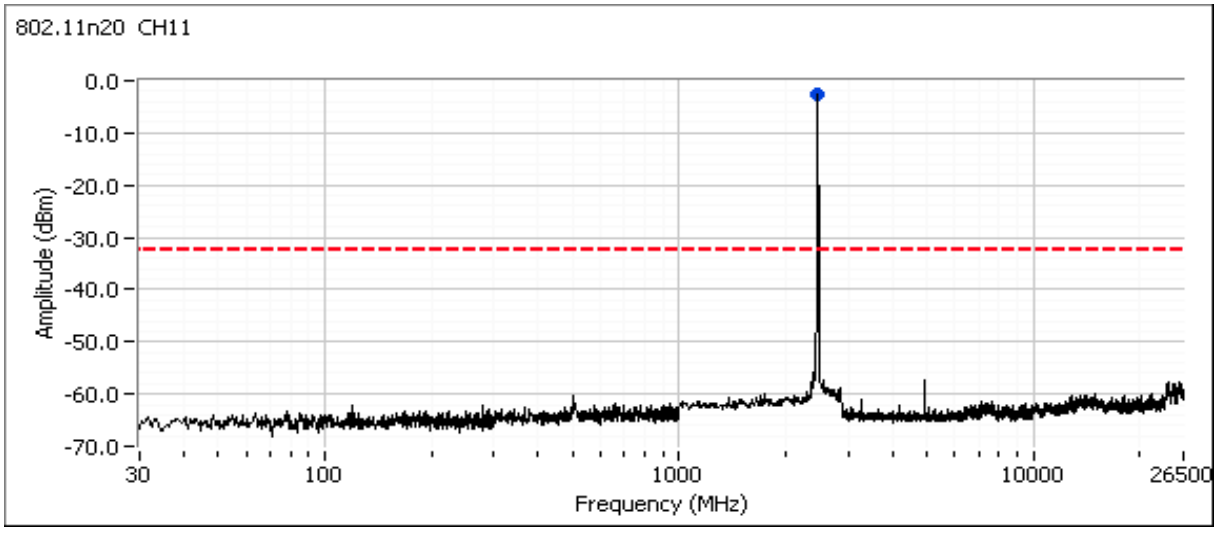


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plots for center channel, power setting = default




Plots for high channel, power setting = default



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

## Power, PSD, Bandwidth and Spurious Emissions (802.11a)

### Test Specific Details

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

Date of Test: 11/3/2011
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#4

Config. Used: 2
Config Change: none
EUT Voltage: 3.3Vdc

### General Test Configuration

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

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

### Ambient Conditions:

Temperature: 23 °C
Rel. Humidity: 37 %

### Summary of Results

| Run # | Pwr setting | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|---|
| 1 | default | Output Power | 15.247(b) | Pass | 7.9 dBm |
| 2 | default | Power spectral Density (PSD) | 15.247(d) | Pass | -11.8dBm/3kHz |
| 3 | default | Minimum 6dB Bandwidth | 15.247(a) | Pass | 15.0 MHz |
| 3 | default | 99% Bandwidth | RSS GEN | - | 16.9MHz |
| 4 | default | Spurious emissions | 15.247(b) | Pass | All emissions < -30 dBc |

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

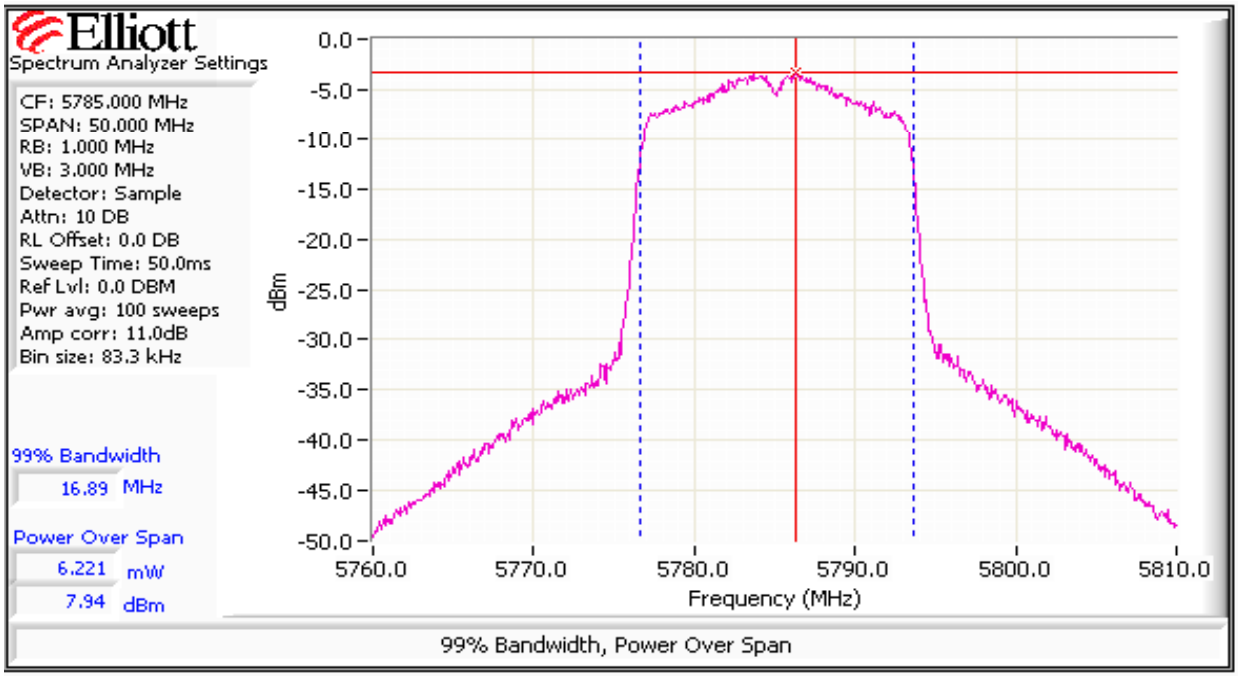
No deviations were made from the requirements of the standard.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/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 |
|---|---|---|---|---|---|---|---|---|---|
| - | 5745 | 7.8 | 6.0 | 6.5 | Pass | 14.3 | 0.027 | 15.5 | 35.5 |
| - | 5785 | 7.9 | 6.2 | 6.5 | Pass | 14.4 | 0.028 | 15.2 | 33.1 |
| - | 5805 | 7.8 | 6.0 | 6.5 | Pass | 14.3 | 0.027 | 15.0 | 31.6 |

| | |
|---|---|
| Note 1: | Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the PSA analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc. |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |
| Note 3: | Power measured with a peak power meter for reference purposes only. |

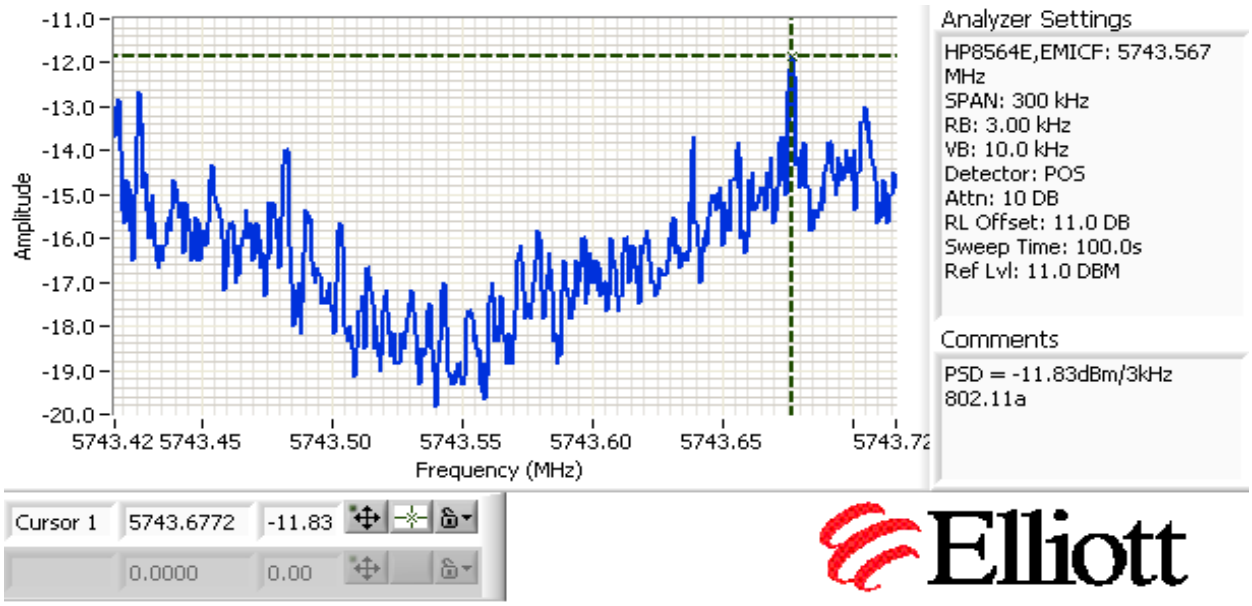


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #2: Power spectral Density

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) Note 1 | Limit dBm/3kHz | Result |
|---|---|---|---|---|
| - | 5745.149 | -11.8 | 8.0 | Pass |
| - | 5785.144 | -16.7 | 8.0 | Pass |
| - | 5803.0112 | -14.5 | 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. |

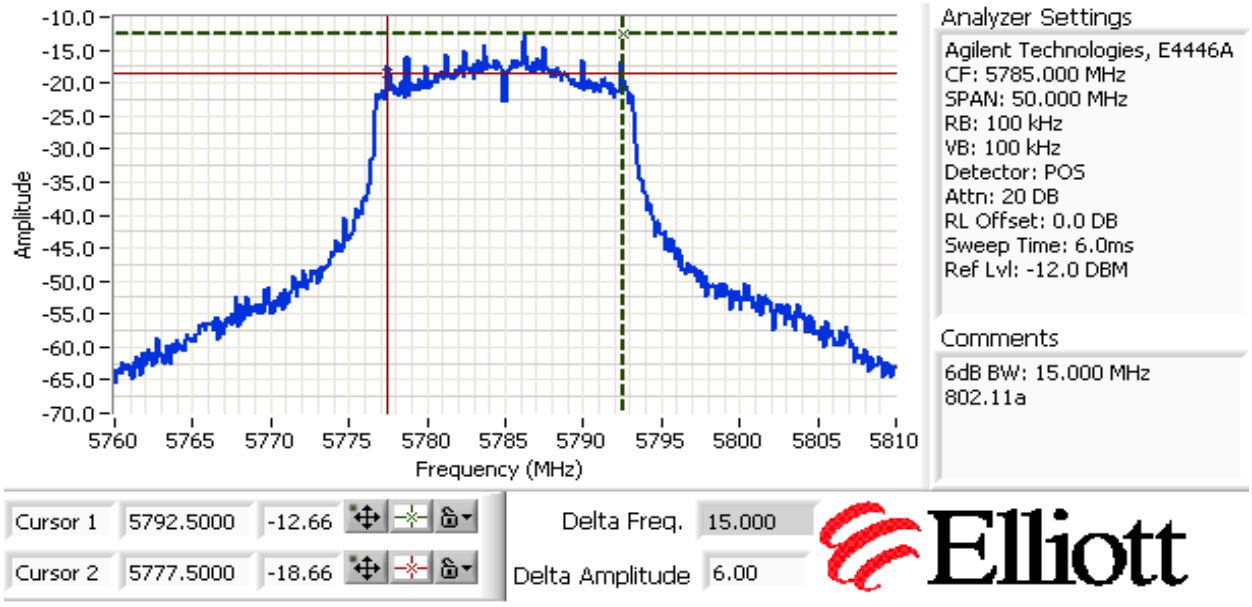


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #3: Signal Bandwidth

| Power Setting | Frequency (MHz) | Resolution Bandwidth | Bandwidth (MHz) 6dB | 99% |
|---|---|---|---|---|
| - | 5745 | 100kHz | 15.1 | 16.9 |
| - | 5785 | 100kHz | 15.0 | 16.9 |
| - | 5805 | 100kHz | 15.1 | 16.9 |

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

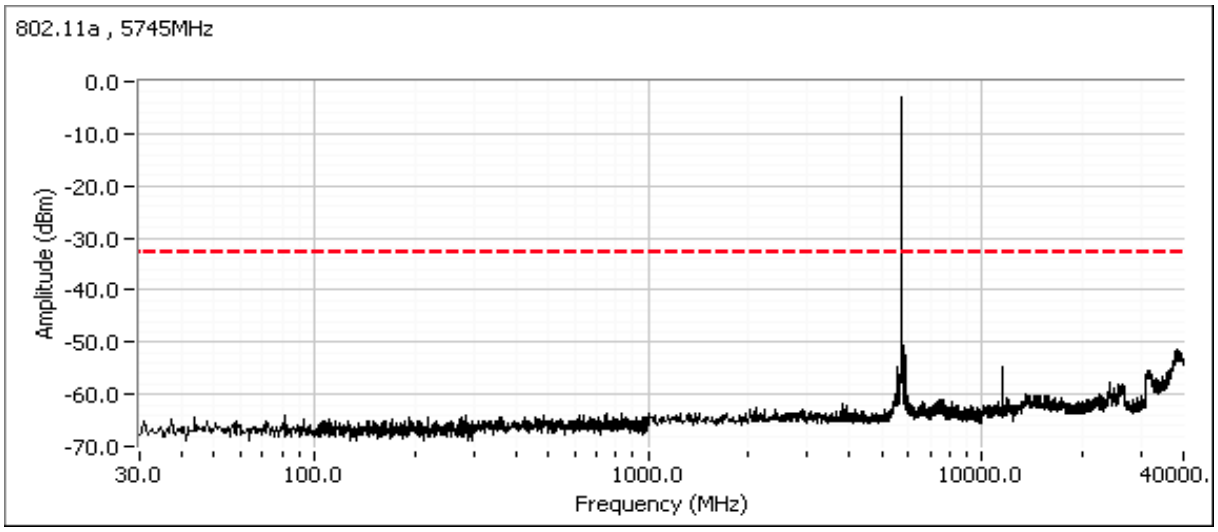



Run #4: Out of Band Spurious Emissions

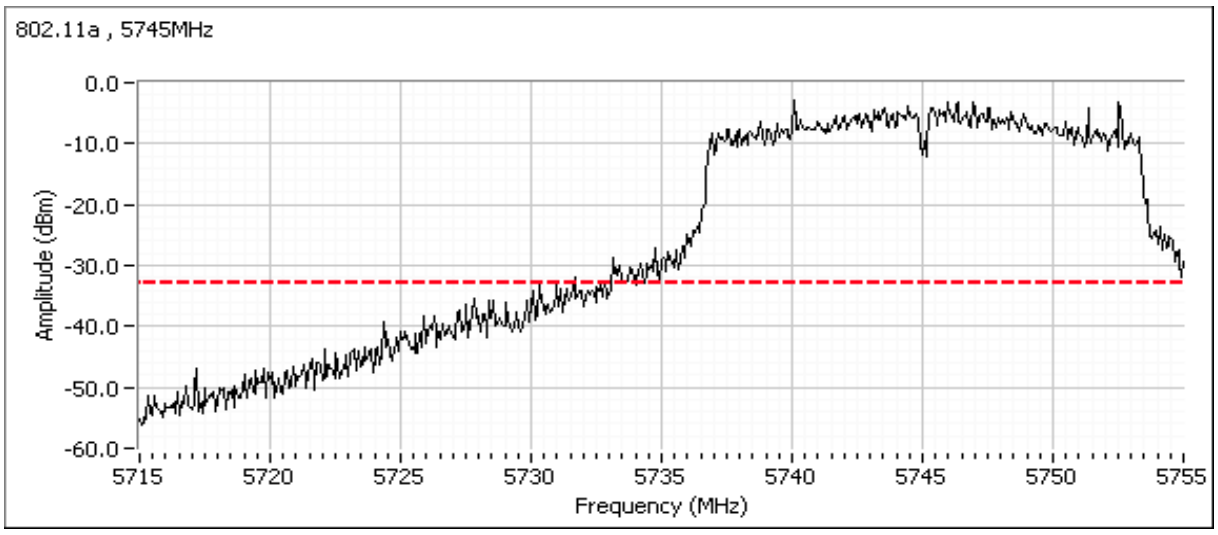
| Frequency (MHz) | Limit | Result |
|---|---|---|
| 5745 | -30dBc | Pass |
| 5785 | -30dBc | Pass |
| 5805 | -30dBc | Pass |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

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

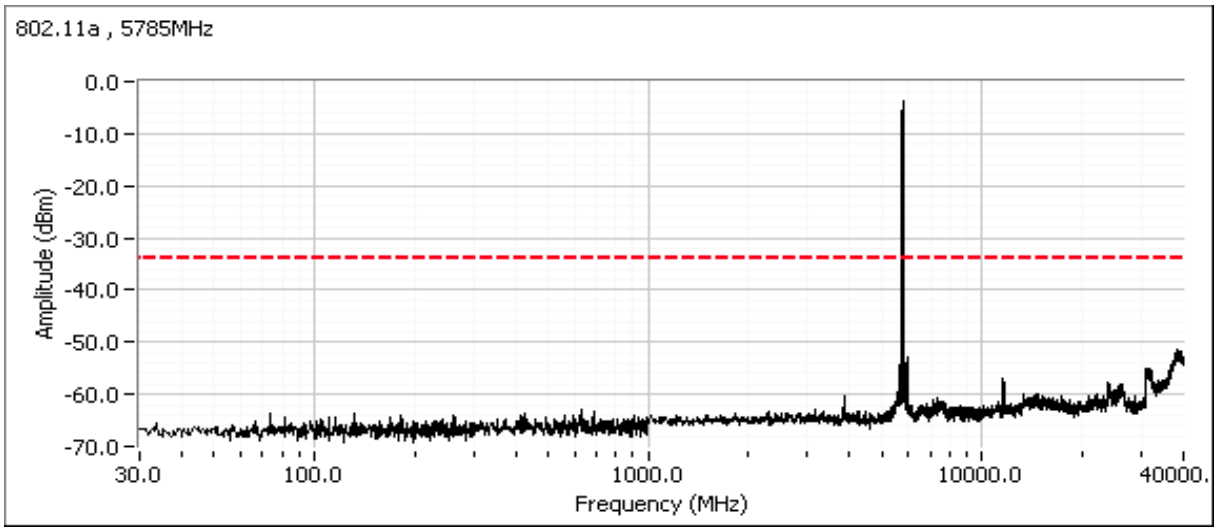



Additional plot from 5715 - 5755 MHz showing compliance with -30dBc at the band edge.

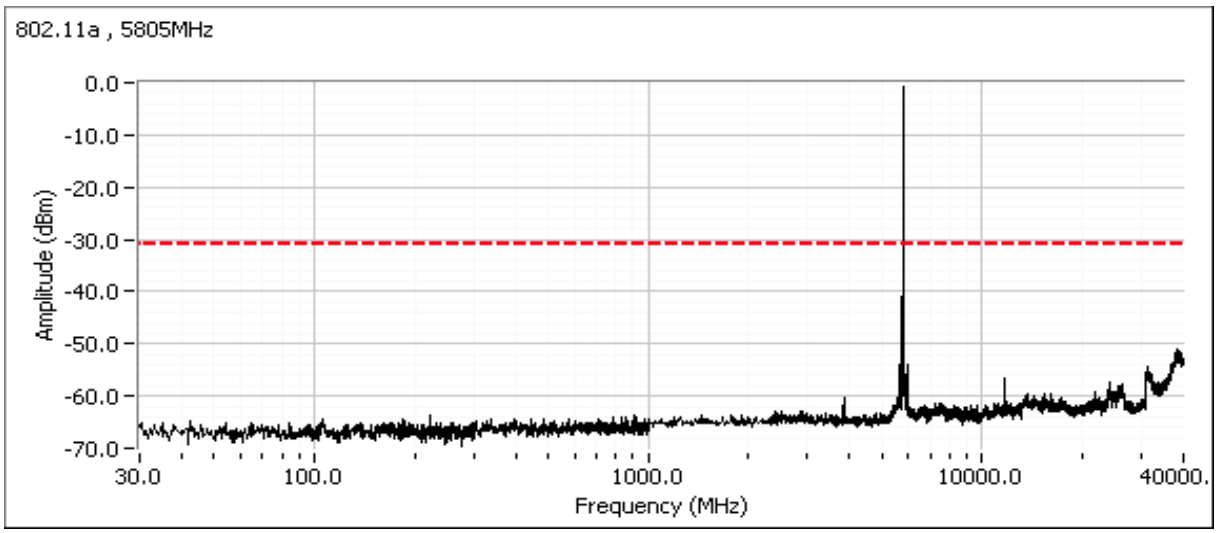


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

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

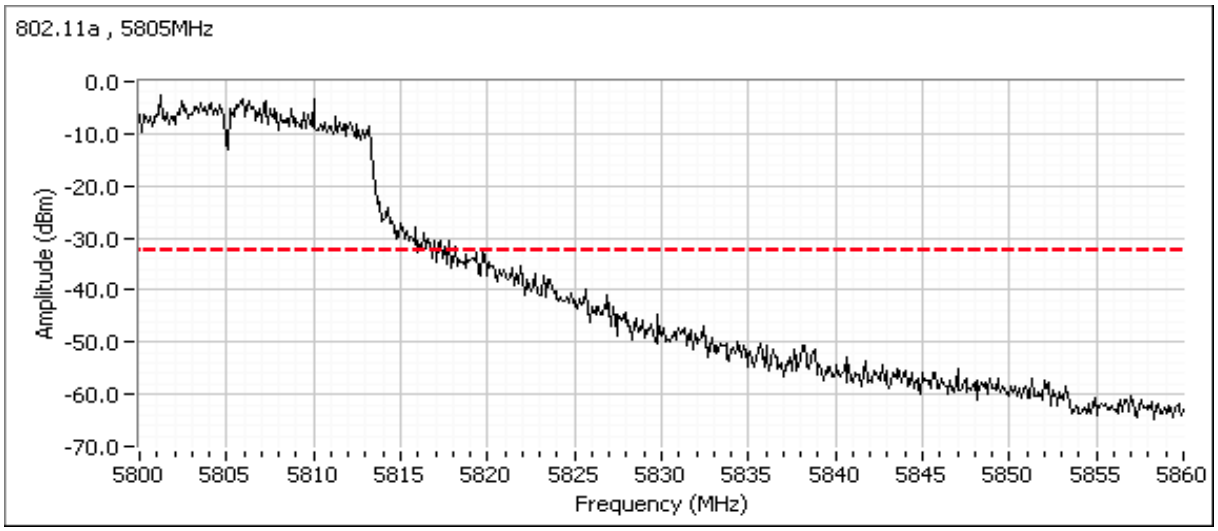



Plots for high channel, power setting(s) = default



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Additional plot from 5820 - 5860 MHz showing compliance with -30dBc at the band edge.



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

## Power, PSD, Bandwidth and Spurious Emissions (802.11n20 - 5GHz)

### Test Specific Details

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

Date of Test: 11/3/2011 & 11/4/11
Test Engineer: Joseph Cadigal & John Caizzi
Test Location: FT Chamber#4

Config. Used: 2
Config Change: none
EUT Voltage: 3.3Vdc

### General Test Configuration

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

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

### Ambient Conditions:

Temperature: 24 °C
Rel. Humidity: 43 %

### Summary of Results

| Run # | Pwr setting | Avg Pwr | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|---|---|
| 1 | - | | Output Power | 15.247(b) | Pass | 10.6 dBm |
| 2 | | | Power spectral Density (PSD) | 15.247(d) | Pass | -10.3 dBm/3kHz |
| 3 | | | Minimum 6dB Bandwidth | 15.247(a) | Pass | 16.8 MHz |
| 3 | | | 99% Bandwidth | RSS GEN | - | 18.2 |
| 4 | | | Spurious emissions | 15.247(b) | Pass | All emissions < -30 dBc |

### Modifications Made During Testing

No modifications were made to the EUT during testing

### Deviations From The Standard

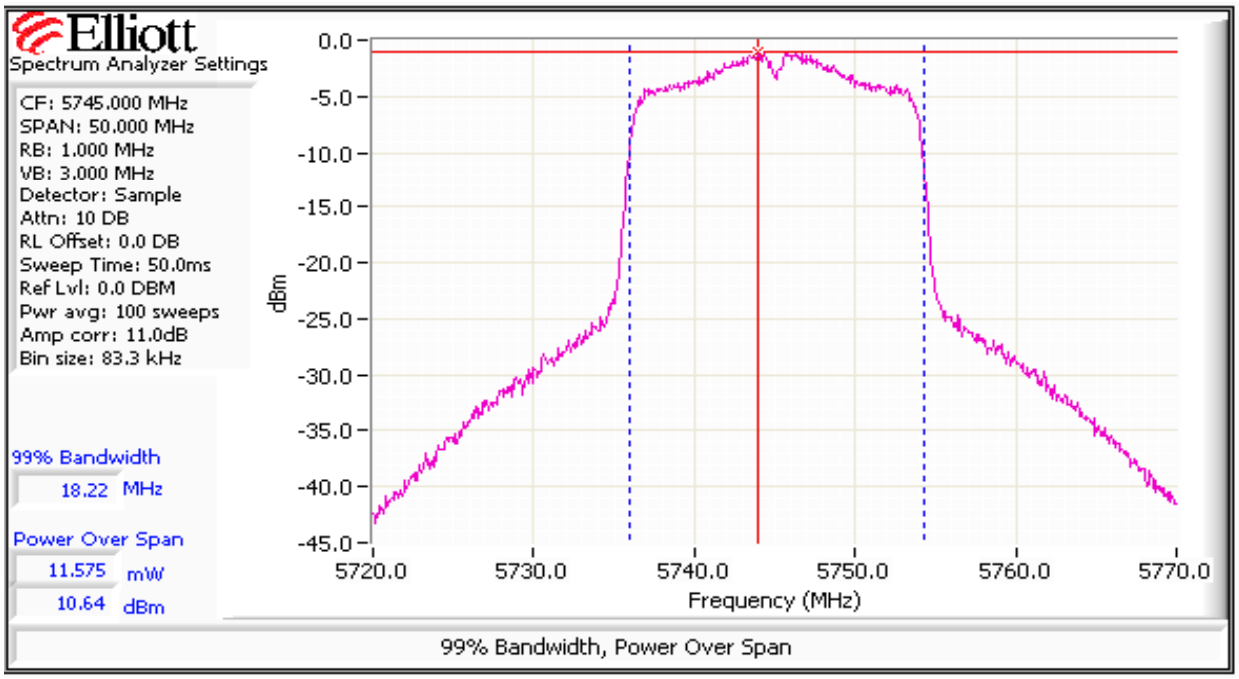
No deviations were made from the requirements of the standard.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/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 |
|---|---|---|---|---|---|---|---|---|---|
| - | 5745 | 10.6 | 11.6 | 6.5 | Pass | 17.1 | 0.052 | 16.2 | 41.7 |
| | 5785 | 10.3 | 10.8 | 6.5 | Pass | 16.8 | 0.048 | 15.7 | 37.2 |
| | 5805 | 10.2 | 10.5 | 6.5 | Pass | 16.7 | 0.047 | 15.6 | 36.3 |

| | |
|---|---|
| Note 1: | Output power measured using a spectrum analyzer (see plots below) with RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the ESI analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz (option #2, method 1 in KDB 558074, equivalent to method 1 of DA-02-2138A1 for U-NII devices). Spurious limit becomes -30dBc. |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |
| Note 3: | Power measured using peak power meter and is included for reference only. |

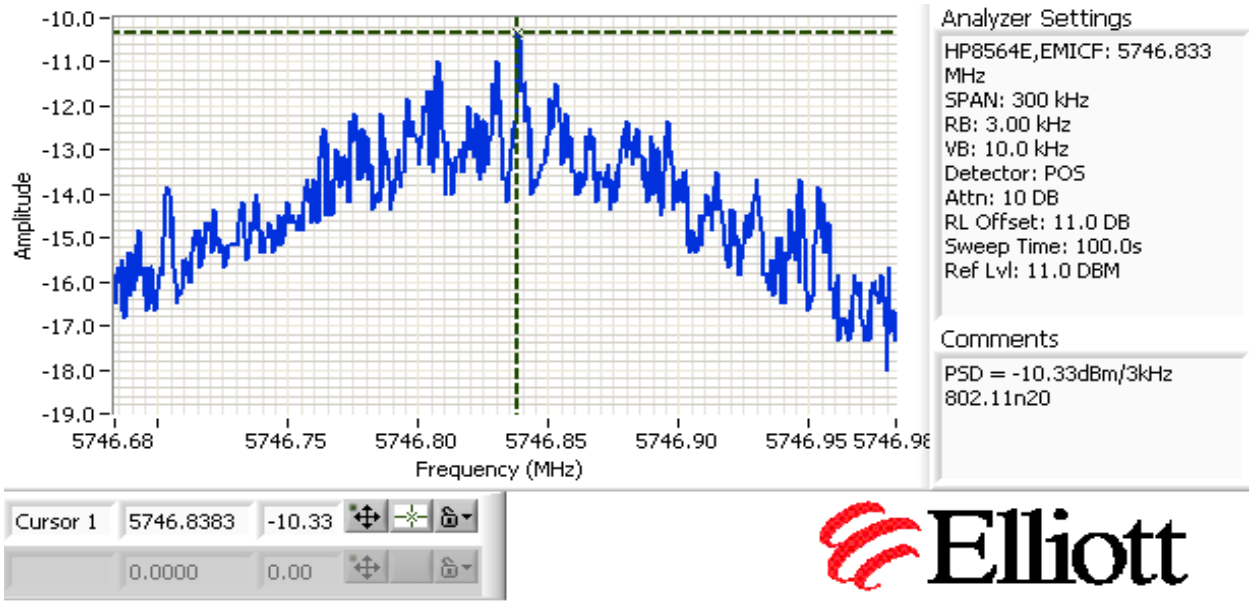


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #2: Power spectral Density

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) Note 1 | Limit dBm/3kHz | Result |
|---|---|---|---|---|
| Default | 5745 | -10.3 | 8.0 | Pass |
| | 5785 | -11.3 | 8.0 | Pass |
| | 5805 | -11.2 | 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. |

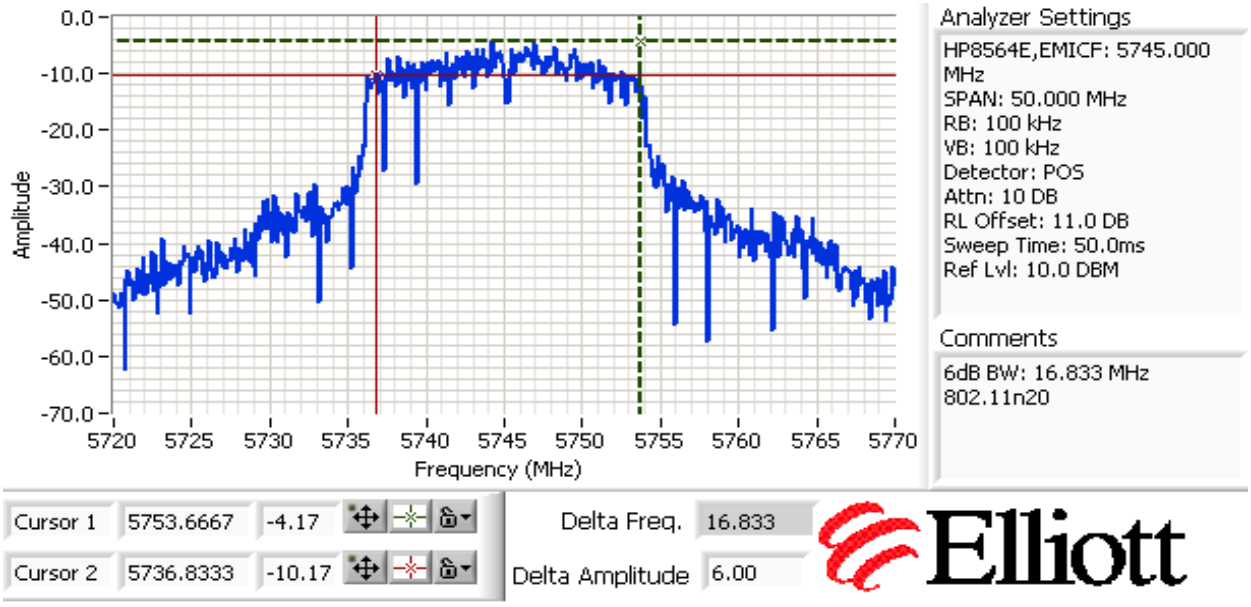


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Run #3: Signal Bandwidth

| Power Setting | Frequency (MHz) | Resolution Bandwidth | Bandwidth (MHz) 6dB | 99% |
|---|---|---|---|---|
| - | 5745 | 100 kHz | 16.8 | 18.2 |
| | 5785 | | 17.5 | 18.2 |
| | 5805 | | 17.6 | 18.2 |

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

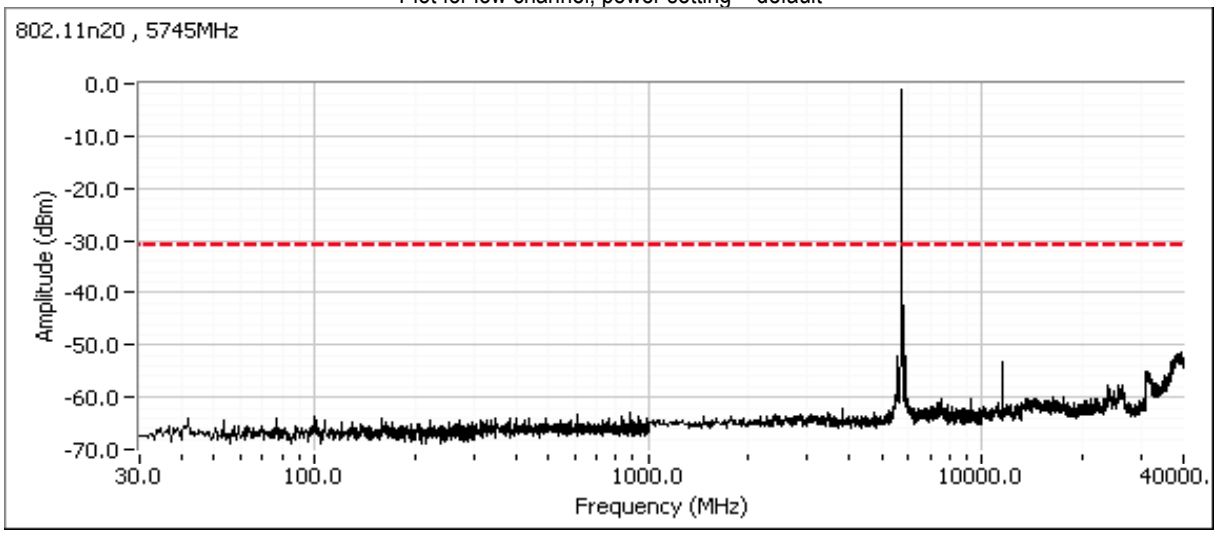


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

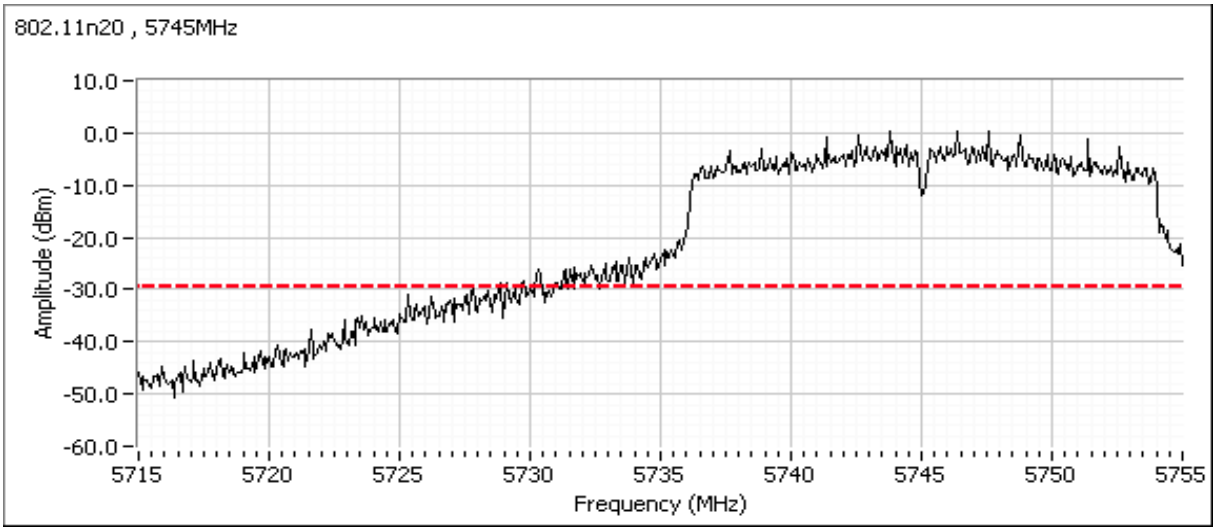
Run #4: Out of Band Spurious Emissions

| Frequency (MHz) | Limit | Result |
|---|---|---|
| 5745 | -30dBc | Pass |
| 5785 | -30dBc | Pass |
| 5805 | -30dBc | Pass |

Plot for low channel, power setting = default

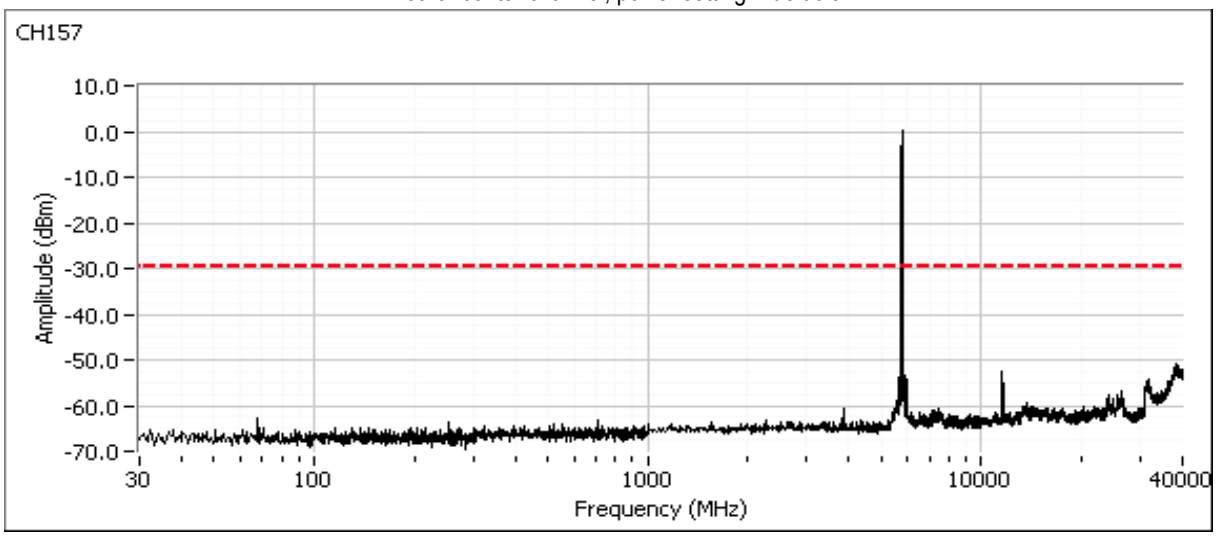



Additional plot from 5715 - 5755 MHz showing compliance with -30dBc at the band edge.

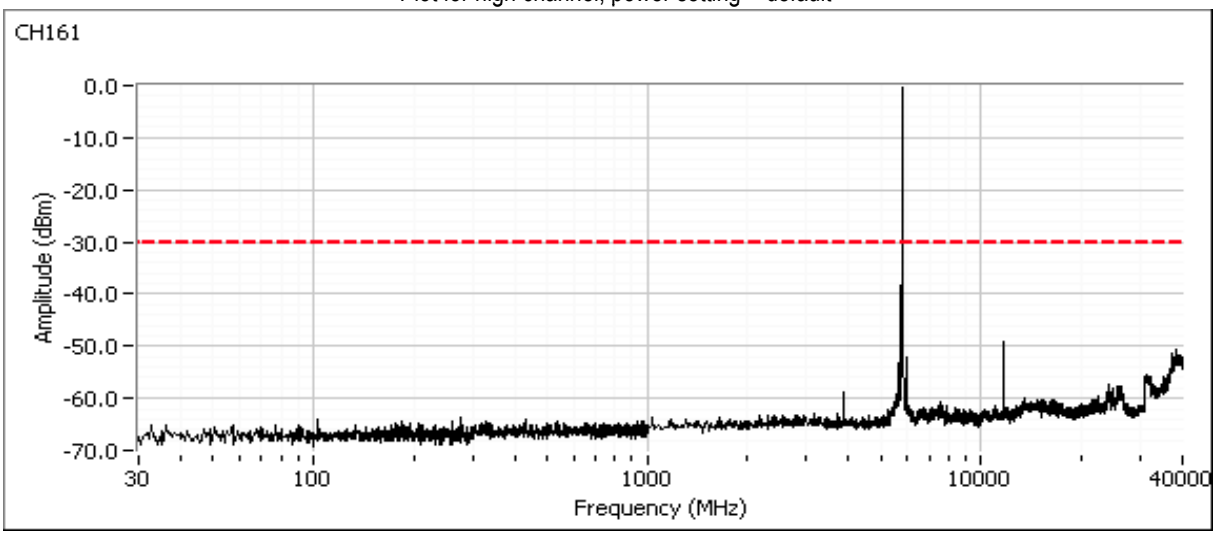


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Plot for center channel, power setting = default

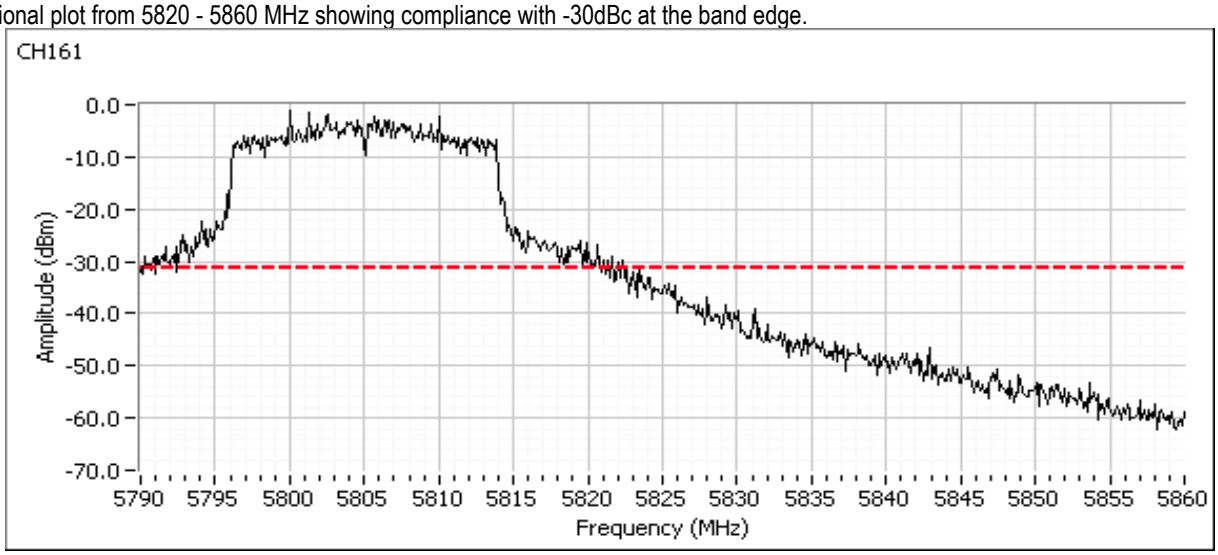



Plot for high channel, power setting = default



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Additional plot from 5820 - 5860 MHz showing compliance with -30dBc at the band edge.



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

# Maximum Permissible Exposure

## 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: 2/14/2012

Test Engineer: Mark Hill

## General Test Configuration

Calculation uses the free space transmission formula:

$$S = (PG)/(4 \pi d^2)$$

Where: S is power density ($W/m^2$), P is output power (W), G is antenna gain relative to isotropic, d is separation distance from the transmitting antenna (m).

## Summary of Results

| | |
|---|---|
| Device complies with Power Density requirements at 20cm separation: | Yes |

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

Use: General
Antenna: 3dBi

802.11b

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 2412 | 14.5 | 27.9 | 0 | 3 | 14.5 | 55.59 | 0.011 | 1.000 |
| 2437 | 15.2 | 33.1 | 0 | 3 | 15.2 | 66.07 | 0.013 | 1.000 |
| 2462 | 14.4 | 27.5 | 0 | 3 | 14.4 | 54.95 | 0.011 | 1.000 |

802.11g

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 2412 | 11.9 | 15.5 | 0 | 3 | 11.9 | 30.90 | 0.006 | 1.000 |
| 2437 | 12.6 | 18.2 | 0 | 3 | 12.6 | 36.31 | 0.007 | 1.000 |
| 2462 | 10.4 | 11.0 | 0 | 3 | 10.4 | 21.88 | 0.004 | 1.000 |

802.11n20

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 2412 | 7.9 | 6.2 | 0 | 3 | 7.9 | 12.30 | 0.002 | 1.000 |
| 2437 | 8.9 | 7.8 | 0 | 3 | 8.9 | 15.49 | 0.003 | 1.000 |
| 2462 | 9.5 | 8.9 | 0 | 3 | 9.5 | 17.78 | 0.004 | 1.000 |

802.11a

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 5745 | 7.8 | 6.0 | 0 | 3 | 7.8 | 11.89 | 0.002 | 1.000 |
| 5785 | 7.9 | 6.2 | 0 | 3 | 7.9 | 12.42 | 0.002 | 1.000 |
| 5805 | 7.8 | 6.0 | 0 | 3 | 7.8 | 12.05 | 0.002 | 1.000 |

802.11n20

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 5745 | 10.6 | 11.6 | 0 | 3 | 10.6 | 23.12 | 0.005 | 1.000 |
| 5785 | 10.3 | 10.8 | 0 | 3 | 10.3 | 21.58 | 0.004 | 1.000 |
| 5805 | 10.2 | 10.5 | 0 | 3 | 10.2 | 20.89 | 0.004 | 1.000 |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80878 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.247/RSS-210 | Class: | N/A |

UNII Bands

802.11a

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 5260 | 12.8 | 19.0 | 0 | 6.5 | 12.8 | 84.92 | 0.017 | 1.000 |
| 5300 | 14.2 | 26.0 | 0 | 6.5 | 14.2 | 116.14 | 0.023 | 1.000 |
| 5320 | 10.5 | 11.2 | 0 | 6.5 | 10.5 | 50.12 | 0.010 | 1.000 |
| 5500 | 15.0 | 31.3 | 0 | 6.5 | 15.0 | 139.96 | 0.028 | 1.000 |
| 5580 | 13.5 | 22.3 | 0 | 6.5 | 13.5 | 99.54 | 0.020 | 1.000 |
| 5700 | 8.1 | 6.4 | 0 | 6.5 | 8.1 | 28.64 | 0.006 | 1.000 |

802.11n20

| Freq. MHz | EUT Power dBm | EUT Power mW* | Cable Loss dB | Ant Gain dBi | Power at Ant dBm | EIRP mW | Power Density (S) at 20 cm mW/cm^2 | MPE Limit at 20 cm mW/cm^2 |
|---|---|---|---|---|---|---|---|---|
| 5260 | 11.9 | 15.6 | 0 | 6.5 | 11.9 | 69.82 | 0.014 | 1.000 |
| 5300 | 13.2 | 20.7 | 0 | 6.5 | 13.2 | 92.68 | 0.018 | 1.000 |
| 5320 | 8.5 | 7.1 | 0 | 6.5 | 8.5 | 31.62 | 0.006 | 1.000 |
| 5500 | 13.3 | 21.4 | 0 | 6.5 | 13.3 | 95.50 | 0.019 | 1.000 |
| 5580 | 12.8 | 19.0 | 0 | 6.5 | 12.8 | 84.72 | 0.017 | 1.000 |
| 5700 | 10.7 | 11.7 | 0 | 6.5 | 10.7 | 52.36 | 0.010 | 1.000 |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | - |
| Emissions Standard(s): | FCC 15.E/RSS-210 | Class: | - |
| Immunity Standard(s): | - | Environment: | - |

# EMC Test Data

For The

# Summit Data Communications

Model

SDC-WB40 (1x1 802.11abg + BT 2.1)

Date of Last Test: 8/24/2011

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.407 (UNII) Radiated Bandedge Emissions (Larsen Antenna)

## Test Specific Details

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

## General Test Configuration

The EUT ws installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

## Ambient Conditions:

Rel. Humidity: 30-40 %
Temperature: 18 - 25 °C

## 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.

## Summary of Results

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run # 1 | 802.11a Chain A | #56 5280MHz | Larsen | - | Restricted Band Edge at 5250 MHz | LP0002 (Taiwan Only) | 52.3dBµV/m @ 5249.8MHz (-1.7dB) |
| Run # 1 | 802.11a Chain A | #64 5320MHz | Larsen | - | Restricted Band Edge at 5350 MHz | 15.209 | 53.8dBµV/m @ 5350.1MHz (-0.2dB) |
| Run # 1 | 802.11a Chain A | #100 5500MHz | Larsen | - | Restricted Band Edge at 5460 MHz | 15.209 | 47.3dBµV/m @ 5459.3MHz (-6.7dB) |
| Run # 2 | 802.11n20 Chain A | #56 5280MHz | Larsen | - | Restricted Band Edge at 5250 MHz | LP0002 (Taiwan Only) | 50.7dBµV/m @ 5249.8MHz (-3.3dB) |
| Run # 2 | 802.11n20 Chain A | #64 5320MHz | Larsen | - | Restricted Band Edge at 5350 MHz | 15.209 | 53.6dBµV/m @ 5350.0MHz (-0.4dB) |
| Run # 2 | 802.11n20 Chain A | #100 5500MHz | Larsen | - | Restricted Band Edge at 5460 MHz | 15.209 | 47.5dBµV/m @ 5458.9MHz (-6.5dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 1, Band Edge Field Strength - 802.11a, Chain A

Run # 1b, EUT on Channel #56 5280MHz - 802.11a, Chain A

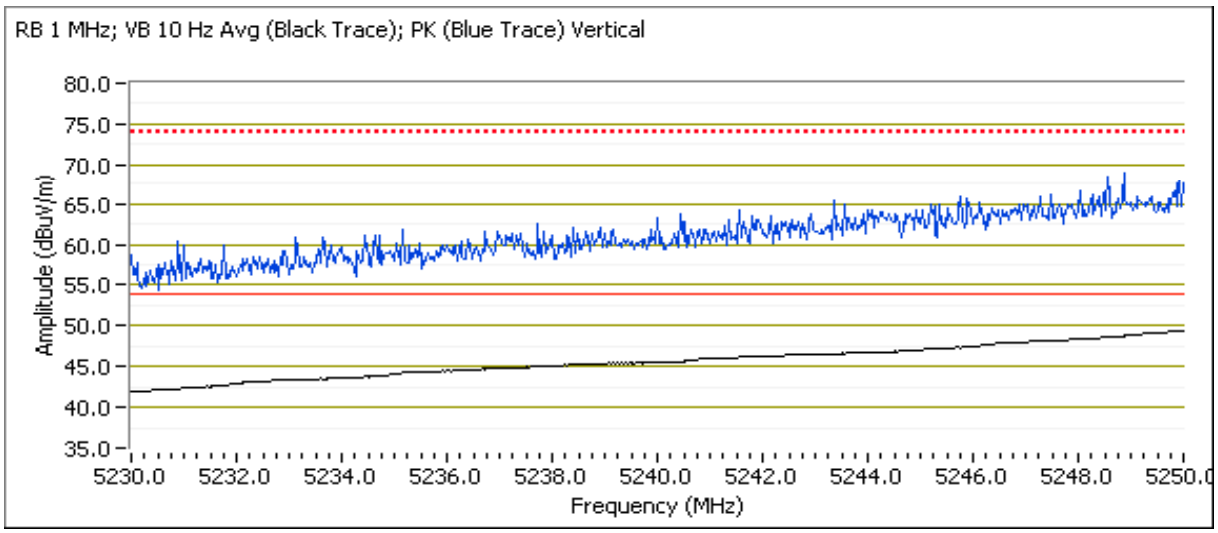
Date of Test: 8/16/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

For Taiwan Only

*5250MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | LP0002 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5249.840 | 52.3 | V | 54.0 | -1.7 | AVG | 129 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.980 | 68.6 | V | 74.0 | -5.4 | PK | 129 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |
| 5249.770 | 47.5 | H | 54.0 | -6.5 | AVG | 330 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5249.580 | 63.4 | H | 74.0 | -10.6 | PK | 330 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



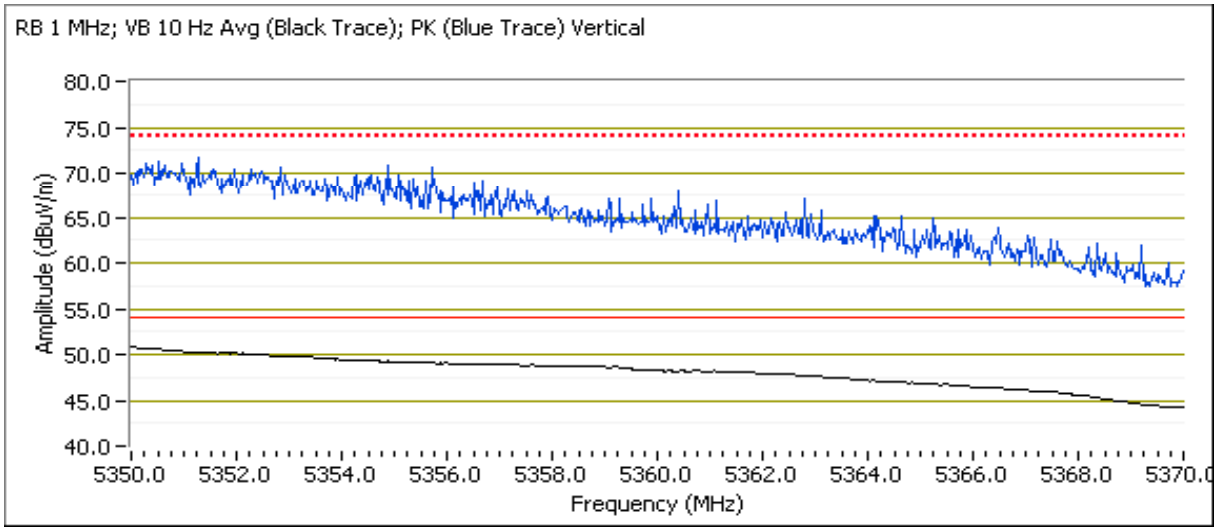
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 1c, EUT on Channel #64 5320MHz - 802.11a, Chain A

Date of Test: 11/14/2011 Test Location: FT Chamber #5
Test Engineer: Rafael Varelas Config Change: None

Tested Sample #2011-1055, Larsen antenna 2011-1286, Linux Shell
*Direct Measurement of Field Strength at the bandedge*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.100 | 53.8 | V | 54.0 | -0.2 | AVG | 157 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.790 | 71.5 | V | 74.0 | -2.5 | PK | 157 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5350.010 | 43.5 | H | 54.0 | -10.5 | AVG | 77 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.250 | 56.6 | H | 74.0 | -17.4 | PK | 77 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |

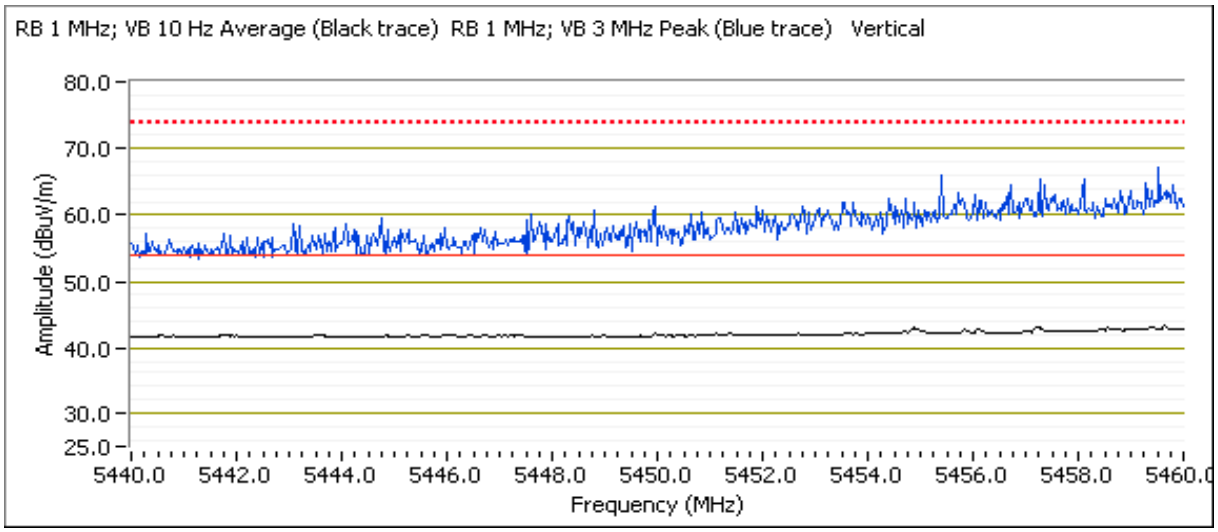


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 1d, EUT on Channel #100 5500MHz - 802.11a, Chain A

*Direct Measurement of Field Strength at the bandedge @ 5460 MHz*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.330 | 47.3 | V | 54.0 | -6.7 | AVG | 45 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 5459.530 | 45.9 | H | 54.0 | -8.1 | AVG | 355 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5459.330 | 62.7 | V | 74.0 | -11.3 | PK | 45 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |
| 5459.600 | 60.1 | H | 74.0 | -13.9 | PK | 355 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 2, Band Edge Field Strength - 802.11n20, Chain A

Run # 2b, EUT on Channel #56 5280MHz - 802.11n20, Chain A

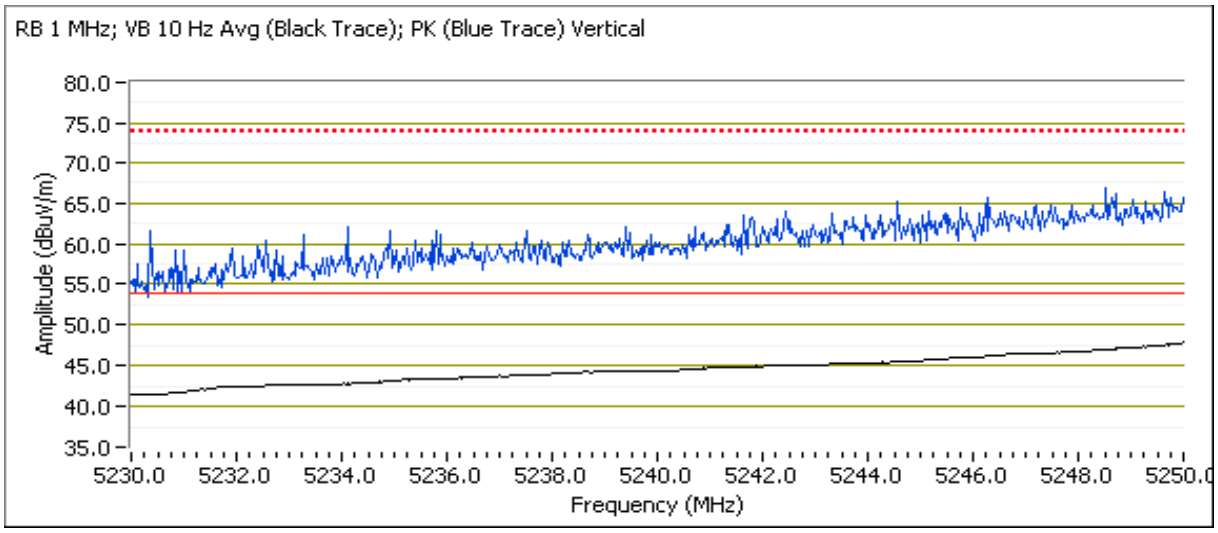
Date of Test: 8/16/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

For Taiwan Only

*5250MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | LP0002 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5249.840 | 50.7 | V | 54.0 | -3.3 | AVG | 143 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.620 | 65.7 | V | 74.0 | -8.3 | PK | 143 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |
| 5249.500 | 46.0 | H | 54.0 | -8.0 | AVG | 324 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.470 | 61.4 | H | 74.0 | -12.6 | PK | 324 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

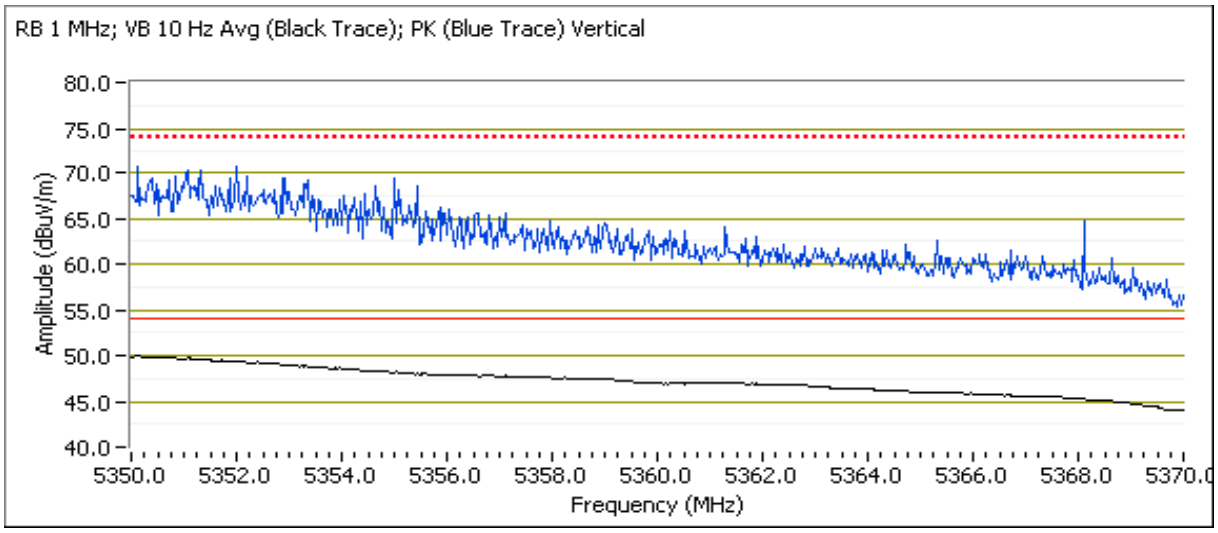
Run # 2c, EUT on Channel #64 5320MHz - 802.11n20, Chain A

Date of Test: 11/14/2011 Test Location: FT Chamber #5
Test Engineer: Rafael Varelas Config Change: None

Tested Sample #2011-1055, Larsen antenna 2011-1286, Linux Shell

*Direct Measurement of Field Strength at the bandedge*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.020 | 53.6 | V | 54.0 | -0.4 | AVG | 167 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.180 | 70.3 | V | 74.0 | -3.7 | PK | 167 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5350.030 | 43.8 | H | 54.0 | -10.2 | AVG | 71 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.930 | 56.5 | H | 74.0 | -17.5 | PK | 71 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

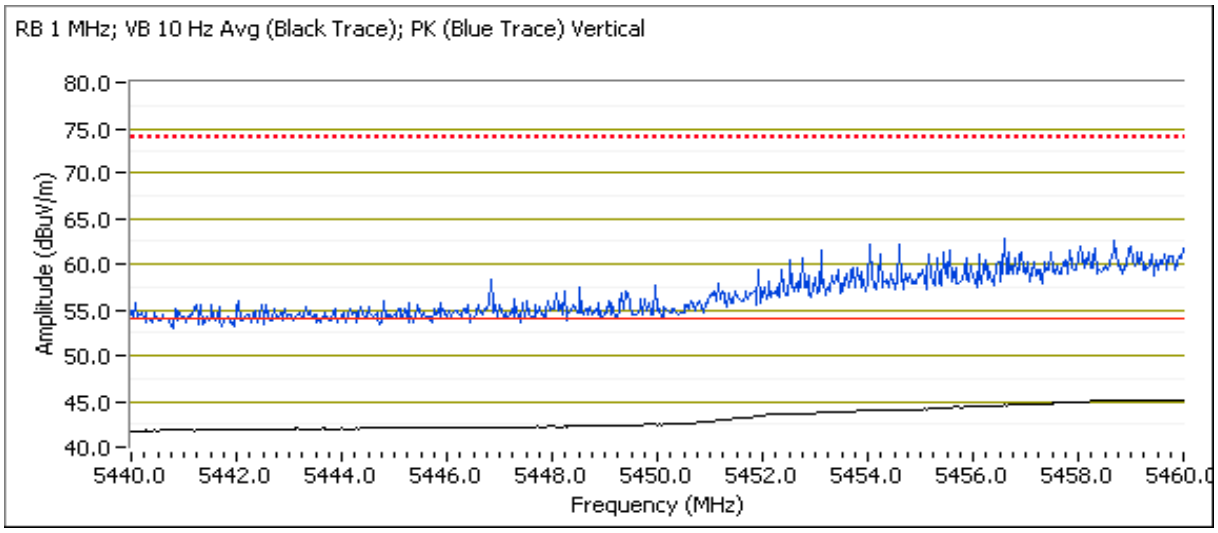
Run # 2d, EUT on Channel #100 5500MHz - 802.11n20, Chain A

Date of Test: 11/142011 Test Location: FT Chamber #5
Test Engineer: Rafael Varelas Config Change: None

Tested Sample #2011-1055, Larsen antenna 2011-1286, Linux Shell

*Direct Measurement of Field Strength at the bandedge @ 5460 MHz*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5458.910 | 47.5 | V | 54.0 | -6.5 | AVG | 163 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5459.380 | 62.8 | V | 74.0 | -11.2 | PK | 163 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5458.860 | 43.4 | H | 54.0 | -10.6 | AVG | 71 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5458.690 | 55.2 | H | 74.0 | -18.8 | PK | 71 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions (Larsen)

## Test Specific Details

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

## General Test Configuration

The EUT ws installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

## Ambient Conditions:

Rel. Humidity: 15 - 55 %
Temperature: 18 - 25 °C

## 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.

Run #3 and Run #4- Tested with New WB40 module Mac: 0017231566CF

## Notes:

No radio related emissions were observed below 1GHz and above 18GHz in preliminary measurements.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

## Summary of Results

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Scans on center channel in all three OFDM modes to determine the worst case | | | | | | | |
| Run #2 (5250-5350MHz Band) | 802.11a Chain A | #60 5300MHz | Larsen | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 48.5dBµV/m @ 10601.7MHz (-5.5dB) |
| | n20 Chain A | #60 5300MHz | Larsen | - | | | 47.5dBµV/m @ 10600.6MHz (-6.5dB) |
| | Worst case mode/worse case Chain A - top and bottom channels. | | | | | | |
| | 802.11a Chain A | #52 5260MHz | Larsen | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 47.2dBµV/m @ 2994.5MHz (-21.1dB) |
| | | #64 5320MHz | Larsen | - | | | 48.2dBµV/m @ 10640.4MHz (-5.8dB) |

## New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run #3 (5470-5725MHz Band) | 802.11a Chain A | #116 5580MHz | Larsen | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 44.8dBµV/m @ 1189.1MHz (-9.2dB) |
| | n20 Chain A | #116 5580MHz | Larsen | - | | | 43.5dBµV/m @ 1188.8MHz (-10.5dB) |
| | Worst case mode/worse case Chain A/n20) - top and bottom channels. | | | | | | |
| | 802.11a Chain A | #100 5500MHz | Larsen | - | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 45.1dBµV/m @ 1188.9MHz (-8.9dB) |
| | | #140 5700MHz | Larsen | - | | | 40.3dBµV/m @ 1188.4MHz (-13.7dB) |
| Receive mode | | | | | | | |
| Run #4 | Receive | #60 5300MHz | Larsen | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 51.6dBµV/m @ 2994.7MHz (-2.4dB) |
| | | #116 5580MHz | Larsen | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 51.8dBµV/m @ 2994.7MHz (-2.2dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2, Radiated Spurious Emissions, 1-40GHz, Center Channel 5250-5350MHz - 802.11a, n20

Date of Test: 8/3/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

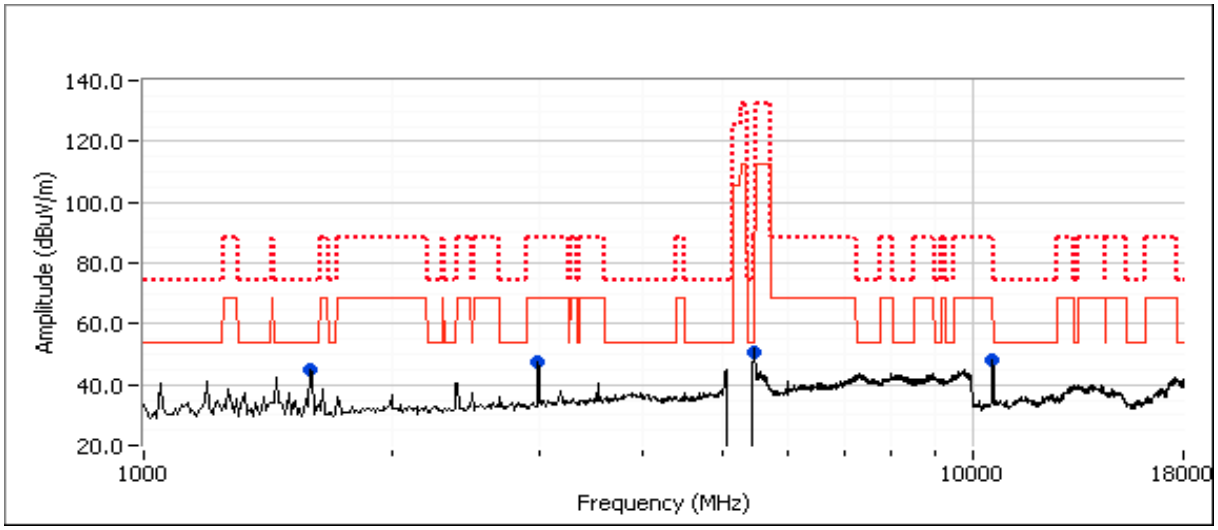
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m).

Run #2a: Channel #60 5300MHz - 802.11a,Chain A

*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 | |
| 10601.730 | 48.5 | V | 54.0 | -5.5 | AVG | 30 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 10602.800 | 60.2 | V | 74.0 | -13.8 | PK | 30 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.330 | 31.6 | V | 54.0 | -22.4 | AVG | 145 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.030 | 54.3 | V | 74.0 | -19.7 | PK | 145 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5426.150 | 43.6 | V | 54.0 | -10.4 | AVG | 76 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5426.090 | 55.4 | V | 74.0 | -18.6 | PK | 76 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.390 | 47.2 | V | 68.3 | -21.1 | Peak | 122 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



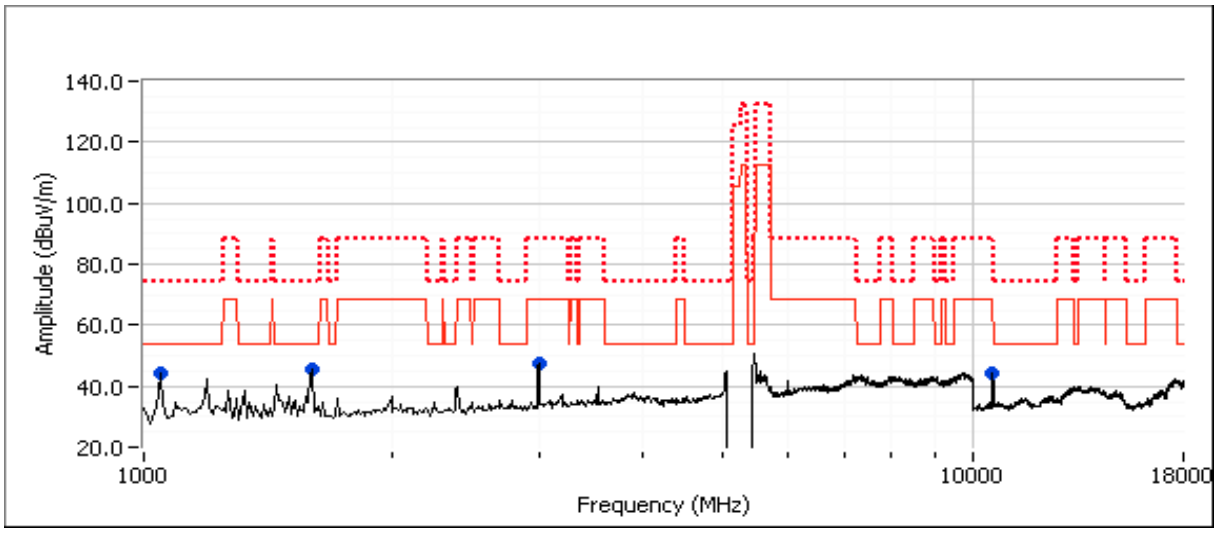
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2b: Channel #60 5300MHz - 802.11n20,Chain A

*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 | |
| 10600.630 | 47.5 | V | 54.0 | -6.5 | AVG | 104 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 10601.630 | 58.5 | V | 74.0 | -15.5 | PK | 104 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |
| 2998.330 | 47.6 | V | 68.3 | -20.7 | Peak | 200 | 1.0 | Note 1 |
| 1030.090 | 27.7 | H | 54.0 | -26.3 | AVG | 250 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 1030.290 | 37.3 | H | 74.0 | -36.7 | PK | 250 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 1596.090 | 31.6 | V | 54.0 | -22.4 | AVG | 284 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1593.050 | 53.8 | V | 74.0 | -20.2 | PK | 284 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



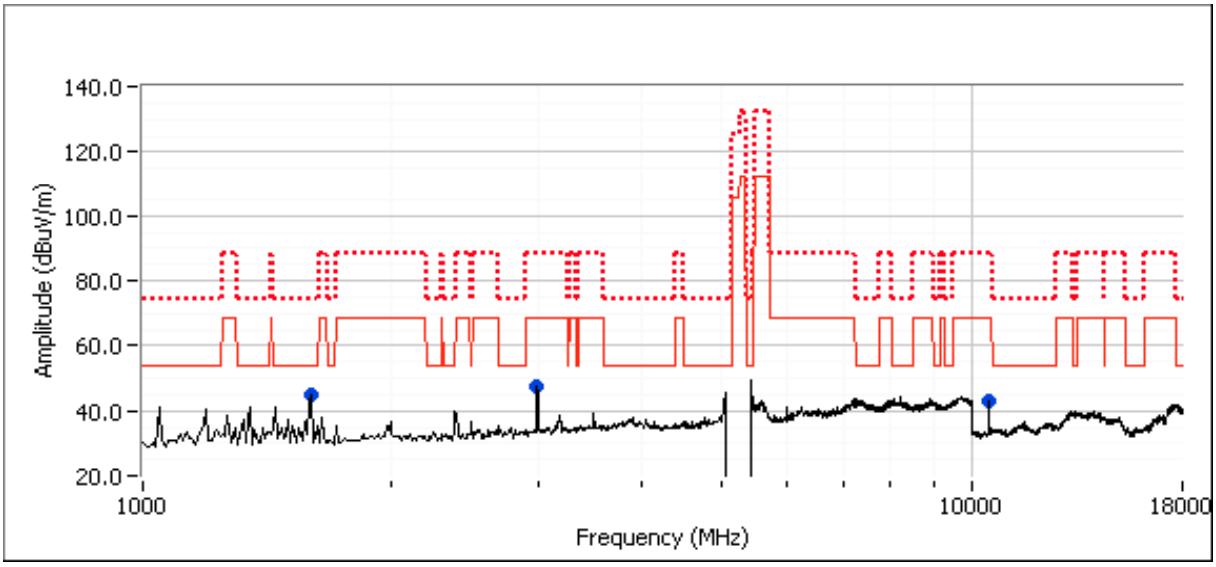
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2c: Channel #52 5260MHz - 802.11a

*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 | |
| 2994.480 | 47.2 | V | 68.3 | -21.1 | Peak | 118 | 1.0 | Note 1 |
| 1598.140 | 31.4 | V | 54.0 | -22.6 | AVG | 283 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.760 | 52.4 | V | 74.0 | -21.6 | PK | 283 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 10520.000 | 43.1 | H | 68.3 | -25.2 | Peak | 32 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



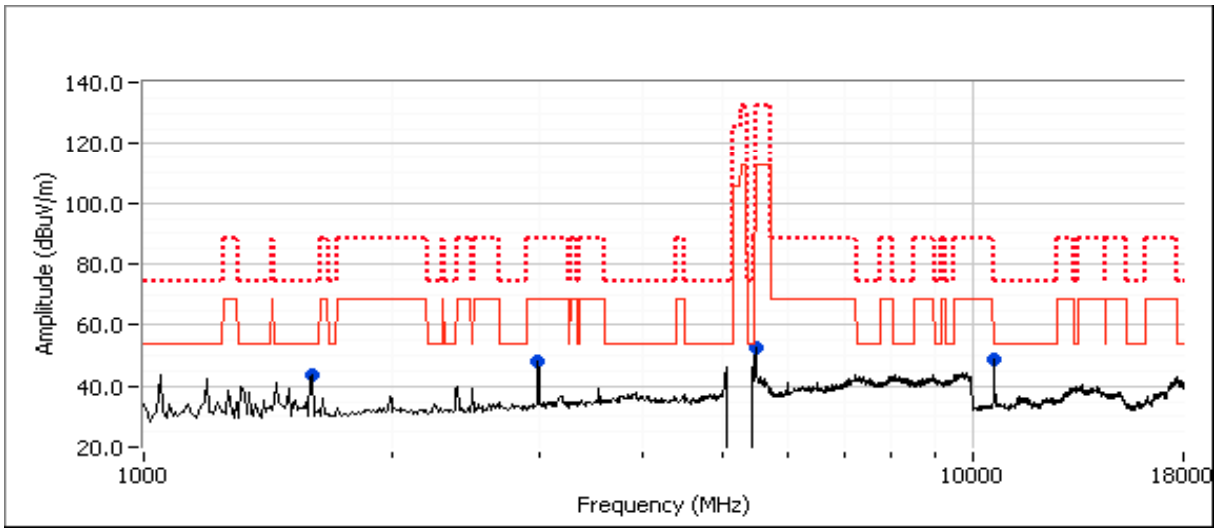
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2d: Channel #64 5320MHz - 802.11a

*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 | |
| 10640.400 | 48.2 | V | 54.0 | -5.8 | AVG | 41 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 10640.470 | 59.3 | V | 74.0 | -14.7 | PK | 41 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.230 | 34.3 | V | 54.0 | -19.7 | AVG | 196 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.240 | 57.9 | V | 74.0 | -16.1 | PK | 196 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2993.930 | 47.8 | V | 68.3 | -20.5 | Peak | 122 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3, Radiated Spurious Emissions, 1-40GHz, Center Channel 5470-5725MHz - 802.11a, n20

Date of Test: 8/12/2011 Test Location: FT3
Test Engineer: John Caizzi / R. Varelas Config Change: none

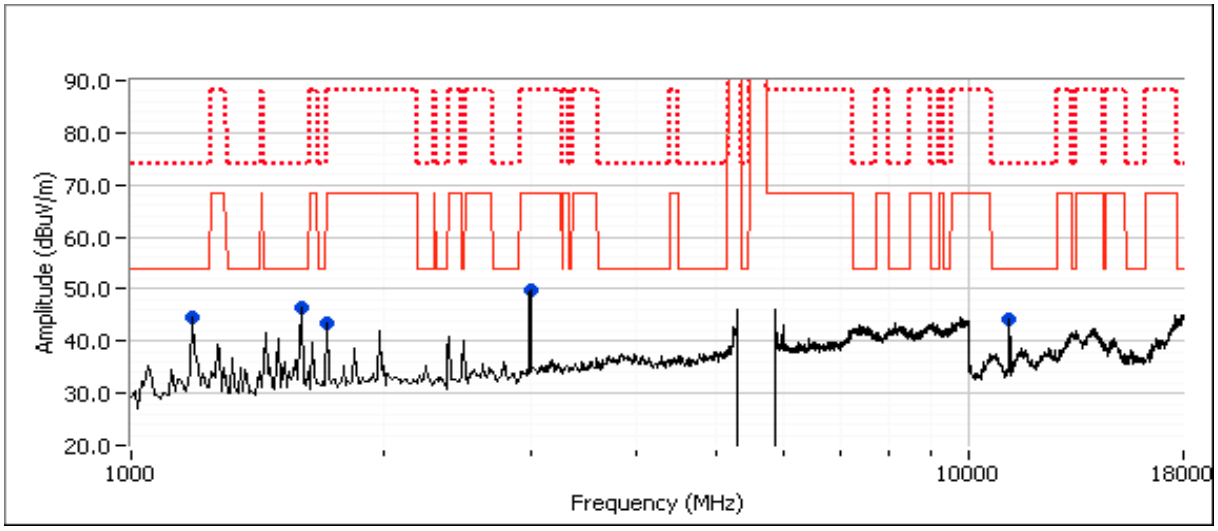
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m).

Run #3a: Channel #116 5580MHz - 802.11a, Chain A

*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 | |
| 1189.060 | 44.8 | V | 54.0 | -9.2 | AVG | 285 | 1.00 | |
| 1195.660 | 47.4 | V | 74.0 | -26.6 | PK | 285 | 1.00 | |
| 1596.130 | 33.5 | V | 54.0 | -20.5 | AVG | 170 | 1.00 | |
| 1592.960 | 52.8 | V | 74.0 | -21.2 | PK | 170 | 1.00 | |
| 11160.000 | 41.8 | V | 54.0 | -12.2 | AVG | 3 | 1.28 | |
| 11165.800 | 54.3 | V | 74.0 | -19.7 | PK | 3 | 1.28 | |
| 2998.330 | 49.9 | V | 68.3 | -18.4 | Peak | 120 | 1.0 | Note 1 |
| 1715.000 | 43.4 | H | 68.3 | -24.9 | Peak | 94 | 1.3 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



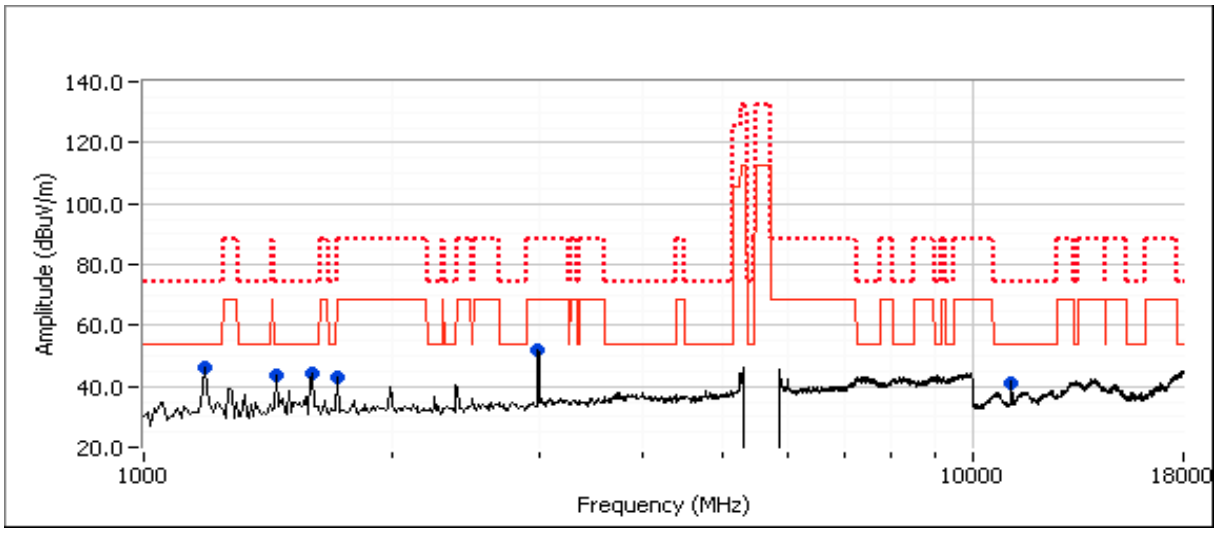
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3b: Channel #116 5580MHz - 802.11n20, Chain A

*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 | |
| 1188.800 | 43.5 | V | 54.0 | -10.5 | AVG | 251 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1195.670 | 40.2 | V | 74.0 | -33.8 | PK | 251 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1453.070 | 42.7 | H | 54.0 | -11.3 | AVG | 26 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1452.550 | 45.2 | H | 74.0 | -28.8 | PK | 26 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.050 | 32.5 | V | 54.0 | -21.5 | AVG | 174 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1594.320 | 51.1 | V | 74.0 | -22.9 | PK | 174 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.750 | 52.0 | V | 68.3 | -16.3 | Peak | 121 | 1.0 | Note 1 |
| 1715.000 | 42.9 | V | 68.3 | -25.4 | Peak | 311 | 1.9 | Note 1 |
| 11160.600 | 39.9 | V | 54.0 | -14.1 | AVG | 335 | 1.71 | |
| 11160.470 | 53.2 | V | 74.0 | -20.8 | PK | 335 | 1.71 | |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



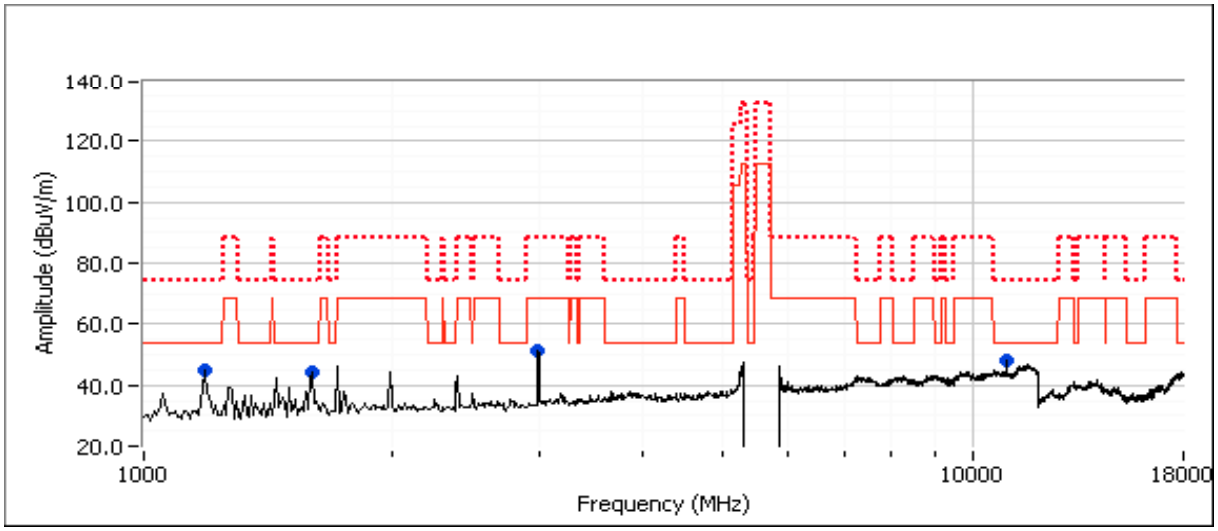
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3c: Channel #100 5500 MHz - 802.11a

*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 | |
| 1188.930 | 45.1 | V | 54.0 | -8.9 | AVG | 256 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1198.530 | 47.3 | V | 74.0 | -26.7 | PK | 256 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 10998.870 | 42.9 | V | 54.0 | -11.1 | AVG | 3 | 1.7 | RB 1 MHz;VB 10 Hz;Pk |
| 10995.510 | 54.8 | V | 74.0 | -19.2 | PK | 3 | 1.7 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.210 | 32.6 | V | 54.0 | -21.4 | AVG | 173 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.170 | 51.2 | V | 74.0 | -22.8 | PK | 173 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.840 | 51.5 | V | 68.3 | -16.8 | Peak | 128 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



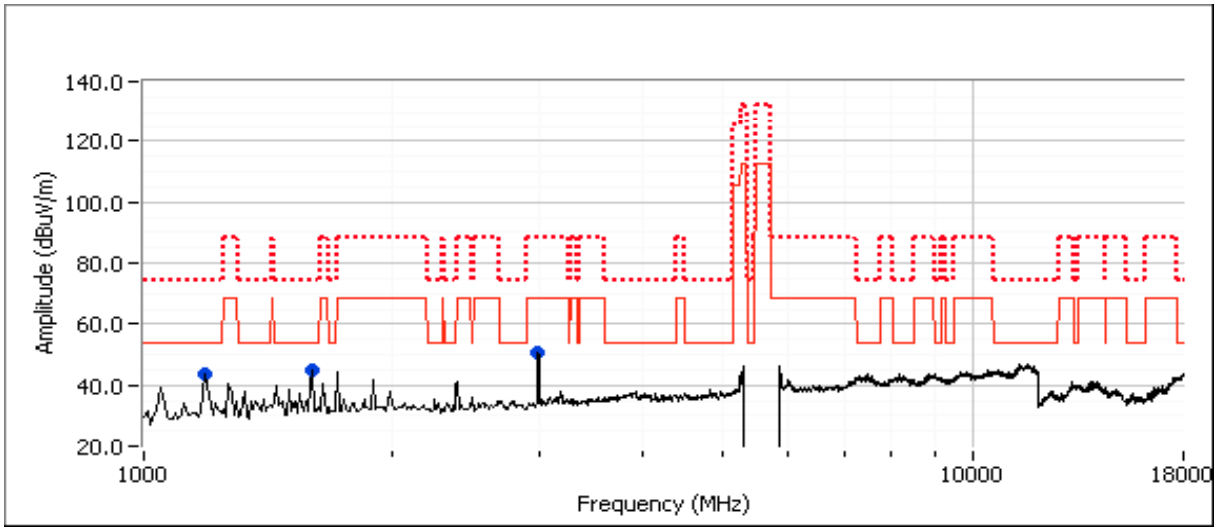
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3d: Channel #140 5700 MHz - 802.11a

*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 | |
| 1188.380 | 40.3 | H | 54.0 | -13.7 | AVG | 256 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1187.550 | 39.8 | H | 74.0 | -34.2 | PK | 256 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.220 | 33.5 | V | 54.0 | -20.5 | AVG | 177 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1592.890 | 53.5 | V | 74.0 | -20.5 | PK | 177 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.750 | 50.5 | V | 68.3 | -17.8 | Peak | 123 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #4, Radiated Spurious Emissions, 1-18GHz, Receive, Chain A

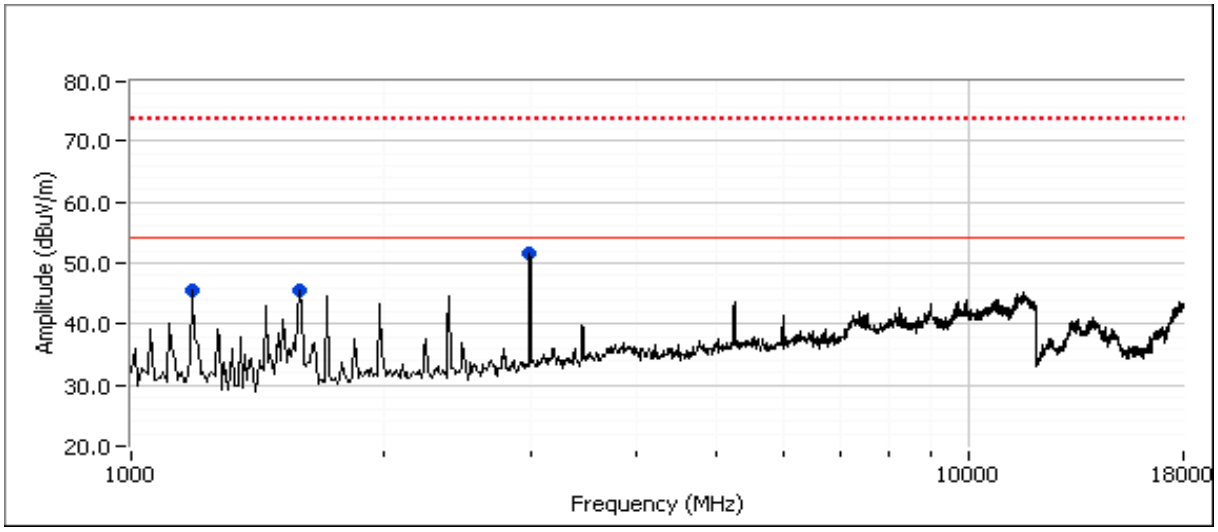
Date of Test: 8/12/2011 Test Location: FT3

Test Engineer: Rafael Varelas Config Change: none

Run #4b: EUT on Channel #60 5300MHz - Receive, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.670 | 51.6 | V | 54.0 | -2.4 | AVG | 113 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.690 | 53.7 | V | 74.0 | -20.3 | PK | 113 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.400 | 38.0 | H | 54.0 | -16.0 | AVG | 51 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1181.130 | 36.7 | H | 74.0 | -37.3 | PK | 51 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1590.750 | 38.3 | H | 54.0 | -15.7 | AVG | 307 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.650 | 43.2 | H | 74.0 | -30.8 | PK | 307 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

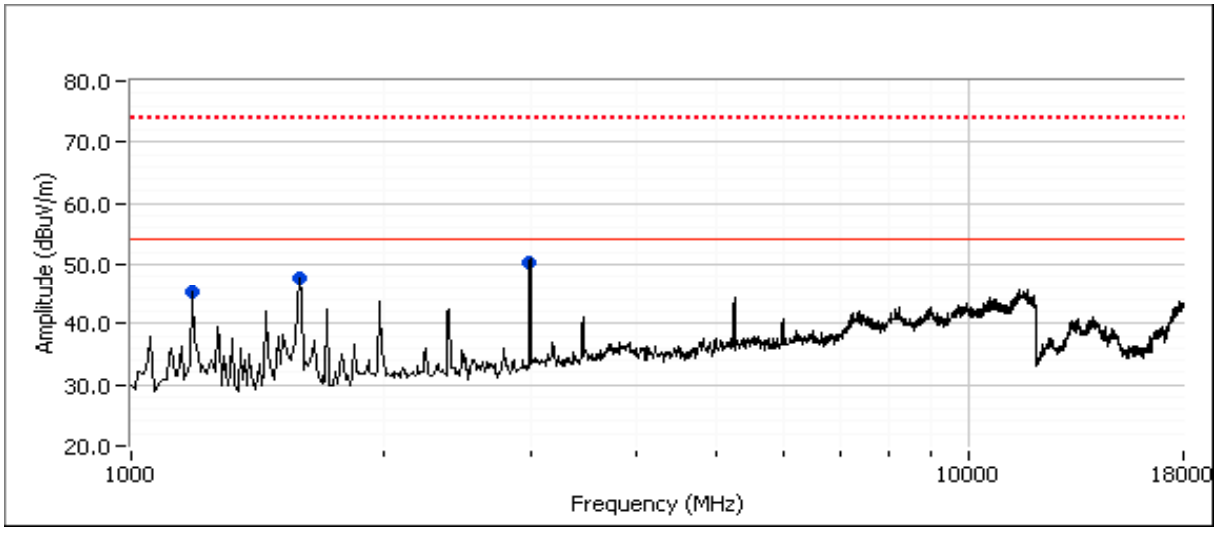


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #4c: EUT on Channel #116 5580MHz - Receive, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.670 | 51.8 | V | 54.0 | -2.2 | AVG | 115 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.560 | 53.9 | V | 74.0 | -20.1 | PK | 115 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1585.040 | 48.0 | H | 54.0 | -6.0 | AVG | 299 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1583.910 | 53.7 | H | 74.0 | -20.3 | PK | 299 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.930 | 37.1 | H | 54.0 | -16.9 | AVG | 248 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.120 | 42.6 | H | 74.0 | -31.4 | PK | 248 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.407 (UNII) Radiated Bandedge Emissions (Ethertronics Antenna)

## Summary of Results

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| | | #56 5280MHz | Ethertronics | 100% | Restricted Band Edge at 5250 MHz | LP0002 (Taiwan Only) | 50.8dBµV/m @ 5250.0MHz (-3.2dB) |
| | | #64 5320MHz | Ethertronics | 100% | Restricted Band Edge at 5350 MHz | 15.209 | 50.0dBµV/m @ 5350.0MHz (-4.0dB) |
| | | #100 5500MHz | Ethertronics | 100% | Restricted Band Edge at 5460 MHz | 15.209 | 47.4dBµV/m @ 5459.7MHz (-6.6dB) |
| | | #56 5280MHz | Ethertronics | 100% | Restricted Band Edge at 5250 MHz | LP0002 (Taiwan Only) | 48.5dBµV/m @ 5249.7MHz (-5.5dB) |
| | | #64 5320MHz | Ethertronics | 100% | Restricted Band Edge at 5350 MHz | 15.209 | 49.3dBµV/m @ 5350.0MHz (-4.7dB) |
| | | #100 5500MHz | Ethertronics | 100% | Restricted Band Edge at 5460 MHz | 15.209 | 45.9dBµV/m @ 5459.5MHz (-8.1dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

## Test Specific Details

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

## General Test Configuration

The EUT ws installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

## Ambient Conditions:

| | |
|---|---|
| Rel. Humidity: | 15 - 55 % |
| Temperature: | 18 - 25 °C |

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 1, Band Edge Field Strength - 802.11a, Chain A

Run # 1b, EUT on Channel #56 5280MHz - 802.11a, Chain A

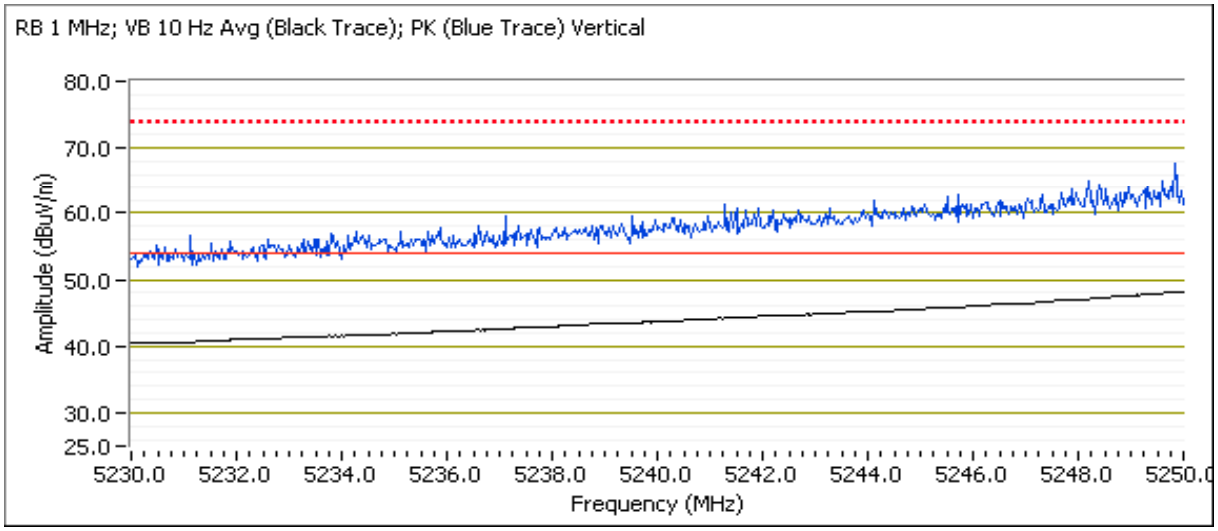
Date of Test: 8/16/2011 Test Location: FT Chamber #5

Test Engineer: Rafael Varelas Config Change: None

For Taiwan Only

*5250MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | LP0002 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5249.970 | 50.8 | V | 54.0 | -3.2 | AVG | 360 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 5249.070 | 64.7 | V | 74.0 | -9.3 | PK | 360 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 5249.960 | 50.4 | H | 54.0 | -3.6 | AVG | 230 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5249.620 | 66.0 | H | 74.0 | -8.0 | PK | 230 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

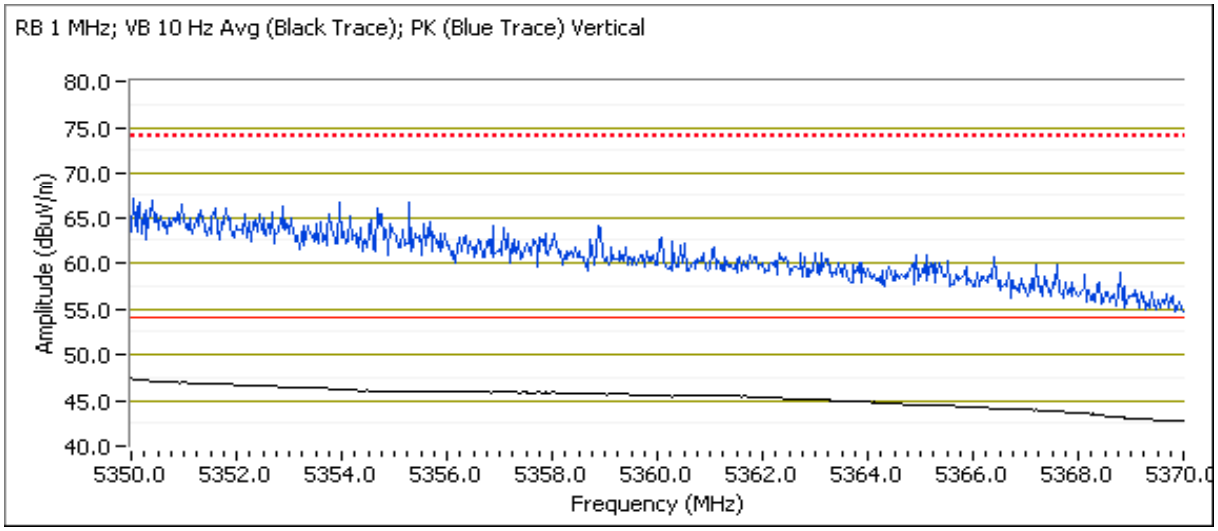
Run # 1c, EUT on Channel #64 5320MHz - 802.11a, Chain A

Date of Test: 11/14/2011 Test Location: FT5
Test Engineer: Rafael Varelas Config Change: none

Tested Sample #2011-1055, Ethertronics antenna 2011-2861, Linux Shell

*Direct Measurement of Field Strength at the bandedge*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.020 | 50.0 | V | 54.0 | -4.0 | AVG | 17 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 5351.200 | 66.6 | V | 74.0 | -7.4 | PK | 17 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 5350.110 | 47.9 | H | 54.0 | -6.1 | AVG | 223 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.550 | 64.2 | H | 74.0 | -9.8 | PK | 223 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

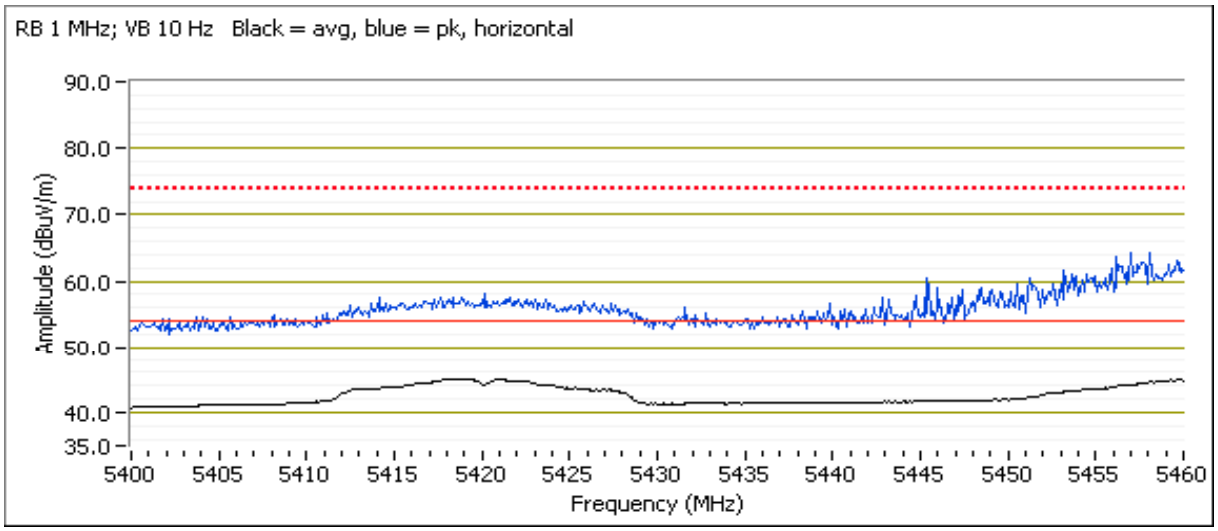


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 1d, EUT on Channel #100 5500MHz - 802.11a, Chain A

*Direct Measurement of Field Strength at the bandedge @ 5460 MHz*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.700 | 47.4 | H | 54.0 | -6.6 | AVG | 210 | 1.12 | |
| 5454.000 | 62.3 | H | 74.0 | -11.7 | PK | 210 | 1.12 | |
| 5459.600 | 46.8 | V | 54.0 | -7.2 | AVG | 297 | 1.38 | |
| 5459.100 | 60.0 | V | 74.0 | -14.0 | PK | 297 | 1.38 | |



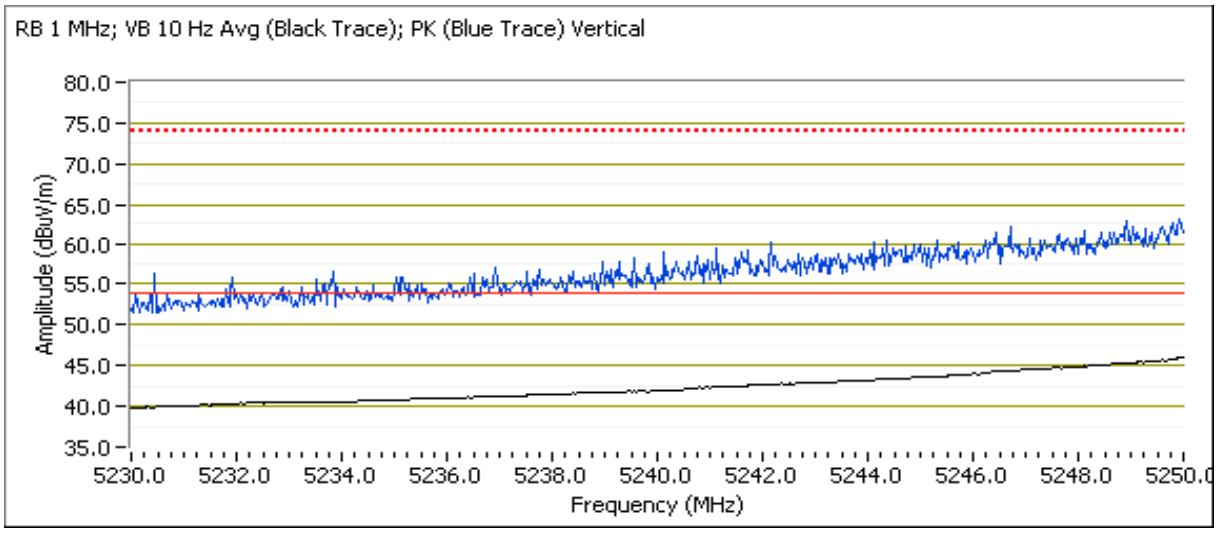
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 2, Band Edge Field Strength - 802.11n20, Chain A
Run # 2b, EUT on Channel #56 5280MHz - 802.11n20, Chain A

Date of Test: 8/16/2011 Test Location: FT Chamber #5
Test Engineer: Rafael Varelas Config Change: None

For Taiwan Only
*5250MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | LP0002 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5249.710 | 48.5 | V | 54.0 | -5.5 | AVG | 34 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.960 | 62.5 | V | 74.0 | -11.5 | PK | 34 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 5249.810 | 47.6 | H | 54.0 | -6.4 | AVG | 222 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5249.800 | 63.8 | H | 74.0 | -10.2 | PK | 222 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

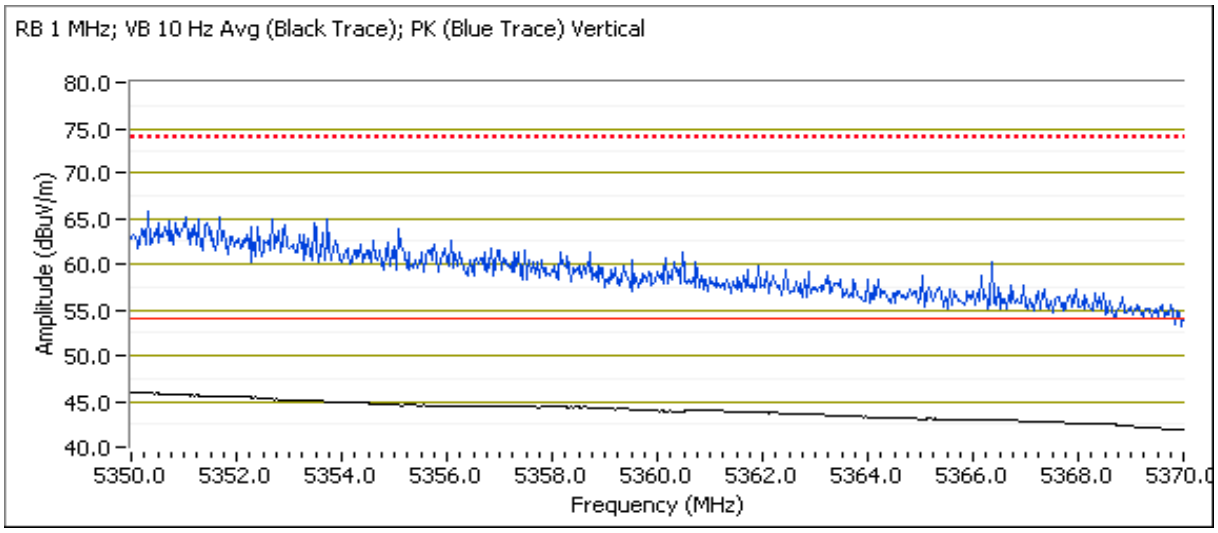
Run # 2c, EUT on Channel #64 5320MHz - 802.11n20, Chain A

Date of Test: 11/14/2011 Test Location: FT5
Test Engineer: Rafael Varelas Config Change: none

Tested Sample #2011-1055, Ethertronics antenna 2011-2861, Linux Shell

*Direct Measurement of Field Strength at the bandedge*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.010 | 49.3 | V | 54.0 | -4.7 | AVG | 173 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5351.360 | 65.1 | V | 74.0 | -8.9 | PK | 173 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5350.130 | 47.1 | H | 54.0 | -6.9 | AVG | 223 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.980 | 63.4 | H | 74.0 | -10.6 | PK | 223 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |

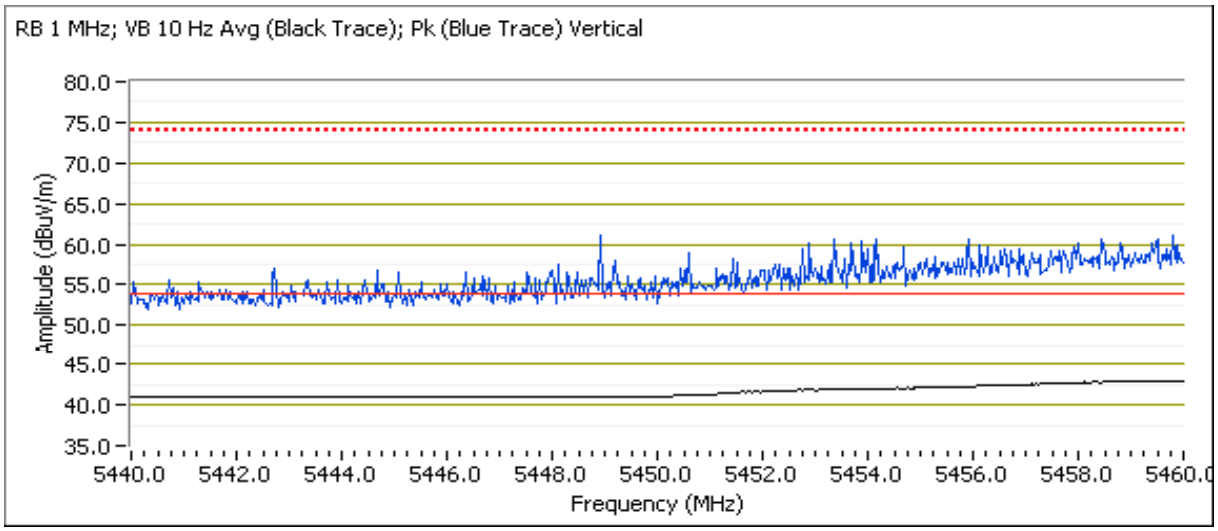


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 2d, EUT on Channel #100 5500MHz - 802.11n20, Chain A

*Direct Measurement of Field Strength at the bandedge @ 5460 MHz*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.520 | 45.9 | V | 54.0 | -8.1 | AVG | 59 | 1.5 | RB 1 MHz;VB 10 Hz;Pk |
| 5458.370 | 61.1 | V | 74.0 | -12.9 | PK | 59 | 1.5 | RB 1 MHz;VB 3 MHz;Pk |
| 5458.900 | 45.4 | H | 54.0 | -8.6 | AVG | 196 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5458.400 | 60.4 | H | 74.0 | -13.6 | PK | 196 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions (Ethertronics)

## Summary of Results

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Scans on center channel in all three OFDM modes to determine the worst case | | | | | | | |
| Run #2 (5250-5350MHz Band) | 802.11a Chain A | #60 5300MHz | Ethertronics | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 46.6dBµV/m @ 1453.1MHz (-7.4dB) |
| | n20 Chain A | #60 5300MHz | Ethertronics | 100% | | | 44.3dBµV/m @ 5458.9MHz (-9.7dB) |
| | Worst case mode (802.11a) - top and bottom channels. | | | | | | |
| | 802.11a Chain A | #52 5260MHz | Ethertronics | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 42.2dBµV/m @ 1188.8MHz (-11.8dB) |
| | | #64 5320MHz | Ethertronics | 100% | | | 44.6dBµV/m @ 1453.2MHz (-9.4dB) |
| Run #3 (5470-5725MHz Band) | 802.11a Chain A | #116 5580MHz | Ethertronics | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 43.7dBµV/m @ 1188.9MHz (-10.3dB) |
| | n20 Chain A | #116 5580MHz | Ethertronics | 100% | | | 44.9dBµV/m @ 1453.1MHz (-9.1dB) |
| | Worst case mode (802.11n20) - top and bottom channels. | | | | | | |
| | n20 Chain A | #100 5500MHz | Ethertronics | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 44.6dBµV/m @ 1188.9MHz (-9.4dB) |
| | | #140 5700MHz | Ethertronics | 100% | | | 42.6dBµV/m @ 1188.9MHz (-11.4dB) |
| Receive mode | | | | | | | |
| Run #4 | Receive | #60 5300MHz | Ethertronics | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 47.2dBµV/m @ 2994.7MHz (-6.8dB) |
| | | #116 5580MHz | Ethertronics | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 47.3dBµV/m @ 2994.7MHz (-6.7dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

## Test Specific Details

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

## General Test Configuration

The EUT ws installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

## Ambient Conditions:

| | |
|---|---|
| Rel. Humidity: | 15 - 55 % |
| Temperature: | 18 - 25 °C |

## 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.

## Notes:

No radio related emissions were observed below 1GHz and above 18GHz in preliminary measurements.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2, Radiated Spurious Emissions, 1-40GHz, Center Channel 5250-5350MHz - 802.11a, n20

Date of Test: 8/15/2011 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: none

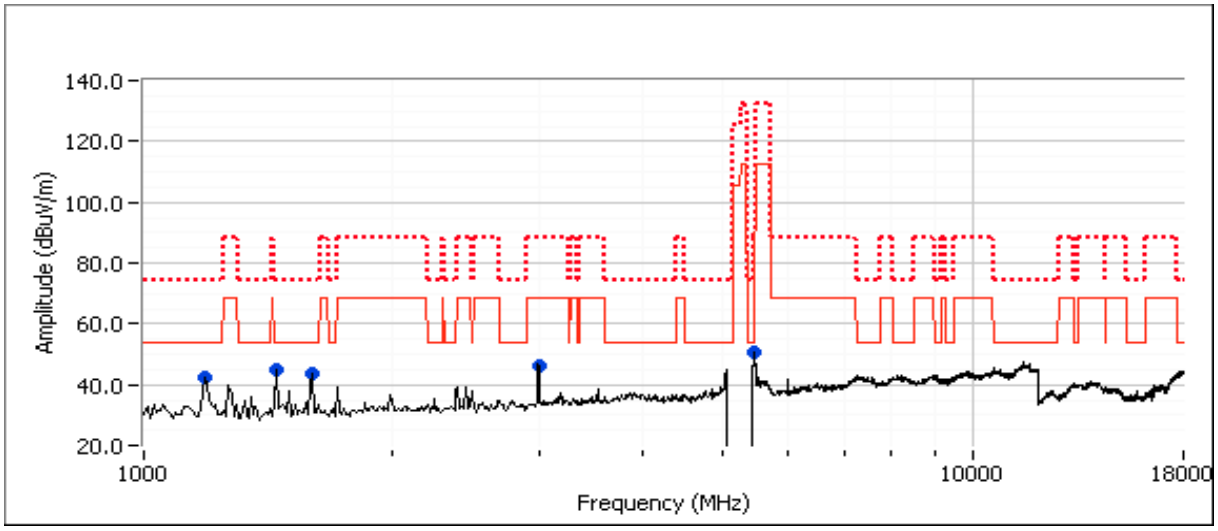
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m).

Run #2a: Channel #60 5300MHz - 802.11a,Chain A

*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 | |
| 1453.110 | 46.6 | H | 54.0 | -7.4 | AVG | 61 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1452.760 | 48.5 | H | 74.0 | -25.5 | PK | 61 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1594.540 | 30.0 | V | 54.0 | -24.0 | AVG | 265 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1594.010 | 47.9 | V | 74.0 | -26.1 | PK | 265 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.620 | 36.6 | H | 54.0 | -17.4 | AVG | 84 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1198.020 | 36.8 | H | 74.0 | -37.2 | PK | 84 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5458.630 | 44.8 | V | 54.0 | -9.2 | AVG | 48 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5458.420 | 54.6 | V | 74.0 | -19.4 | PK | 48 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.760 | 46.4 | V | 68.3 | -21.9 | Peak | 128 | 1.5 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



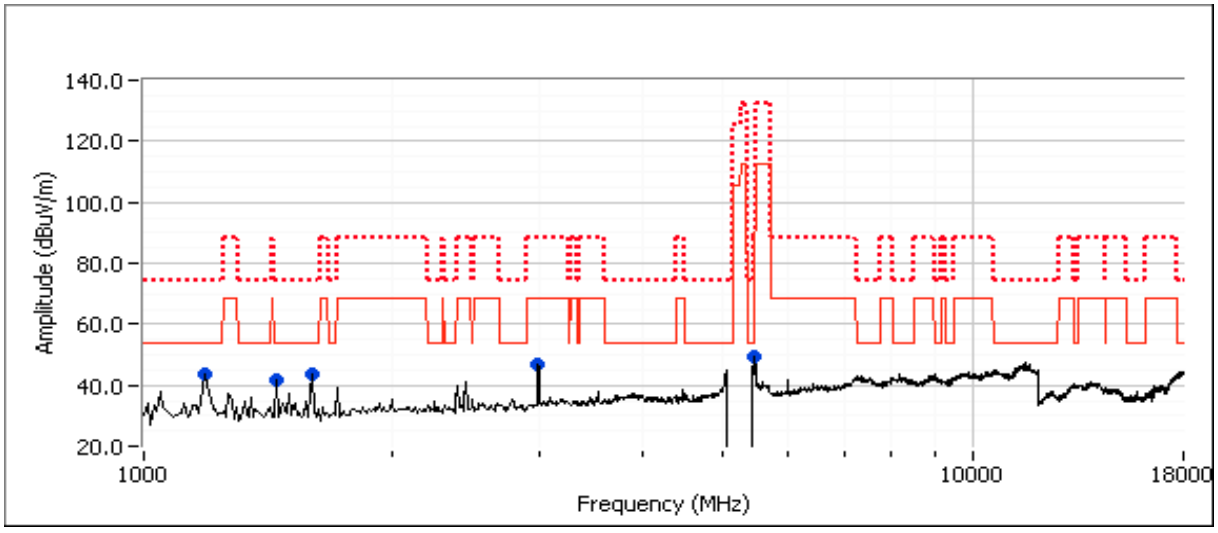
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2b: Channel #60 5300MHz - 802.11n20,Chain A

*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 | |
| 5458.930 | 44.3 | V | 54.0 | -9.7 | AVG | 67 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5459.430 | 54.6 | V | 74.0 | -19.4 | PK | 67 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.930 | 30.6 | V | 54.0 | -23.4 | AVG | 0 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.740 | 55.0 | V | 74.0 | -19.0 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1447.490 | 27.7 | V | 54.0 | -26.3 | AVG | 198 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1447.390 | 35.7 | V | 74.0 | -38.3 | PK | 198 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.630 | 36.6 | H | 54.0 | -17.4 | AVG | 237 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1198.300 | 42.1 | H | 74.0 | -31.9 | PK | 237 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.750 | 47.1 | V | 68.3 | -21.2 | Peak | 128 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



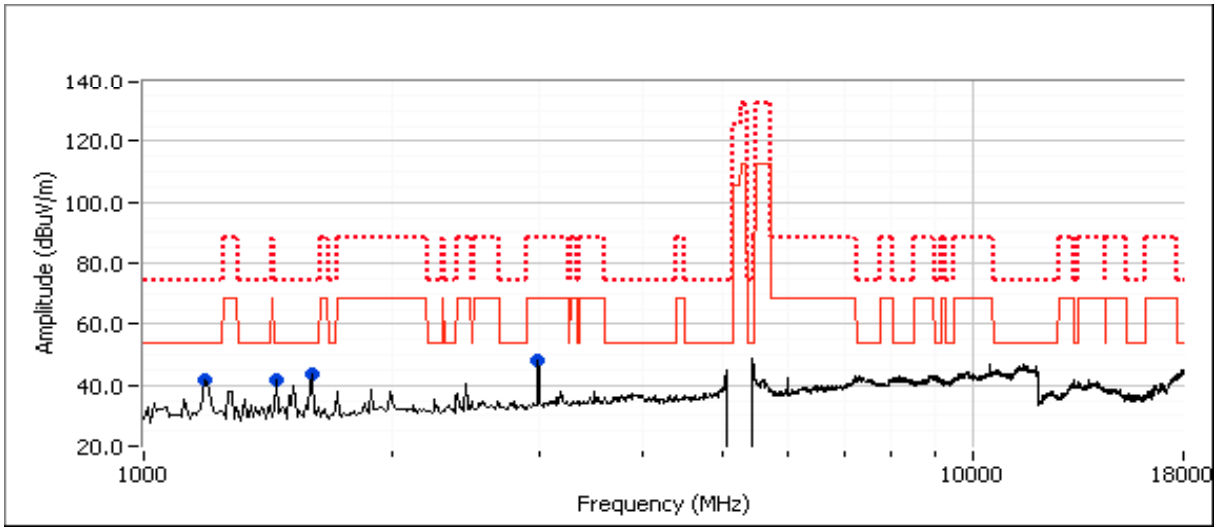
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2c: Channel #52 5260MHz - 802.11a

*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 | |
| 1188.830 | 42.2 | V | 54.0 | -11.8 | AVG | 333 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1195.000 | 42.9 | V | 74.0 | -31.1 | PK | 333 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1593.910 | 29.1 | V | 54.0 | -24.9 | AVG | 2 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1593.980 | 49.3 | V | 74.0 | -24.7 | PK | 2 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1452.800 | 32.5 | V | 54.0 | -21.5 | AVG | 178 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1443.730 | 39.3 | V | 74.0 | -34.7 | PK | 178 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.750 | 47.8 | V | 68.3 | -20.5 | Peak | 123 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



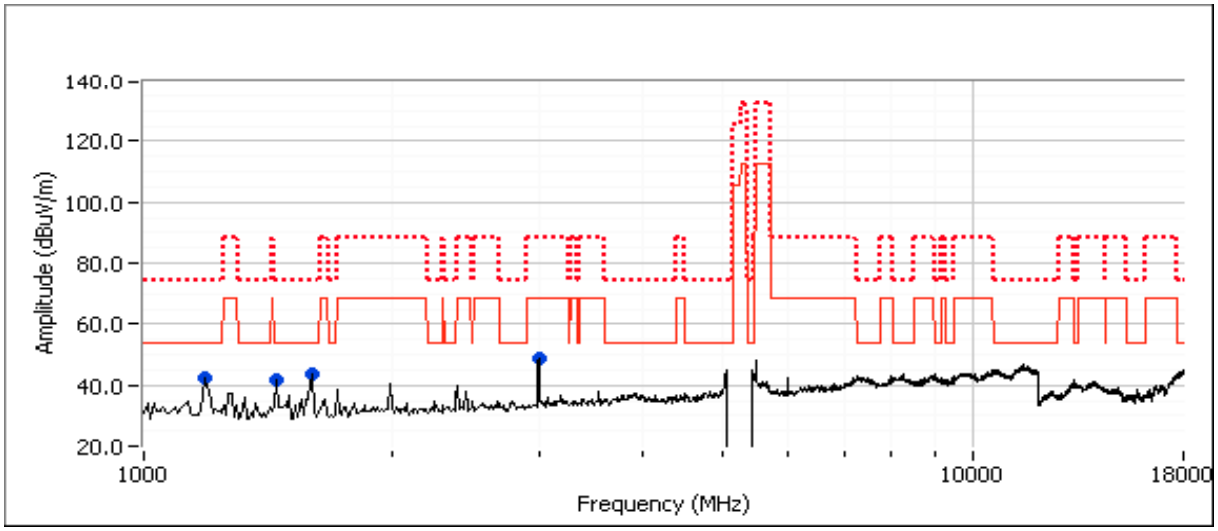
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2d: Channel #64 5320MHz - 802.11a

*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 | |
| 1453.240 | 44.6 | H | 54.0 | -9.4 | AVG | 291 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1454.320 | 45.2 | H | 74.0 | -28.8 | PK | 291 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1593.720 | 30.4 | V | 54.0 | -23.6 | AVG | 356 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1593.800 | 54.0 | V | 74.0 | -20.0 | PK | 356 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1189.130 | 36.6 | H | 54.0 | -17.4 | AVG | 229 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.870 | 41.8 | H | 74.0 | -32.2 | PK | 229 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.760 | 48.6 | V | 68.3 | -19.7 | Peak | 200 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3, Radiated Spurious Emissions, 1-40GHz, Center Channel 5470-5725MHz - 802.11a, n20

Date of Test: 8/15/2011 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: none

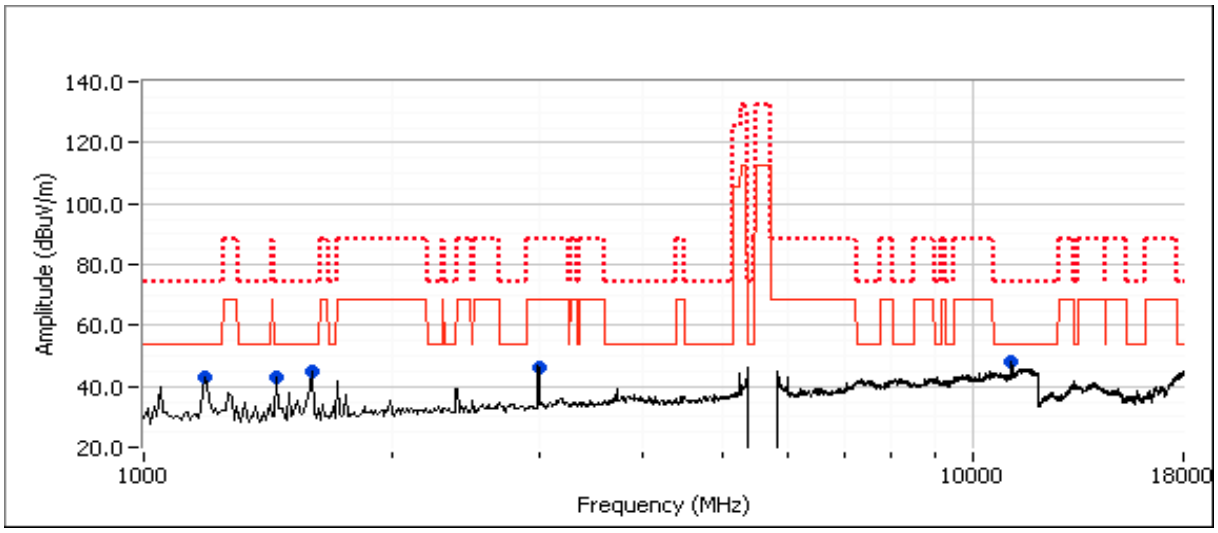
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m).

Run #3a: Channel #116 5580MHz - 802.11a,Chain A

*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 | |
| 1188.900 | 43.7 | V | 54.0 | -10.3 | AVG | 103 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.240 | 46.2 | V | 74.0 | -27.8 | PK | 103 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1593.240 | 28.1 | V | 54.0 | -25.9 | AVG | 3 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.070 | 50.5 | V | 74.0 | -23.5 | PK | 3 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 11158.900 | 42.3 | H | 54.0 | -11.7 | AVG | 212 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 11159.370 | 55.3 | H | 74.0 | -18.7 | PK | 212 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.850 | 46.4 | V | 68.3 | -21.9 | Peak | 127 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



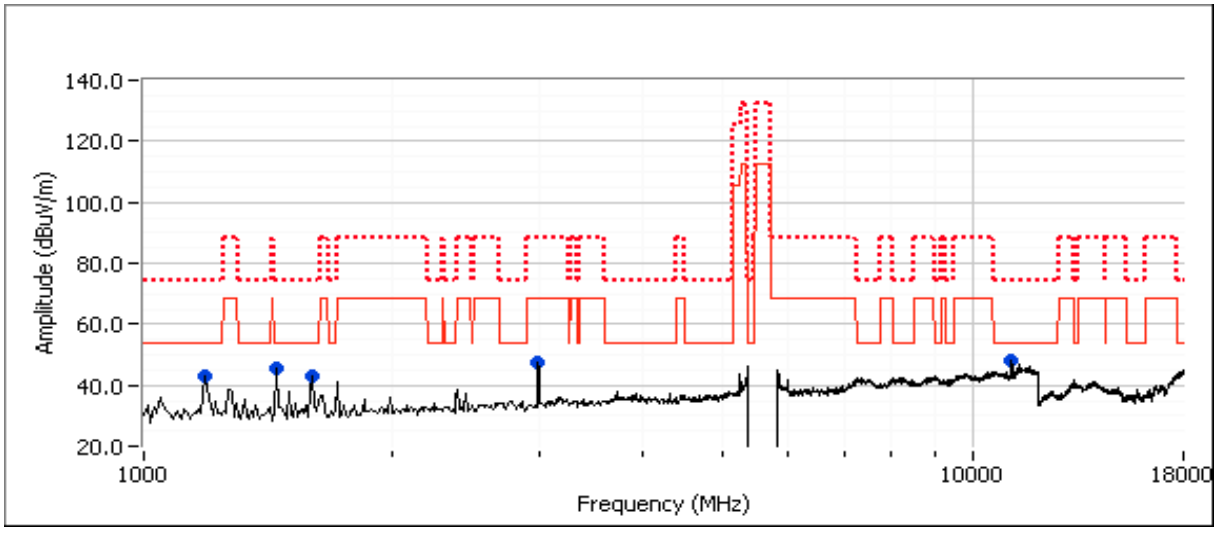
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3b: Channel #116 5580MHz - 802.11n20, Chain A

*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 | |
| 1453.080 | 44.9 | H | 54.0 | -9.1 | AVG | 33 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1453.690 | 45.3 | H | 74.0 | -28.7 | PK | 33 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1595.330 | 30.0 | V | 54.0 | -24.0 | AVG | 349 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1594.640 | 53.5 | V | 74.0 | -20.5 | PK | 349 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.900 | 38.4 | H | 54.0 | -15.6 | AVG | 231 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1189.280 | 37.5 | H | 74.0 | -36.5 | PK | 231 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 11157.100 | 40.3 | H | 54.0 | -13.7 | AVG | 215 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 11159.540 | 54.1 | H | 74.0 | -19.9 | PK | 215 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.840 | 47.2 | V | 68.3 | -21.1 | Peak | 197 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



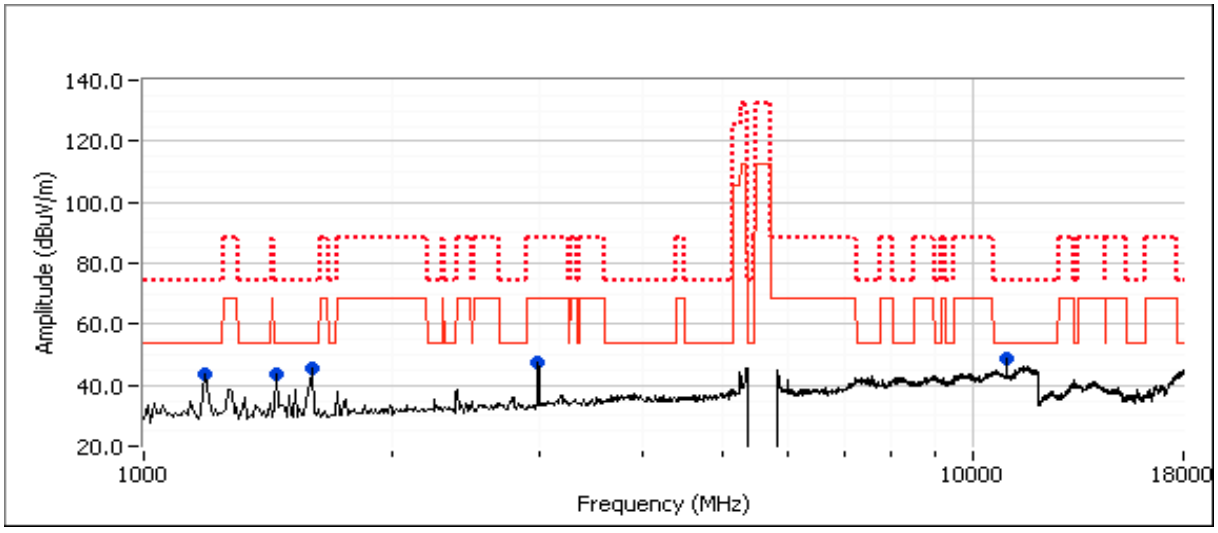
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3c: Channel #100 5500 MHz - 802.11n20

*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 | |
| 1188.940 | 44.6 | V | 54.0 | -9.4 | AVG | 120 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1187.910 | 44.5 | V | 74.0 | -29.5 | PK | 120 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1598.410 | 30.3 | V | 54.0 | -23.7 | AVG | 0 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.070 | 54.3 | V | 74.0 | -19.7 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 11001.020 | 43.5 | H | 54.0 | -10.5 | AVG | 205 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 11000.790 | 54.1 | H | 74.0 | -19.9 | PK | 205 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 1452.980 | 42.9 | H | 54.0 | -11.1 | AVG | 299 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1454.070 | 34.9 | H | 74.0 | -39.1 | PK | 299 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.840 | 47.4 | V | 68.3 | -20.9 | Peak | 199 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



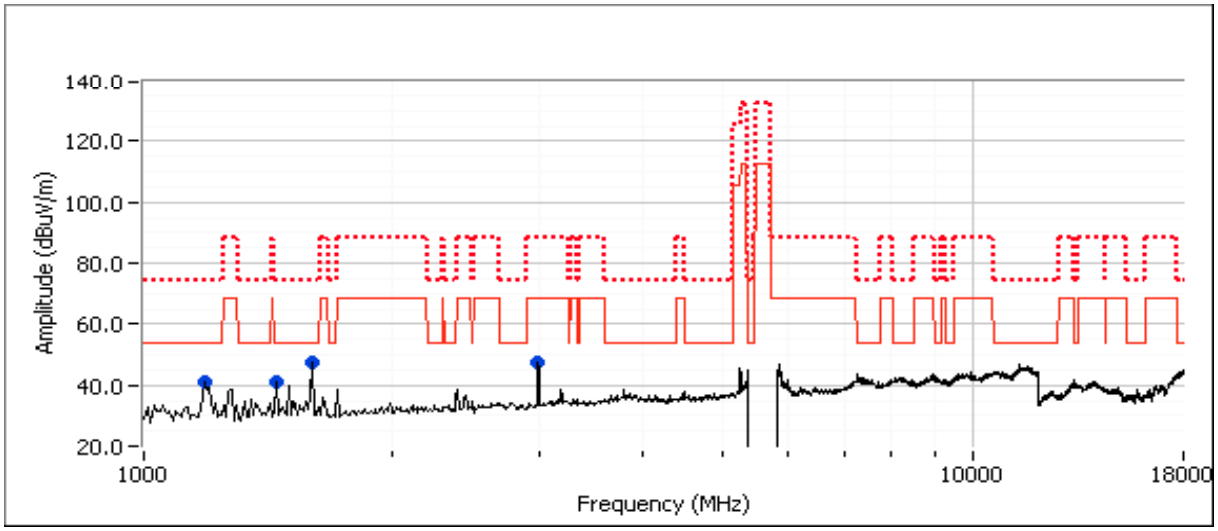
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3d: Channel #140 5700 MHz - 802.11n20

*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 | |
| 1188.900 | 42.6 | V | 54.0 | -11.4 | AVG | 245 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1189.820 | 43.0 | V | 74.0 | -31.0 | PK | 245 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.380 | 30.1 | V | 54.0 | -23.9 | AVG | 354 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.520 | 54.1 | V | 74.0 | -19.9 | PK | 354 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1453.160 | 41.3 | V | 54.0 | -12.7 | AVG | 131 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1452.580 | 35.3 | V | 74.0 | -38.7 | PK | 131 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.840 | 47.7 | V | 68.3 | -20.6 | Peak | 202 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #4, Radiated Spurious Emissions, 1-18GHz, Receive, Chain A

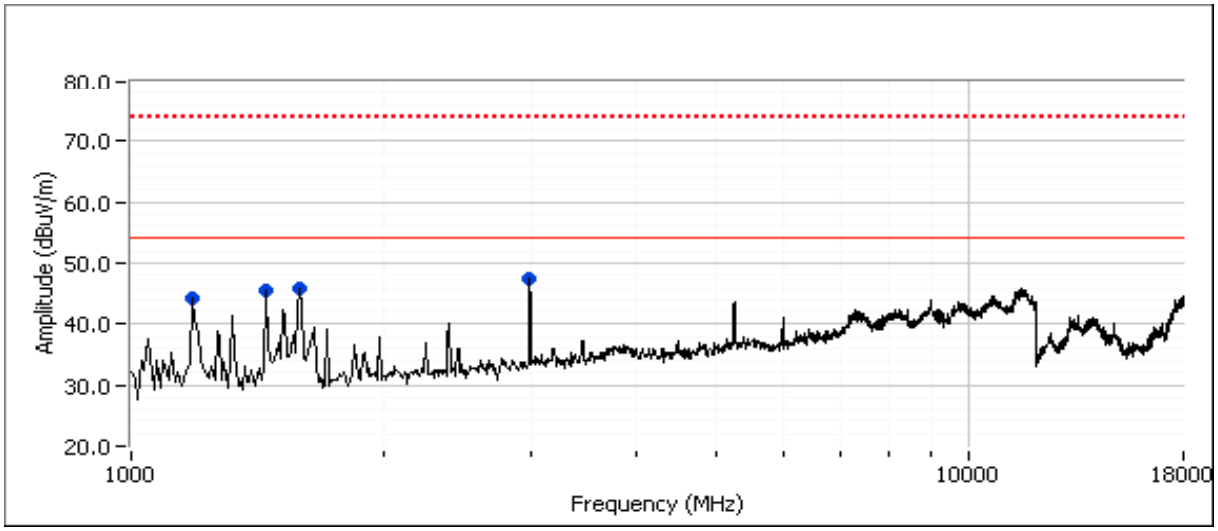
Date of Test: 8/15/2011 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: none

Run #4b: EUT on Channel #60 5300MHz - Receive, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.690 | 47.2 | V | 54.0 | -6.8 | AVG | 203 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.670 | 50.8 | V | 74.0 | -23.2 | PK | 203 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1585.170 | 46.4 | H | 54.0 | -7.6 | AVG | 318 | 1.9 | RB 1 MHz;VB 10 Hz;Pk |
| 1586.460 | 49.0 | H | 74.0 | -25.0 | PK | 318 | 1.9 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.890 | 42.0 | V | 54.0 | -12.0 | AVG | 98 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.360 | 43.9 | V | 74.0 | -30.1 | PK | 98 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1452.930 | 46.4 | H | 54.0 | -7.6 | AVG | 58 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1454.450 | 44.6 | H | 74.0 | -29.4 | PK | 58 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

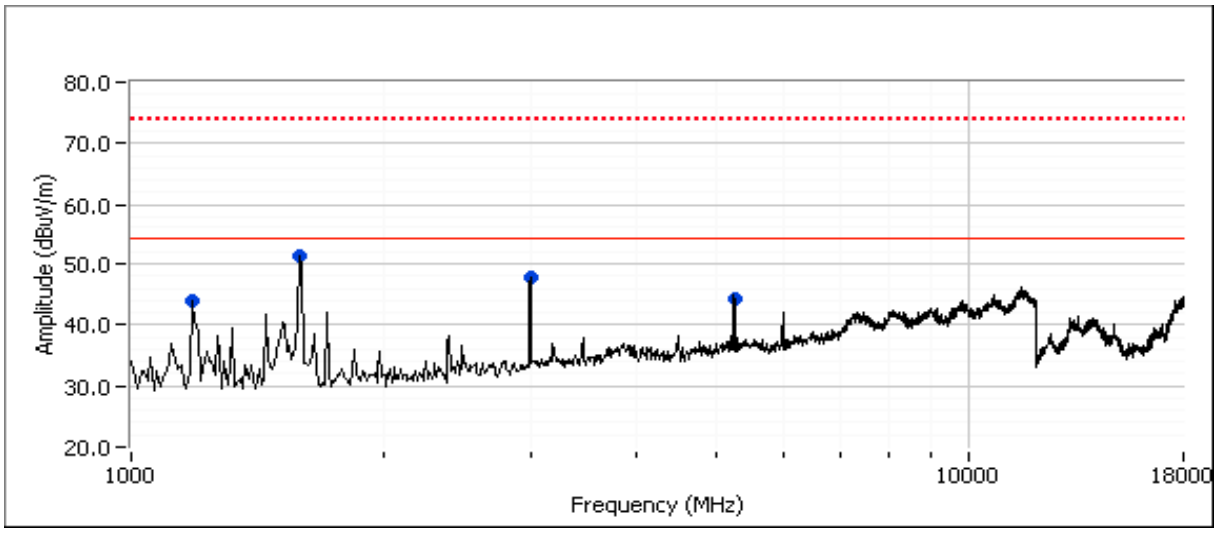


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #4c: EUT on Channel #116 5580MHz - Receive, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.680 | 47.3 | V | 54.0 | -6.7 | AVG | 199 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.650 | 50.8 | V | 74.0 | -23.2 | PK | 199 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.860 | 44.8 | V | 54.0 | -9.2 | AVG | 124 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.120 | 43.4 | V | 74.0 | -30.6 | PK | 124 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5246.770 | 34.4 | V | 54.0 | -19.6 | AVG | 191 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5246.780 | 49.2 | V | 74.0 | -24.8 | PK | 191 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1585.330 | 44.8 | H | 54.0 | -9.2 | AVG | 323 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1584.070 | 44.6 | H | 74.0 | -29.4 | PK | 323 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.407 (UNII) Radiated Bandedge Emissions (H&S)

## Summary of Results

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Run # 1 | 802.11a Chain A | #56 5280MHz | H&S | 100% | Restricted Band Edge at 5250 MHz | LP0002 (Taiwan Only) | 49.6dBµV/m @ 5250.0MHz (-4.4dB) |
| Run # 1 | 802.11a Chain A | #64 5320MHz | H&S | 100% | Restricted Band Edge at 5350 MHz | 15.209 | 51.7dBµV/m @ 5350.4MHz (-2.3dB) |
| Run # 1 | 802.11a Chain A | #100 5500MHz | H&S | 100% | Restricted Band Edge at 5460 MHz | 15.209 | 45.6dBµV/m @ 5459.5MHz (-8.4dB) |
| Run # 2 | 802.11n20 Chain A | #56 5280MHz | H&S | 100% | Restricted Band Edge at 5250 MHz | LP0002 (Taiwan Only) | 48.4dBµV/m @ 5249.5MHz (-5.6dB) |
| Run # 2 | 802.11n20 Chain A | #64 5320MHz | H&S | 100% | Restricted Band Edge at 5350 MHz | 15.209 | 51.5dBµV/m @ 5350.1MHz (-2.5dB) |
| Run # 2 | 802.11n20 Chain A | #100 5500MHz | H&S | 100% | Restricted Band Edge at 5460 MHz | 15.209 | 46.4dBµV/m @ 5459.9MHz (-7.6dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

## Test Specific Details

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

## General Test Configuration

The EUT ws installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

## Ambient Conditions:

| | |
|---|---|
| Rel. Humidity: | 15 - 55 % |
| Temperature: | 18 - 25 °C |

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

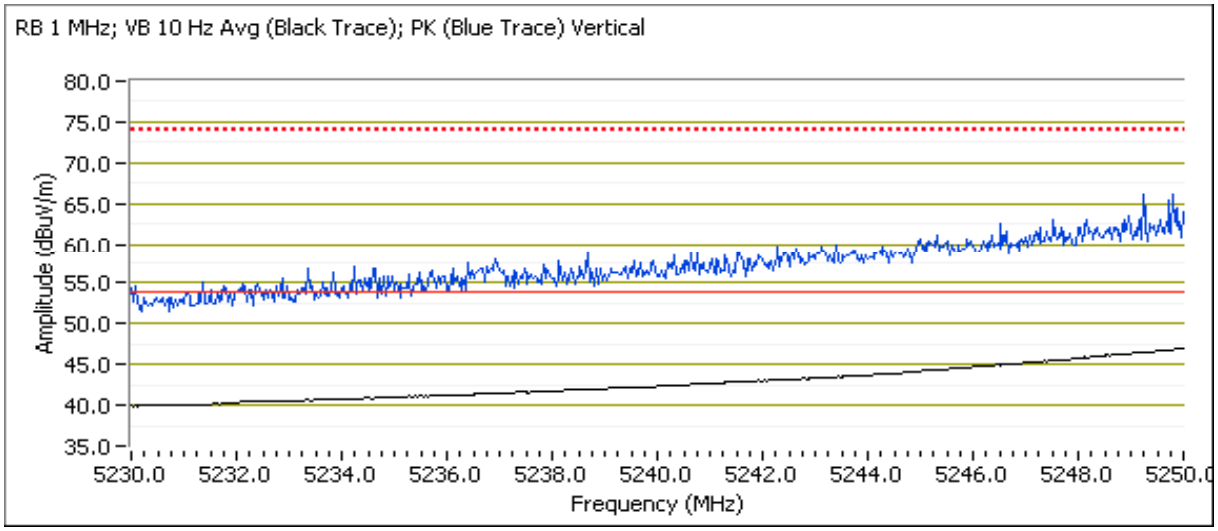
Run # 1, Band Edge Field Strength - 802.11a, Chain A

Run # 1b, EUT on Channel #56 5280MHz - 802.11a, Chain A

For Taiwan Only

*5250MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | LP0002 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5250.000 | 49.6 | V | 54.0 | -4.4 | AVG | 320 | 1.7 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.420 | 63.6 | V | 74.0 | -10.4 | PK | 320 | 1.7 | RB 1 MHz;VB 3 MHz;Pk |
| 5250.000 | 48.6 | H | 54.0 | -5.4 | AVG | 327 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.230 | 63.4 | H | 74.0 | -10.6 | PK | 327 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

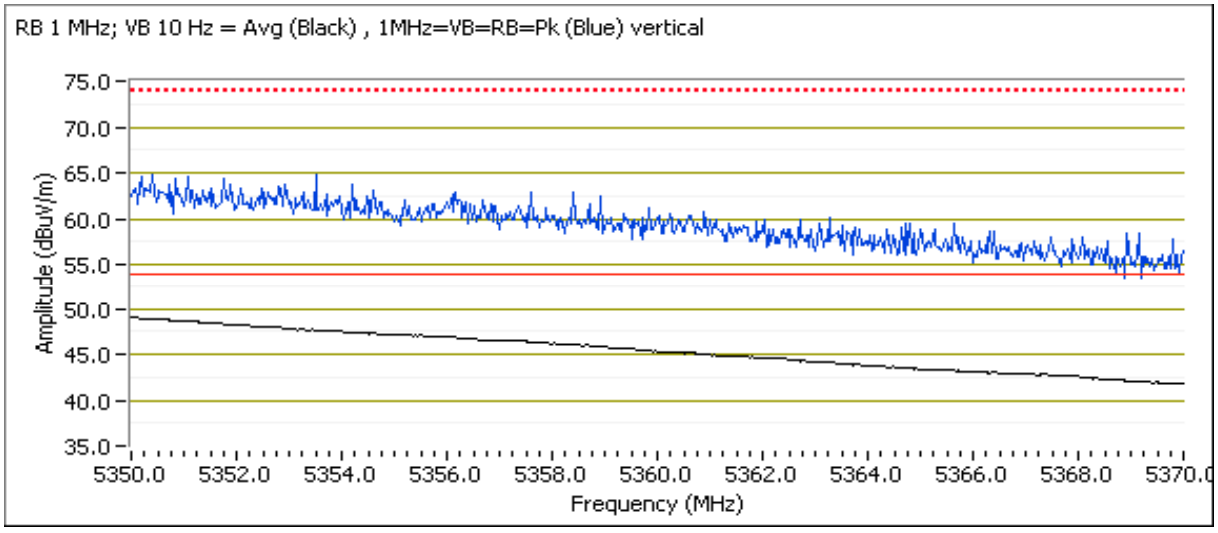
Run # 1c, EUT on Channel #64 5320MHz - 802.11a, Chain A

Date of Test: 8/16/2011 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

*Direct Measurement of Field Strength at the bandedge*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.400 | 51.7 | V | 54.0 | -2.3 | AVG | 308 | 1.5 | RB 1 MHz;VB 10 Hz;Pk |
| 5353.400 | 63.7 | V | 74.0 | -10.3 | PK | 308 | 1.5 | RB 1 MHz;VB 3 MHz;Pk |
| 5350.170 | 50.4 | H | 54.0 | -3.6 | AVG | 323 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.630 | 64.1 | H | 74.0 | -9.9 | PK | 323 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

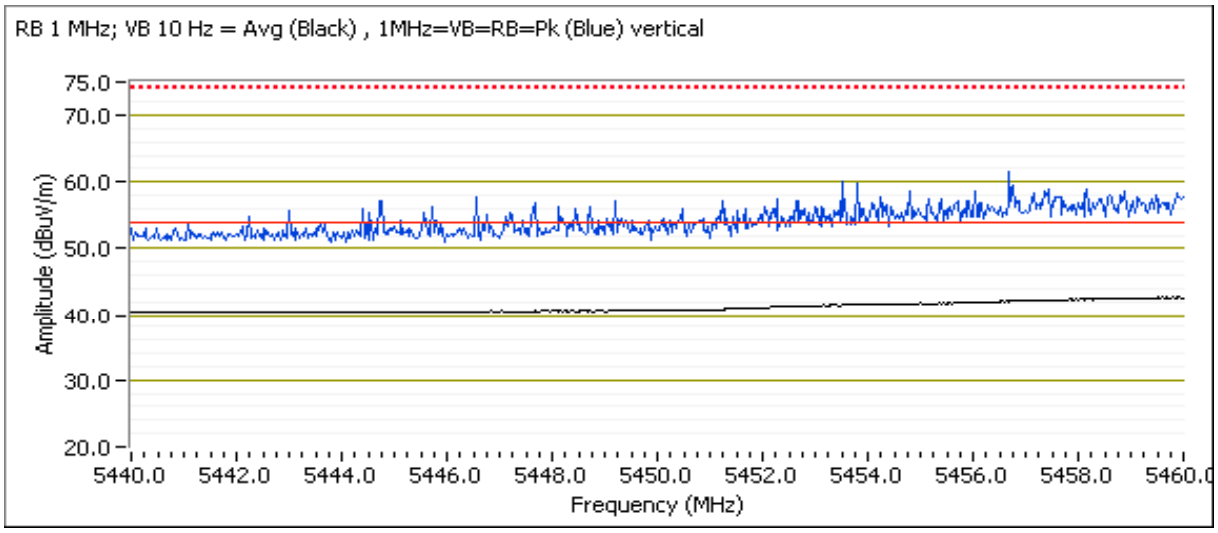


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 1d, EUT on Channel #100 5500MHz - 802.11a, Chain A

*Direct Measurement of Field Strength at the bandedge @ 5460 MHz*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.500 | 45.6 | V | 54.0 | -8.4 | AVG | 311 | 2.5 | RB 1 MHz;VB 10 Hz;Pk |
| 5453.130 | 58.3 | V | 74.0 | -15.7 | PK | 311 | 2.5 | RB 1 MHz;VB 3 MHz;Pk |
| 5459.430 | 45.5 | H | 54.0 | -8.5 | AVG | 43 | 1.1 | RB 1 MHz;VB 10 Hz;Pk |
| 5455.170 | 58.4 | H | 74.0 | -15.6 | PK | 43 | 1.1 | RB 1 MHz;VB 3 MHz;Pk |

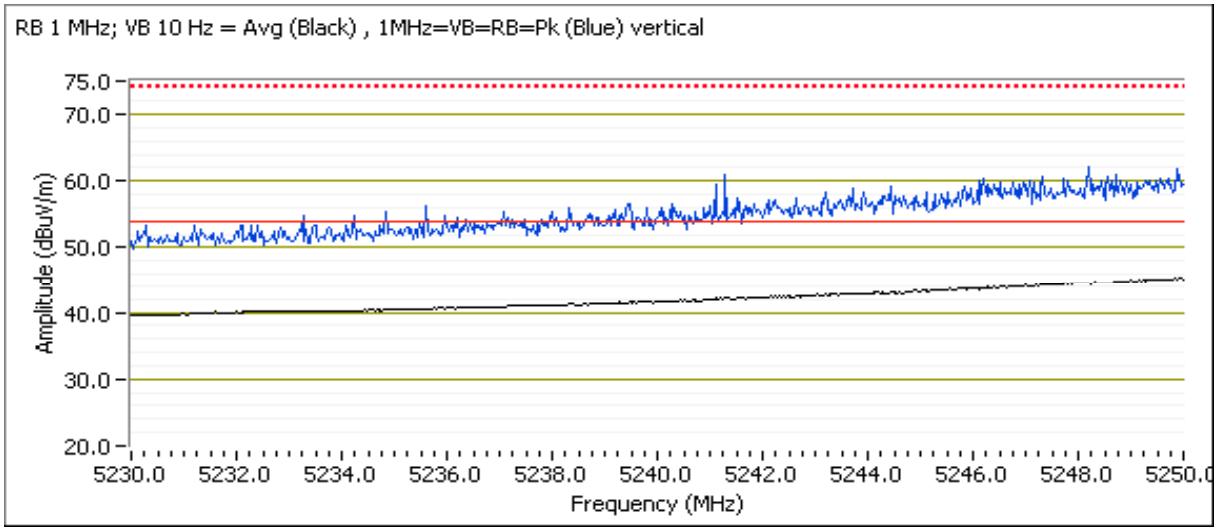


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 2, Band Edge Field Strength - 802.11n20, Chain A

Run # 2b, EUT on Channel #56 5280MHz - 802.11n20, Chain A
For Taiwan Only
*5250MHz Band Edge Signal Radiated Field Strength*

| Frequency | Level | Pol | LP0002 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5249.500 | 48.4 | V | 54.0 | -5.6 | AVG | 305 | 2.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5249.430 | 60.0 | V | 74.0 | -14.0 | PK | 305 | 2.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5250.000 | 46.2 | H | 54.0 | -7.8 | AVG | 46 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 5248.170 | 58.4 | H | 74.0 | -15.6 | PK | 46 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

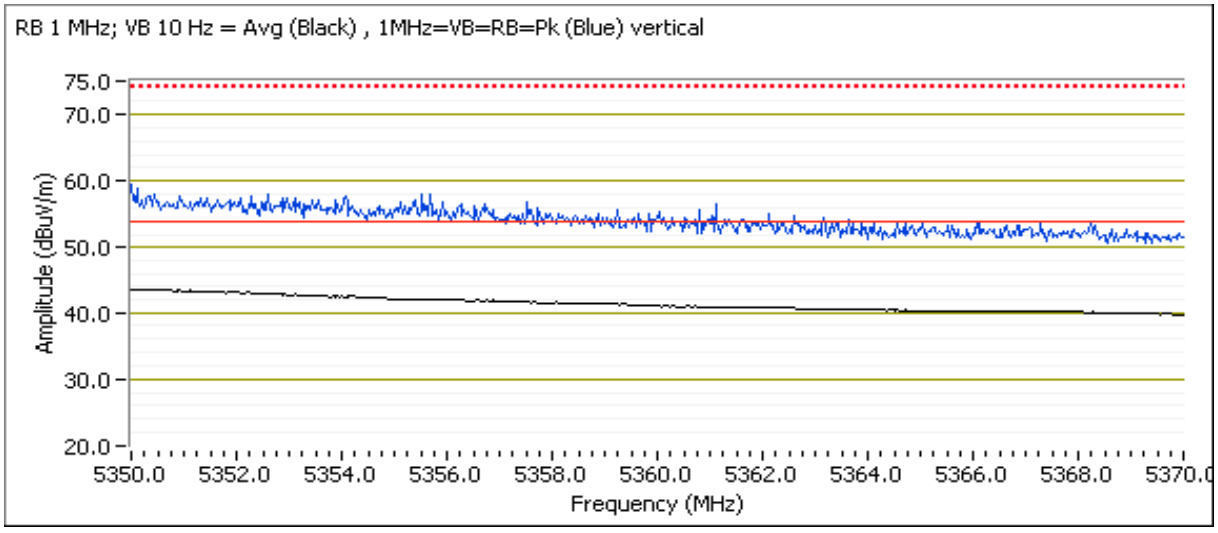
Run # 2c, EUT on Channel #64 5320MHz - 802.11n20, Chain A

Date of Test: 8/16/2011 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

*Direct Measurement of Field Strength at the bandedge*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5350.070 | 51.5 | V | 54.0 | -2.5 | AVG | 0 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.330 | 62.9 | V | 74.0 | -11.1 | PK | 0 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 5350.070 | 51.8 | H | 54.0 | -2.2 | AVG | 44 | 1.6 | RB 1 MHz;VB 10 Hz;Pk |
| 5350.630 | 65.1 | H | 74.0 | -8.9 | PK | 44 | 1.6 | RB 1 MHz;VB 3 MHz;Pk |

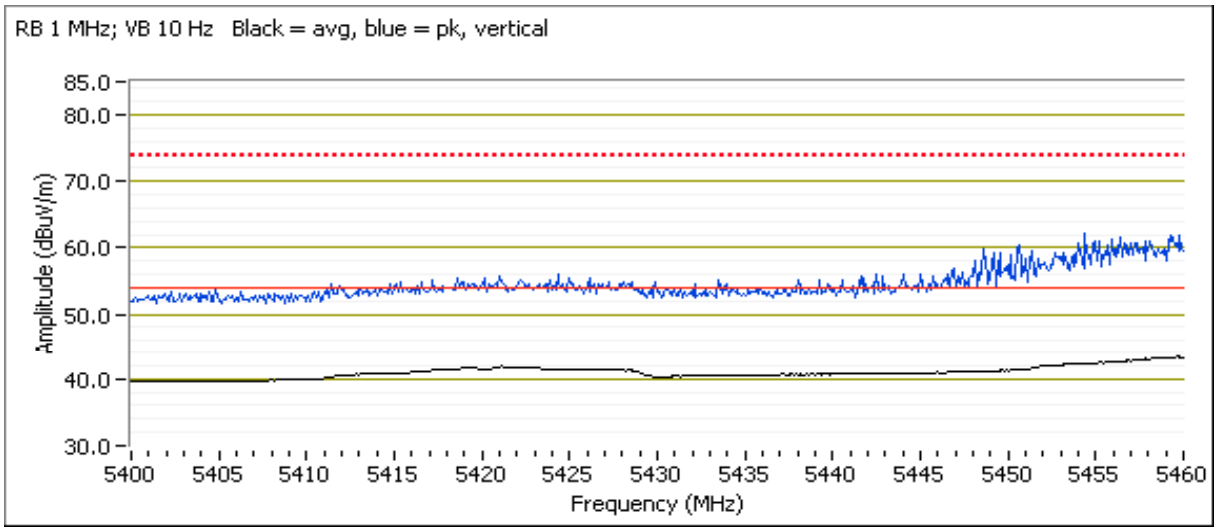


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run # 2d, EUT on Channel #100, 5500MHz - 802.11n20, Chain A

*Direct Measurement of Field Strength at the bandedge @ 5460 MHz*

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 5459.700 | 46.1 | H | 54.0 | -7.9 | AVG | 47 | 1.01 | |
| 5457.800 | 58.0 | H | 74.0 | -16.0 | PK | 47 | 1.01 | |
| 5459.900 | 46.4 | V | 54.0 | -7.6 | AVG | 333 | 1.22 | |
| 5459.300 | 58.7 | V | 74.0 | -15.3 | PK | 333 | 1.22 | |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions (H&S)

## Summary of Results

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Mode | Channel | Antenna | Power Setting | Test Performed | Limit | Result / Margin |
|---|---|---|---|---|---|---|---|
| Scans on center channel in both OFDM modes to determine the worst case. | | | | | | | |
| Run #2 (5250-5350MHz Band) | 802.11a Chain A | #60 5300MHz | H&S | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 50.7dBµV/m @ 5459.1MHz (-3.3dB) |
| | n20 Chain A | #60 5300MHz | H&S | 100% | | | 48.5dBµV/m @ 5458.4MHz (-5.5dB) |
| | Worst case mode (802.11a) - top and bottom channels. | | | | | | |
| | 802.11a Chain A | #52 5260MHz | H&S | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 43.8dBµV/m @ 1189.0MHz (-10.2dB) |
| | | #64 5320MHz | H&S | 100% | | | 40.5dBµV/m @ 10640.2MHz (-13.5dB) |
| Run #3 (5470-5725MHz Band) | 802.11a Chain A | #116 5580MHz | H&S | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 48.0dBµV/m @ 1188.9MHz (-6.0dB) |
| | n20 Chain A | #116 5580MHz | H&S | 100% | | | 45.7dBµV/m @ 1188.9MHz (-8.3dB) |
| | Worst case mode (802.11a) - top and bottom channels. | | | | | | |
| | 802.11a Chain A | #100 5500MHz | H&S | 100% | Radiated Emissions, 1 - 40 GHz | FCC 15.209 / 15 E | 39.8dBµV/m @ 10999.2MHz (-14.2dB) |
| | | #140 5700MHz | H&S | 100% | | | 46.0dBµV/m @ 1188.9MHz (-8.0dB) |
| Receive mode | | | | | | | |
| Run #4 | Receive | #60 5300MHz | H&S | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 48.5dBµV/m @ 1188.9MHz (-5.5dB) |
| | | #116 5580MHz | H&S | - | Radiated Emissions, 1 - 18 GHz | RSS-GEN | 46.2dBµV/m @ 2994.7MHz (-7.8dB) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

## Test Specific Details

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

## General Test Configuration

The EUT ws installed into a test fixture such that the EUT was exposed (i.e. outside of a host PC).
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

## Ambient Conditions:

| | |
|---|---|
| Rel. Humidity: | 15 - 55 % |
| Temperature: | 18 - 25 °C |

## 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.

## Notes:

No radio related emissions were observed below 1GHz and above 18GHz in preliminary measurements.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2, Radiated Spurious Emissions, 1-40GHz, Center Channel 5250-5350MHz - 802.11a, n20

Date of Test: 8/17/2011 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: none

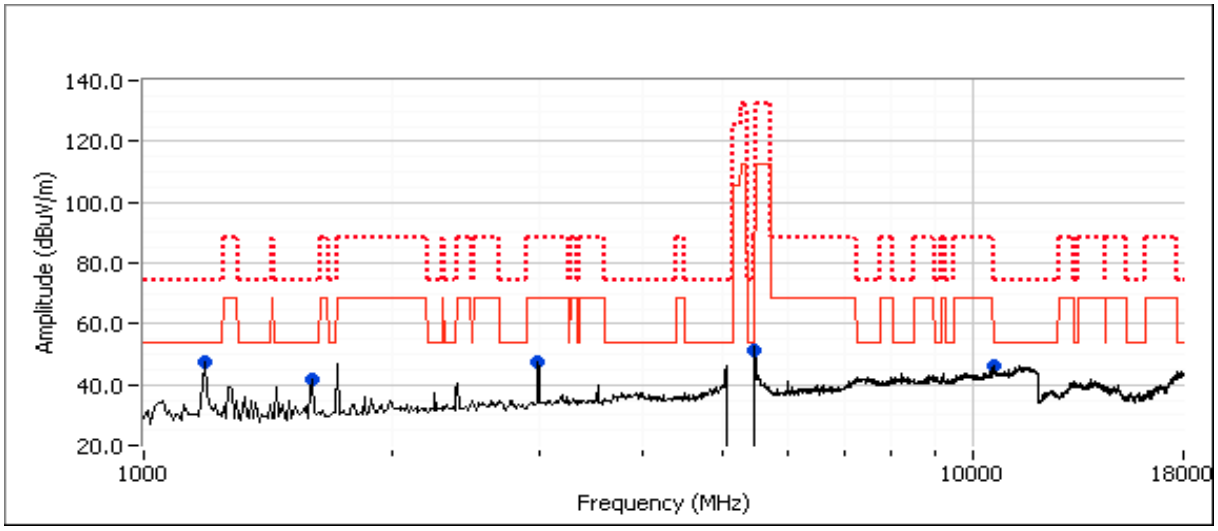
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m).

Run #2a: Channel #60 5300MHz - 802.11a,Chain A

*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 | |
| 5459.110 | 50.7 | V | 54.0 | -3.3 | AVG | 309 | 1.2 | RB 1 MHz;VB 10 Hz;Pk |
| 5459.380 | 60.2 | V | 74.0 | -13.8 | PK | 309 | 1.2 | RB 1 MHz;VB 3 MHz;Pk |
| 10600.160 | 39.3 | V | 54.0 | -14.7 | AVG | 132 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 10600.600 | 49.6 | V | 74.0 | -24.4 | PK | 132 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.110 | 30.5 | V | 54.0 | -23.5 | AVG | 186 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1596.380 | 52.6 | V | 74.0 | -21.4 | PK | 186 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.740 | 41.2 | V | 54.0 | -12.8 | AVG | 331 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1195.230 | 41.5 | V | 74.0 | -32.5 | PK | 331 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.830 | 47.7 | V | 68.3 | -20.6 | Peak | 151 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



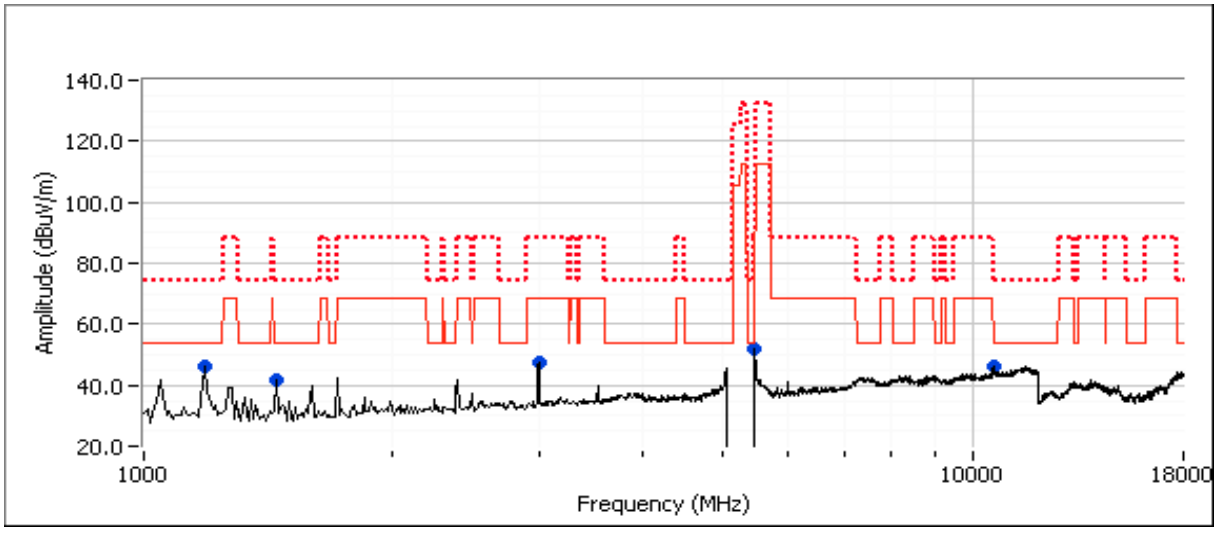
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2b: Channel #60 5300MHz - 802.11n20,Chain A

*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 | |
| 5458.380 | 48.5 | V | 54.0 | -5.5 | AVG | 340 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 5459.180 | 58.8 | V | 74.0 | -15.2 | PK | 340 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |
| 1452.630 | 37.5 | V | 54.0 | -16.5 | AVG | 11 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1458.800 | 38.1 | V | 74.0 | -35.9 | PK | 11 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.530 | 43.9 | V | 54.0 | -10.1 | AVG | 79 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1198.960 | 40.7 | V | 74.0 | -33.3 | PK | 79 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 10601.190 | 41.2 | H | 54.0 | -12.8 | AVG | 351 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 10598.560 | 52.6 | H | 88.3 | -35.7 | PK | 351 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.810 | 47.5 | V | 68.3 | -20.8 | Peak | 153 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



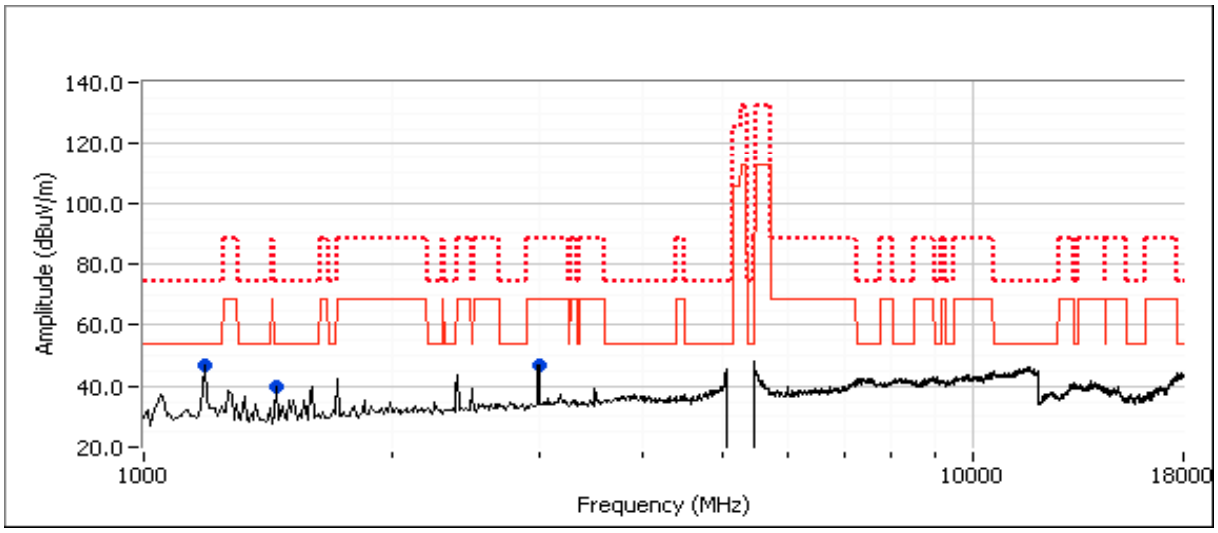
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2c: Channel #52 5260MHz - 802.11a

*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 | |
| 1188.990 | 43.8 | V | 54.0 | -10.2 | AVG | 158 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.730 | 36.4 | V | 74.0 | -37.6 | PK | 158 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1453.080 | 37.6 | H | 54.0 | -16.4 | AVG | 355 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1440.720 | 34.1 | H | 74.0 | -39.9 | PK | 355 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.810 | 47.0 | V | 68.3 | -21.3 | Peak | 155 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



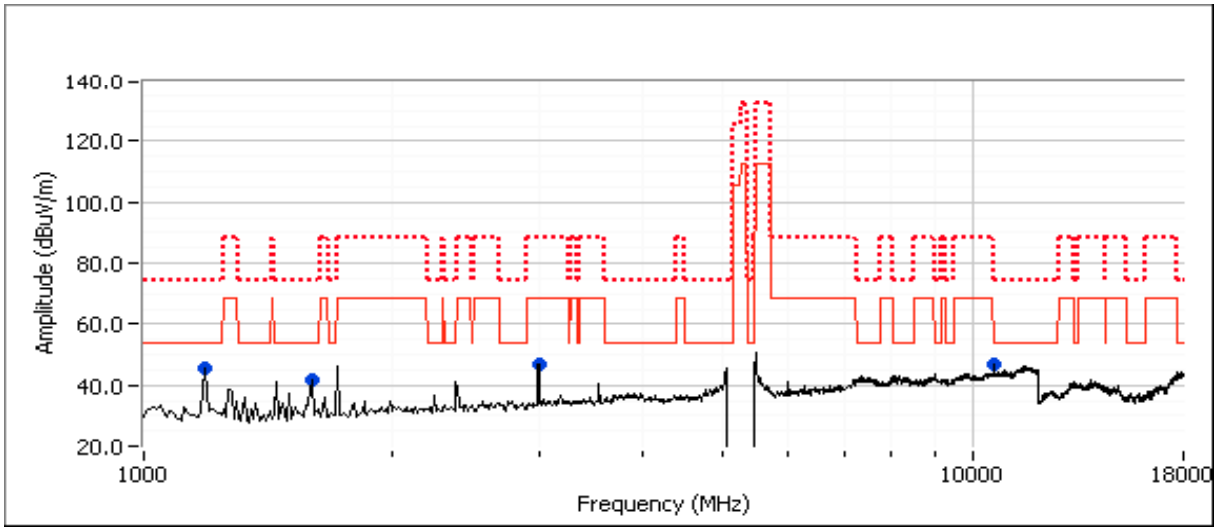
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #2d: Channel #64 5320MHz - 802.11a

*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 | |
| 10640.160 | 40.5 | V | 54.0 | -13.5 | AVG | 36 | 1.5 | RB 1 MHz;VB 10 Hz;Pk |
| 10641.230 | 51.6 | V | 74.0 | -22.4 | PK | 36 | 1.5 | RB 1 MHz;VB 3 MHz;Pk |
| 1585.600 | 30.1 | V | 54.0 | -23.9 | AVG | 3 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.400 | 48.2 | V | 74.0 | -25.8 | PK | 3 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.420 | 40.5 | H | 54.0 | -13.5 | AVG | 195 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1181.120 | 36.0 | H | 74.0 | -38.0 | PK | 195 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.810 | 46.8 | V | 68.3 | -21.5 | Peak | 148 | 1.3 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3, Radiated Spurious Emissions, 1-40GHz, Center Channel 5470-5725MHz - 802.11a, n20

Date of Test: 8/17/2011 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: none

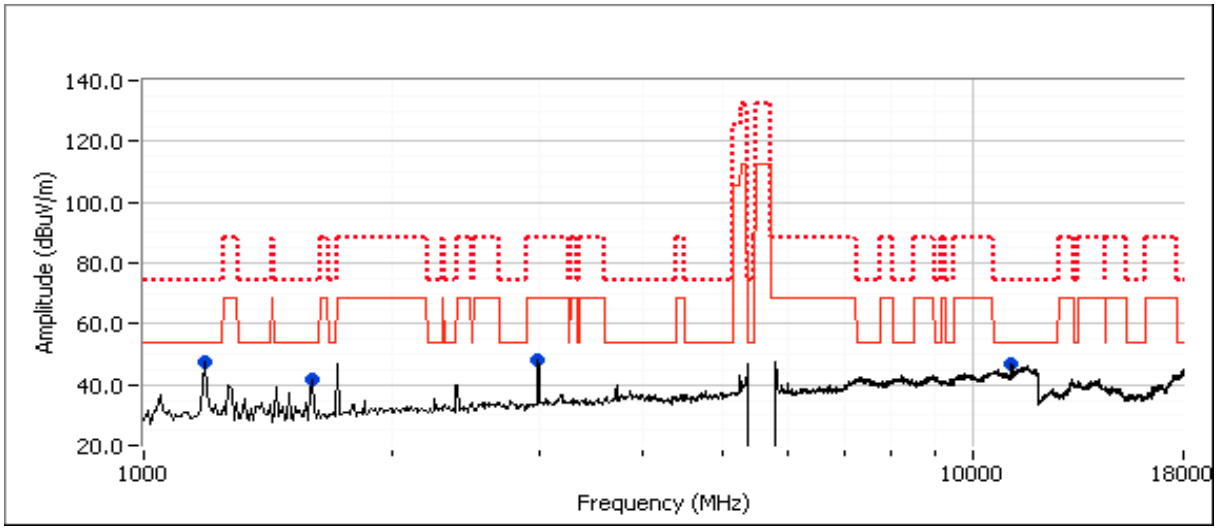
For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit is -27dBm eirp (68.3dBuV/m @3m).

Run #3a: Channel #116 5580MHz - 802.11a,Chain A

*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 | |
| 1188.900 | 48.0 | V | 54.0 | -6.0 | AVG | 132 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.500 | 50.1 | V | 74.0 | -23.9 | PK | 132 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.110 | 31.1 | V | 54.0 | -22.9 | AVG | 182 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1598.720 | 54.1 | V | 74.0 | -19.9 | PK | 182 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 11159.180 | 39.3 | H | 54.0 | -14.7 | AVG | 8 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 11162.480 | 50.9 | H | 74.0 | -23.1 | PK | 8 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.830 | 47.8 | V | 68.3 | -20.5 | Peak | 152 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



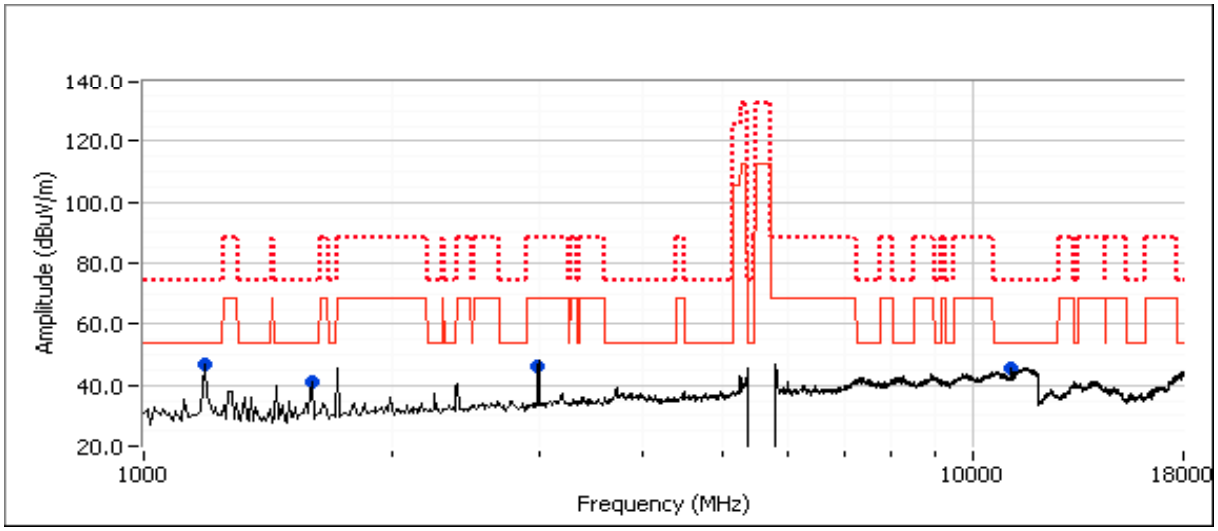
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3b: Channel #116 5580MHz - 802.11n20, Chain A

*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 | |
| 1188.940 | 45.7 | V | 54.0 | -8.3 | AVG | 140 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1187.730 | 35.9 | V | 74.0 | -38.1 | PK | 140 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 11158.660 | 40.1 | H | 54.0 | -13.9 | AVG | 15 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 11159.930 | 53.3 | H | 74.0 | -20.7 | PK | 15 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 1597.110 | 28.1 | V | 54.0 | -25.9 | AVG | 332 | 1.3 | RB 1 MHz;VB 10 Hz;Pk |
| 1597.680 | 44.0 | V | 74.0 | -30.0 | PK | 332 | 1.3 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.830 | 46.3 | V | 68.3 | -22.0 | Peak | 151 | 1.3 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



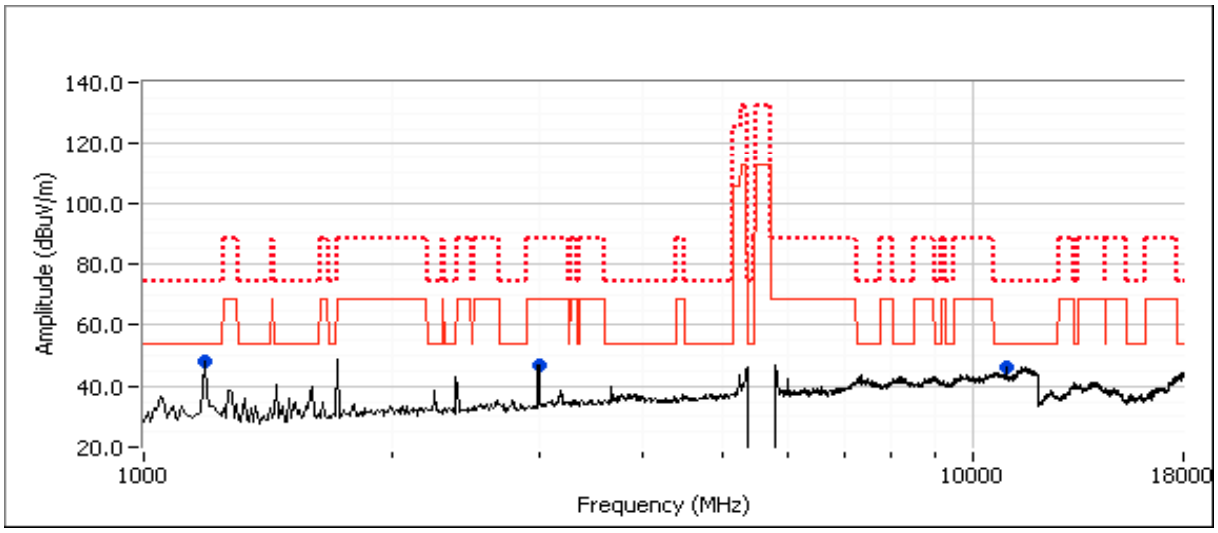
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3c: Channel #100 5500 MHz - 802.11a

*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 | |
| 10999.160 | 39.8 | V | 54.0 | -14.2 | AVG | 331 | 1.4 | RB 1 MHz;VB 10 Hz;Pk |
| 11006.990 | 51.6 | V | 74.0 | -22.4 | PK | 331 | 1.4 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.810 | 46.9 | V | 68.3 | -21.4 | Peak | 149 | 1.0 | Note 1 |
| 1189.020 | 38.6 | V | 54.0 | -15.4 | AVG | 350 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.420 | 40.4 | V | 74.0 | -33.6 | PK | 350 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



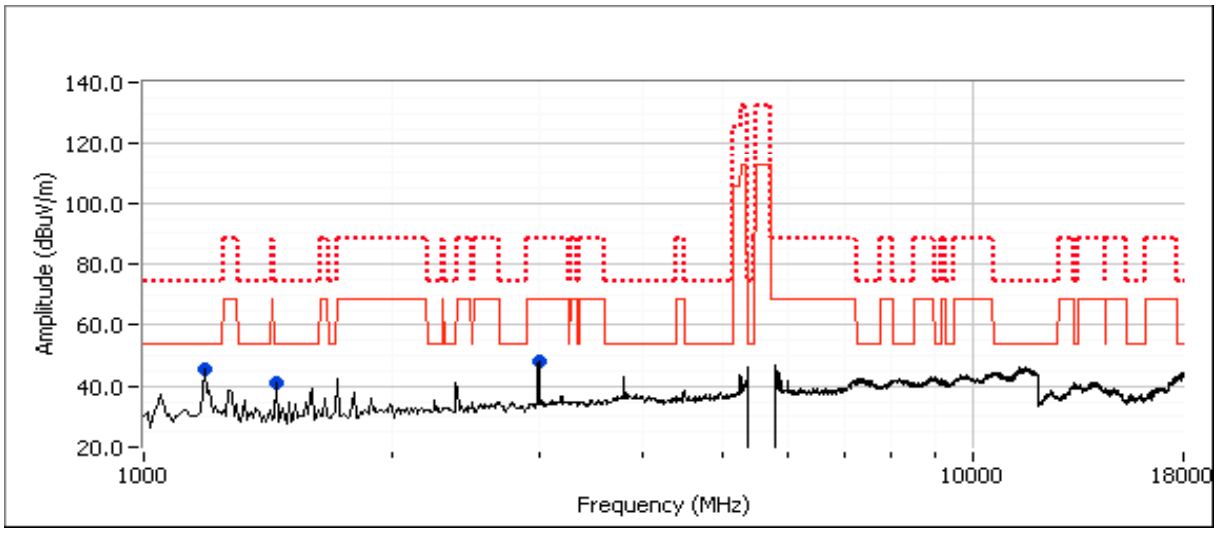
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #3d: Channel #140 5700 MHz - 802.11a

*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 | |
| 1188.860 | 46.0 | H | 54.0 | -8.0 | AVG | 191 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.480 | 35.7 | H | 74.0 | -38.3 | PK | 191 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1453.160 | 39.1 | H | 54.0 | -14.9 | AVG | 14 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1454.320 | 42.4 | H | 74.0 | -31.6 | PK | 14 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.810 | 47.9 | V | 68.3 | -20.4 | Peak | 148 | 1.0 | Note 1 |

| | |
|---|---|
| Note 1 | Emission in non restricted band. Peak measurement compared to non-restricted band limit of -27dBm/MHz eirp (68.3dBuV/m) |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #4, Radiated Spurious Emissions, 1-418GHz, Receive, Chain A

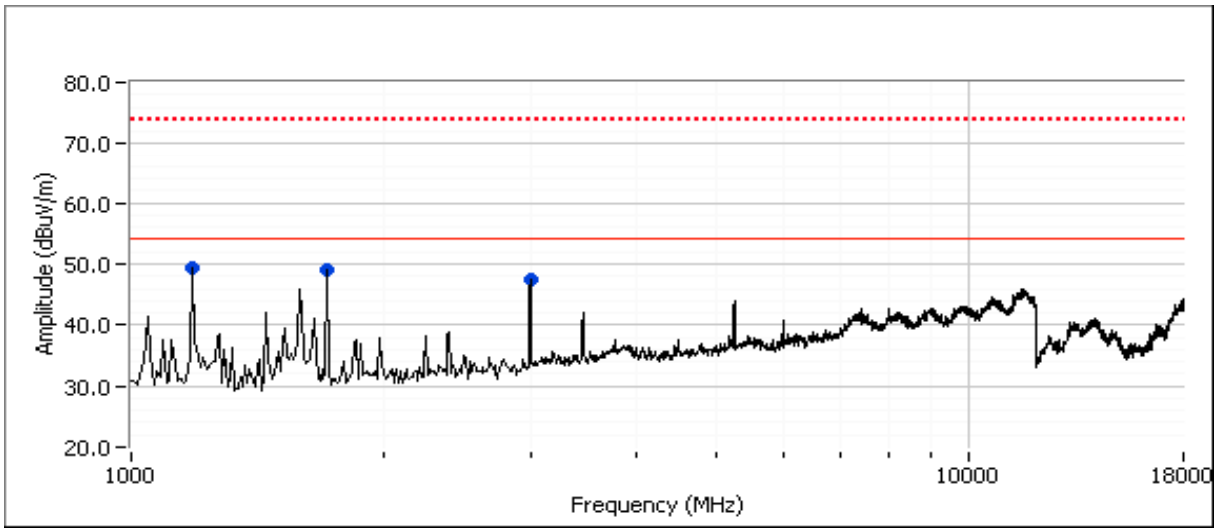
Date of Test: 8/17/2011 Test Location: FT5

Test Engineer: Rafael Varelas Config Change: none

Run #4b: EUT on Channel #60 5300MHz - Receive, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 1188.940 | 48.5 | H | 54.0 | -5.5 | AVG | 125 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.900 | 48.4 | H | 74.0 | -25.6 | PK | 125 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1717.460 | 46.3 | V | 54.0 | -7.7 | AVG | 310 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1716.930 | 35.4 | V | 74.0 | -38.6 | PK | 310 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 2994.670 | 48.1 | V | 54.0 | -5.9 | AVG | 147 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.640 | 51.2 | V | 74.0 | -22.8 | PK | 147 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |

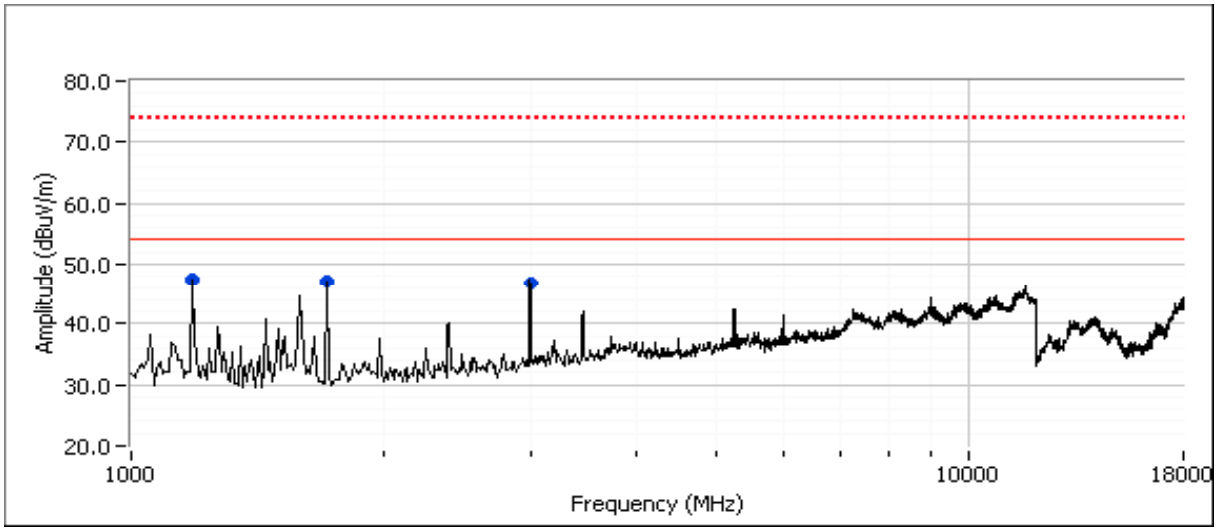


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Run #4c: EUT on Channel #116 5580MHz - Receive, Chain A

*Spurious Radiated Emissions:*

| Frequency | Level | Pol | RSS-GEN | | Detector | Azimuth | Height | Comments |
|---|---|---|---|---|---|---|---|---|
| MHz | dBµV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2994.670 | 46.2 | V | 54.0 | -7.8 | AVG | 180 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 2994.730 | 51.1 | V | 74.0 | -22.9 | PK | 180 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1188.870 | 40.5 | V | 54.0 | -13.5 | AVG | 3 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1188.200 | 43.6 | V | 74.0 | -30.4 | PK | 3 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |
| 1717.330 | 39.3 | V | 54.0 | -14.7 | AVG | 140 | 1.0 | RB 1 MHz;VB 10 Hz;Pk |
| 1717.250 | 44.3 | V | 74.0 | -29.7 | PK | 140 | 1.0 | RB 1 MHz;VB 3 MHz;Pk |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

# RSS-210 (LELAN) and FCC 15.407(UNII)
## Antenna Port Measurements
### Power, PSD, Peak Excursion, 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: 8/24/2011 2/6/2012
Test Engineer: John Caizzi / Joseph Cadigal
Test Location: FT5

Config. Used: 2
Config Change: no antennas
EUT Voltage: 3.3 VDC

## Summary of Results

New Module #2011-1296, Laptop #2011-2312, Linux Shell

| Run # | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|
| 1 | Power, 5250 - 5350MHz | LP0002 | Pass | 802.11a: 26 mW<br>802.11n 20MHz: 21 mW |
| 1 | PSD, 5250 - 5350MHz | LP0002 | Pass | 802.11a: 3.1 dBm/MHz<br>802.11n 20MHz: 1.7 dBm/MHz |
| 1 | Max EIRP<br>5250 - 5350MHz | TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm. | N/A | EIRP = 20.7 dBm (117.5 mW)<br>TPC not required |
| 1 | Power, 5470 - 5725MHz | 15.407(a) (1), (2) | Pass | 802.11a: 31 mW<br>802.11n 20MHz: 21 mW |
| 1 | PSD, 5470 - 5725MHz | 15.407(a) (1), (2) | Pass | 802.11a: 4 dBm/MHz<br>802.11n 20MHz: 2.1 dBm/MHz |
| 1 | Max EIRP<br>5470 - 5725MHz | TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm. | N/A | EIRP = 21.5 dBm (140 mW)<br>TPC not required |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

| Run # | Test Performed | Limit | Pass / Fail | Result / Margin |
|---|---|---|---|---|
| 1 | 26dB Bandwidth | 15.407<br>(Information only) | - | > 20MHz for all modes |
| 1 | 99% Bandwidth | RSS 210<br>(Information only) | N/A | 802.11a: 17.3 MHz<br>802.11n 20MHz: 18.1 MHz |
| 2 | Peak Excursion Envelope | 15.407(a) (6)<br>13dB | - | 802.11a: Pass<br>802.11n 20MHz: Pass |
| 3 | Antenna Conducted - Out of Band Spurious | 15.407(b)<br>-27dBm/MHz | Pass | All emissions below the -27dBm/MHz limit |

## General Test Configuration

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

## Ambient Conditions:

| | |
|---|---|
| Temperature: | 24 °C |
| Rel. Humidity: | 43 % |

## 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: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

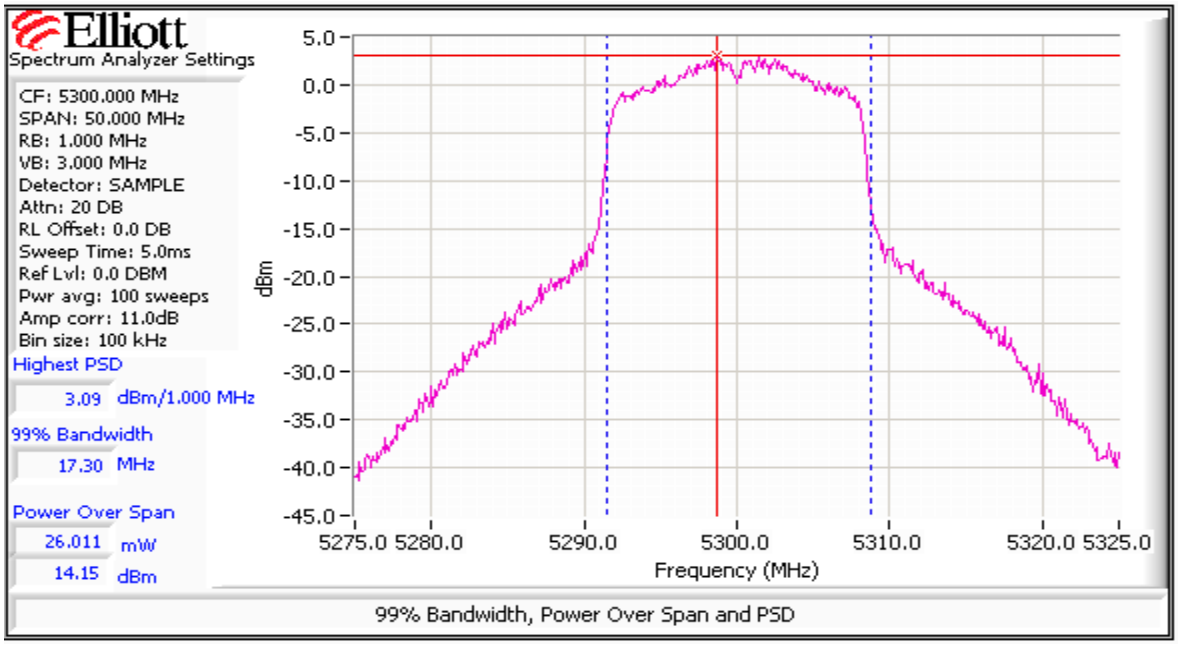
Run #1: Bandwidth, Output Power and Power Spectral Density - Single Chain Systems

| | |
|---|---|
| Note 1: | Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the analyzer was configured with a gated sweep such that it was sweeping only when the device was transmitting) and power integration over 50 MHz (method 1 of DA-02-2138A1). |
| Note 2: | Measured using the same analyzer settings used for output power. |
| Note 3: | For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB. |
| Note 4: | 99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB |

Taiwan LP0002 Power Table
Single Chain Operation, 5250-5350 MHz Band, LP0002 (Taiwan)

Antenna Gain (dBi): 6.5 EIRP: 117.5 mW 20.7 dBm

| Frequency (MHz) | Software Setting | Bandwidth 26dB | Bandwidth 99%[4] | Output Power[1] dBm Measured | Output Power[1] dBm Limit | Power (Watts) | PSD[2] dBm/MHz Measured | PSD[2] dBm/MHz LP0002 Limit | Result |
|---|---|---|---|---|---|---|---|---|---|
| 802.11a | | | | | | | | | |
| 5260 | - | 29.7 | 17.1 | 12.8 | 16.5 | 0.019 | 1.6 | 3.5 | Pass |
| 5300 | - | 33.7 | 17.3 | 14.2 | 16.5 | 0.026 | 3.1 | 3.5 | Pass |
| 5320 | - | 23.3 | 16.7 | 10.5 | 16.5 | 0.011 | -0.7 | 3.5 | Pass |
| 802.11n 20MHz | | | | | | | | | |
| 5260 | - | 29.7 | 18.1 | 11.9 | 16.5 | 0.015 | 0.4 | 3.5 | Pass |
| 5300 | - | 32.8 | 18.1 | 13.2 | 16.5 | 0.021 | 1.7 | 3.5 | Pass |
| 5320 | - | 22.2 | 17.9 | 8.5 | 16.5 | 0.007 | -2.8 | 3.5 | Pass |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Single Chain Operation, 5470- 5725 MHz Band

Antenna Gain (dBi): 6.5 EIRP: 140.0 mW 21.5 dBm

| Frequency (MHz) | Software Setting | Bandwidth 26dB | Bandwidth 99%[4] | Output Power[1] dBm Measured | Output Power[1] dBm Limit | Power (Watts) | PSD[2] dBm/MHz Measured | PSD[2] dBm/MHz FCC Limit | PSD[2] dBm/MHz RSS Limit[3] | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a | | | | | | | | | | |
| 5500 | Default | 31.5 | 17.2 | 15.0 | 23.5 | 0.031 | 4.0 | 10.5 | 11.0 | Pass |
| 5580 | Default | 30.4 | 16.9 | 13.5 | 23.5 | 0.022 | 2.4 | 10.5 | 11.0 | Pass |
| 5700 | Default | 25.5 | 16.6 | 8.1 | 23.5 | 0.006 | -2.9 | 10.5 | 11.0 | Pass |
| 802.11n 20MHz | | | | | | | | | | |
| 5500 | Default | 29.5 | 17.9 | 13.2 | 23.5 | 0.021 | 2.1 | 10.5 | 11.0 | Pass |
| 5580 | Default | 28.2 | 18.0 | 12.6 | 23.5 | 0.018 | 1.4 | 10.5 | 11.0 | Pass |
| 5700 | Default | 29.3 | 18.0 | 10.7 | 23.5 | 0.012 | -0.7 | 10.5 | 11.0 | Pass |

Run #2: Peak Excursion
(802.11n20) 20MHz:

| Freq (MHz) | Peak Excursion(dB) Value | Peak Excursion(dB) Limit | Freq (MHz) | Peak Excursion(dB) Value | Peak Excursion(dB) Limit | Freq (MHz) | Peak Excursion(dB) Value | Peak Excursion(dB) Limit |
|---|---|---|---|---|---|---|---|---|
| | | | 5260 | 11.2 | 13.0 | 5500 | 11.8 | 13.0 |
| | | | 5300 | 11.7 | 13.0 | 5580 | 11.2 | 13.0 |
| | | | 5320 | 11.8 | 13.0 | 5700 | 11.8 | 13.0 |

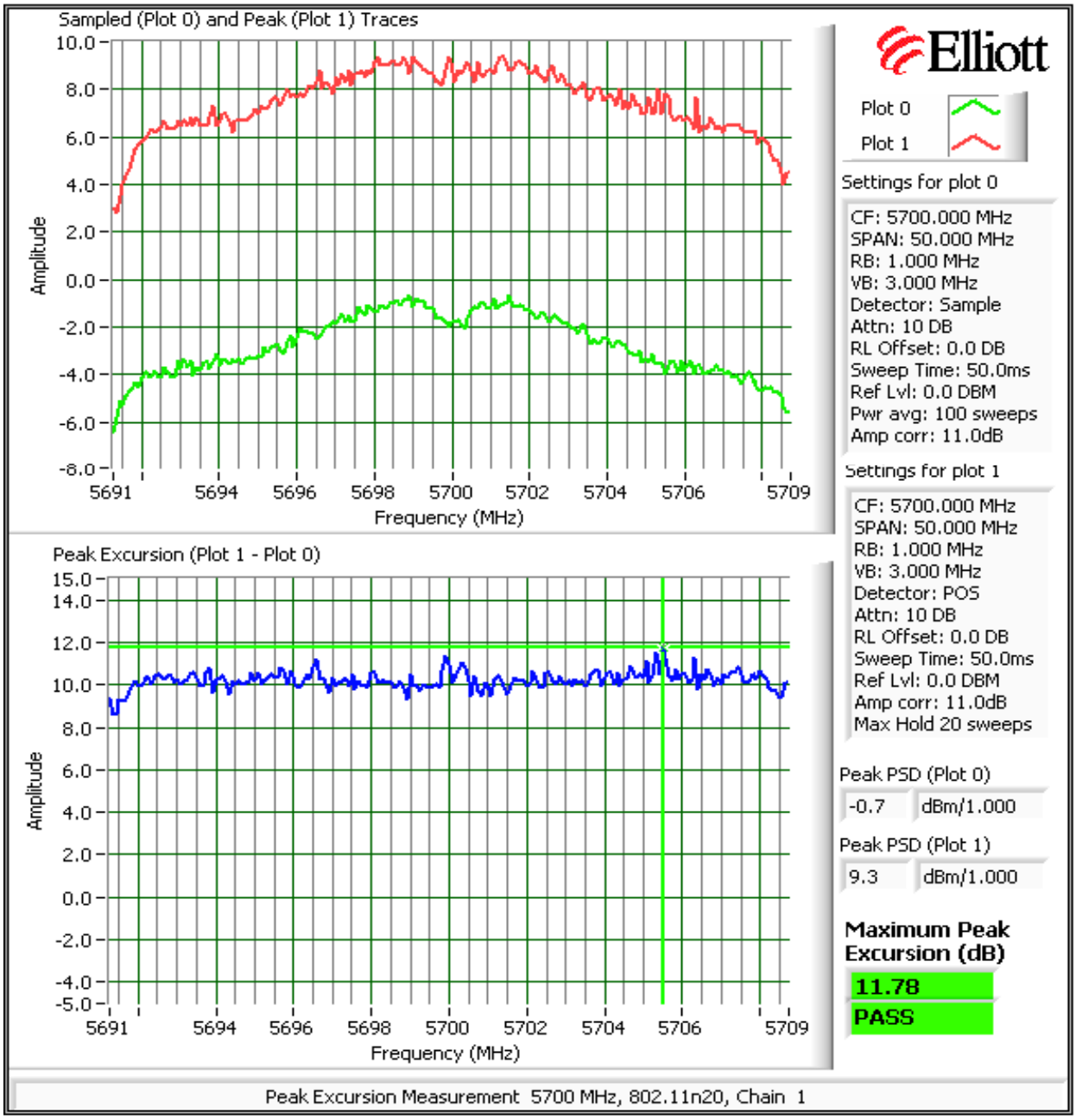
Note: 802.11n20 represented worse case for peak excursion

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

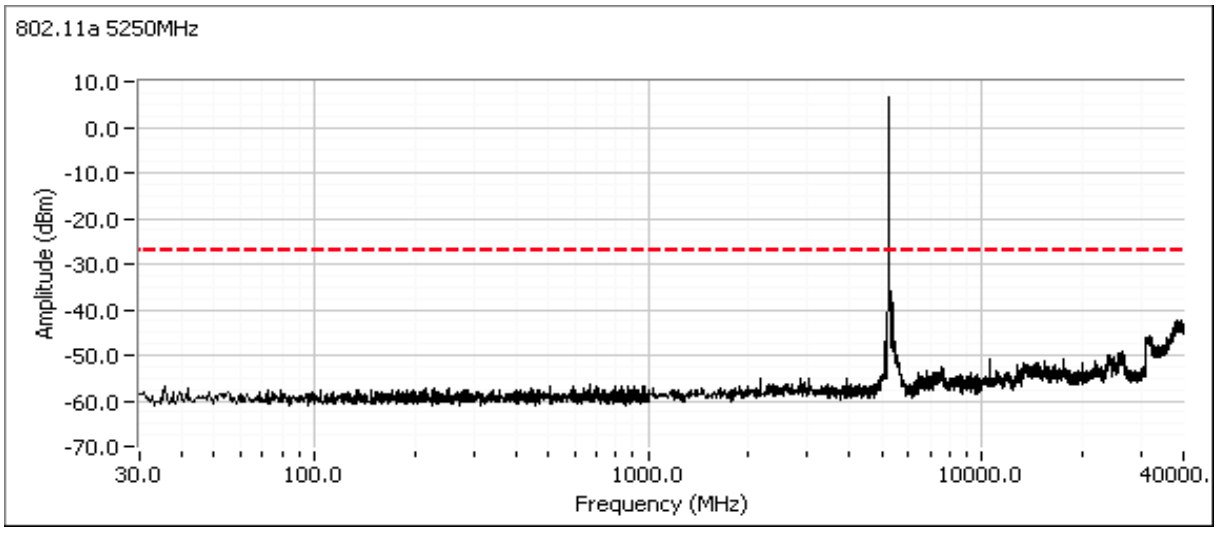
Run #3: Out Of Band Spurious Emissions - Antenna Conducted

| | | |
|---|---|---|
| Maximum Antenna Gain: | 6.5 dBi | |
| Spurious Limit: | -27.0 dBm/MHz eirp | |
| Limit Used On Plots [Note 1]: | -33.5 dBm/MHz | Peak Limit (RB=VB=1MHz) |

| | |
|---|---|
| Note 1: | The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). |
| Note 2: | All spurious signals below 1GHz are measured during digital device radiated emissions test. |
| Note 3: | Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP |
| Note 4: | If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band. |
| Note 5: | Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209. |

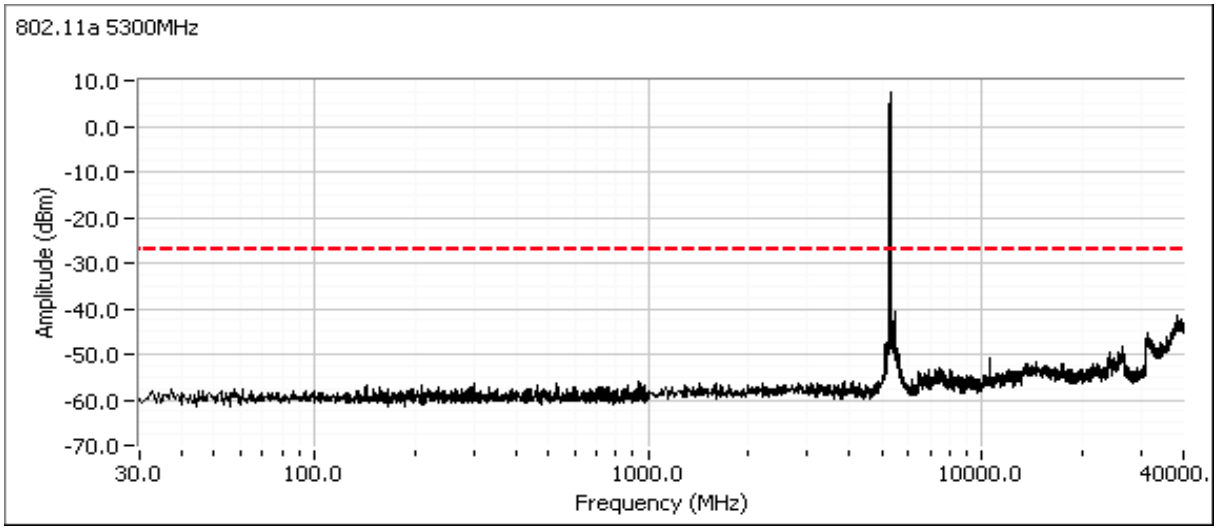
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

802.11a
Low channel, 5250 - 5350 MHz Band



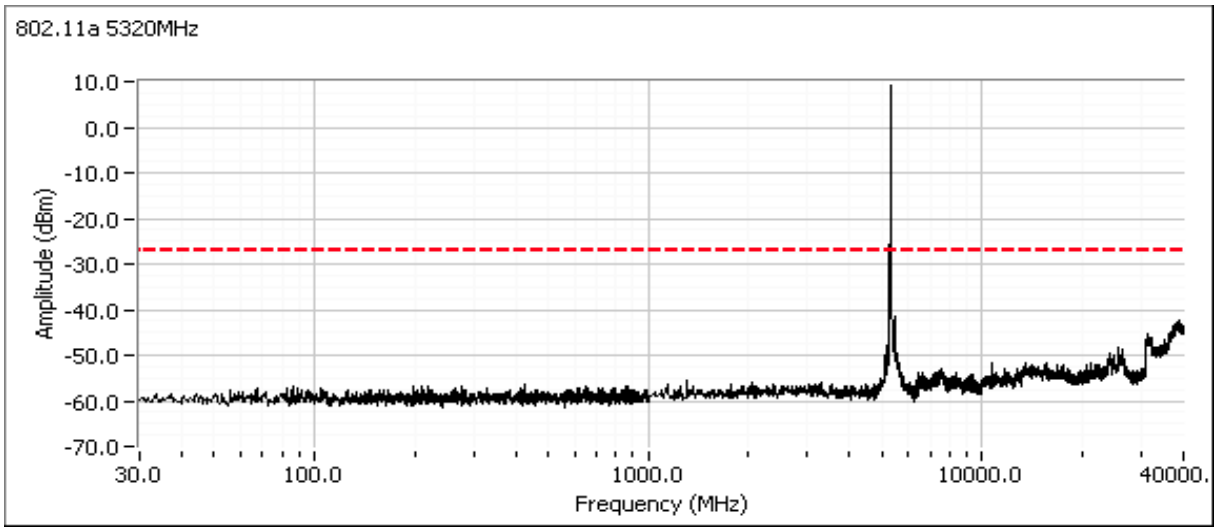
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Center channel, 5250 - 5350 MHz Band




High channel, 5250 - 5350 MHz Band

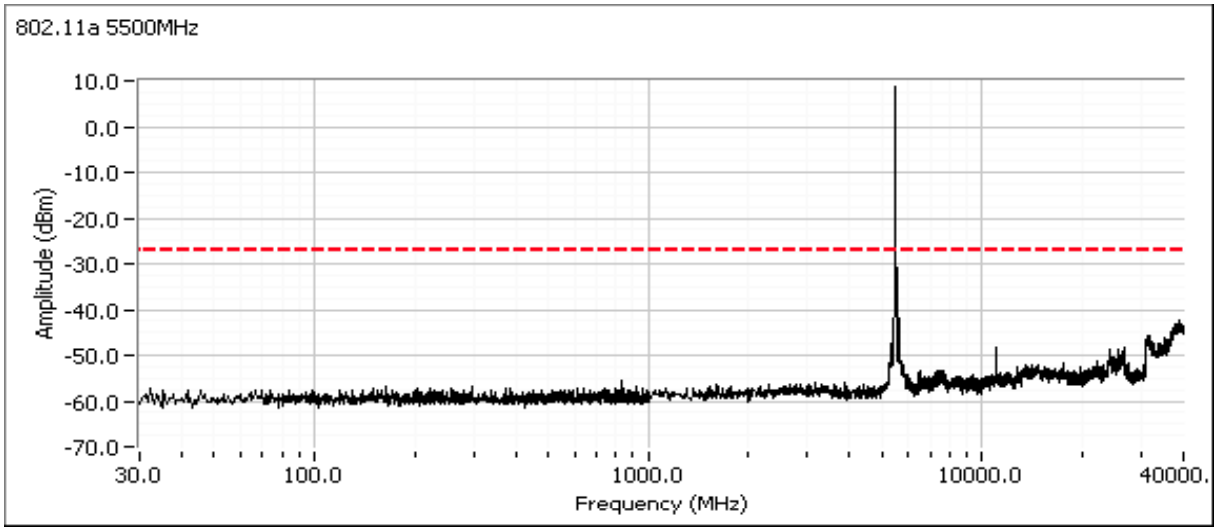
Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.



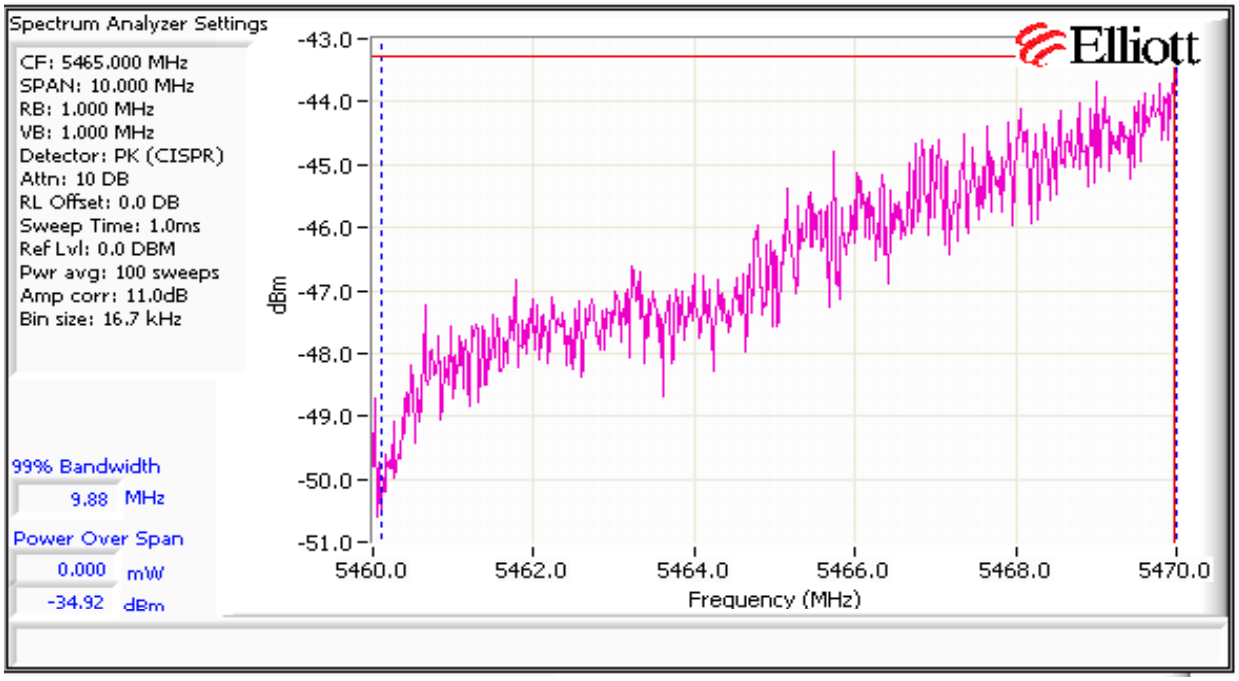
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Low channel, 5470 - 5725 MHz Band

Includes a plot from 5460 - 5470 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions tests.

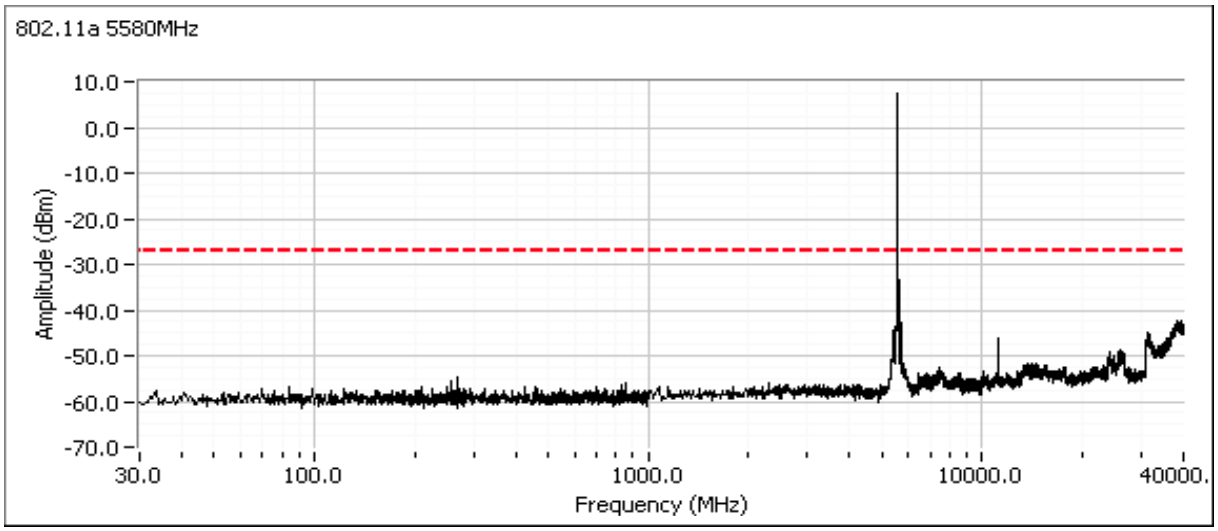


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |



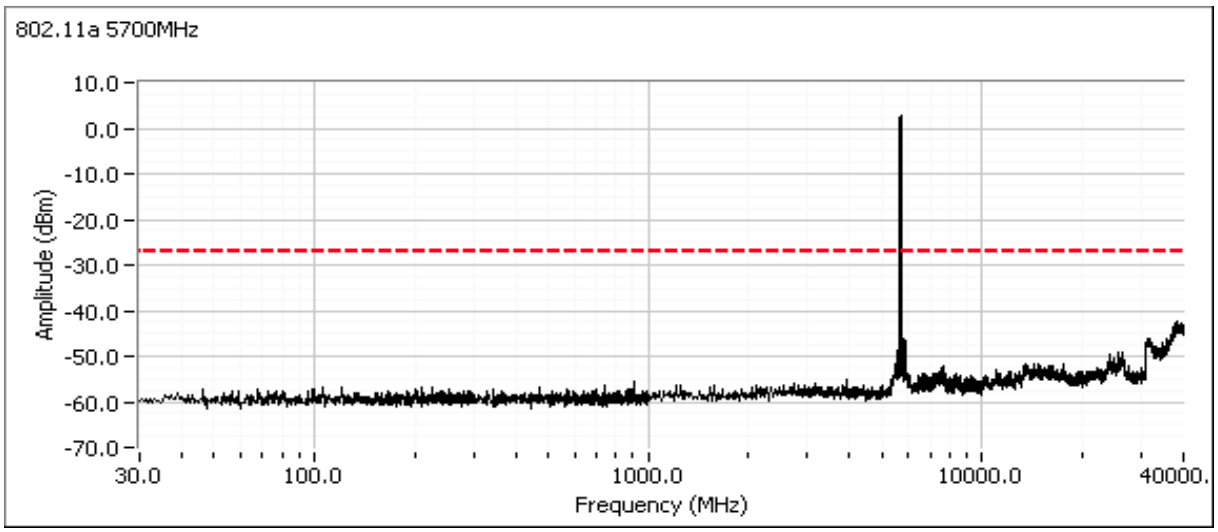
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Center channel, 5470 - 5725 MHz Band (20Mhz channel use 5580 MHz, 40MHz channel use 5550 MHz)

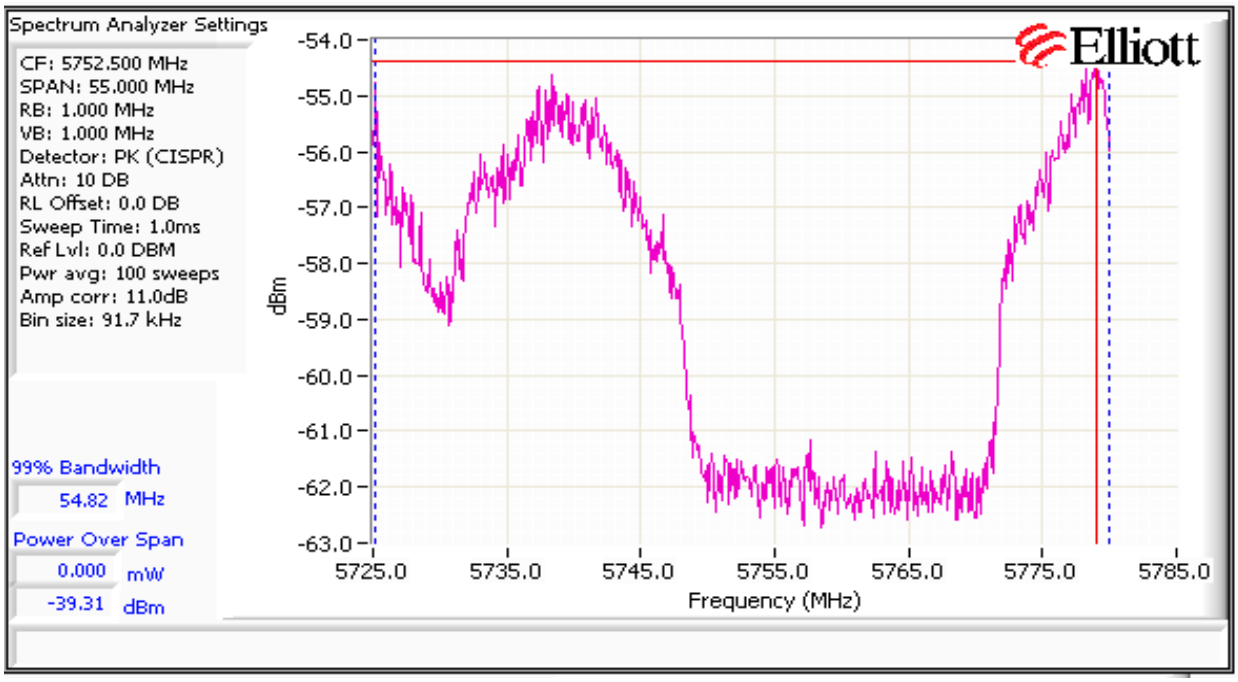



High channel, 5470 - 5725 MHz Band

Includes a plot from 5725 - 5780 MHz showing compliance with the -27dBm/MHz eirp limit immediately above the allocated band (5725 MHz).



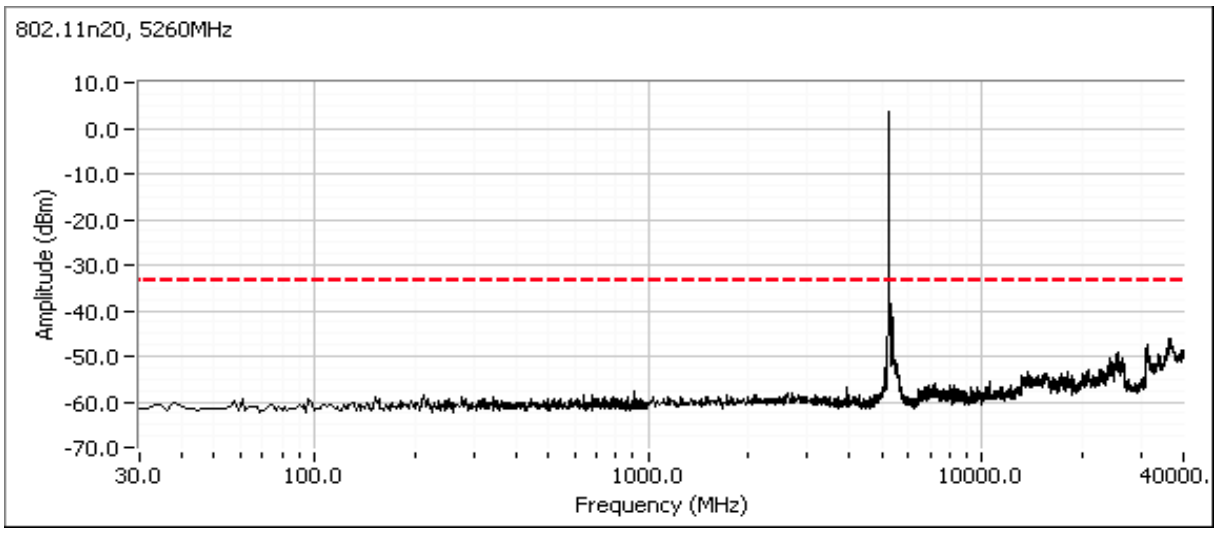
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

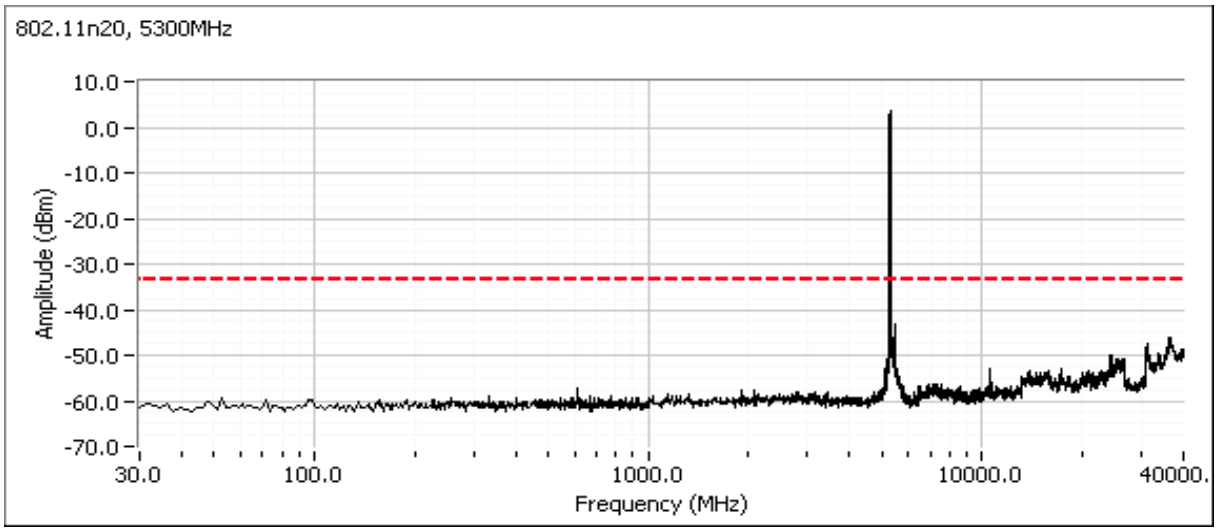
802.11n20

Low channel, 5250 - 5350 MHz Band



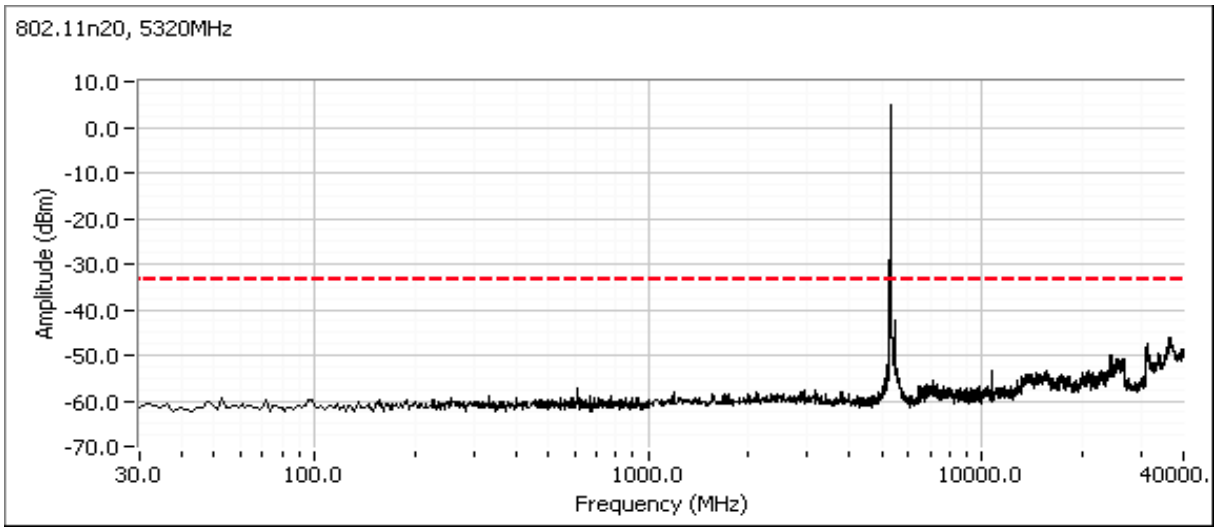
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Center channel, 5250 - 5350 MHz Band




High channel, 5250 - 5350 MHz Band

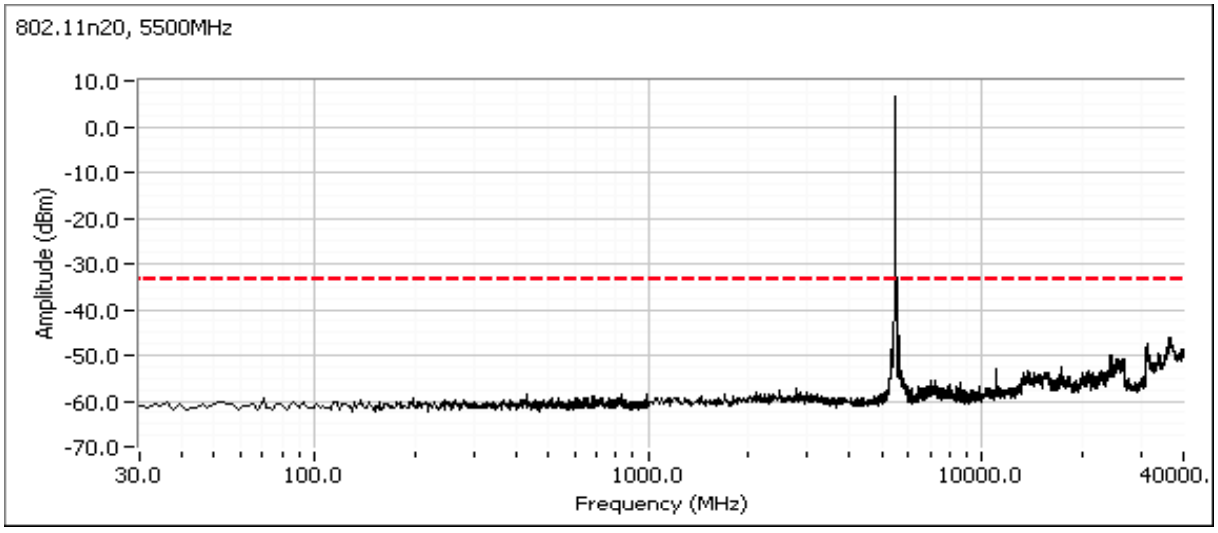
Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

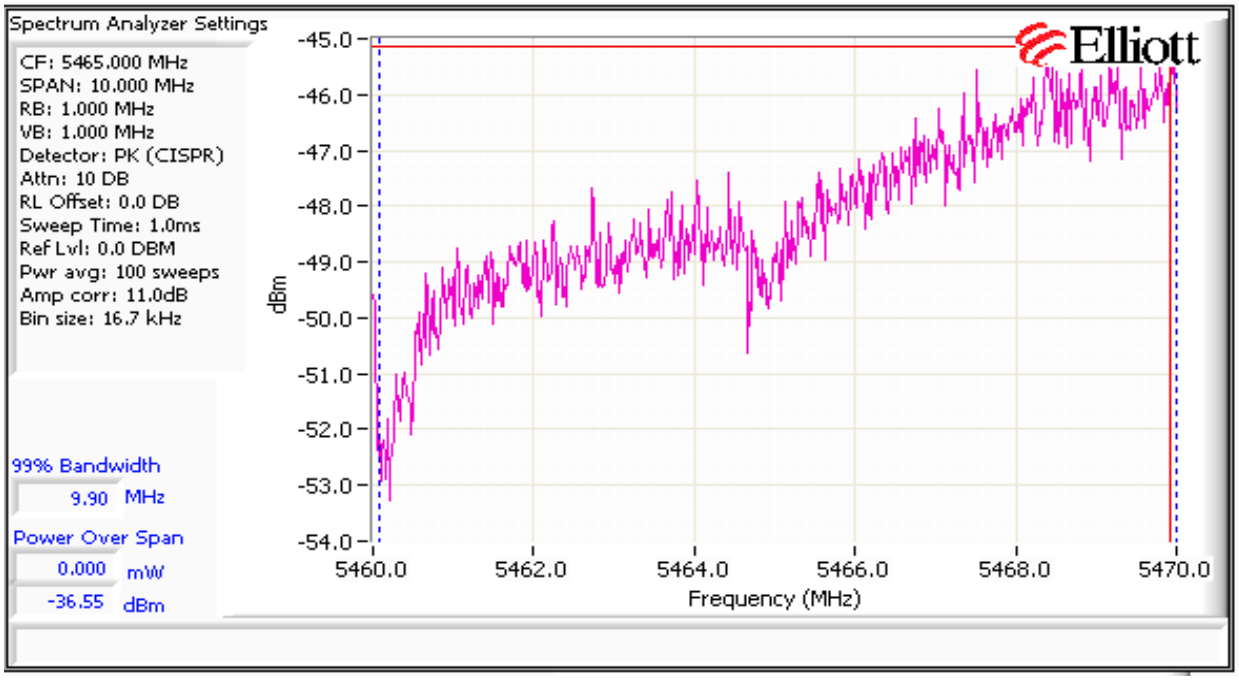


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Low channel, 5470 - 5725 MHz Band

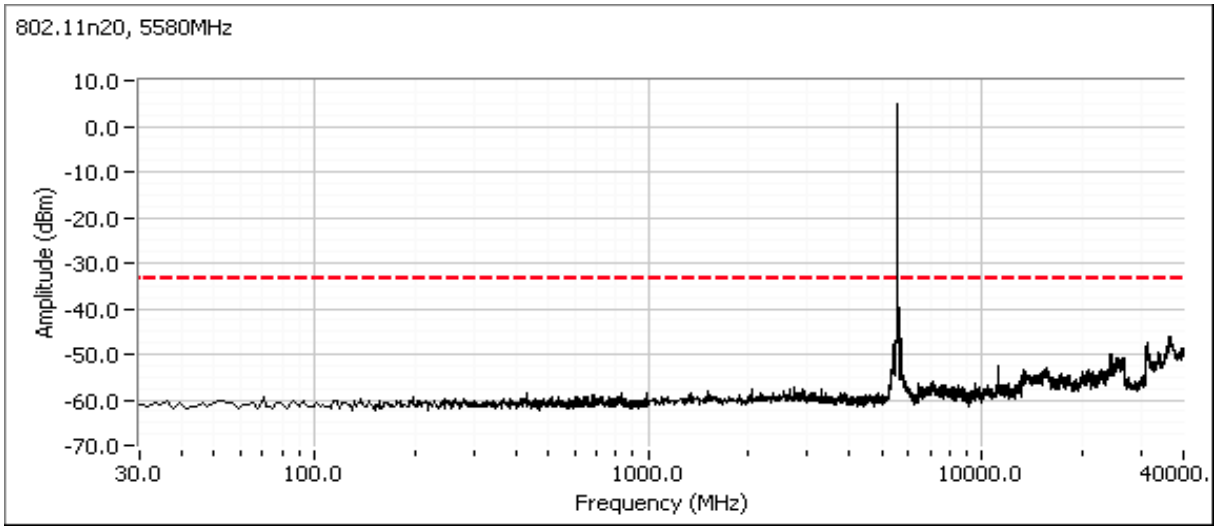
Includes a plot from 5460 - 5470 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions tests.



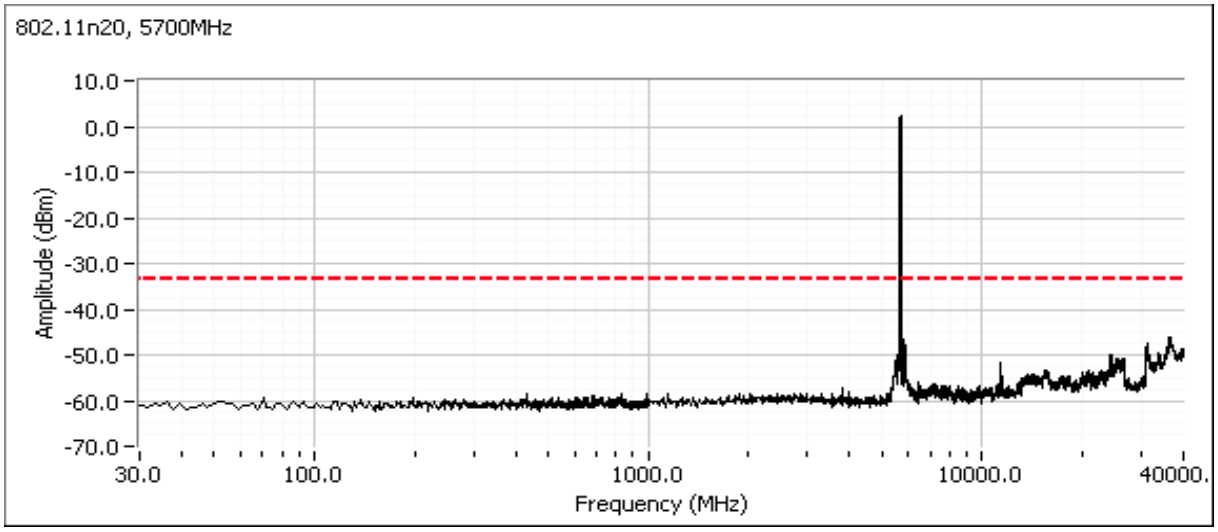
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |

Center channel, 5470 - 5725 MHz Band (20Mhz channel use 5580 MHz, 40MHz channel use 5550 MHz)

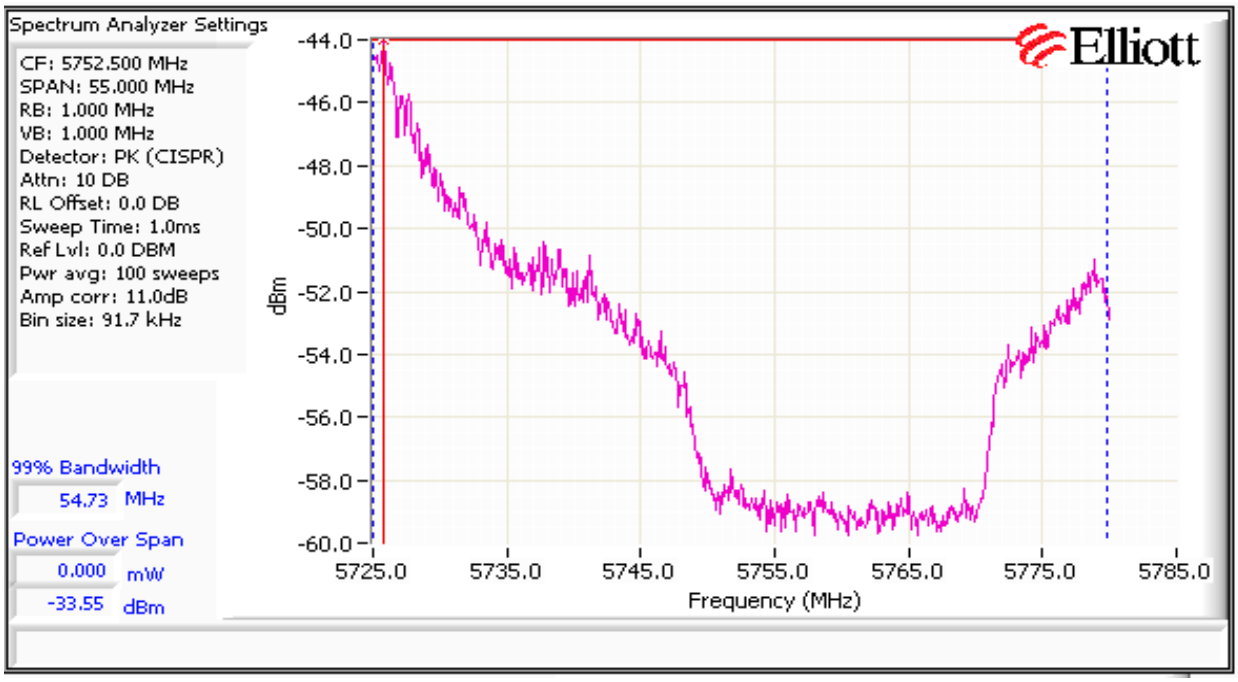



High channel, 5470 - 5725 MHz Band

Includes a plot from 5725 - 5780 MHz showing compliance with the -27dBm/MHz eirp limit immediately above the allocated band (5725 MHz).



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 (1x1 802.11abg + BT 2.1) | T-Log Number: | T80880 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | FCC 15.E/RSS-210 | Class: | N/A |



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | - |
| Emissions Standard(s): | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |
| Immunity Standard(s): | EN 301 489-1 V1.8.1 | Environment: | - |

# EMC Test Data

For The

# Summit Data Communications

Model

SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1)

Date of Last Test: 12/16/2011

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |

# Conducted Emissions

*(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)*

## Test Specific Details

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

Date of Test: 5/11/2011
Test Engineer: Joseph Cadigal
Test Location: Fremont Chamber #7

Config. Used: 1
Config Change: none
EUT Voltage: Refer to individual run

## General Test Configuration

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

## Ambient Conditions:

Temperature: 24 °C
Rel. Humidity: 37 %

## Summary of Results

| Run # | Test Performed | Limit | Result | Margin |
|---|---|---|---|---|
| 1 | CE, AC Power, 230V/50Hz | Class B | Pass | 41.1dBµV @ 29.071MHz (-8.9dB) |
| 2 | CE, AC Power,120V/60Hz | Class B | Pass | 32.7dBµV @ 0.457MHz (-14.1dB) |

## Modifications Made During Testing

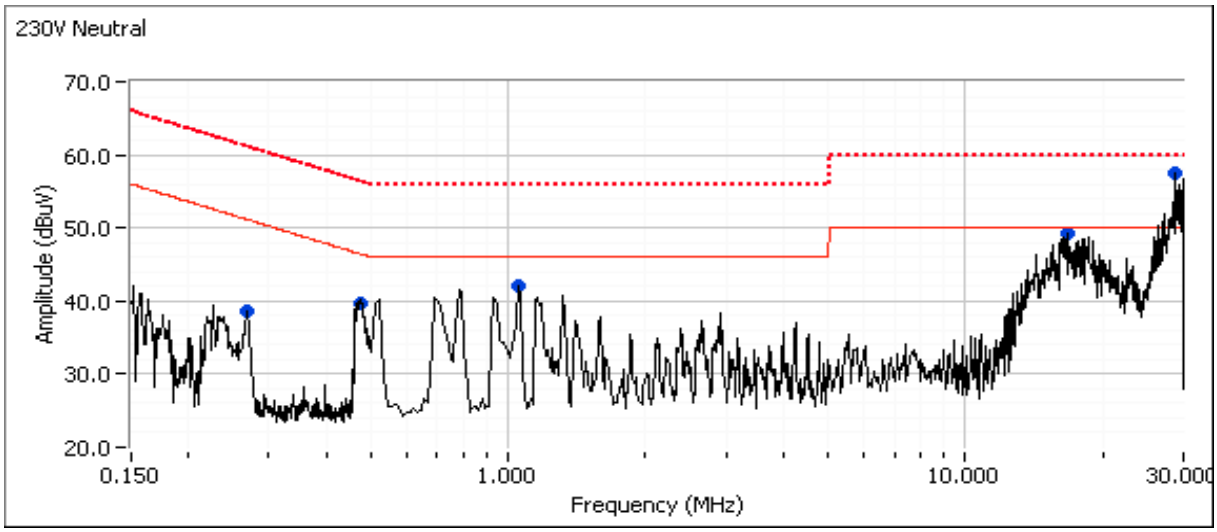
No modifications were made to the EUT during testing

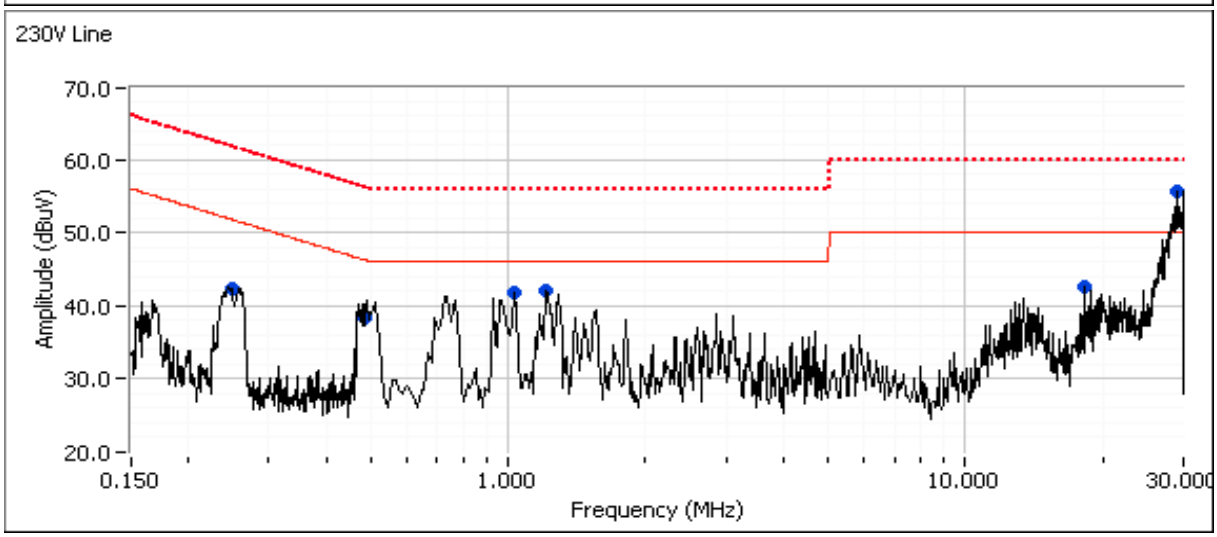
## Deviations From The Standard

No deviations were made from the requirements of the standard.

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz
WB40 (1x1 802.11abgn), EUT transmitting in 802.11b at 1 Mbps on CH6.



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |

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

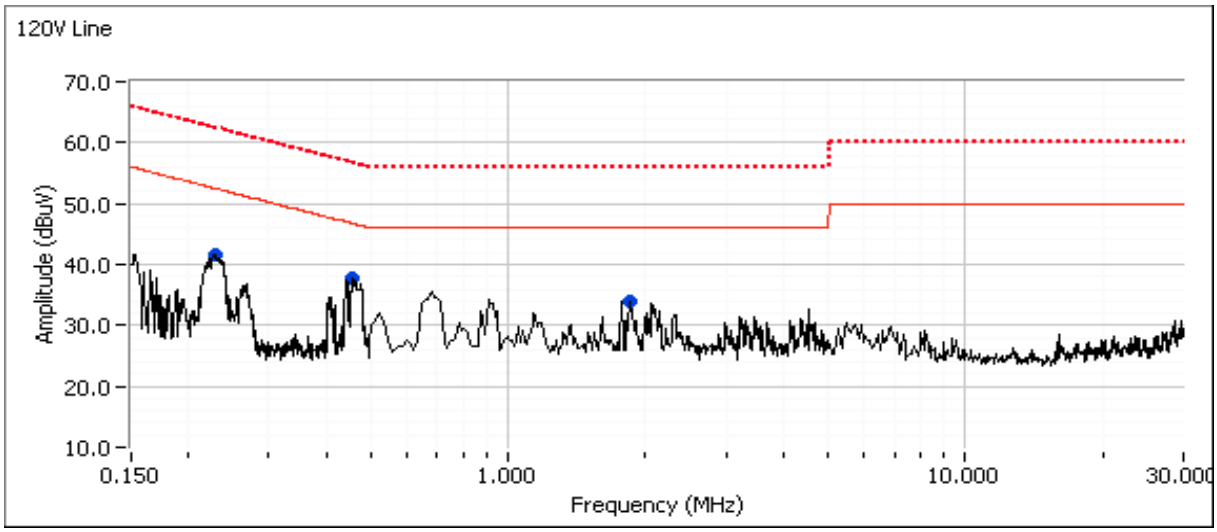
| Frequency | Level | AC | Class B | | Detector | Comments |
|---|---|---|---|---|---|---|
| MHz | dBµV | Line | Limit | Margin | QP/Ave | |
| 0.469 | 39.8 | Neutral | 46.4 | -6.6 | Peak | |
| 0.261 | 38.6 | Neutral | 51.1 | -12.5 | Peak | |
| 1.044 | 42.1 | Neutral | 46.0 | -3.9 | Peak | |
| 17.307 | 49.3 | Neutral | 50.0 | -0.7 | Peak | |
| 29.071 | 57.5 | Neutral | 50.0 | 7.5 | Peak | |
| 0.485 | 38.4 | Line 1 | 46.3 | -7.9 | Peak | |
| 0.242 | 42.4 | Line 1 | 51.8 | -9.4 | Peak | |
| 1.290 | 42.0 | Line 1 | 46.0 | -4.0 | Peak | |
| 1.030 | 41.8 | Line 1 | 46.0 | -4.2 | Peak | |
| 18.527 | 42.7 | Line 1 | 50.0 | -7.3 | Peak | |
| 29.589 | 55.6 | Line 1 | 50.0 | 5.6 | Peak | |

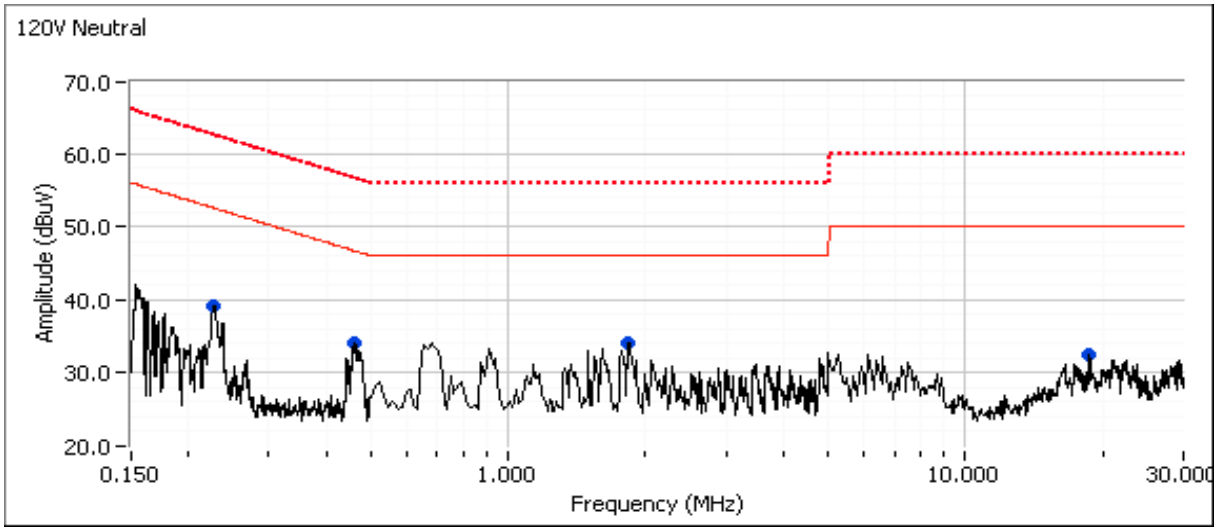
Final quasi-peak and average readings

| Frequency | Level | AC | Class B | | Detector | Comments |
|---|---|---|---|---|---|---|
| MHz | dBµV | Line | Limit | Margin | QP/Ave | |
| 29.071 | 41.1 | Neutral | 50.0 | -8.9 | AVG | AVG (0.10s) |
| 29.589 | 39.6 | Line 1 | 50.0 | -10.4 | AVG | AVG (0.10s) |
| 29.071 | 47.7 | Neutral | 60.0 | -12.3 | QP | QP (1.00s) |
| 29.589 | 46.2 | Line 1 | 60.0 | -13.8 | QP | QP (1.00s) |
| 0.485 | 31.9 | Line 1 | 46.3 | -14.4 | AVG | AVG (0.10s) |
| 1.044 | 41.3 | Neutral | 56.0 | -14.7 | QP | QP (1.00s) |
| 17.307 | 34.3 | Neutral | 50.0 | -15.7 | AVG | AVG (0.10s) |
| 1.044 | 30.2 | Neutral | 46.0 | -15.8 | AVG | AVG (0.10s) |
| 0.242 | 35.5 | Line 1 | 52.0 | -16.5 | AVG | AVG (0.10s) |
| 0.485 | 38.6 | Line 1 | 56.3 | -17.7 | QP | QP (1.00s) |
| 0.469 | 28.5 | Neutral | 46.5 | -18.0 | AVG | AVG (0.10s) |
| 0.469 | 38.2 | Neutral | 56.5 | -18.3 | QP | QP (1.00s) |
| 1.030 | 37.1 | Line 1 | 56.0 | -18.9 | QP | QP (1.00s) |
| 17.307 | 40.9 | Neutral | 60.0 | -19.1 | QP | QP (1.00s) |
| 1.290 | 35.9 | Line 1 | 56.0 | -20.1 | QP | QP (1.00s) |
| 0.242 | 41.8 | Line 1 | 62.0 | -20.2 | QP | QP (1.00s) |
| 0.261 | 30.8 | Neutral | 51.4 | -20.6 | AVG | AVG (0.10s) |
| 1.030 | 25.1 | Line 1 | 46.0 | -20.9 | AVG | AVG (0.10s) |
| 1.290 | 21.1 | Line 1 | 46.0 | -24.9 | AVG | AVG (0.10s) |
| 0.261 | 36.4 | Neutral | 61.4 | -25.0 | QP | QP (1.00s) |
| 18.527 | 23.0 | Line 1 | 50.0 | -27.0 | AVG | AVG (0.10s) |
| 18.527 | 31.2 | Line 1 | 60.0 | -28.8 | QP | QP (1.00s) |

| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz
WB40 (1x1 802.11abgn), EUT transmitting in 802.11b at 1 Mbps on CH6.



| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |

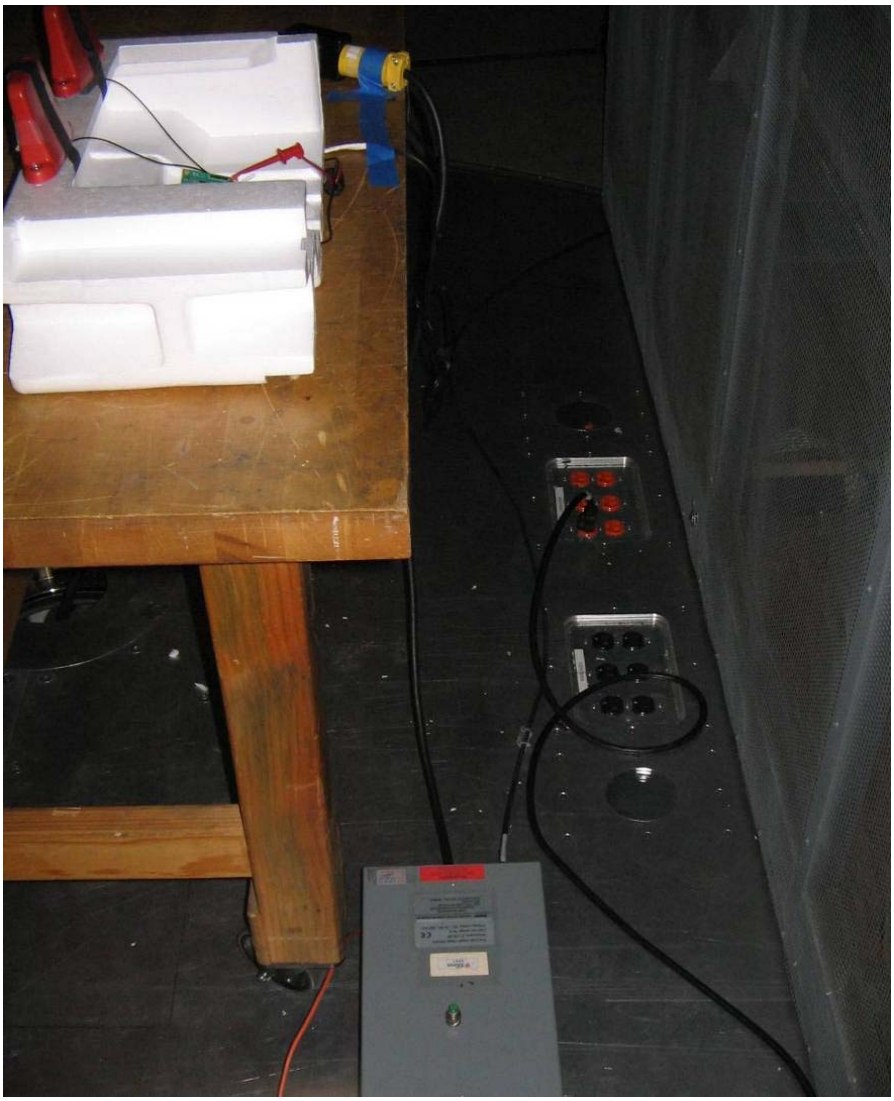
Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

| Frequency | Level | AC | Class B | | Detector | Comments |
|---|---|---|---|---|---|---|
| MHz | dBµV | Line | Limit | Margin | QP/Ave | |
| 0.457 | 37.8 | Line 1 | 46.7 | -8.9 | Peak | |
| 0.223 | 41.6 | Line 1 | 52.5 | -10.9 | Peak | |
| 1.833 | 34.0 | Line 1 | 46.0 | -12.0 | Peak | |
| 0.229 | 39.1 | Neutral | 52.5 | -13.4 | Peak | |
| 0.458 | 34.1 | Neutral | 46.7 | -12.6 | Peak | |
| 1.829 | 34.2 | Neutral | 46.0 | -11.8 | Peak | |
| 18.734 | 32.4 | Neutral | 50.0 | -17.6 | Peak | |

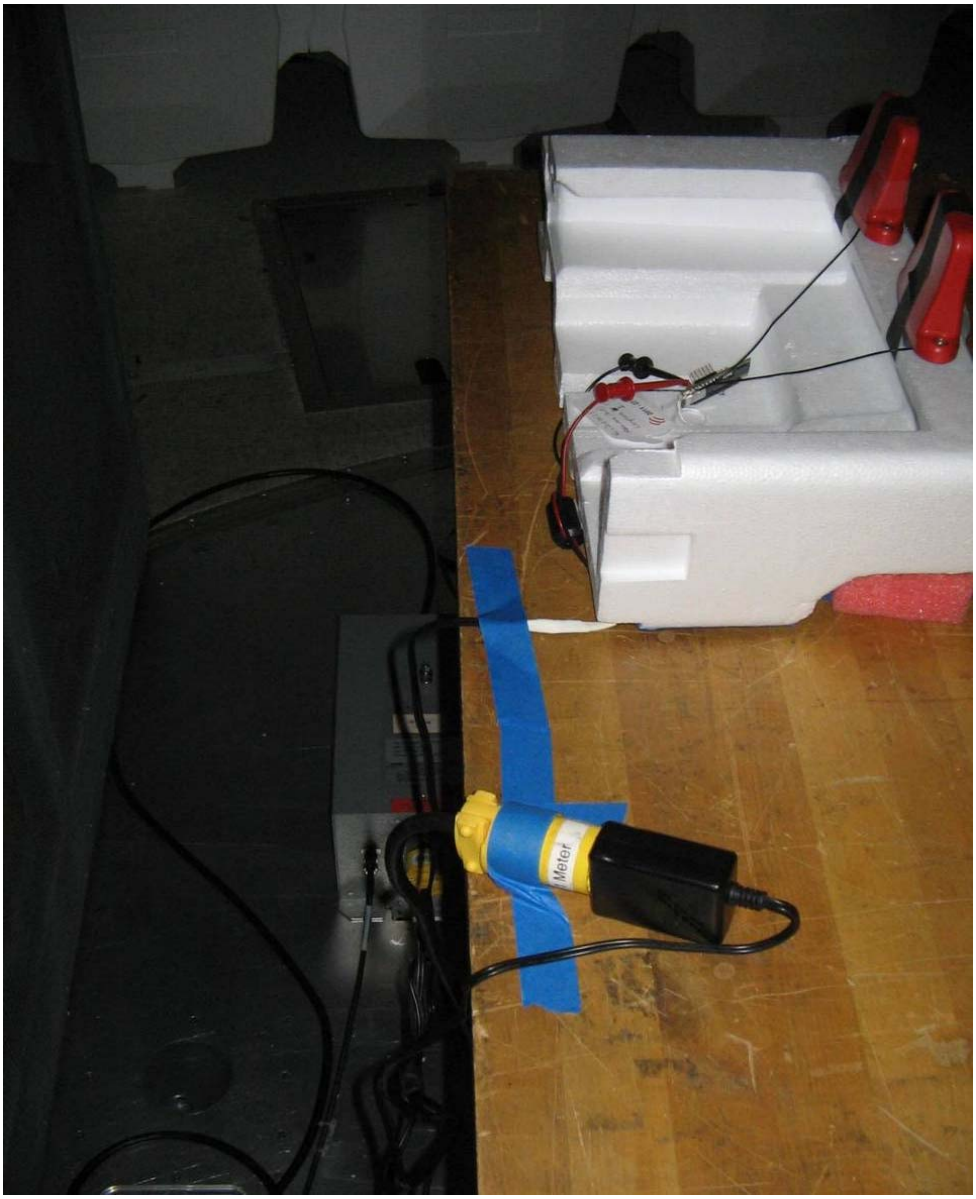
Final quasi-peak and average readings

| Frequency | Level | AC | Class B | | Detector | Comments |
|---|---|---|---|---|---|---|
| MHz | dBµV | Line | Limit | Margin | QP/Ave | |
| 0.457 | 32.7 | Line 1 | 46.8 | -14.1 | AVG | AVG (0.10s) |
| 0.457 | 36.3 | Line 1 | 56.8 | -20.5 | QP | QP (1.00s) |
| 0.458 | 26.1 | Neutral | 46.7 | -20.6 | AVG | AVG (0.10s) |
| 0.223 | 31.9 | Line 1 | 52.7 | -20.8 | AVG | AVG (0.10s) |
| 0.229 | 31.3 | Neutral | 52.5 | -21.2 | AVG | AVG (0.10s) |
| 1.829 | 22.5 | Neutral | 46.0 | -23.5 | AVG | AVG (0.10s) |
| 1.829 | 31.5 | Neutral | 56.0 | -24.5 | QP | QP (1.00s) |
| 0.458 | 32.0 | Neutral | 56.7 | -24.7 | QP | QP (1.00s) |
| 0.223 | 37.6 | Line 1 | 62.7 | -25.1 | QP | QP (1.00s) |
| 1.833 | 30.8 | Line 1 | 56.0 | -25.2 | QP | QP (1.00s) |
| 1.833 | 20.7 | Line 1 | 46.0 | -25.3 | AVG | AVG (0.10s) |
| 0.229 | 36.7 | Neutral | 62.5 | -25.8 | QP | QP (1.00s) |
| 18.734 | 16.3 | Neutral | 50.0 | -33.7 | AVG | AVG (0.10s) |
| 18.734 | 24.9 | Neutral | 60.0 | -35.1 | QP | QP (1.00s) |

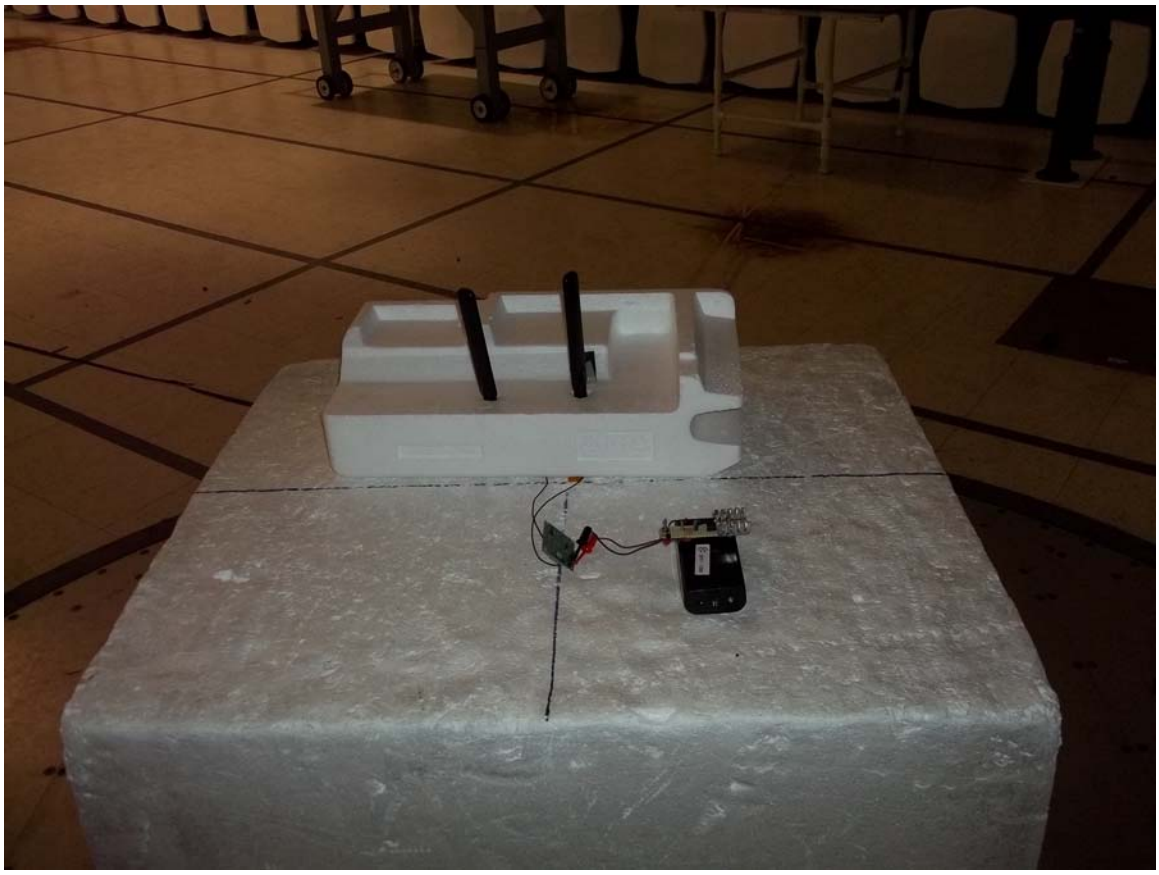
| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |

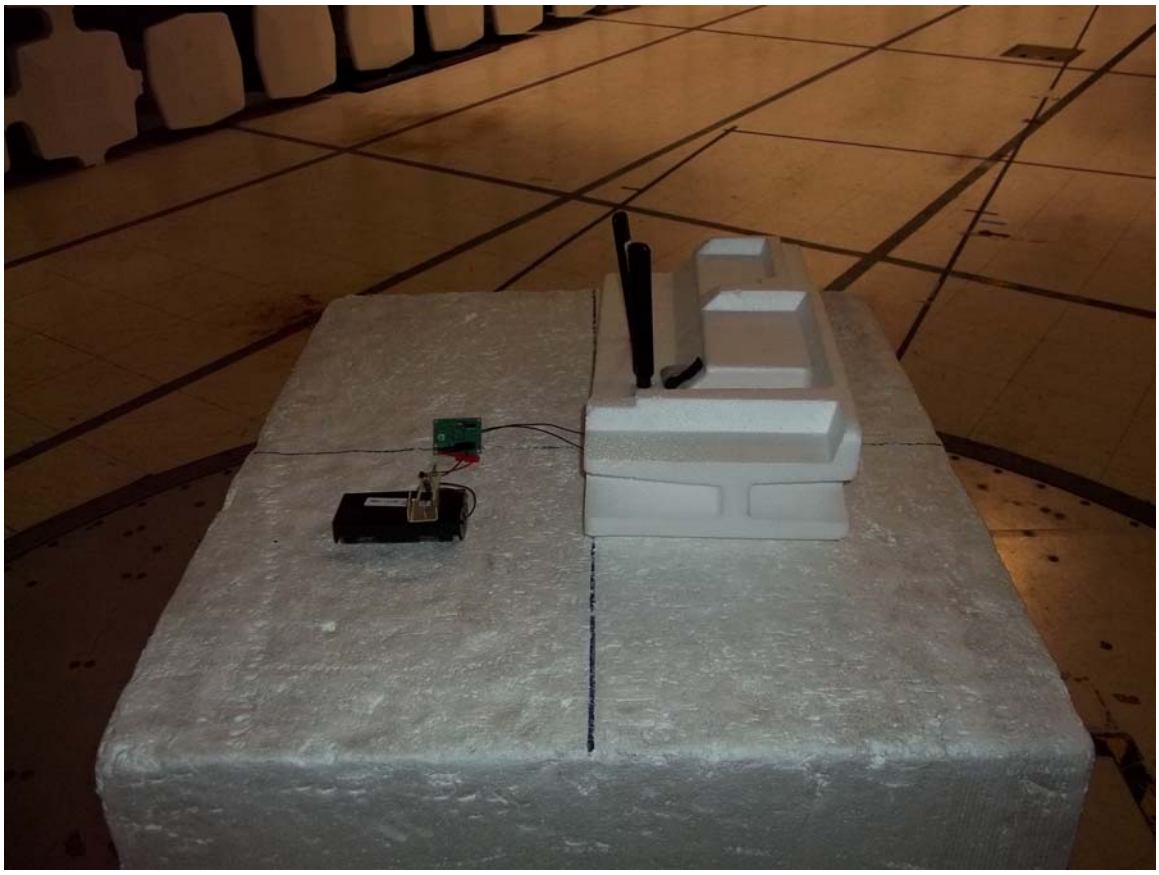


| | | | |
|---|---|---|---|
| Client: | Summit Data Communications | Job Number: | J78403 |
| Model: | SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1) | T-Log Number: | T83198 |
| | | Account Manager: | Christine Krebill |
| Contact: | Ron Seide | | |
| Standard: | EN 301 489-1 V1.8.1/ FCC Part 15B | Class: | B |



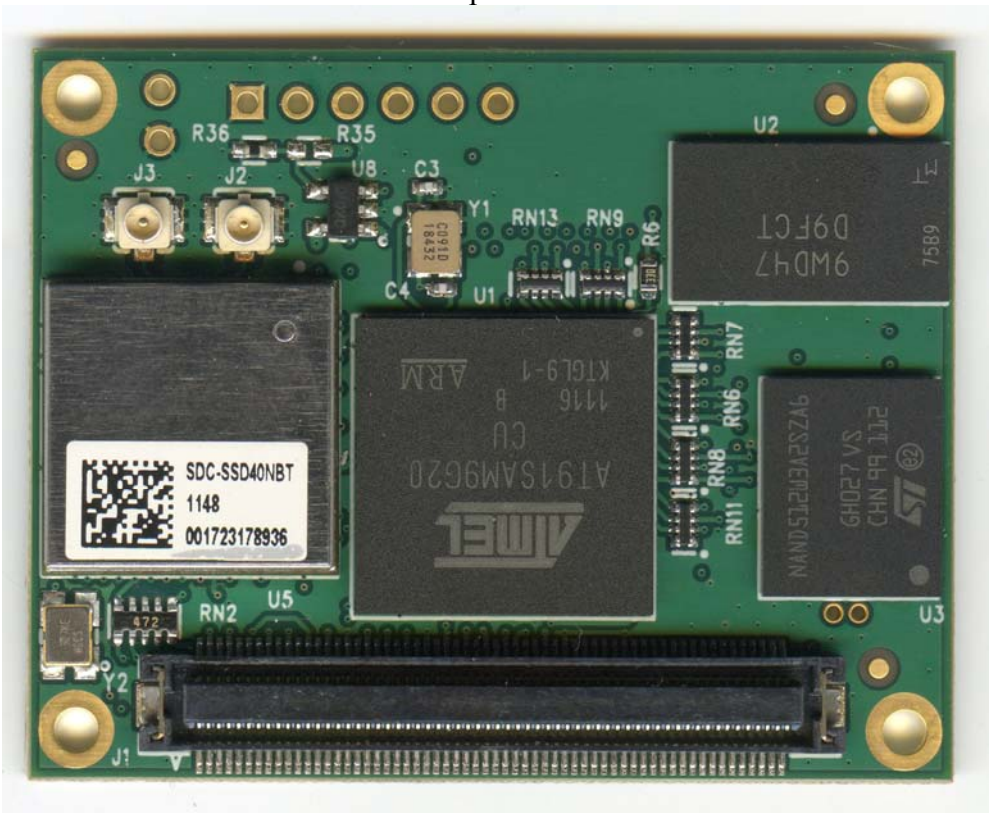
## *APPENDIX C RADIATED EMISSIONS TEST CONFIGURATION PHOTOGRAPHS*



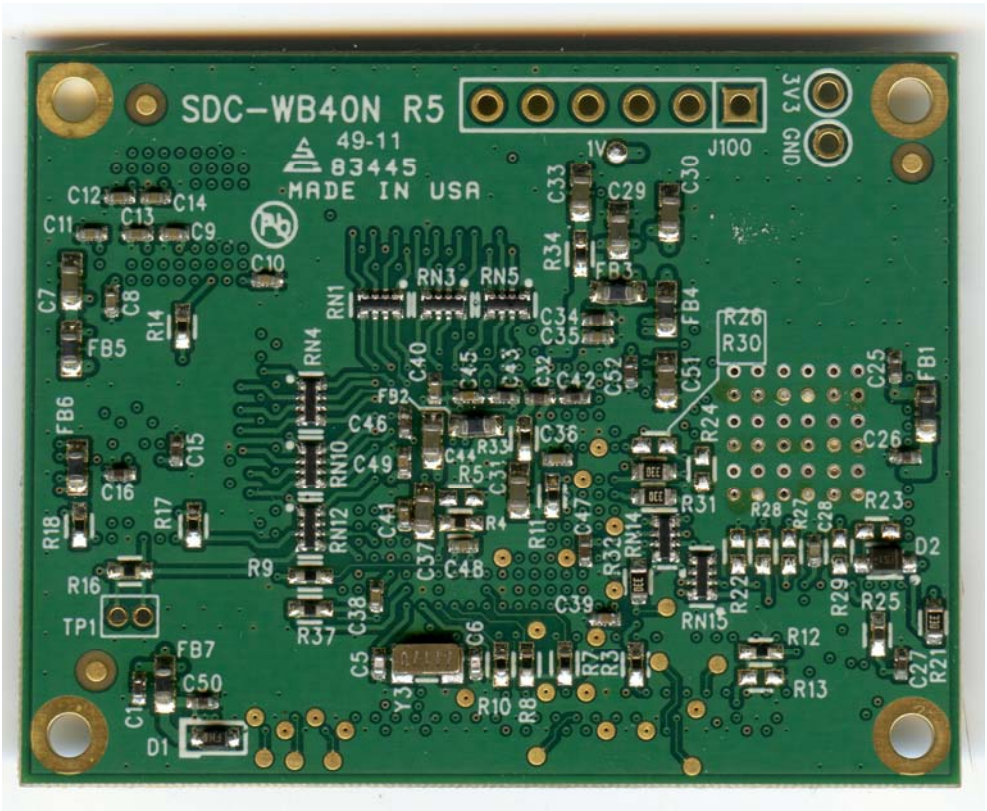


## *APPENDIX D DETAILED PHOTOGRAPHS OF CONSTRUCTION*

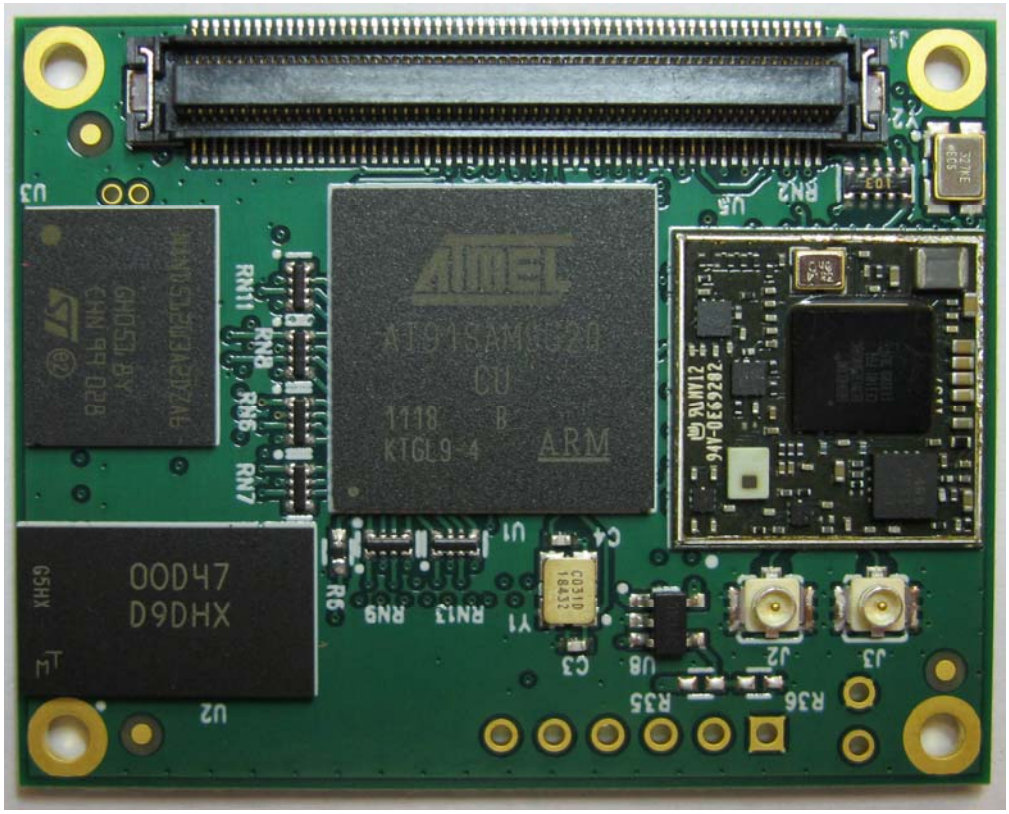
Top view




Bottom view



Without Shield



*End Of Report*

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