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

GRANTEE:	Summit Data Communications 526 South Main St. Suite 805 Akron, OH 44311
TEST SITE:	Elliott Laboratories 41039 Boyce Road 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
PRODUCT RECEIVED DATE:	October 19, 2010
TOTAL NUMBER OF PAGES:	102

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ACCREDITED
Testing Cert #0214.26

REVISION HISTORY

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

TABLE OF CONTENTS

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

FREQUENCY HOPPING SPREAD SPECTRUM (2400 – 2483.5 MHz, less than 75 channels)

LP0002 Section	Description	Measured Value / Comments	Limit / Requirement	Refer to:	Result
3.10.1(6.1.1)	20dB Bandwidth	Basic: 1111kHz EDR: 1470kHz	Channel spacing > 2/3rds 20dB BW, >25kHz		Complies
	Channel Separation	1000kHz			Complies
3.10.1(6.1.2)	Number of Channels	Max: 79 Min: 20	15 or more		Complies
3.10.1(2.1) (6.1.2)	Channel Dwell Time (*average time of occupancy)*	The system uses the Bluetooth algorithm and, therefore, meets all requirements for channel utilization.	<0.4 second within a period of 0.4 x number of channels		Complies
3.10.1(6.1.2)	Channel Utilization		All channels shall, on average, be used equally		Complies
3.10.1(2.1) and 6.1	Output Power	Basic: -3.05 dBm (0.5 mW) EDR: -1.27 dBm (0.7mW) EIRP = 1.2 mW Note 1	*0.125 Watts (EIRP < 0.5W)*		Complies
3.10.1 (5)	Spurious Emissions – 30MHz – 25GHz	All spurious emissions < -20dBc	< -20dBc		Complies
3.10.1 (5)	Radiated Spurious Emissions 30MHz – 25GHz	46.5 dBµV/m @ 2994.7 MHz (-7.5 dB)	Section 2.8 in restricted bands, all others < -20dBc		Complies
3.10.1(6.1.1)	Receiver bandwidth	Refer to operational description	Shall match the channel bandwidth		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.

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.

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 on a single channel continuously at the maximum 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 Fremont, 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.

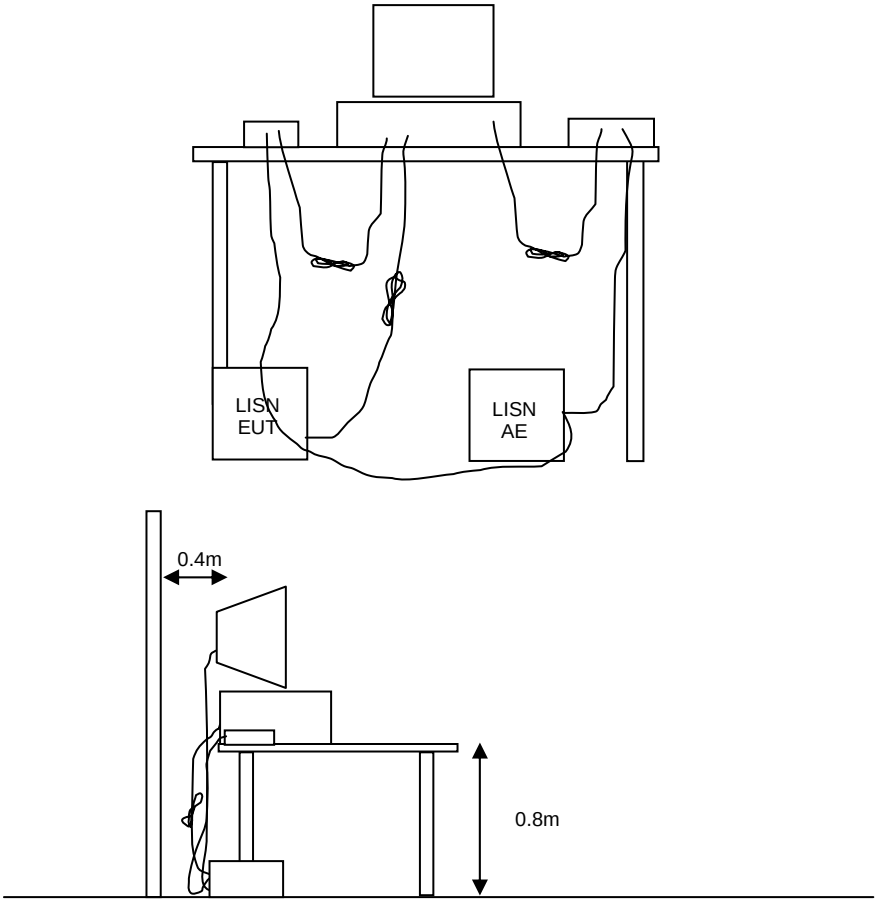


Figure 1 Typical Conducted Emissions Test Configuration

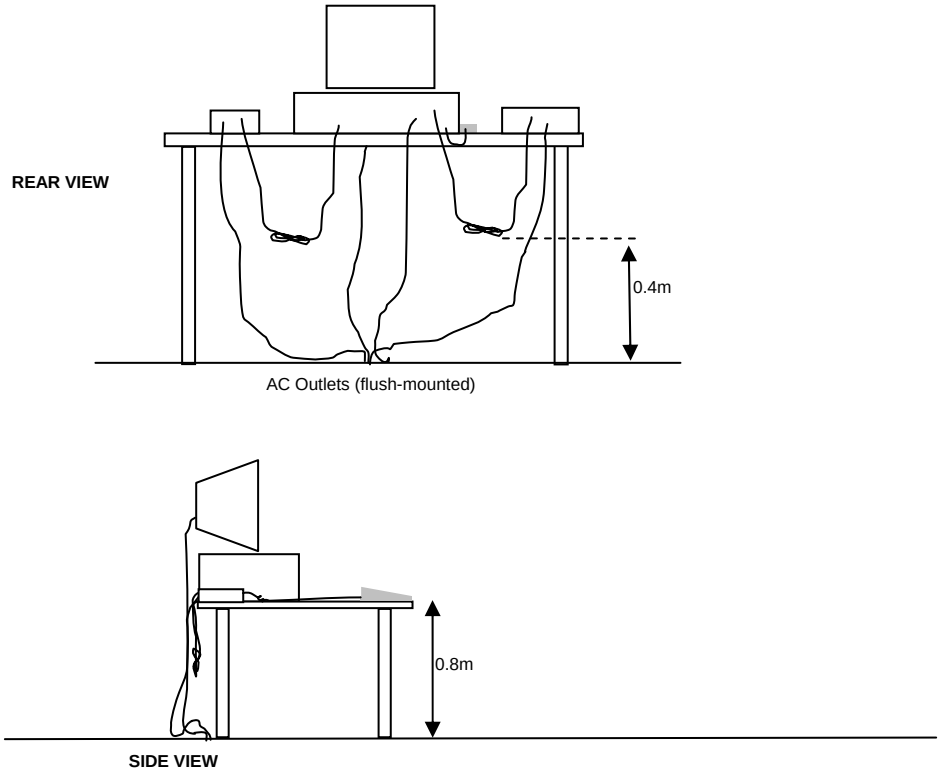
RADIATED EMISSIONS

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.

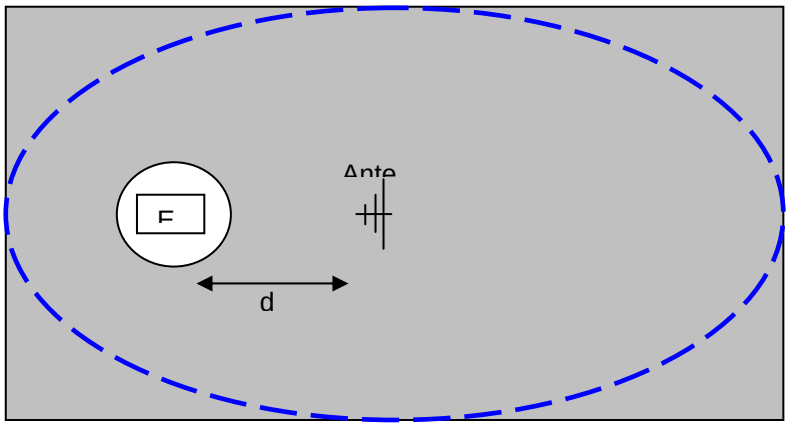
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

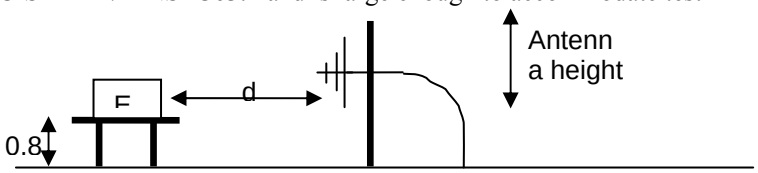
When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



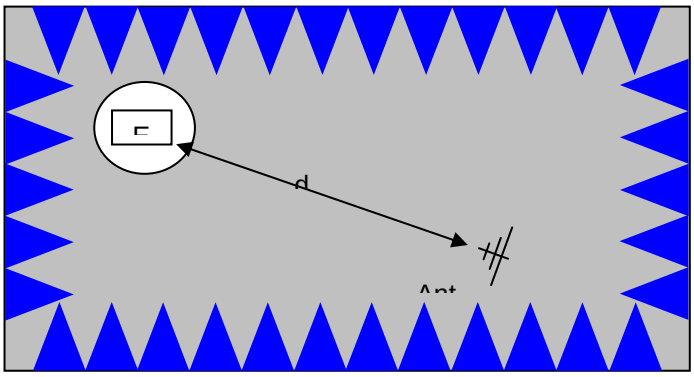
Typical Test Configuration for Radiated Field Strength Measurements



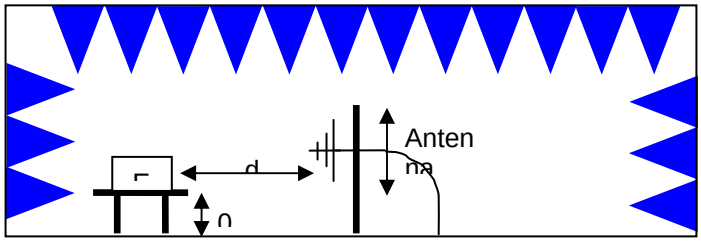
The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test



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



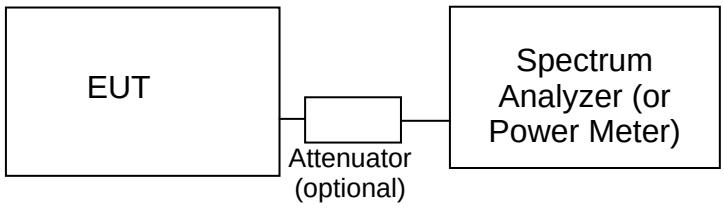
The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used



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 – 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).

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

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

T83113

Radiated Emissions, 30 - 1,000 MHz, 11-May-11

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz - 22 GHz	8593EM	1319	11/22/2011
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	1/17/2012
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	6/4/2011
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103A	2359	2/15/2012

Conducted Emissions - AC Power Ports, 11-May-11

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz - 22 GHz	8593EM	1319	11/22/2011
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	1/17/2012
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1594	5/27/2011
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2000	12/15/2011

Radiated Emissions, 30 - 6,500 MHz, 06-Oct-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

Radiated Emissions, 1000 - 26,500 MHz, 07-Oct-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
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	8/3/2012

Radio Antenna Port (Power and Spurious Emissions), 19-Oct-11

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

Radiated Emissions, 1000 - 26,500 MHz, 20-Oct-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
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, 2400-2500 MHz	BRM50702-02	1683	8/3/2012
A.H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	2/9/2012

Radiated Emissions, 1000 - 26,500 MHz, 26-Oct-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
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/15/2012

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

T83113 Pages 24 - 90
T83198 Pages 91 - 98

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		-
Emissions Standard(s):	FCC 15.247/RSS-210	Class:	-
Immunity Standard(s):	EN 301 489-1 V1.8.1	Environment:	-

EMC Test Data

For The

Summit Data Communications

Model

SDC-WB40NBT (1x1 802.11abg + BT 2.1)

Date of Last Test:

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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 (Bluetooth)

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

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.

The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.

With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.

The maximum dwell time in a 100m period is 4 x 3.125ms = 12.5ms.

The average correction factor is, therefore, 20log(12.5/100) =-18dB

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

Run #	Mode	Channel	Antenna	Power Setting	Test Performed	Limit	Result / Margin
Run # 1	Basic (1 Mb/s) Chain A	2402MHz	Ethertronics	max	Restricted Band Edge at 2390 MHz	15.209	38.6dBµV/m @ 2350.1MHz (-15.4dB)
		2480MHz	Ethertronics	max	Restricted Band Edge at 2483.5 MHz	15.209	39.5dBµV/m @ 2483.5MHz (-14.5dB)
Run # 2	EDR (3 Mb/s) Chain A	2402MHz	Ethertronics	max	Restricted Band Edge at 2390 MHz	15.209	38.6dBµV/m @ 2389.8MHz (-15.4dB)
		2480MHz	Ethertronics	max	Restricted Band Edge at 2483.5 MHz	15.209	40.1dBµV/m @ 2483.5MHz (-13.9dB)

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 %

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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.

Run # 1, Band Edge Field Strength - Basic (1 Mb/s), Chain A

Date of Test: 10/19/2011 Test Location: FT Chamber#5

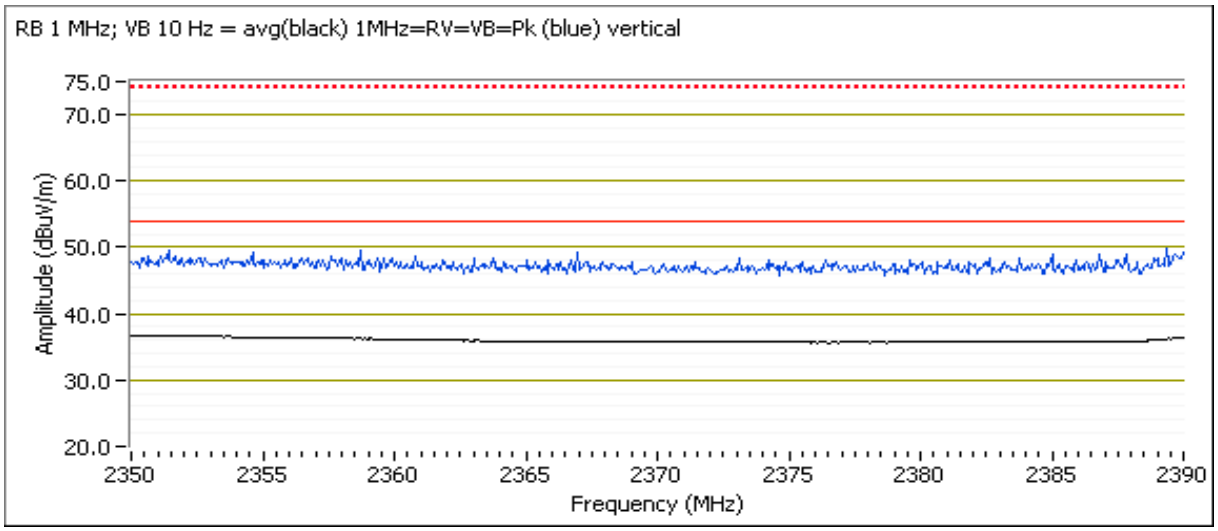
Test Engineer: Joseph Cadigal Config Change: none

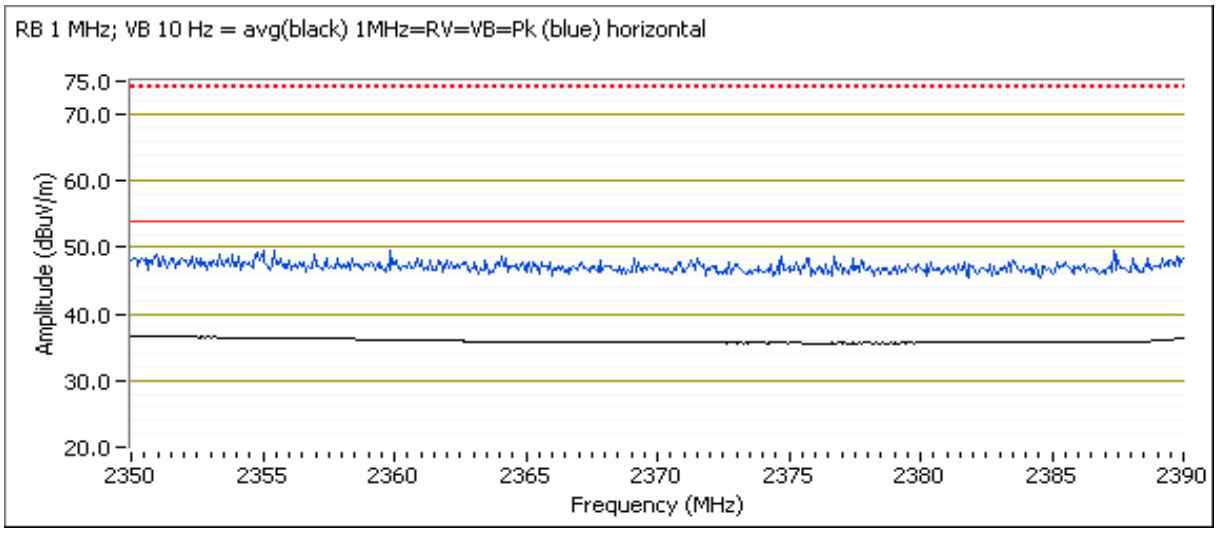
Run # 1a, EUT on Channel 2402MHz - Basic (1 Mb/s), Chain A

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	
2350.130	38.6	V	54.0	-15.4	AVG	283	1.4	RB 1 MHz;VB 10 Hz;Pk
2389.870	49.6	V	74.0	-24.4	PK	283	1.4	RB 1 MHz;VB 3 MHz;Pk
2352.070	38.6	H	54.0	-15.4	AVG	204	1.2	RB 1 MHz;VB 10 Hz;Pk
2383.530	49.9	H	74.0	-24.1	PK	204	1.2	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A





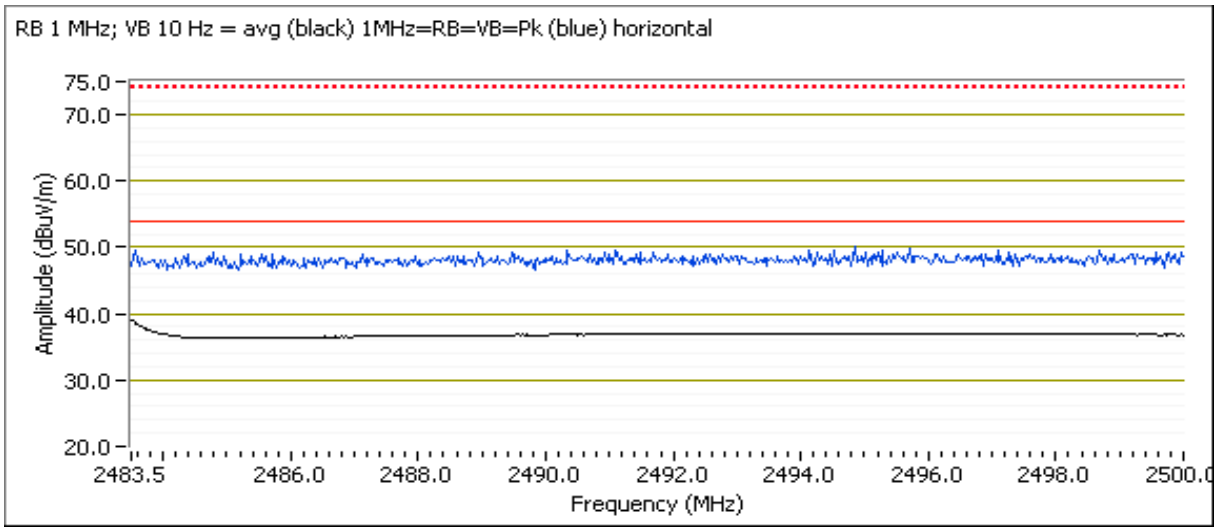
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

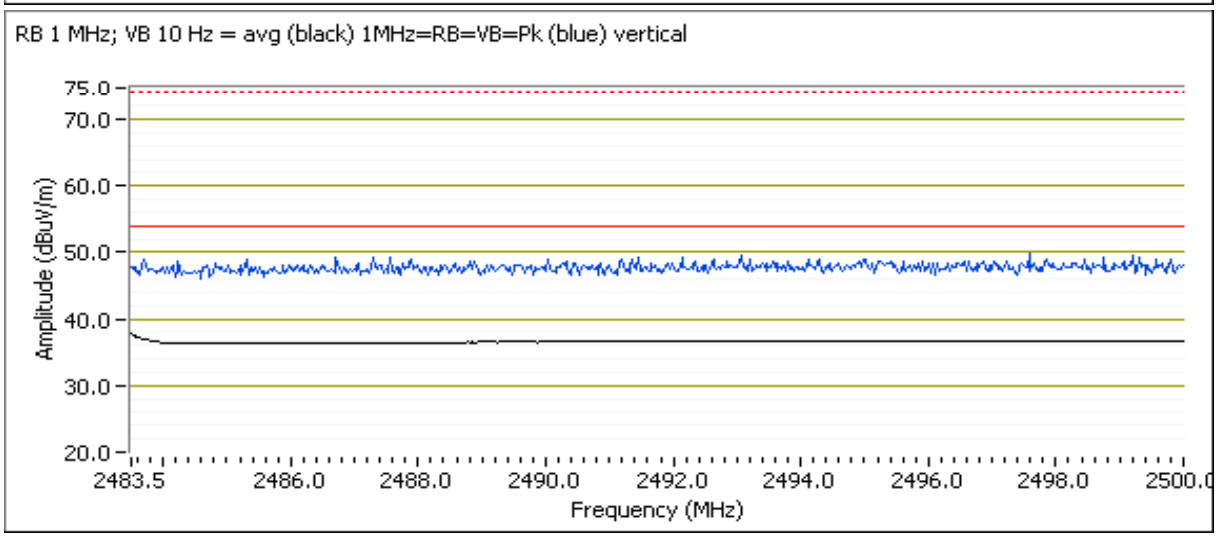
Run # 1b, EUT on Channel 2480MHz - Basic (1 Mb/s), Chain A

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	H	54.0	-14.5	AVG	15	1.1	RB 1 MHz;VB 10 Hz;Pk
2496.040	50.8	H	74.0	-23.2	PK	15	1.1	RB 1 MHz;VB 3 MHz;Pk
2483.500	38.8	V	54.0	-15.2	AVG	268	1.1	RB 1 MHz;VB 10 Hz;Pk
2498.930	49.9	V	74.0	-24.1	PK	268	1.1	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2, Band Edge Field Strength - EDR (3 Mb/s), Chain A

Date of Test: 10/19/2011 Test Location: FT Chamber #5

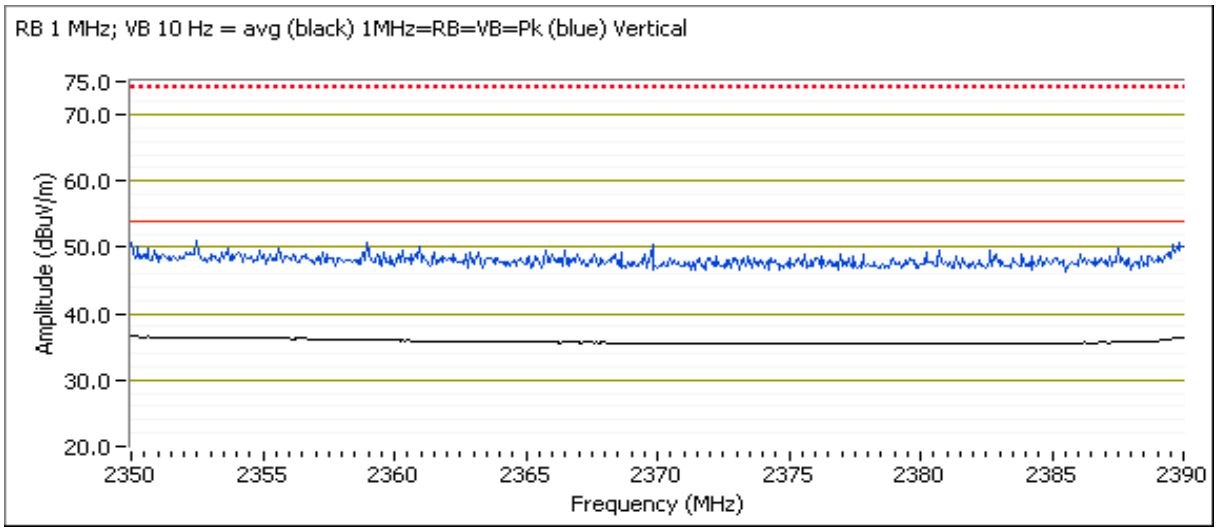
Test Engineer: Rafael Varelas Config Change: None

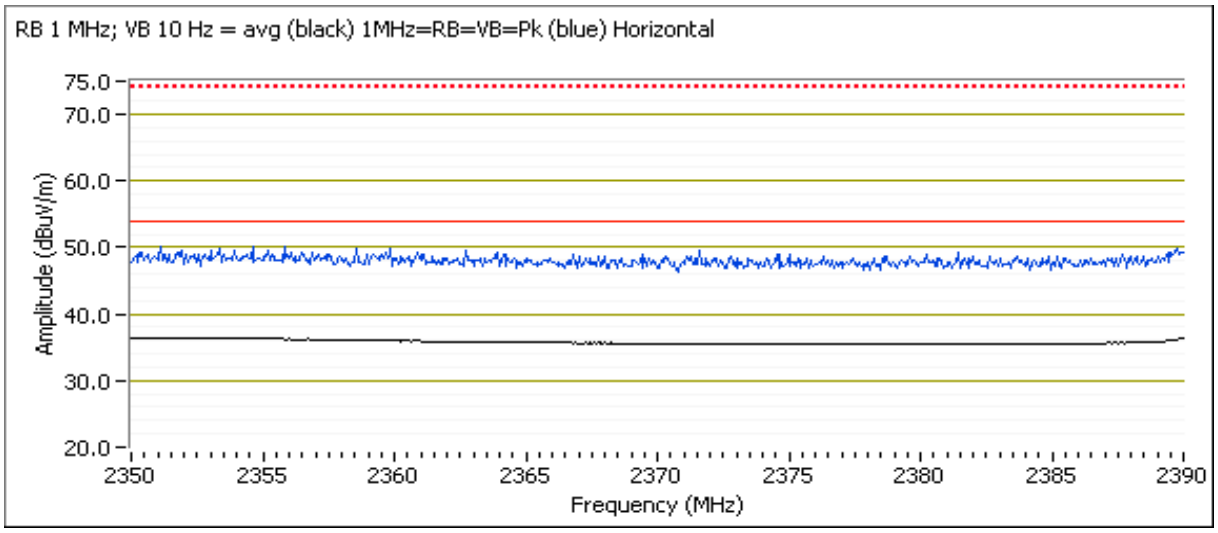
Run # 2a, EUT on Channel 2402MHz - EDR (3 Mb/s), Chain A

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	
2389.800	38.6	V	54.0	-15.4	AVG	290	1.0	RB 1 MHz;VB 10 Hz;Pk
2389.690	50.5	V	74.0	-23.5	PK	290	1.0	RB 1 MHz;VB 3 MHz;Pk
2389.980	38.5	H	54.0	-15.5	AVG	205	1.0	RB 1 MHz;VB 10 Hz;Pk
2389.380	51.0	H	74.0	-23.0	PK	205	1.0	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A





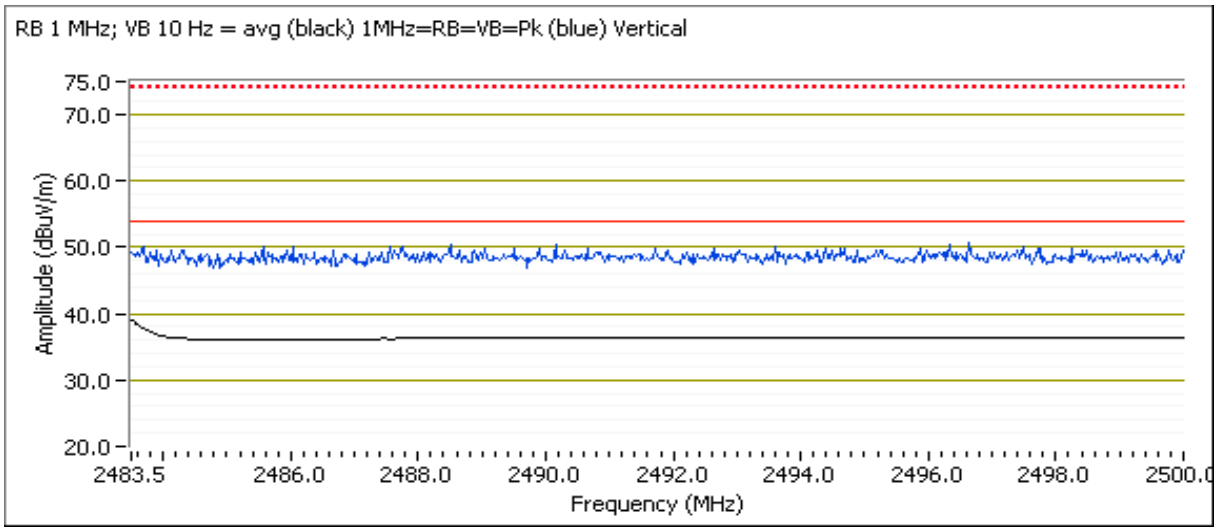
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

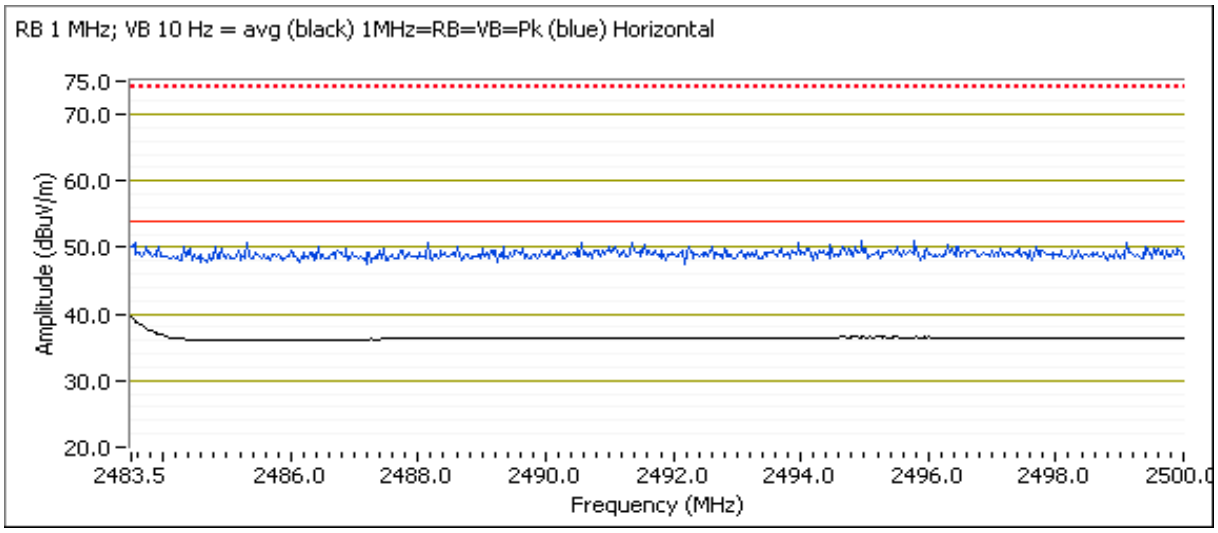
Run # 2b, EUT on Channel 2480MHz - EDR (3 Mb/s), Chain A

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	40.1	H	54.0	-13.9	AVG	21	1.1	RB 1 MHz;VB 10 Hz;Pk
2485.410	49.9	H	74.0	-24.1	PK	21	1.1	RB 1 MHz;VB 3 MHz;Pk
2483.500	39.6	V	54.0	-14.4	AVG	286	1.1	RB 1 MHz;VB 10 Hz;Pk
2486.110	49.6	V	74.0	-24.4	PK	286	1.1	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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 (Bluetooth)

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

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.

The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.

With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.

The maximum dwell time in a 100m period is 4 x 3.125ms = 12.5ms.

The average correction factor is, therefore, 20log(12.5/100) =-18dB

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

Run #	Mode	Channel	Antenna	Power Setting	Test Performed	Limit	Result / Margin
Run # 1	Basic (1 Mb/s) Chain A	2402MHz	Cisco	max	Restricted Band Edge at 2390 MHz	15.209	39.5dBµV/m @ 2390.0MHz (-14.5dB)
		2480MHz	Cisco	max	Restricted Band Edge at 2483.5 MHz	15.209	42.2dBµV/m @ 2483.5MHz (-11.8dB)
Run # 2	EDR (3 Mb/s) Chain A	2402MHz	Cisco	max	Restricted Band Edge at 2390 MHz	15.209	39.5dBµV/m @ 2389.9MHz (-14.5dB)
		2480MHz	Cisco	max	Restricted Band Edge at 2483.5 MHz	15.209	43.6dBµV/m @ 2483.5MHz (-10.4dB)

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 %

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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.

Run # 1, Band Edge Field Strength - Basic (1 Mb/s), Chain A

Date of Test: 10/5/2011 Test Location: FT Chamber#3

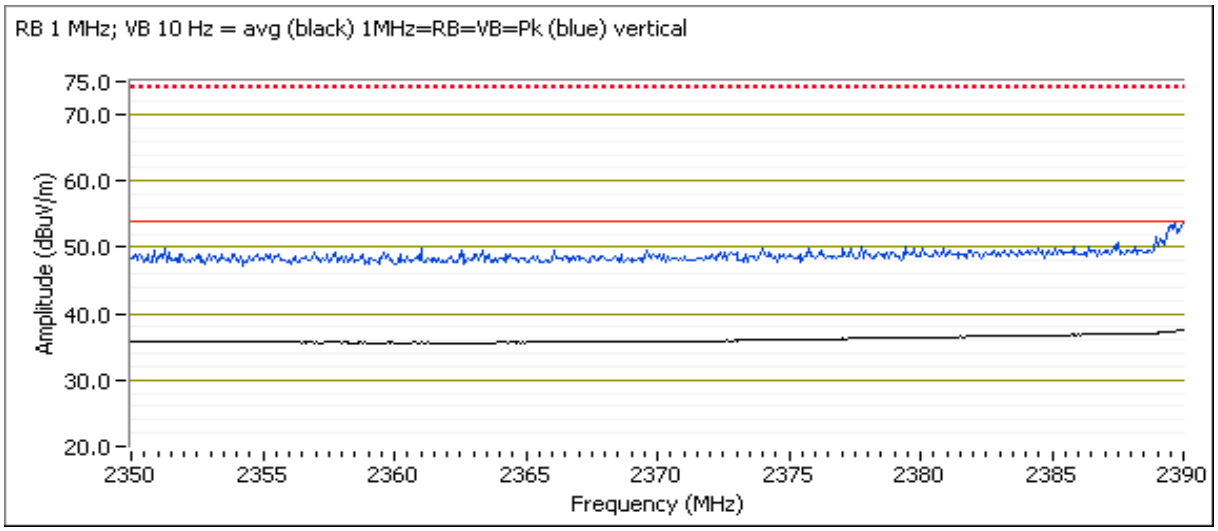
Test Engineer: Joseph Cadigal Config Change: none

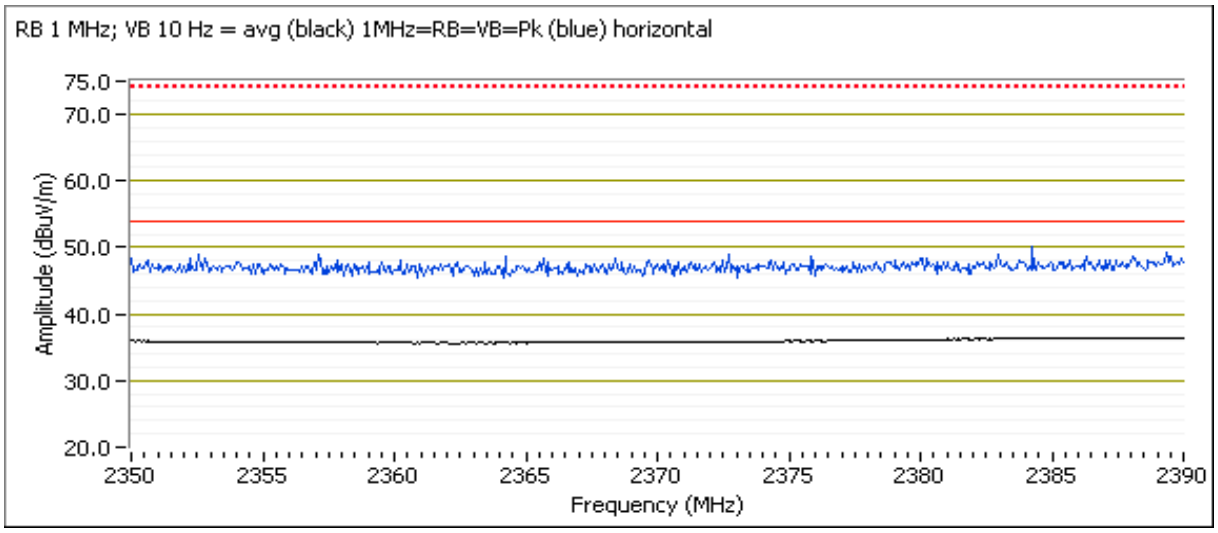
Run # 1a, EUT on Channel 2402MHz - Basic (1 Mb/s), Chain A

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	39.5	V	54.0	-14.5	AVG	360	1.0	RB 1 MHz;VB 10 Hz;Pk
2389.800	51.1	V	74.0	-22.9	PK	360	1.0	RB 1 MHz;VB 3 MHz;Pk
2389.200	38.3	H	54.0	-15.7	AVG	132	1.0	RB 1 MHz;VB 10 Hz;Pk
2374.670	49.7	H	74.0	-24.3	PK	132	1.0	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



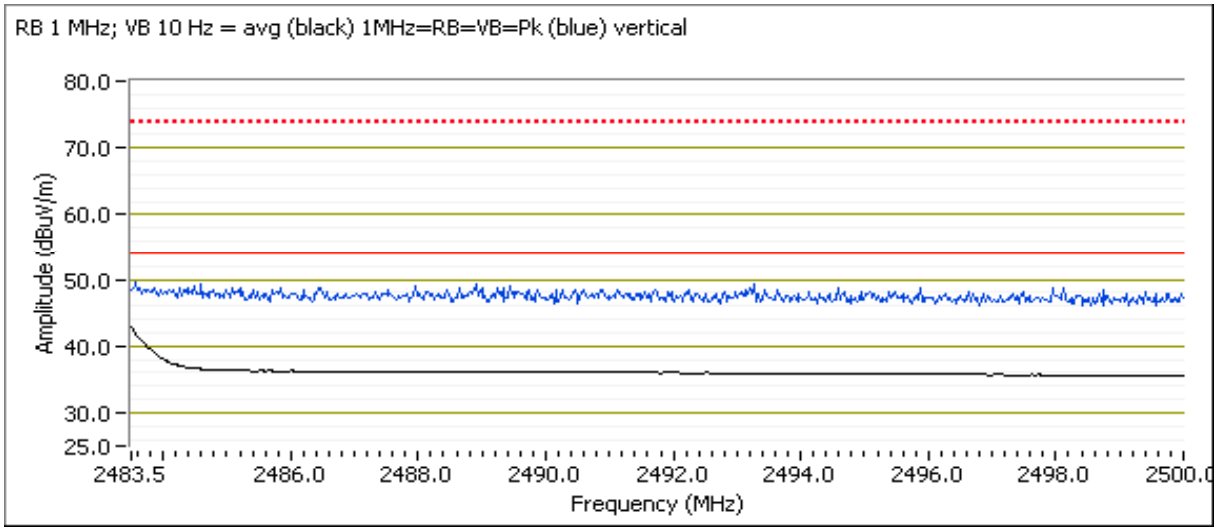


Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

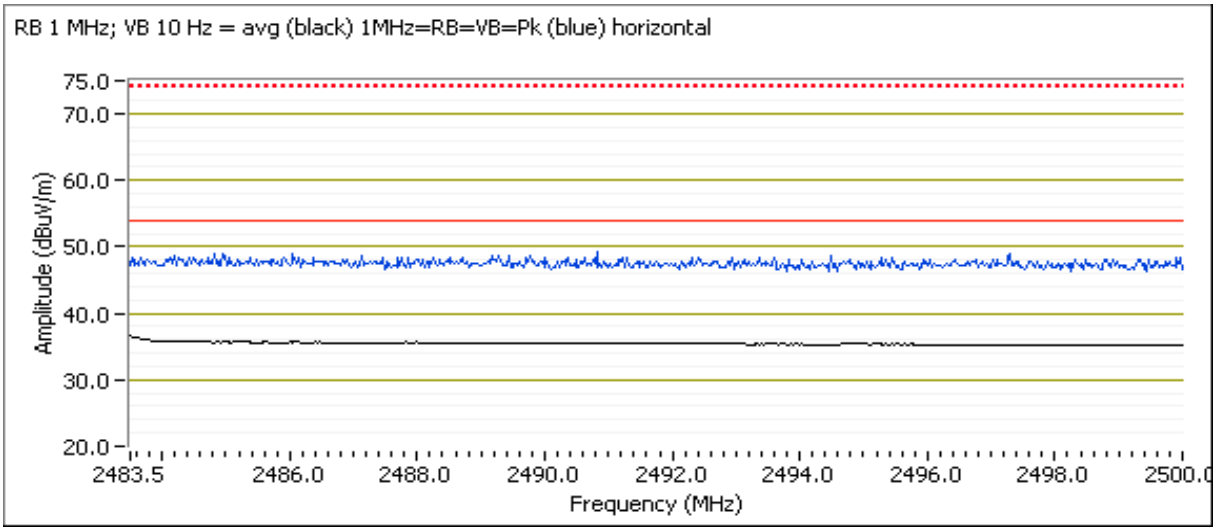
Run # 1b, EUT on Channel 2480MHz - Basic (1 Mb/s), Chain A

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	42.2	V	54.0	-11.8	AVG	343	1.0	RB 1 MHz;VB 10 Hz;Pk
2484.300	49.2	V	74.0	-24.8	PK	343	1.0	RB 1 MHz;VB 3 MHz;Pk
2483.500	37.9	H	54.0	-16.1	AVG	185	1.1	RB 1 MHz;VB 10 Hz;Pk
2489.550	48.7	H	74.0	-25.3	PK	185	1.1	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



Run # 2, Band Edge Field Strength - EDR (3 Mb/s), Chain A

Date of Test: 10/5/2011 Test Location: FT Chamber#3

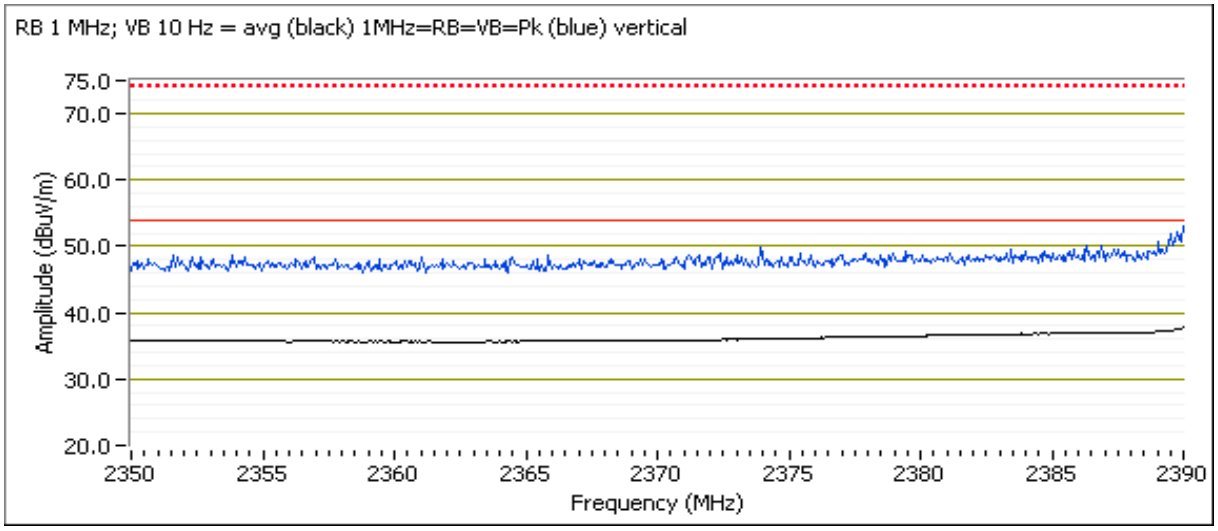
Test Engineer: Joseph Cadigal Config Change: none

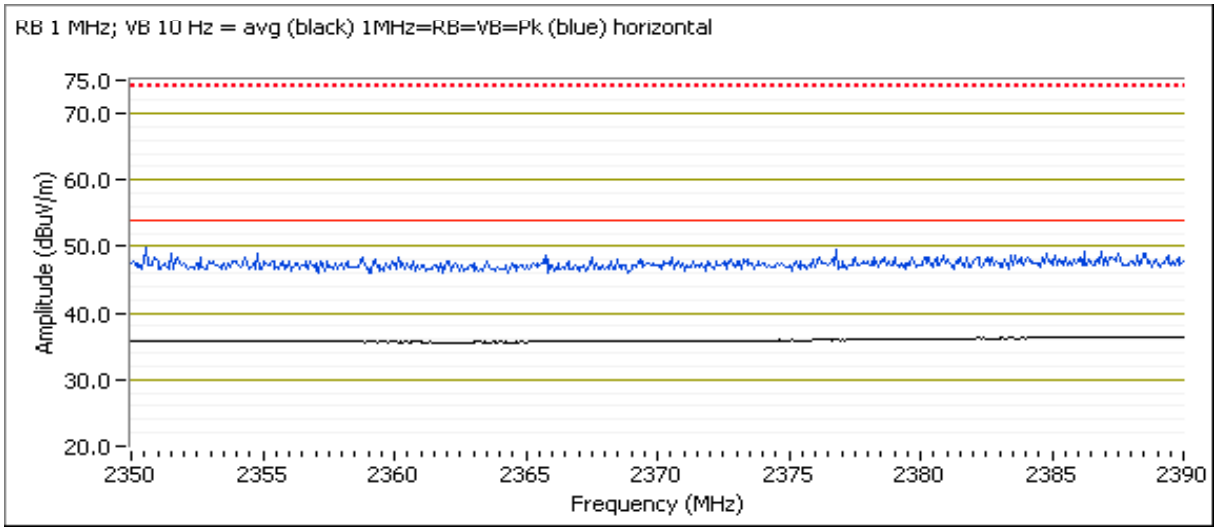
Run # 2a, EUT on Channel 2402MHz - EDR (3 Mb/s), Chain A

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	39.5	V	54.0	-14.5	AVG	0	1.0	RB 1 MHz;VB 10 Hz;Pk
2389.600	50.7	V	74.0	-23.3	PK	0	1.0	RB 1 MHz;VB 3 MHz;Pk
2387.670	38.1	H	54.0	-15.9	AVG	0	1.0	RB 1 MHz;VB 10 Hz;Pk
2356.930	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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



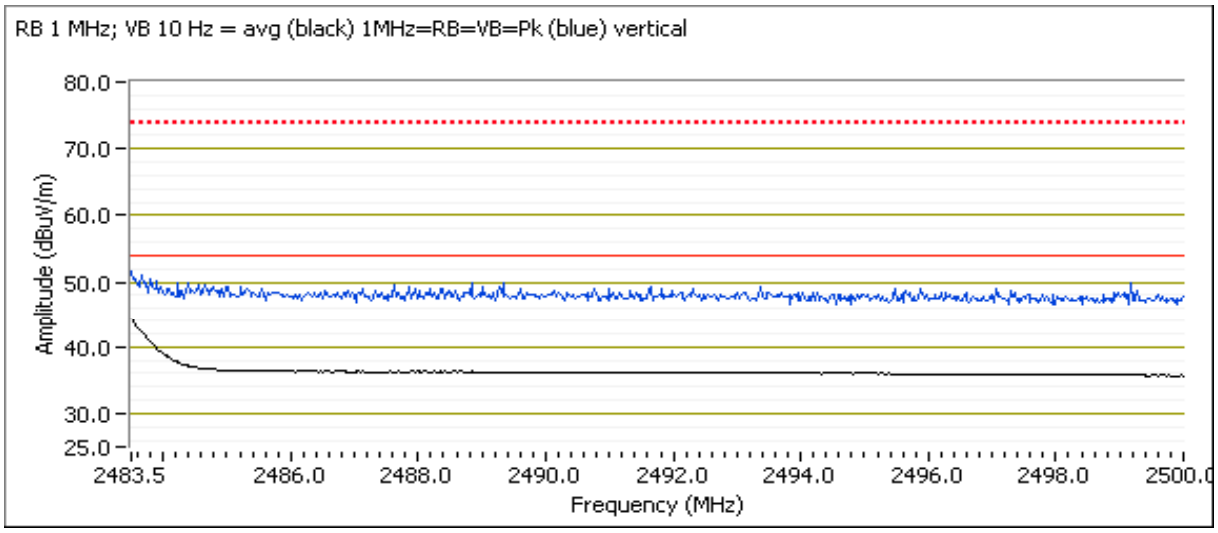


Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

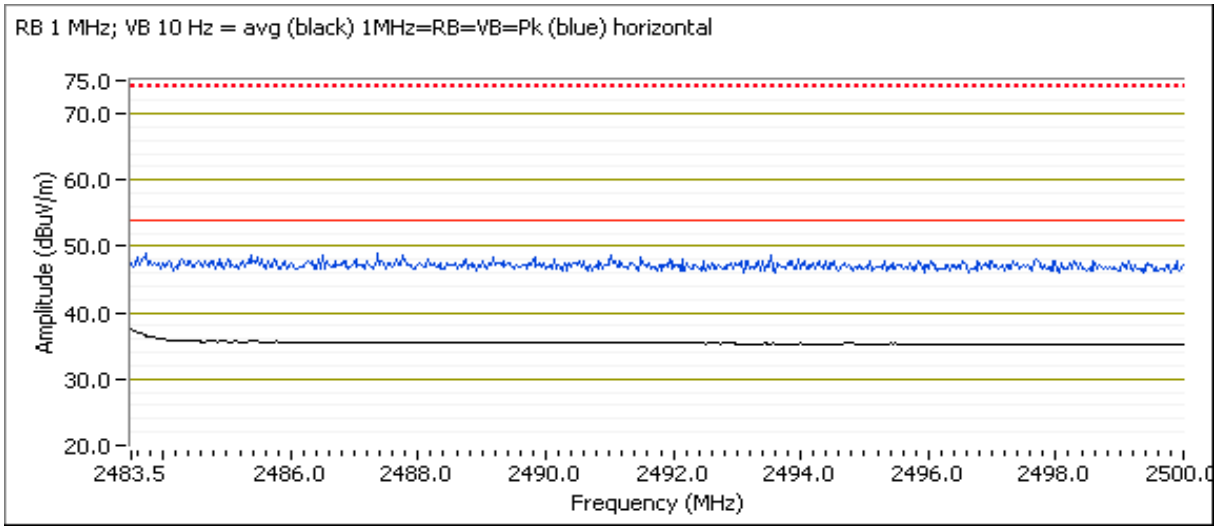
Run # 2b, EUT on Channel 2480MHz - EDR (3 Mb/s), Chain A

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	43.6	V	54.0	-10.4	AVG	100	1.0	RB 1 MHz;VB 10 Hz;Pk
2483.580	50.2	V	74.0	-23.8	PK	100	1.0	RB 1 MHz;VB 3 MHz;Pk
2483.500	38.4	H	54.0	-15.6	AVG	187	1.0	RB 1 MHz;VB 10 Hz;Pk
2497.440	49.0	H	74.0	-25.0	PK	187	1.0	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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 (Bluetooth)

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

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.
The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.
With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.
The maximum dwell time in a 100ms period is 4 x 3.125ms = 12.5ms.
The average correction factor is, therefore, 20log(12.5/100) = -18dB.

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

Run #	Mode	Channel	Antenna	Power Setting	Test Performed	Limit	Result / Margin
Run # 1	Basic (1 Mb/s) Chain A	2402MHz	H&S	max	Restricted Band Edge at 2390 MHz	15.209	39.4dBµV/m @ 2390.0MHz (-14.6dB)
		2480MHz	H&S	max	Restricted Band Edge at 2483.5 MHz	15.209	42.8dBµV/m @ 2483.5MHz (-11.2dB)
Run # 2	EDR (3 Mb/s) Chain A	2402MHz	H&S	max	Restricted Band Edge at 2390 MHz	15.209	38.7dBµV/m @ 2387.9MHz (-15.3dB)
		2480MHz	H&S	max	Restricted Band Edge at 2483.5 MHz	15.209	43.7dBµV/m @ 2483.5MHz (-10.3dB)

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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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.

Run # 1, Band Edge Field Strength - Basic (1 Mb/s), Chain A

Date of Test: 10/7/2011 Test Location: FT Chmaber#4

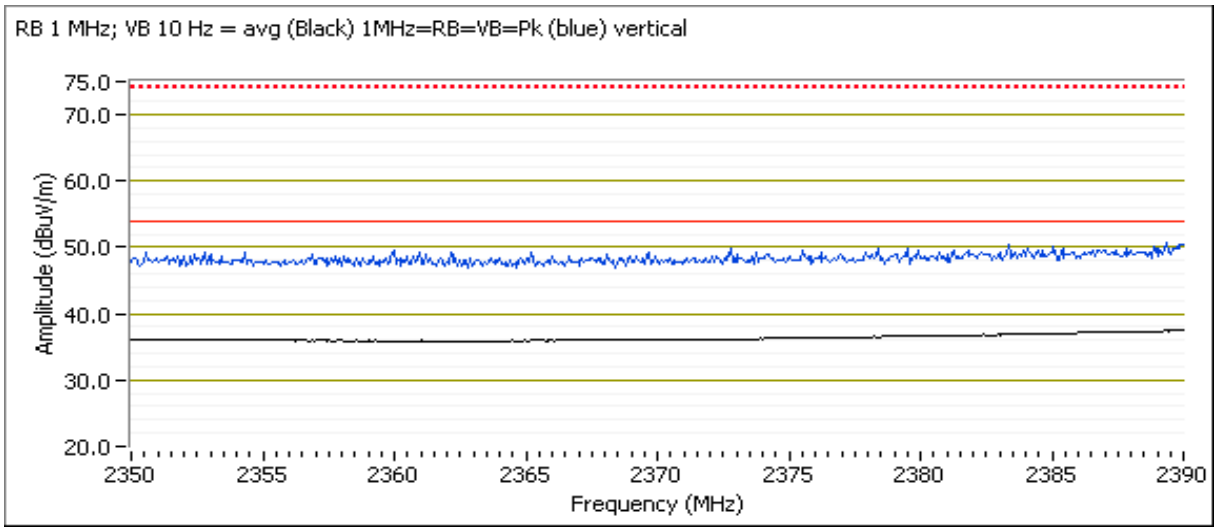
Test Engineer: Joseph Cadigal Config Change: none

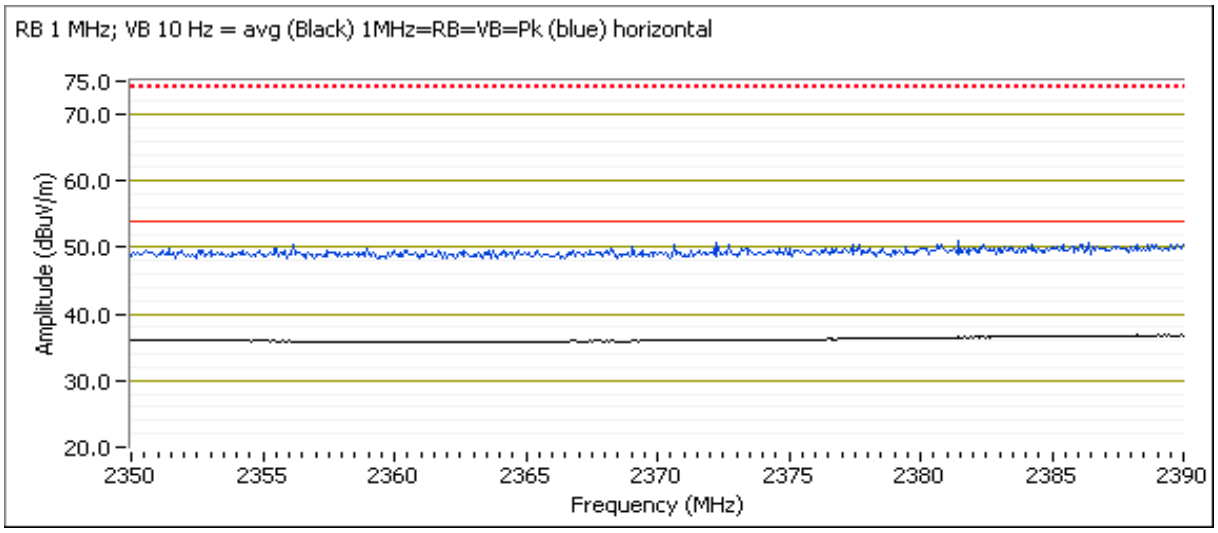
Run # 1a, EUT on Channel 2402MHz - Basic (1 Mb/s), Chain A

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	39.4	V	54.0	-14.6	AVG	235	1.0	RB 1 MHz;VB 10 Hz;Pk
2386.400	50.7	V	74.0	-23.3	PK	235	1.0	RB 1 MHz;VB 3 MHz;Pk
2388.130	38.7	H	54.0	-15.3	AVG	67	1.0	RB 1 MHz;VB 10 Hz;Pk
2378.800	49.8	H	74.0	-24.2	PK	67	1.0	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



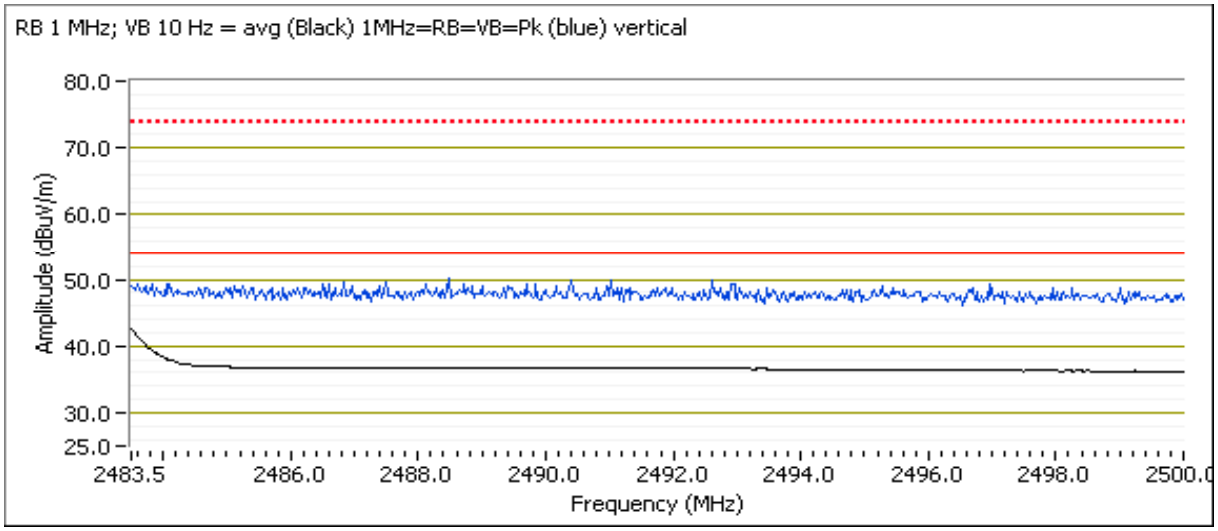


Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

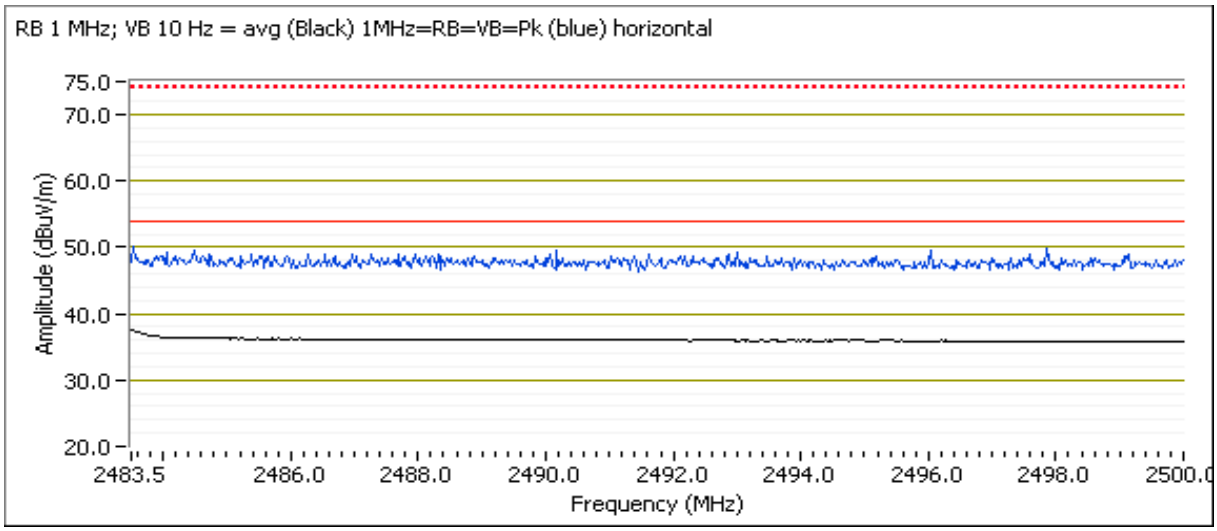
Run # 1b, EUT on Channel 2480MHz - Basic (1 Mb/s), Chain A

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	42.8	V	54.0	-11.2	AVG	160	1.0	RB 1 MHz;VB 10 Hz;Pk
2483.550	50.6	V	74.0	-23.4	PK	160	1.0	RB 1 MHz;VB 3 MHz;Pk
2483.500	38.7	H	54.0	-15.3	AVG	235	1.0	RB 1 MHz;VB 10 Hz;Pk
2490.130	49.1	H	74.0	-24.9	PK	235	1.0	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2, Band Edge Field Strength - EDR (3 Mb/s), Chain A

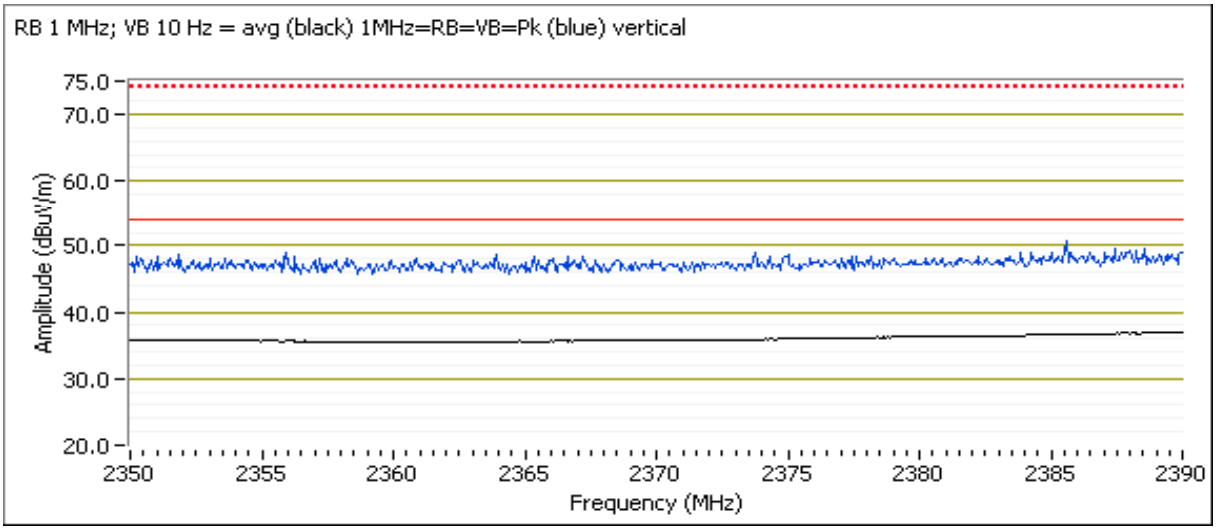
Date of Test: 10/5/2011 Test Location: FT Chamber#3

Test Engineer: Joseph Cadigal Config Change: none

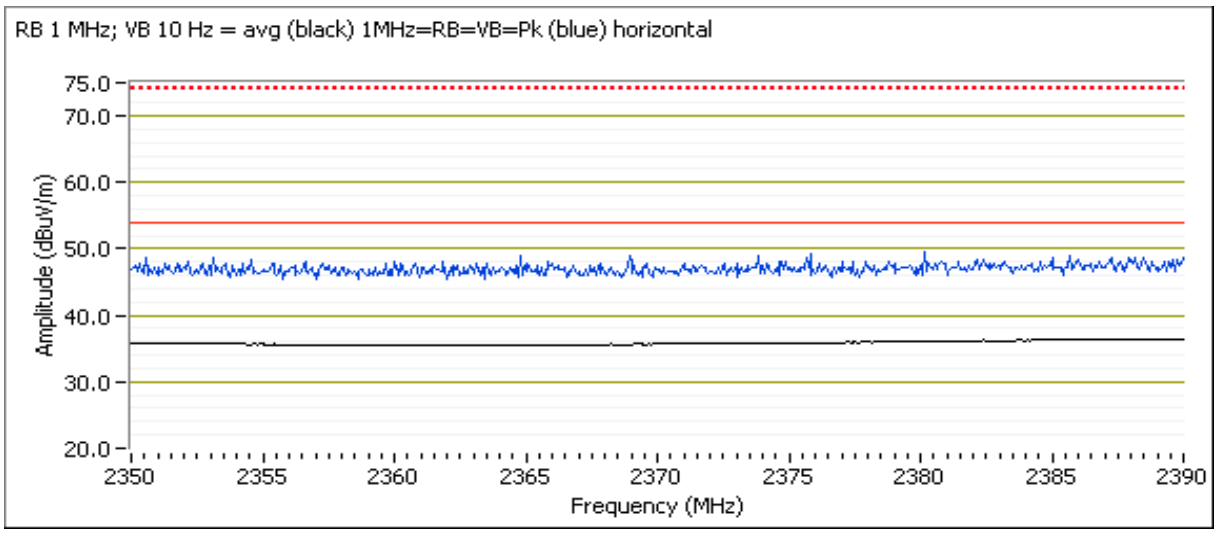
Run # 2a, EUT on Channel 2402MHz - EDR (3 Mb/s), Chain A

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	
2387.930	38.7	V	54.0	-15.3	AVG	173	1.0	RB 1 MHz;VB 10 Hz;Pk
2385.400	49.6	V	74.0	-24.4	PK	173	1.0	RB 1 MHz;VB 3 MHz;Pk
2389.870	38.4	H	54.0	-15.6	AVG	173	1.2	RB 1 MHz;VB 10 Hz;Pk
2366.470	49.4	H	74.0	-24.6	PK	173	1.2	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

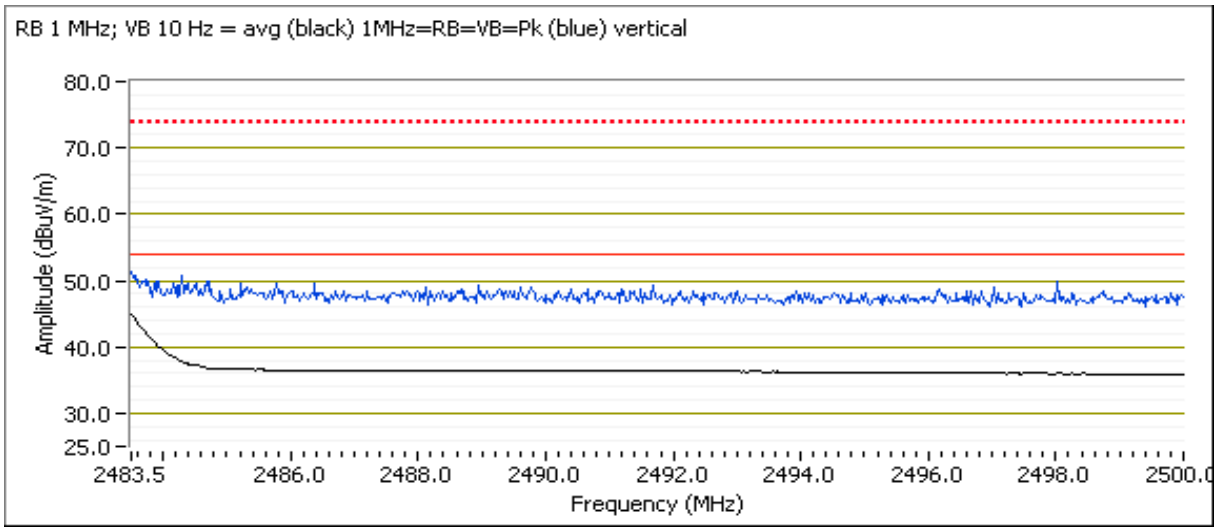


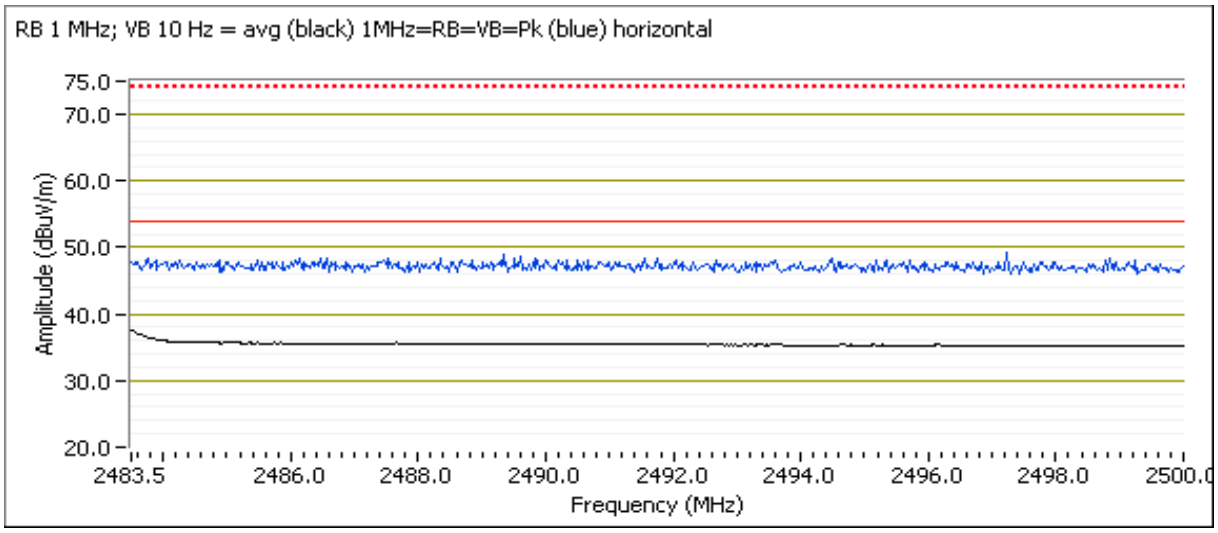
Run # 2b, EUT on Channel 2480MHz - EDR (3 Mb/s), Chain A

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	43.7	V	54.0	-10.3	AVG	161	1.0	RB 1 MHz;VB 10 Hz;Pk
2483.550	50.3	V	74.0	-23.7	PK	161	1.0	RB 1 MHz;VB 3 MHz;Pk
2483.500	38.5	H	54.0	-15.5	AVG	242	1.0	RB 1 MHz;VB 10 Hz;Pk
2493.340	49.3	H	74.0	-24.7	PK	242	1.0	RB 1 MHz;VB 3 MHz;Pk

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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 (Bluetooth)

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

For Bluetooth: Tx is chain B, Rx is chain B

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.

The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.

With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.

The maximum dwell time in a 100m period is 4 x 3.125ms = 12.5ms.

The average correction factor is, therefore, 20log(12.5/100) =-18dB

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

Run #	Mode	Channel	Antenna	Power Setting	Test Performed	Limit	Result / Margin
Run #1	Basic (1 Mb/s) Chain A	2402MHz	Ethertronics	max	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	46.4 dBµV/m @ 2994.5 MHz (-7.6 dB)
		2440MHz	Ethertronics	max			46.1 dBµV/m @ 2994.5 MHz (-7.9 dB)
		2480MHz	Ethertronics	max			41.3 dBµV/m @ 2994.7 MHz (-12.7 dB)
Run # 2	EDR (3 Mb/s) Chain A	2402MHz	Ethertronics	max	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	45.0 dBµV/m @ 2994.7 MHz (-9.0 dB)
		2440MHz	Ethertronics	max			44.7 dBµV/m @ 2994.7 MHz (-9.3 dB)
		2480MHz	Ethertronics	max			38.5 dBµV/m @ 1653.3 MHz (-15.5 dB)
3	Bluetooth Receive	2440	Ethertronics	-	Radiated Emissions, 1 - 7.5 GHz	RSS 210	43.2dBµV/m @ 2994.7MHz (-10.8dB)

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.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-26GHz, Basic (1 Mb/s), Chain A

Date of Test: 10/19/2011 Test Location: FT Chamber #5

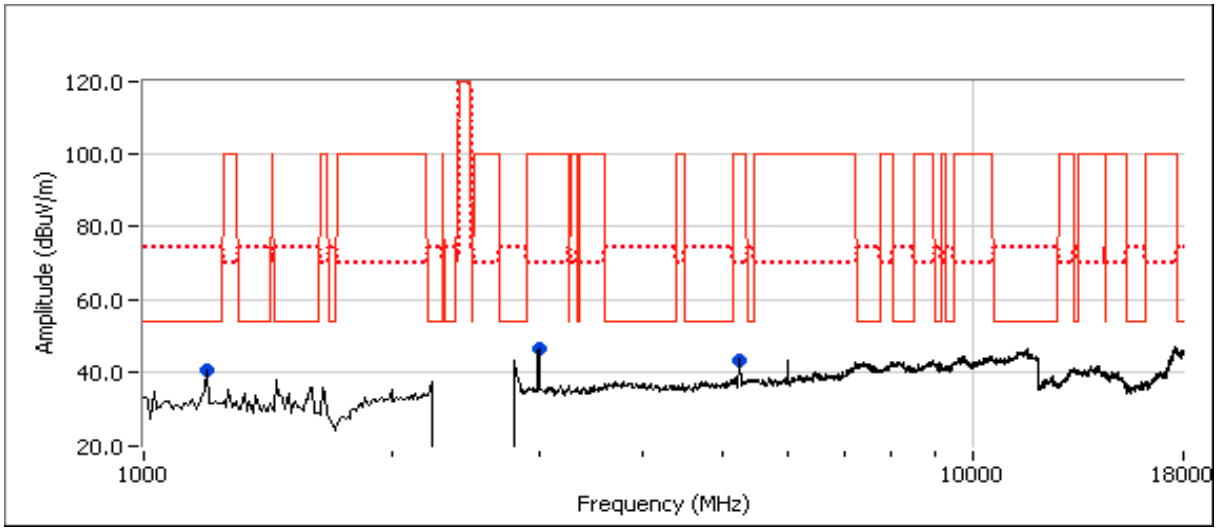
Test Engineer: Rafael Varelas Config Change: None

Run #1a, EUT on Channel 2402MHz - Basic (1 Mb/s), 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	
2994.490	46.4	V	54.0	-7.6	Peak	106	1.0	Note 2
5236.270	43.5	V	54.0	-10.5	Peak	218	1.0	Note 2
1195.690	36.1	V	54.0	-17.9	AVG	164	1.2	RB 1 MHz;VB 10 Hz;Pk
1196.360	49.6	V	74.0	-24.4	PK	164	1.2	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 2:	Emission in non-restricted band, used restriced band limit of 15.209. Peak reading vs the average limit.



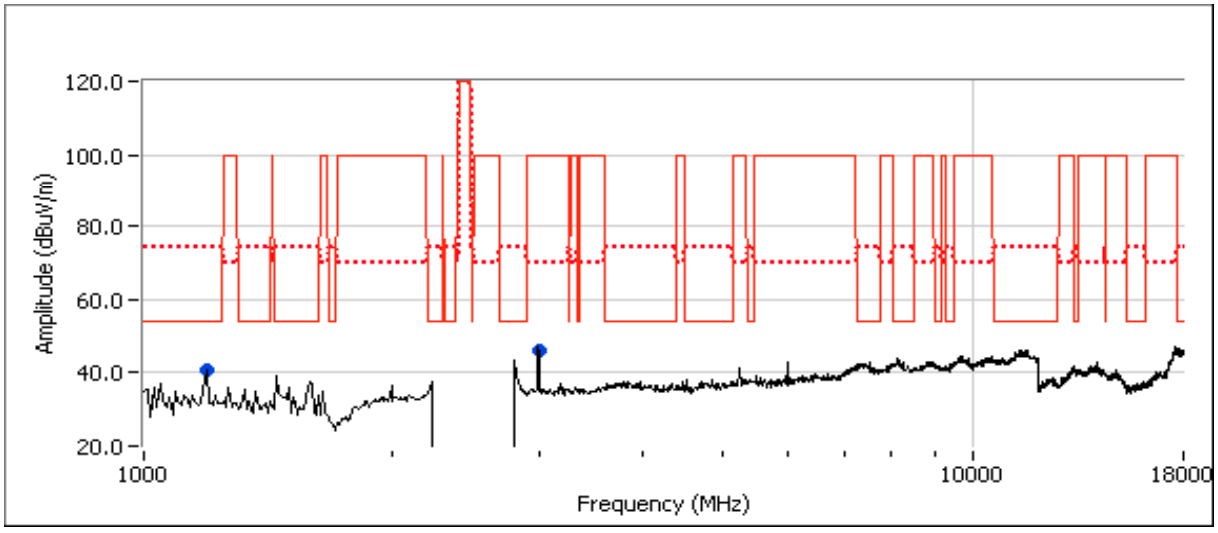
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #1b: , EUT on Channel 2440MHz - Basic (1 Mb/s), 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	
2994.490	46.1	V	54.0	-7.9	Peak	103	1.0	Note 3
1197.010	37.0	V	54.0	-17.0	AVG	224	1.0	RB 1 MHz;VB 10 Hz;Pk
1195.840	50.1	V	74.0	-23.9	PK	224	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:	Emission in non-restricted band, used restriced band limit of 15.209. Peak reading vs the average limit.



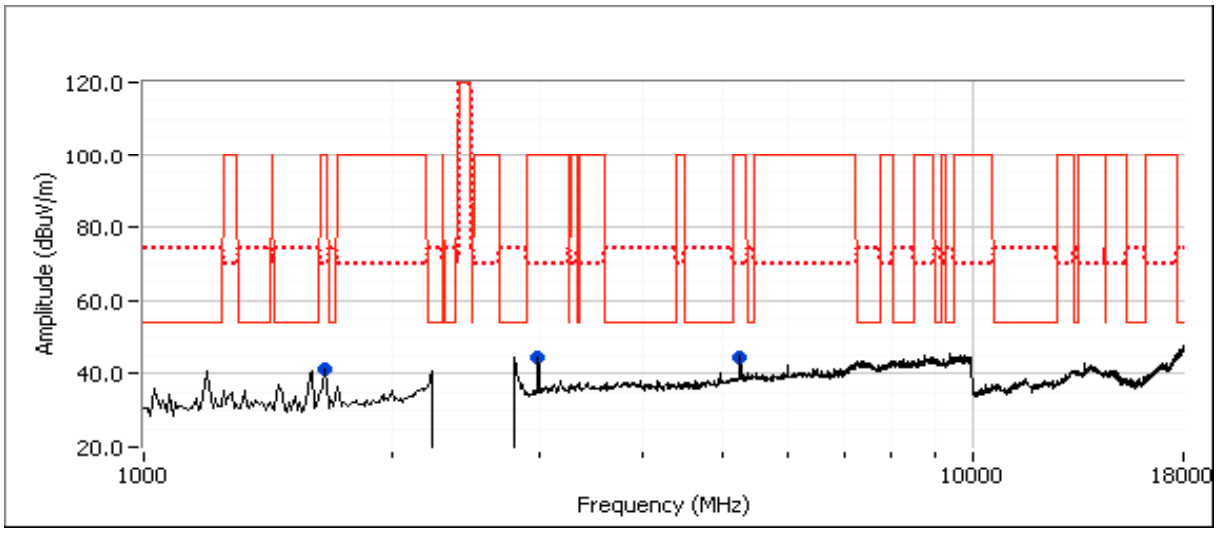
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #1c: , EUT on Channel 2480MHz - Basic (1 Mb/s), 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	
2994.690	41.3	V	54.0	-12.7	AVG	114	1.3	RB 1 MHz;VB 10 Hz;Pk, note 2
1653.440	41.1	H	54.0	-12.9	AVG	28	1.3	RB 1 MHz;VB 10 Hz;Pk, note 2
5242.270	33.5	V	54.0	-20.5	AVG	244	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
2994.760	46.6	V	74.0	-27.4	PK	114	1.3	RB 1 MHz;VB 3 MHz;Pk, note 2
5244.000	44.6	V	74.0	-29.4	PK	244	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1653.340	43.9	H	74.0	-30.1	PK	28	1.3	RB 1 MHz;VB 3 MHz;Pk, note 2

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 in non-restricted band, used restriced band limit of 15.209.



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2, Radiated Spurious Emissions, 1-26GHz, EDR (3 Mb/s), Chain A

Date of Test: 10/26/2011 Test Location: FT Chamber #5

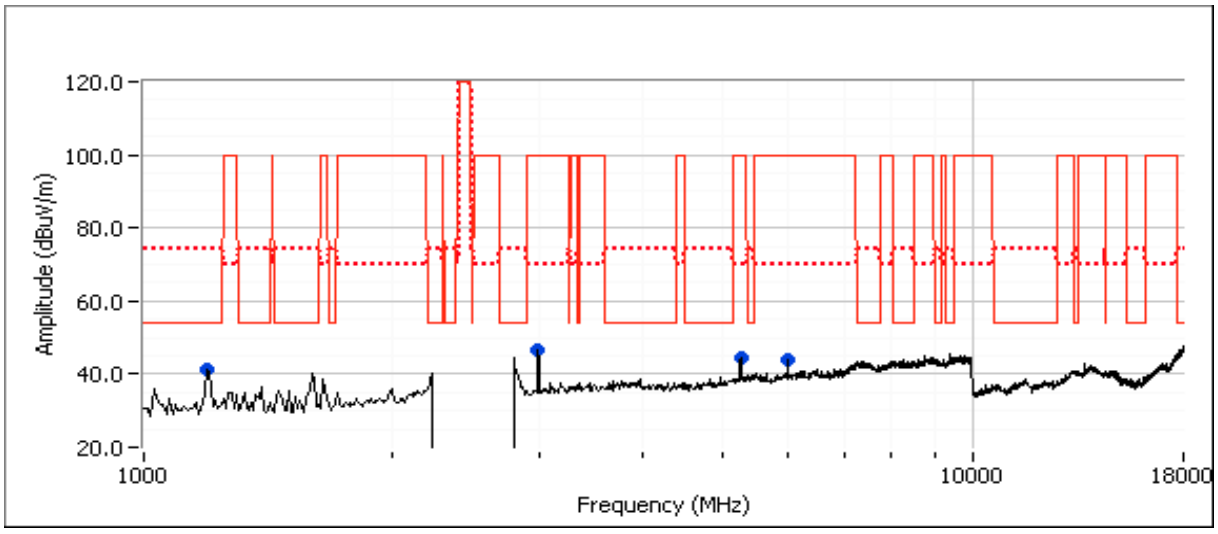
Test Engineer: Joseph Cadigal Config Change: none

Run # 2a, EUT on Channel 2402MHz - EDR (3 Mb/s), 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	
2994.690	45.0	V	54.0	-9.0	AVG	139	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5990.110	34.0	V	54.0	-20.0	AVG	134	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5244.230	34.0	V	54.0	-20.0	AVG	202	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1188.820	31.2	V	54.0	-22.8	AVG	212	1.3	RB 1 MHz;VB 10 Hz;Pk
2994.690	49.2	V	74.0	-24.8	PK	139	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
5244.100	47.5	V	74.0	-26.5	PK	202	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
5991.600	47.2	V	74.0	-26.8	PK	134	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1189.760	38.9	V	74.0	-35.1	PK	212	1.3	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:	Emission in non-restricted band, used restriced band limit of 15.209.



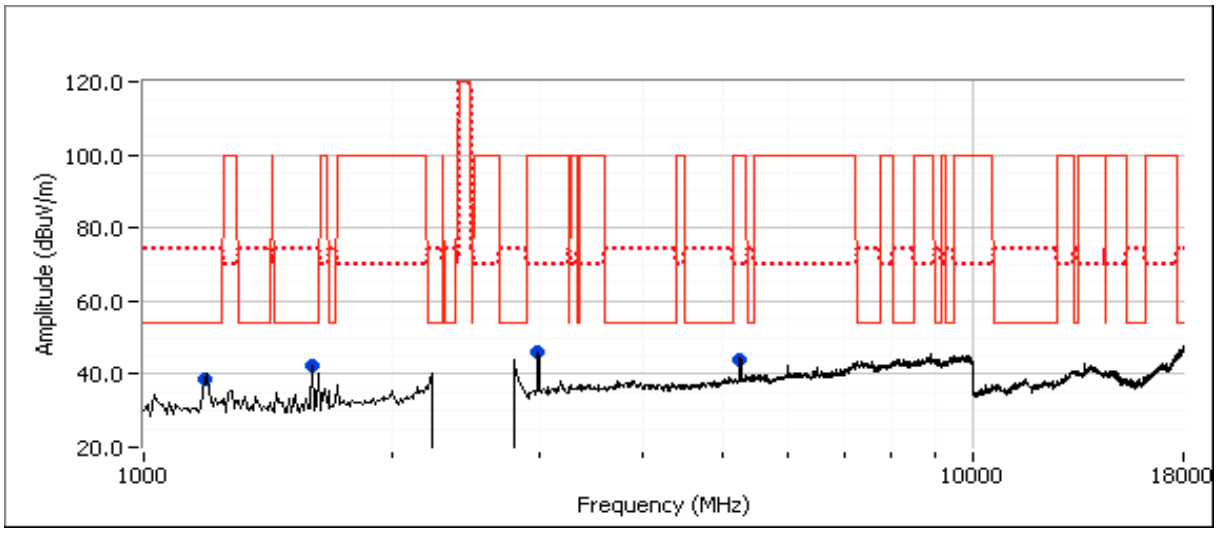
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2b: , EUT on Channel 2440MHz - EDR (3 Mb/s), 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	
2994.700	44.7	V	54.0	-9.3	AVG	138	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
5235.430	34.7	V	54.0	-19.3	AVG	198	1.3	RB 1 MHz;VB 10 Hz;Pk, note 3
2994.540	49.9	V	74.0	-24.1	PK	138	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1186.510	29.3	V	54.0	-24.7	AVG	213	1.0	RB 1 MHz;VB 10 Hz;Pk
5235.960	49.3	V	74.0	-24.7	PK	198	1.3	RB 1 MHz;VB 3 MHz;Pk, note 3
1604.380	27.7	V	54.0	-26.3	AVG	189	1.3	RB 1 MHz;VB 10 Hz;Pk
1185.950	40.6	V	74.0	-33.4	PK	213	1.0	RB 1 MHz;VB 3 MHz;Pk
1603.690	39.0	V	74.0	-35.0	PK	189	1.3	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, used restriced band limit of 15.209.



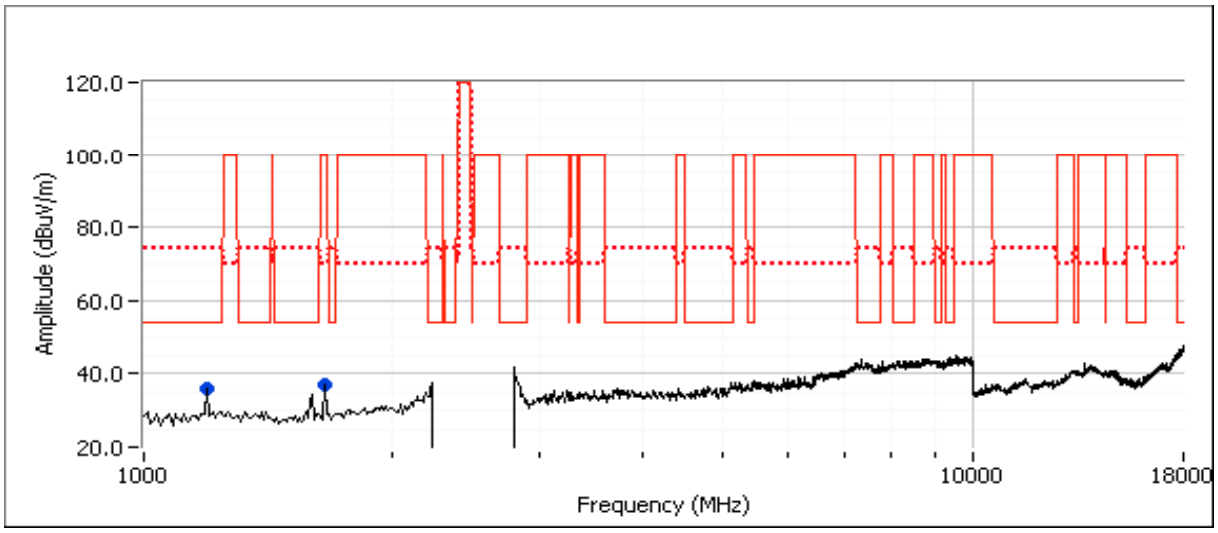
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2c: , EUT on Channel 2480MHz - Basic (3 Mb/s), 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	
1653.320	38.5	V	54.0	-15.5	AVG	314	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1184.310	27.3	V	54.0	-26.7	AVG	314	1.0	RB 1 MHz;VB 10 Hz;Pk
1653.310	43.8	V	74.0	-30.2	PK	314	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1184.240	37.7	V	74.0	-36.3	PK	314	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:	Emission in non-restricted band, used restriced band limit of 15.209.



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

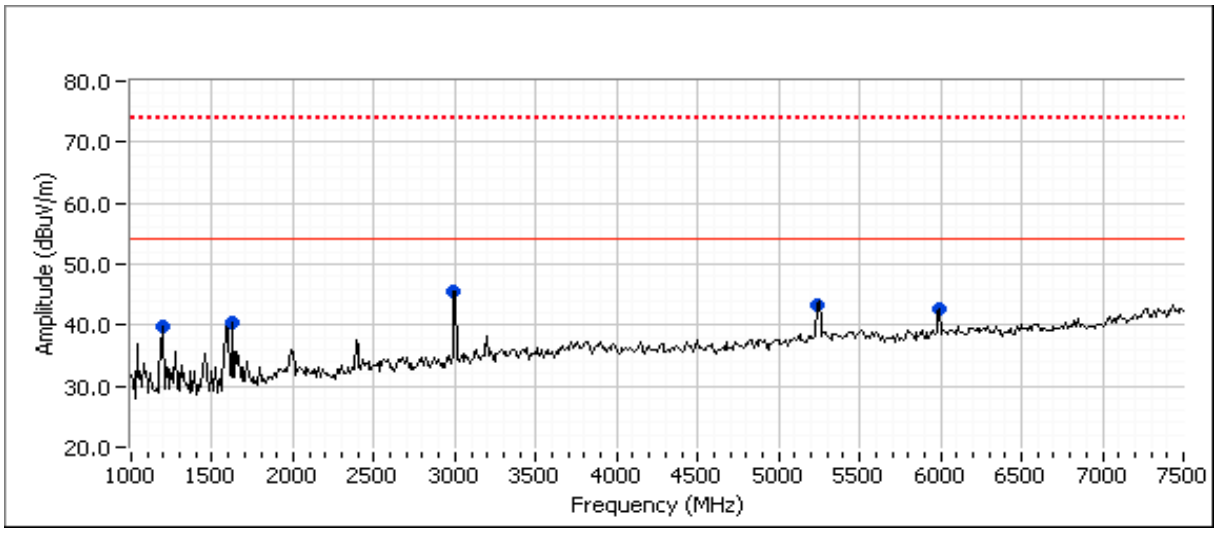
Run # 3, Radiated Spurious Emissions, 1-7.5GHz, Receive, Chain A

Date of Test: 10/26/2011 Test Location: FT Chamber#5

Test Engineer: Joseph Cadigal Config Change: none

Run # 3a, 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	
2994.660	43.2	V	54.0	-10.8	AVG	138	1.3	RB 1 MHz;VB 10 Hz;Pk
1628.660	36.7	V	54.0	-17.3	AVG	300	1.0	RB 1 MHz;VB 10 Hz;Pk
1188.750	35.1	V	54.0	-18.9	AVG	192	1.6	RB 1 MHz;VB 10 Hz;Pk
5237.840	33.3	V	54.0	-20.7	AVG	228	1.0	RB 1 MHz;VB 10 Hz;Pk
5996.390	33.0	V	54.0	-21.0	AVG	144	1.0	RB 1 MHz;VB 10 Hz;Pk
2994.710	47.5	V	74.0	-26.5	PK	138	1.3	RB 1 MHz;VB 3 MHz;Pk
5238.460	45.9	V	74.0	-28.1	PK	228	1.0	RB 1 MHz;VB 3 MHz;Pk
5994.660	44.7	V	74.0	-29.3	PK	144	1.0	RB 1 MHz;VB 3 MHz;Pk
1628.730	41.3	V	74.0	-32.7	PK	300	1.0	RB 1 MHz;VB 3 MHz;Pk
1187.180	36.9	V	74.0	-37.1	PK	192	1.6	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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 (Bluetooth)

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

For Bluetooth: Tx is chain B, Rx is chain B

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.

The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.

With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.

The maximum dwell time in a 100m period is 4 x 3.125ms = 12.5ms.

The average correction factor is, therefore, 20log(12.5/100) =-18dB

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

Run #	Mode	Channel	Antenna	Power Setting	Test Performed	Limit	Result / Margin
Run #1	Basic (1 Mb/s) Chain A	2402MHz	H&S	max	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	36.7 dBµV/m @ 5238.4 MHz (-17.3 dB)
		2440MHz	H&S	max			45.6 dBµV/m @ 2994.7 MHz (-8.4 dB)
		2480MHz	H&S	max			46.5 dBµV/m @ 2994.7 MHz (-7.5 dB)
Run # 2	EDR (3 Mb/s) Chain A	2402MHz	H&S	max	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	36.8 dBµV/m @ 5235.6 MHz (-17.2 dB)
		2440MHz	H&S	max			44.3 dBµV/m @ 2994.7 MHz (-9.7 dB)
		2480MHz	H&S	max			44.5 dBµV/m @ 2994.7 MHz (-9.5 dB)
3	Bluetooth Receive	2440	H&S	-	Radiated Emissions, 1 - 7.5 GHz	RSS 210	42.7dBµV/m @ 5989.3MHz (-11.3dB)

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.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #1, Radiated Spurious Emissions, 1-26GHz, Basic (1 Mb/s), Chain A

Date of Test: 10/12/2011 Test Location: FT Chamber#4

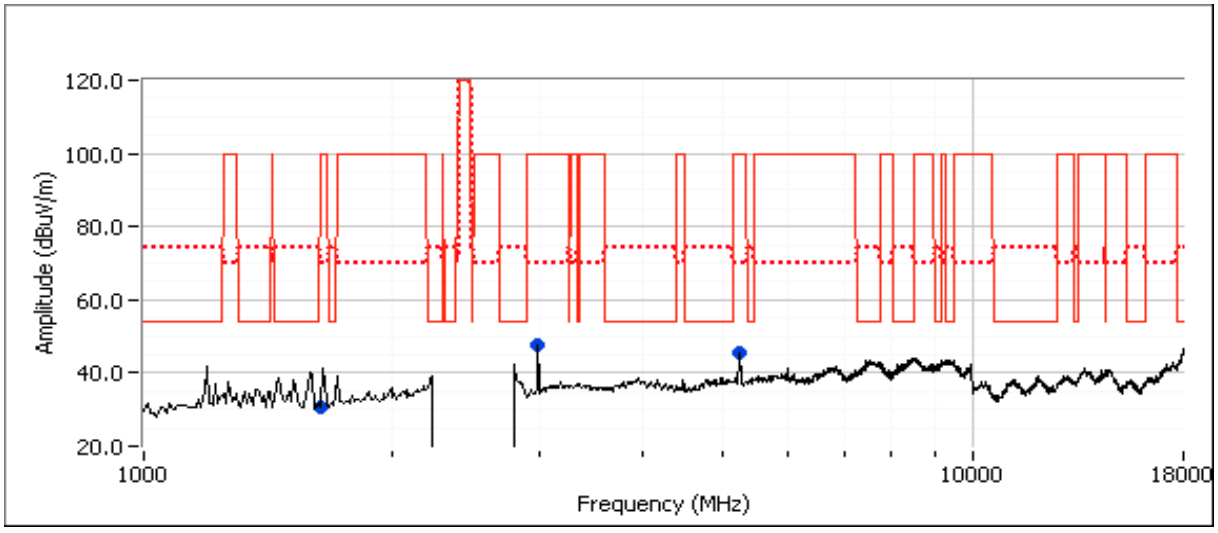
Test Engineer: Joseph Cadigal Config Change:

Run #1a, EUT on Channel 2402MHz - Basic (1 Mb/s), 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	
5238.430	36.7	V	54.0	-17.3	AVG	202	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
2994.690	32.5	V	54.0	-21.5	AVG	150	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5236.210	51.5	V	74.0	-22.5	PK	202	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1636.500	26.4	H	54.0	-27.6	AVG	256	2.2	RB 1 MHz;VB 10 Hz;Pk, note 2
2994.710	42.6	V	74.0	-31.4	PK	150	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1635.100	37.2	H	74.0	-36.8	PK	256	2.2	RB 1 MHz;VB 3 MHz;Pk, note 2

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 in non-restricted band, used restriced band limit of 15.209.



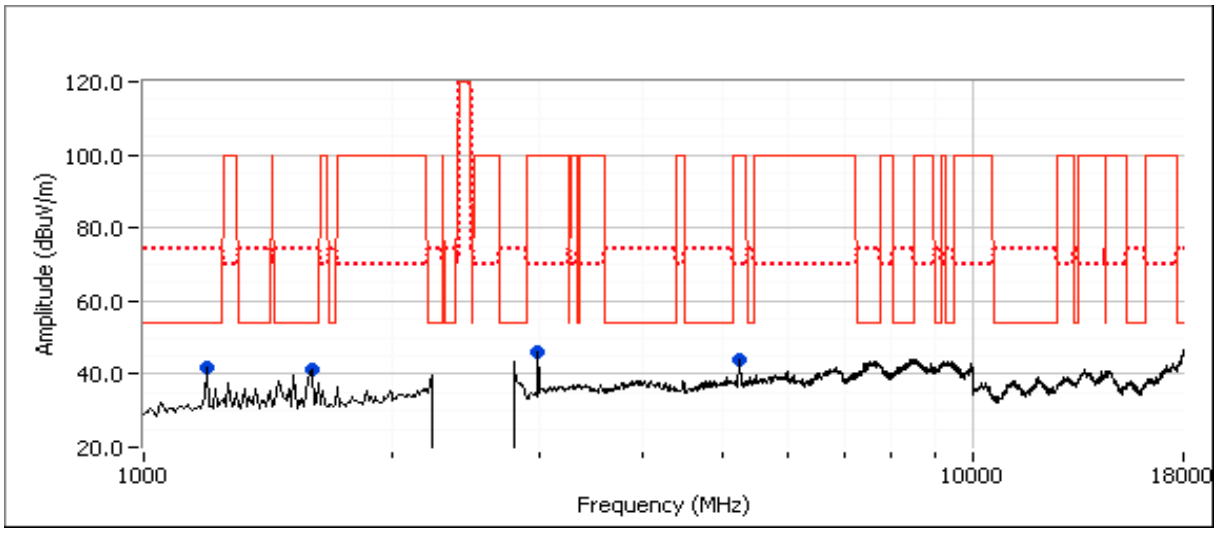
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #1b: , EUT on Channel 2440MHz - Basic (1 Mb/s), 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	
2994.690	45.6	V	54.0	-8.4	AVG	194	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
5252.290	33.2	V	54.0	-20.8	AVG	210	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
1195.900	31.0	V	54.0	-23.0	AVG	173	1.3	RB 1 MHz;VB 10 Hz;Pk
2994.680	50.6	V	74.0	-23.4	PK	194	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1592.770	28.4	V	54.0	-25.6	AVG	0	1.0	RB 1 MHz;VB 10 Hz;Pk
1195.410	46.5	V	74.0	-27.5	PK	173	1.3	RB 1 MHz;VB 3 MHz;Pk
5252.090	44.2	V	74.0	-29.8	PK	210	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1593.600	39.7	V	74.0	-34.3	PK	0	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:	Emission in non-restricted band, used restriced band limit of 15.209.



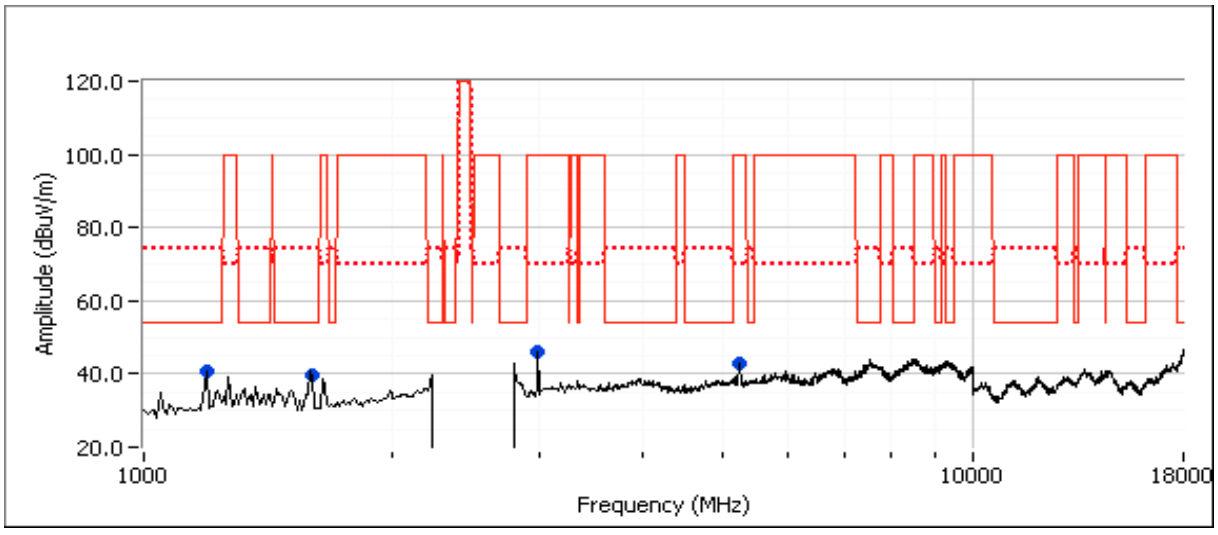
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #1c: , EUT on Channel 2480MHz - Basic (1 Mb/s), 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	
2994.670	46.5	V	54.0	-7.5	AVG	187	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5240.130	36.8	V	54.0	-17.2	AVG	187	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1198.120	34.8	V	54.0	-19.2	AVG	187	1.0	RB 1 MHz;VB 10 Hz;Pk
5240.270	51.5	V	74.0	-22.5	PK	187	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
2994.720	50.8	V	74.0	-23.2	PK	187	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1198.300	49.6	V	74.0	-24.4	PK	187	1.0	RB 1 MHz;VB 3 MHz;Pk
1595.760	29.4	V	54.0	-24.6	AVG	360	1.6	RB 1 MHz;VB 10 Hz;Pk
1596.540	49.1	V	74.0	-24.9	PK	360	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 2:	Emission in non-restricted band, used restriced band limit of 15.209.



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2, Radiated Spurious Emissions, 1-26GHz, EDR (3 Mb/s), Chain A

Date of Test: 10/12/2011 Test Location: FT Chamber#4

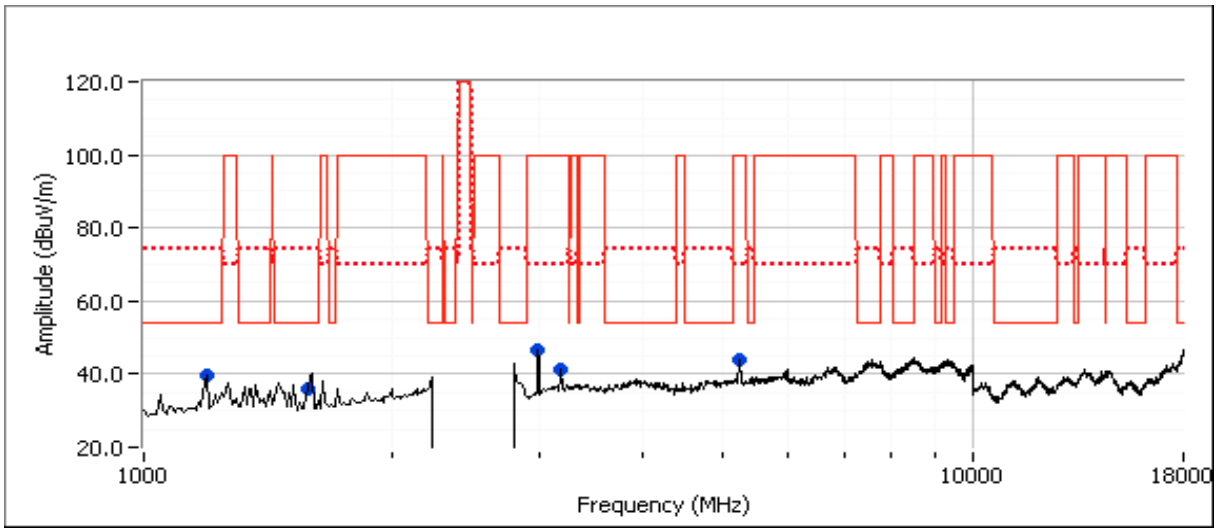
Test Engineer: Joseph Cadigal Config Change: none

Run # 2a, EUT on Channel 2402MHz - EDR (3 Mb/s), 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	
5235.570	36.8	V	54.0	-17.2	AVG	184	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
3189.370	33.3	V	54.0	-20.7	AVG	184	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5235.170	53.0	V	74.0	-21.0	PK	184	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
2990.580	29.6	V	54.0	-24.4	AVG	154	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
3191.260	47.7	V	74.0	-26.3	PK	184	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1193.890	27.5	V	54.0	-26.5	AVG	174	1.0	RB 1 MHz;VB 10 Hz;Pk
2989.810	42.0	V	74.0	-32.0	PK	154	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1193.810	41.2	V	74.0	-32.8	PK	174	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:	Emission in non-restricted band, used restriced band limit of 15.209.



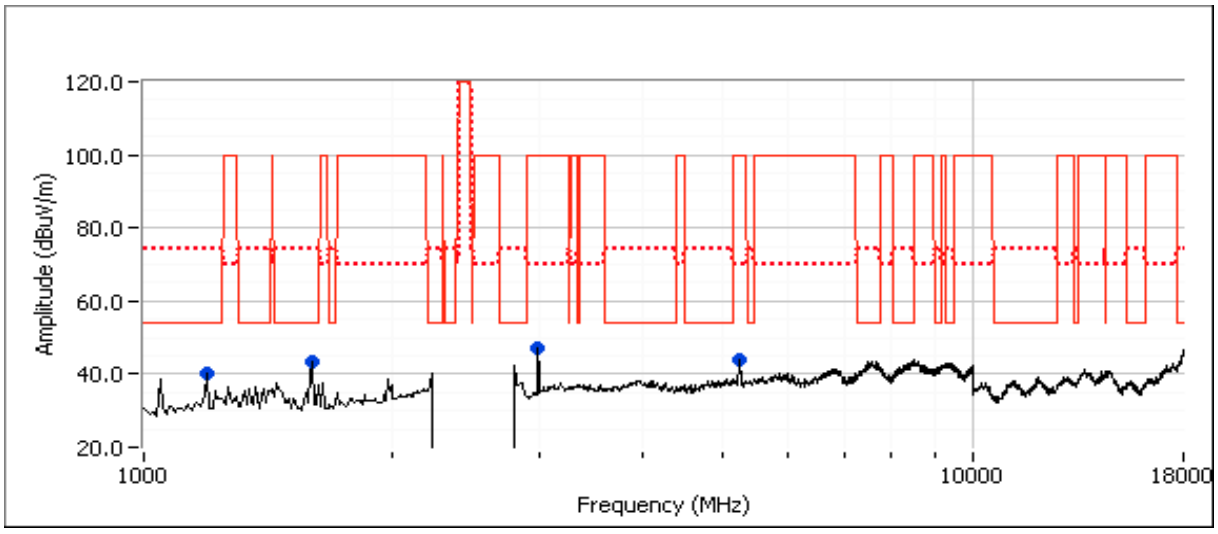
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2b: , EUT on Channel 2440MHz - EDR (3 Mb/s), 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	
2994.690	44.3	V	54.0	-9.7	AVG	196	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
5246.100	36.3	V	54.0	-17.7	AVG	188	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
1198.130	34.0	V	54.0	-20.0	AVG	196	1.0	RB 1 MHz;VB 10 Hz;Pk
5246.540	51.1	V	74.0	-22.9	PK	188	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1197.460	49.1	V	74.0	-24.9	PK	196	1.0	RB 1 MHz;VB 3 MHz;Pk
1593.840	49.0	V	74.0	-25.0	PK	358	1.9	RB 1 MHz;VB 3 MHz;Pk
2994.720	48.1	V	74.0	-25.9	PK	196	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1593.310	28.0	V	54.0	-26.0	AVG	358	1.9	RB 1 MHz;VB 10 Hz;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, used restriced band limit of 15.209.



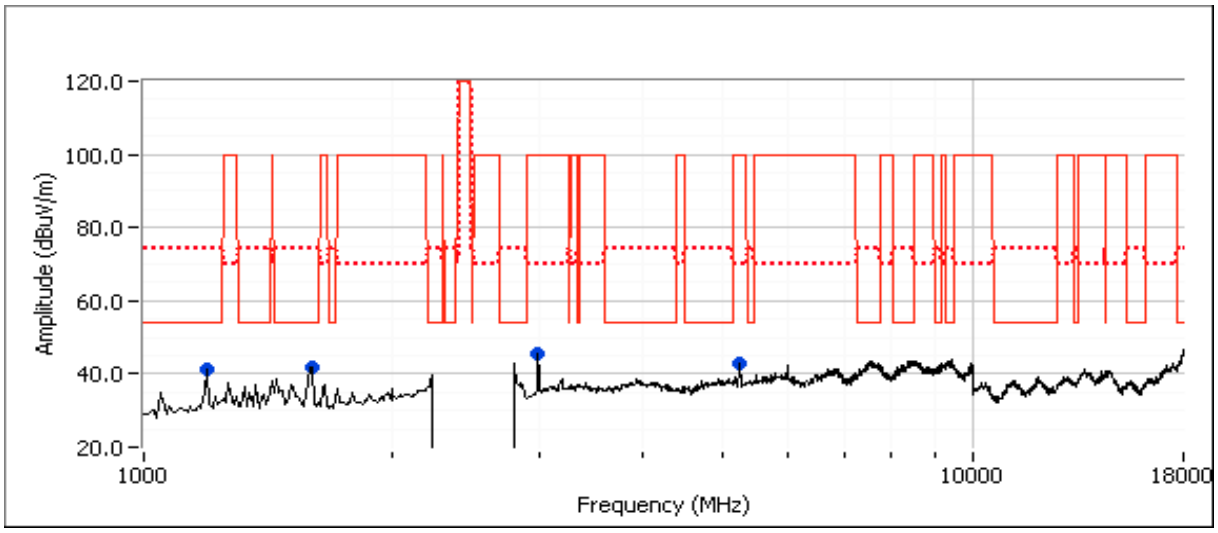
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2c: , EUT on Channel 2480MHz - Basic (3 Mb/s), 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	
2994.670	44.5	V	54.0	-9.5	AVG	188	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5249.500	33.2	V	54.0	-20.8	AVG	199	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1597.740	51.1	V	74.0	-22.9	PK	360	1.0	RB 1 MHz;VB 3 MHz;Pk
1597.770	30.0	V	54.0	-24.0	AVG	360	1.0	RB 1 MHz;VB 10 Hz;Pk
2994.440	49.9	V	74.0	-24.1	PK	188	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1184.370	26.0	V	54.0	-28.0	AVG	212	1.3	RB 1 MHz;VB 10 Hz;Pk
5249.970	44.9	V	74.0	-29.1	PK	199	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1185.250	36.4	V	74.0	-37.6	PK	212	1.3	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:	Emission in non-restricted band, used restriced band limit of 15.209.



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

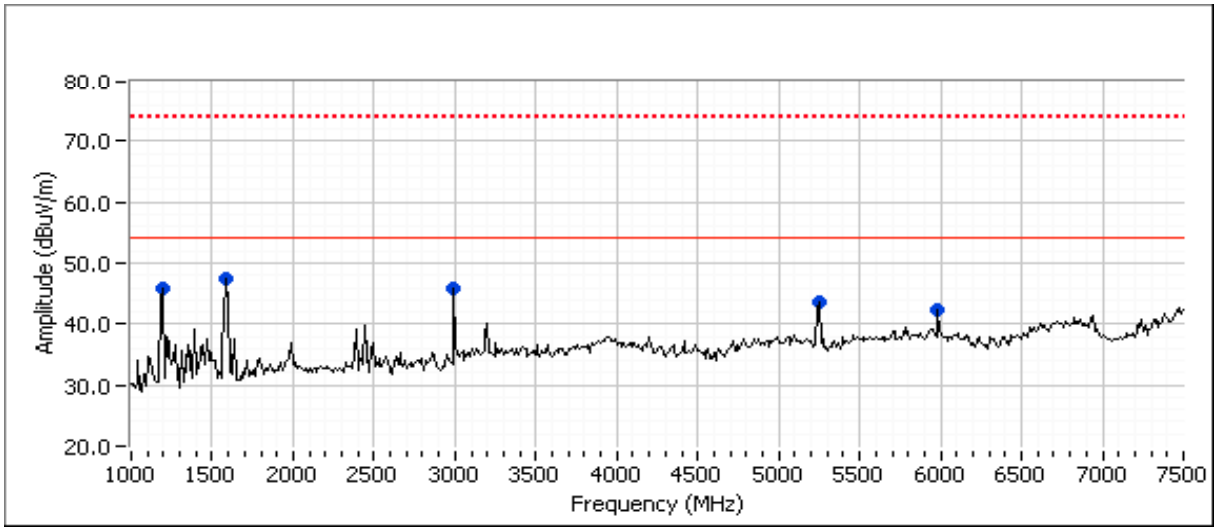
Run # 3, Radiated Spurious Emissions, 1-7.5GHz, Receive, Chain A

Date of Test: 10/12/2011 Test Location: FT Chamber#4

Test Engineer: Joseph Cadigal Config Change: none

Run # 3a, 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	
5989.330	42.7	V	54.0	-11.3	AVG	161	1.0	RB 1 MHz;VB 10 Hz;Pk
5244.060	36.6	V	54.0	-17.4	AVG	183	1.0	RB 1 MHz;VB 10 Hz;Pk
1596.930	56.3	V	74.0	-17.7	PK	198	1.0	RB 1 MHz;VB 3 MHz;Pk
2994.640	34.7	V	54.0	-19.3	AVG	165	1.0	RB 1 MHz;VB 10 Hz;Pk
1597.210	33.1	V	54.0	-20.9	AVG	198	1.0	RB 1 MHz;VB 10 Hz;Pk
5246.930	52.2	V	74.0	-21.8	PK	183	1.0	RB 1 MHz;VB 3 MHz;Pk
1190.360	29.1	V	54.0	-24.9	AVG	194	1.3	RB 1 MHz;VB 10 Hz;Pk
5989.160	48.8	V	74.0	-25.2	PK	161	1.0	RB 1 MHz;VB 3 MHz;Pk
2994.730	42.0	V	74.0	-32.0	PK	165	1.0	RB 1 MHz;VB 3 MHz;Pk
1189.330	39.0	V	74.0	-35.0	PK	194	1.3	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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 (Bluetooth)

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

For Bluetooth: Tx is chain B, Rx is chain B

Bluetooth uses a frequency hopping algorithm that means that the device, during normal operation, is only on a specific channel for a short period of time. The average correction factor is calculated as follows:

A maximum length packet has a duration of 5 time slots.

The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.

With a minimum of 20 hopping channels a channel will not be used more than 4 times in any 100ms period.

The maximum dwell time in a 100m period is 4 x 3.125ms = 12.5ms.

The average correction factor is, therefore, 20log(12.5/100) =-18dB

As this is a hopping radio the correction factor can be applied to the average value of the signal provided the average value was measured with the device continuously transmitting. DA 00-0705 permits the use of the average correction on the measured average value for frequency hopping radios.

Run #	Mode	Channel	Antenna	Power Setting	Test Performed	Limit	Result / Margin
Run #1	Basic (1 Mb/s) Chain A	2402MHz	Cisco	max	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	44.8 dBµV/m @ 2994.7 MHz (-9.2 dB)
		2440MHz	Cisco	max			46.0 dBµV/m @ 2994.7 MHz (-8.0 dB)
		2480MHz	Cisco	max			39.9 dBµV/m @ 2994.6 MHz (-14.1 dB)
Run # 2	EDR (3 Mb/s) Chain A	2402MHz	Cisco	max	Radiated Emissions, 1 - 26 GHz	FCC 15.209 / 15.247	46.1 dBµV/m @ 2994.7 MHz (-7.9 dB)
		2440MHz	Cisco	max			45.9 dBµV/m @ 2994.7 MHz (-8.1 dB)
		2480MHz	Cisco	max			46.1 dBµV/m @ 2994.7 MHz (-7.9 dB)
3	Bluetooth Receive	2440	Cisco	-	Radiated Emissions, 1 - 7.5 GHz	RSS 210	45.0dBµV/m @ 2994.7MHz (-9.0dB)

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.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

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.

Run #1, Radiated Spurious Emissions, 1-26GHz, Basic (1 Mb/s), Chain A

Date of Test: 10/6/2011 Test Location: FT Chamber #4
Test Engineer: Joseph Cadigal Config Change: none

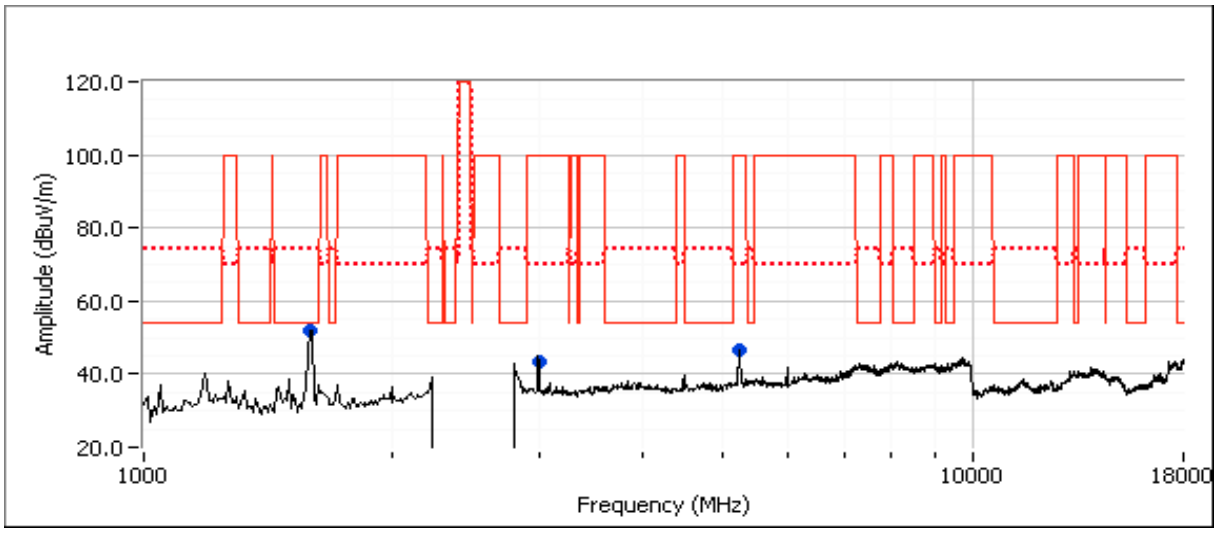
Run #1a, EUT on Channel 2402MHz - Basic (1 Mb/s), Chain A

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	
2994.690	44.8	V	54.0	-9.2	AVG	152	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1594.030	57.9	V	74.0	-16.1	PK	159	1.6	RB 1 MHz;VB 3 MHz;Pk
1594.490	34.3	V	54.0	-19.7	AVG	159	1.6	RB 1 MHz;VB 10 Hz;Pk
5221.550	33.2	V	54.0	-20.8	AVG	214	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
2994.610	49.3	V	74.0	-24.7	PK	152	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
5221.930	44.8	V	74.0	-29.2	PK	214	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2

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 in non-restricted band, used restriced band limit of 15.209.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



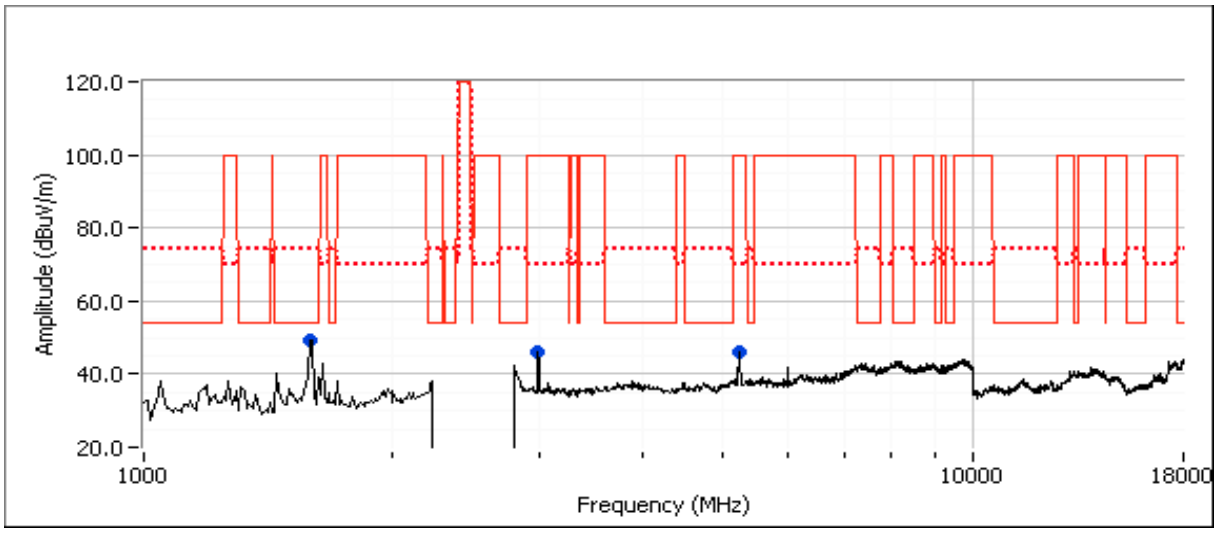
Run #1b: , EUT on Channel 2440MHz - Basic (1 Mb/s), Chain A

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	46.0	V	54.0	-8.0	AVG	184	1.3	RB 1 MHz;VB 10 Hz;Pk, note 3
5235.790	38.9	V	54.0	-15.1	AVG	158	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
1596.970	58.9	V	74.0	-15.1	PK	210	1.3	RB 1 MHz;VB 3 MHz;Pk
5236.230	54.2	V	74.0	-19.8	PK	158	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1595.870	33.9	V	54.0	-20.1	AVG	210	1.3	RB 1 MHz;VB 10 Hz;Pk
2994.400	50.5	V	74.0	-23.5	PK	184	1.3	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:	Emission in non-restricted band, used restriced band limit of 15.209.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



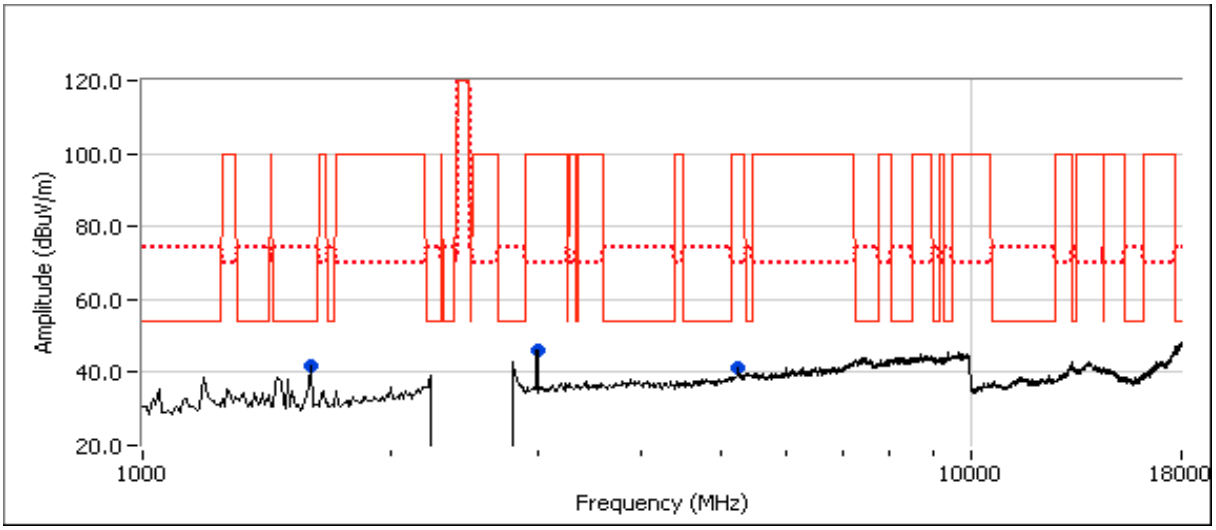
Run #1c: , EUT on Channel 2480MHz - Basic (1 Mb/s), Chain A

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	
2994.640	39.9	V	54.0	-14.1	AVG	98	1.3	RB 1 MHz;VB 10 Hz;Pk, note 2
5242.540	34.2	V	54.0	-19.8	AVG	162	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1595.770	27.7	V	54.0	-26.3	AVG	172	1.0	RB 1 MHz;VB 10 Hz;Pk
5241.400	47.5	V	74.0	-26.5	PK	162	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1596.110	46.5	V	74.0	-27.5	PK	172	1.0	RB 1 MHz;VB 3 MHz;Pk
2994.590	45.8	V	74.0	-28.2	PK	98	1.3	RB 1 MHz;VB 3 MHz;Pk, note 2

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 in non-restricted band, used restriced band limit of 15.209.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2, Radiated Spurious Emissions, 1-26GHz, EDR (3 Mb/s), Chain A

Date of Test: 10/12/2011 Test Location: FT Chamber#5

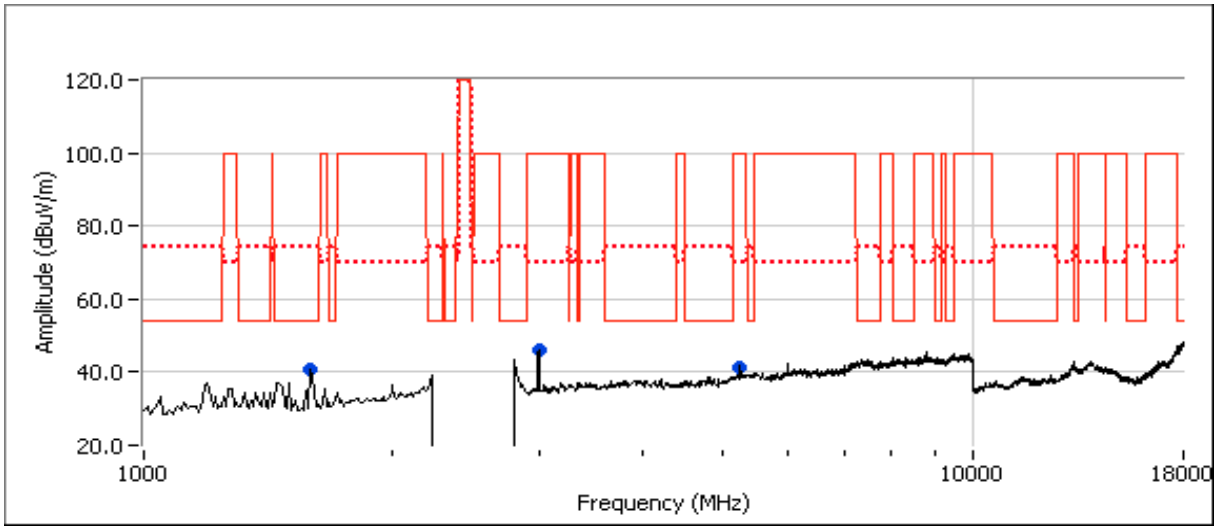
Test Engineer: Joseph Cadigal Config Change: none

Run # 2a, EUT on Channel 2402MHz - EDR (3 Mb/s), 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	
2994.650	46.1	V	54.0	-7.9	AVG	111	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5241.070	37.0	V	54.0	-17.0	AVG	162	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
1581.220	33.8	H	54.0	-20.2	AVG	350	1.9	RB 1 MHz;VB 10 Hz;Pk
5238.500	51.5	V	74.0	-22.5	PK	162	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
2994.520	49.0	V	74.0	-25.0	PK	111	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1582.230	35.6	H	74.0	-38.4	PK	350	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:	Emission in non-restricted band, used restriced band limit of 15.209.



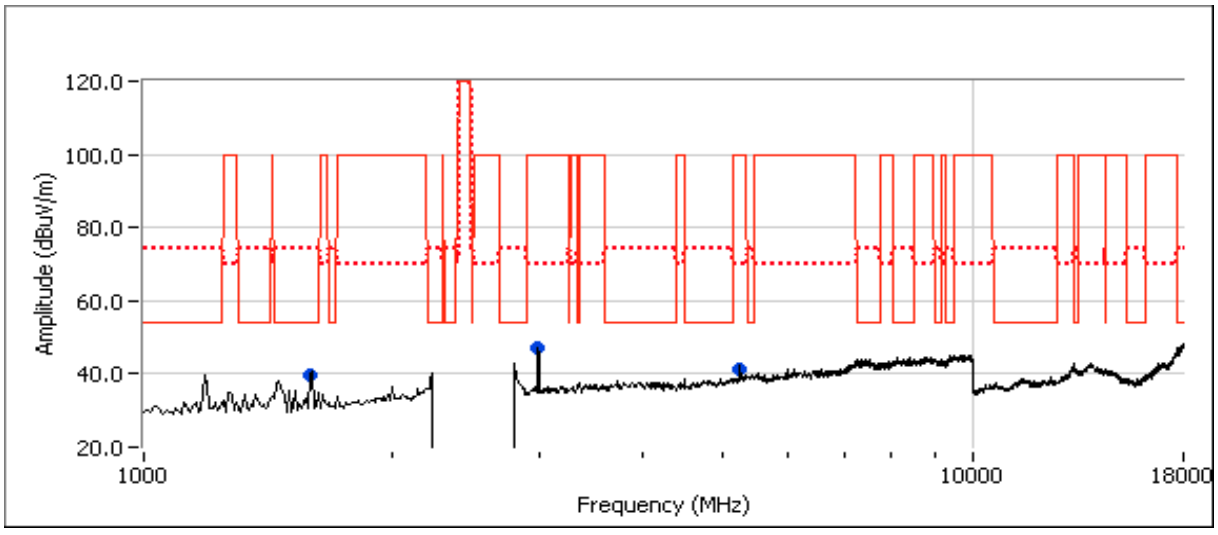
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2b: , EUT on Channel 2440MHz - EDR (3 Mb/s), 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	
2994.690	45.9	V	54.0	-8.1	AVG	118	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
5233.080	33.3	V	54.0	-20.7	AVG	171	1.0	RB 1 MHz;VB 10 Hz;Pk, note 3
2994.640	49.1	V	74.0	-24.9	PK	118	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1586.960	28.7	V	54.0	-25.3	AVG	237	1.0	RB 1 MHz;VB 10 Hz;Pk
5233.100	44.4	V	74.0	-29.6	PK	171	1.0	RB 1 MHz;VB 3 MHz;Pk, note 3
1586.030	36.6	V	74.0	-37.4	PK	237	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:	Emission in non-restricted band, used restriced band limit of 15.209.



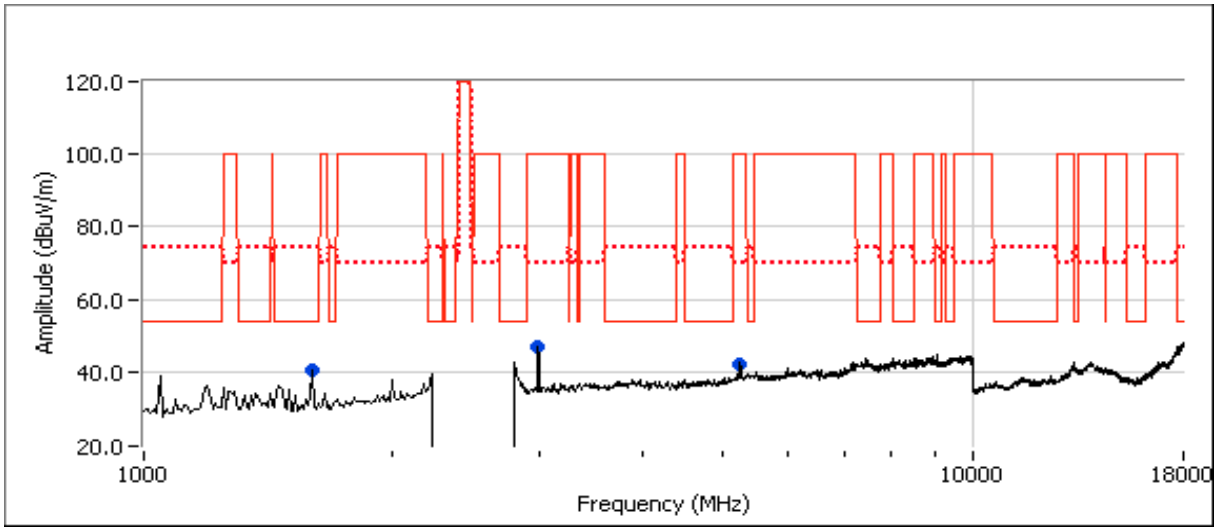
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run # 2c: , EUT on Channel 2480MHz - Basic (3 Mb/s), 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	
2994.680	46.1	V	54.0	-7.9	AVG	118	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
5240.010	33.9	V	54.0	-20.1	AVG	172	1.0	RB 1 MHz;VB 10 Hz;Pk, note 2
2994.820	49.1	V	74.0	-24.9	PK	118	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2
1596.820	26.6	V	54.0	-27.4	AVG	305	1.3	RB 1 MHz;VB 10 Hz;Pk
1598.280	46.6	V	74.0	-27.4	PK	305	1.3	RB 1 MHz;VB 3 MHz;Pk
5241.250	45.8	V	74.0	-28.2	PK	172	1.0	RB 1 MHz;VB 3 MHz;Pk, note 2

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 in non-restricted band, used restriced band limit of 15.209.



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

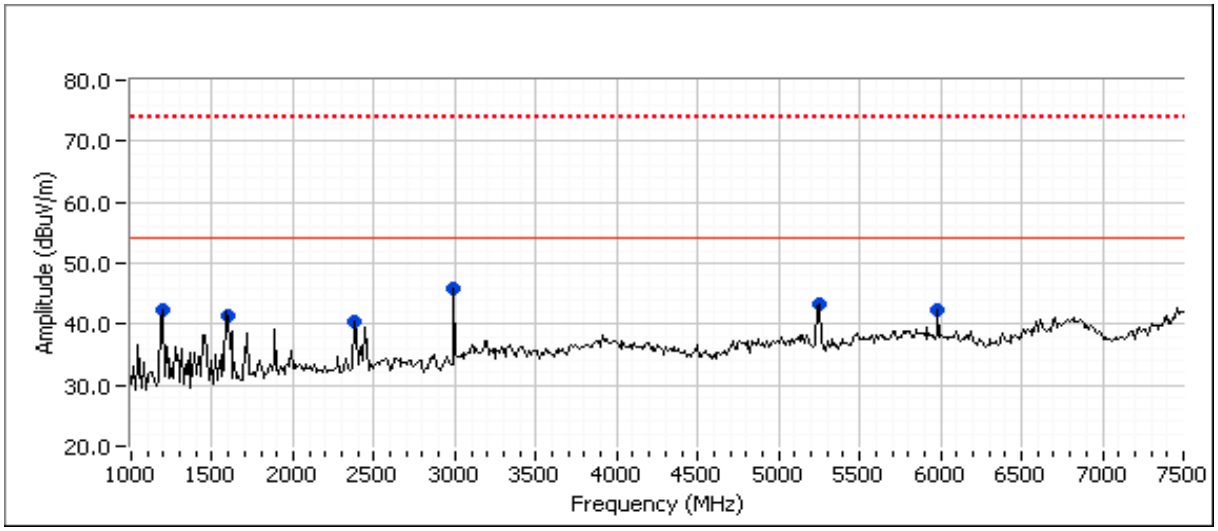
Run # 3, Radiated Spurious Emissions, 1-7.5GHz, Receive, Chain A

Date of Test: 10/12/2011 Test Location: FT Chamber#4

Test Engineer: Joseph Cadigal Config Change: none

Run # 3a, 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	
2994.680	45.0	V	54.0	-9.0	AVG	192	1.0	RB 1 MHz;VB 10 Hz;Pk
5242.080	37.4	V	54.0	-16.6	AVG	185	1.0	RB 1 MHz;VB 10 Hz;Pk
1197.990	35.5	V	54.0	-18.5	AVG	185	1.6	RB 1 MHz;VB 10 Hz;Pk
5974.470	33.5	V	54.0	-20.5	AVG	163	1.0	RB 1 MHz;VB 10 Hz;Pk
5244.150	52.3	V	74.0	-21.7	PK	185	1.0	RB 1 MHz;VB 3 MHz;Pk
1196.320	50.0	V	74.0	-24.0	PK	185	1.6	RB 1 MHz;VB 3 MHz;Pk
2994.700	49.5	V	74.0	-24.5	PK	192	1.0	RB 1 MHz;VB 3 MHz;Pk
2364.500	27.9	V	54.0	-26.1	AVG	349	1.0	RB 1 MHz;VB 10 Hz;Pk
1592.100	26.6	V	54.0	-27.4	AVG	1	1.6	RB 1 MHz;VB 10 Hz;Pk
5976.940	45.7	V	74.0	-28.3	PK	163	1.0	RB 1 MHz;VB 3 MHz;Pk
2365.600	39.4	V	74.0	-34.6	PK	349	1.0	RB 1 MHz;VB 3 MHz;Pk
1593.060	37.4	V	74.0	-36.6	PK	1	1.6	RB 1 MHz;VB 3 MHz;Pk



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

FCC 15.247 FHSS - Power, Bandwidth and Spurious Emissions

Test Specific Details

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

General Test Configuration

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

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

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

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	30 - 26500 MHz - Conducted Spurious Emissions	FCC Part 15.247(c)	Pass	All emissions < -20 dBc
2	Output Power	15.247(b)	Pass	-3.05 dBm (.00049545 W)
3	20dB Bandwidth	15.247(a)	Pass	1.111kHz
3	99% bandwidth	15.247(a)	Pass	918kHz
3	Number of Channels	15.247(a)	Pass	Device complies with the Bluetooth 2 specifications with a minimum of 20 hopping channels
4	Channel Occupancy	15.247(a)	Pass	

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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

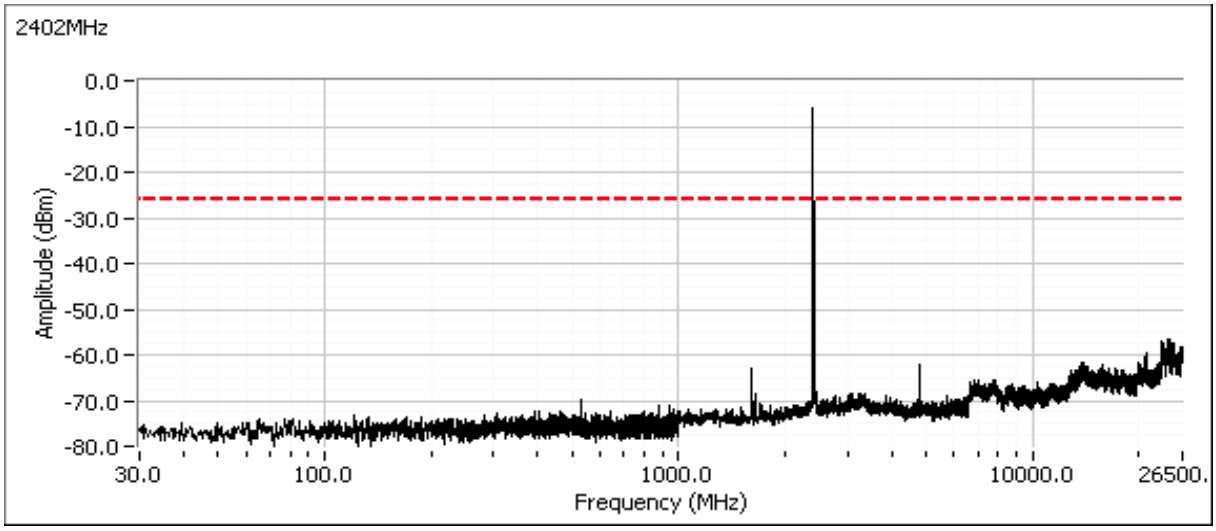
Run #1: Antenna Conducted Spurious Emissions, 30 - 26500 MHz.

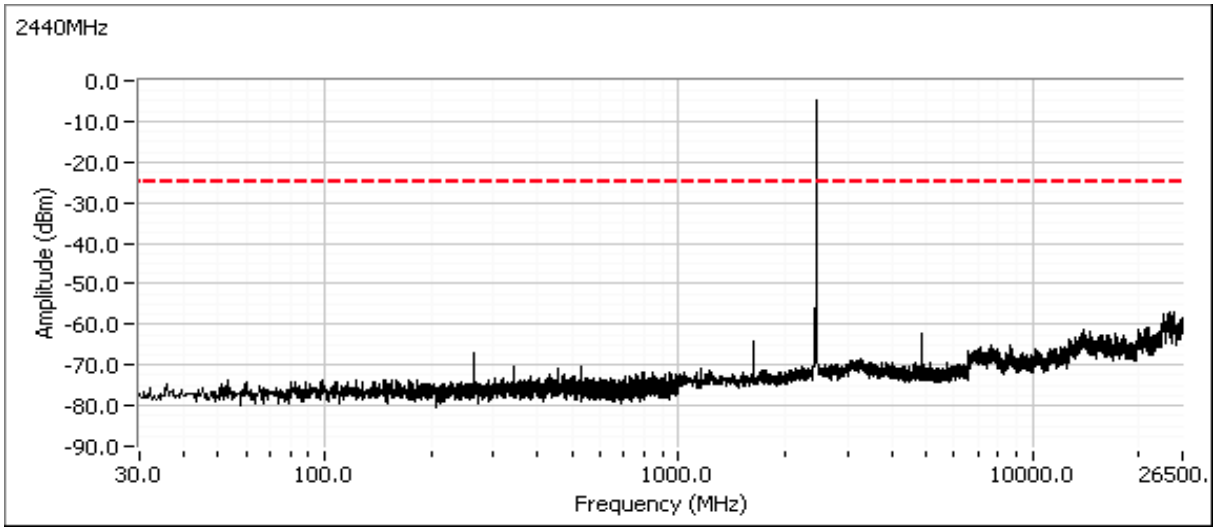
Date of Test: 10/13/2011

Test Engineer: Joseph Cadigal

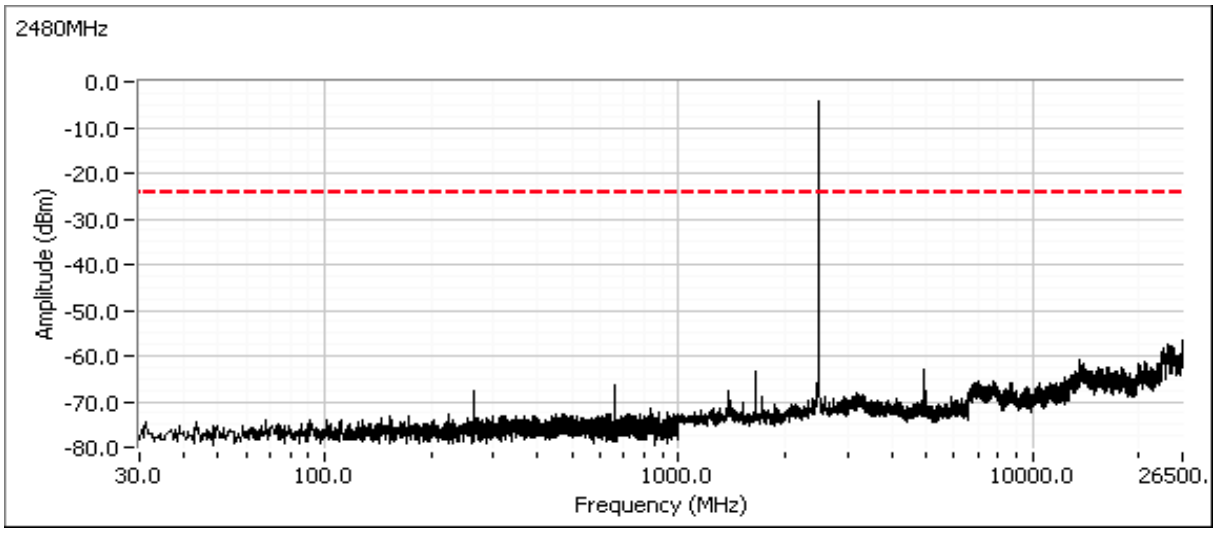
Test Location: FT EMC Lab#4

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





Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



Run #2: Output Power

Date of Test: 10/13/2011
Test Engineer: Joseph Cadigal
Test Location: FT EMC Lab#4

For frequency hopping systems in the 2400-2483.5 MHz band employing less than 75 channels the maximum allowed output power is 0.125 watts.

Maximum antenna gain: 3 dBi

Channel	Frequency (MHz)	Res BW	Output Power (dBm)	Output Power (W)	EIRP (W)
Low	2402		-4.30	0.000371535	0.0007413
Mid	2441		-3.32	0.000465586	0.0004656
High	2480		-3.05	0.00049545	0.0004955

Note 1:	Output power measured using a peak power meter, spurious limit is -20dBc.

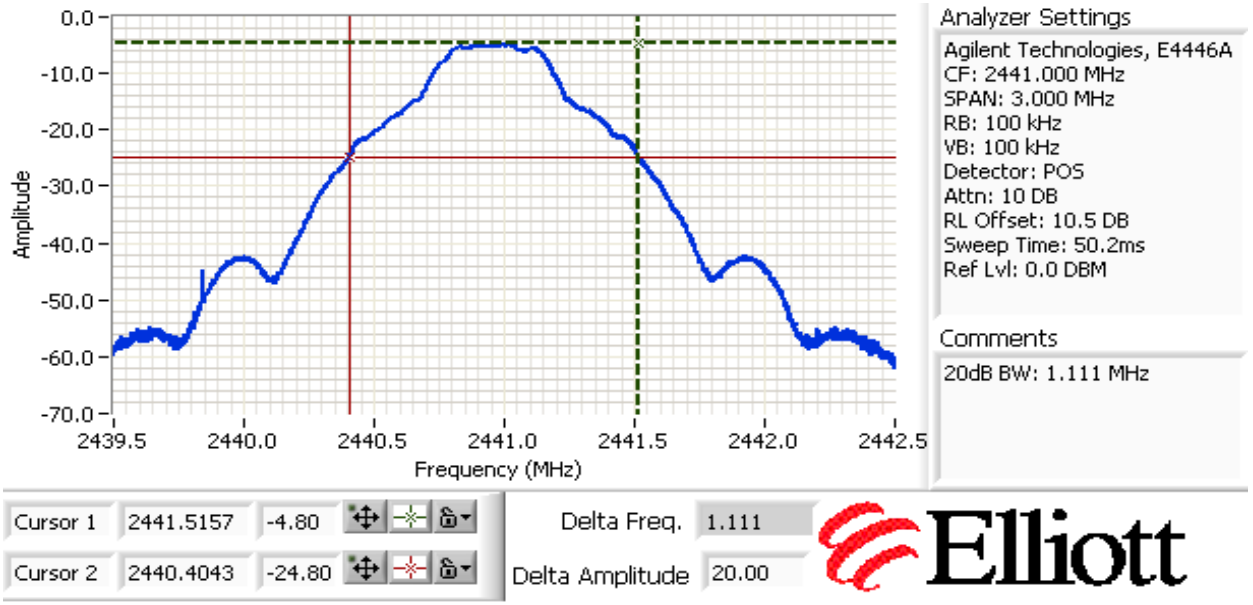
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #3: Bandwidth, Spacing and Number of Channels

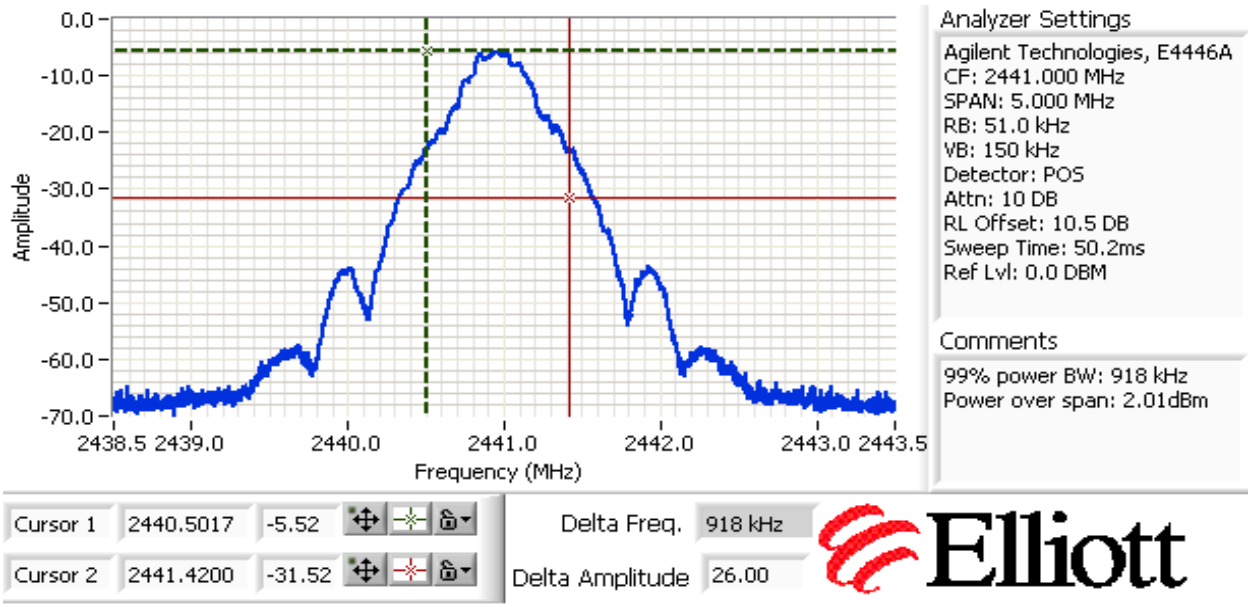
Date of Test: 10/13/2011
Test Engineer: Joseph Cadigal
Test Location: FT EMC Lab#4

Channel	Frequency (MHz)	Resolution Bandwidth	20dB Bandwidth (kHz)	Resolution Bandwidth	99% Bandwidth (kHz)
Low	2402	100kHz	1.105	50kHz	917
Mid	2441	100kHz	1.111	50kHz	918
High	2480	100kHz	1.107	50kHz	912

Note 1:	20dB bandwidth measured using RB = 100kHz, VB = 100kHz (VB > RB)
Note 2:	99% bandwidth measured using RB = 50kHz, VB = 150kHz (VB >=3RB)



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



Run #4: Channel Spacing and Number of Channels

Basic Mode

Channel Spacing: 1000 kHz

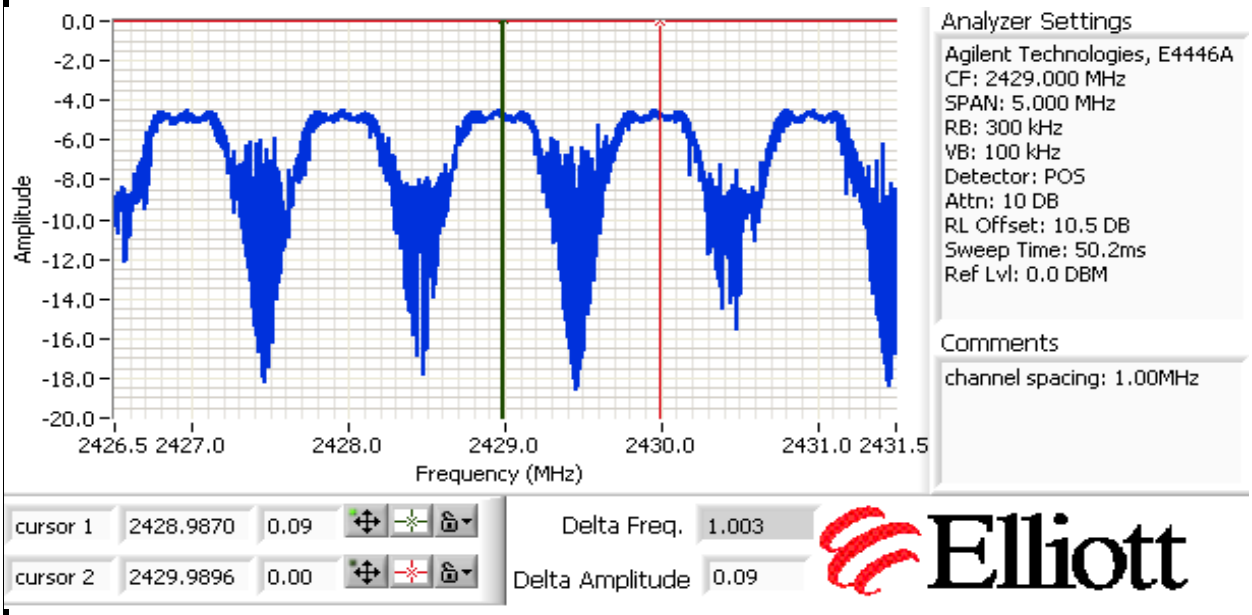
20dB Bandwidth: 1111 kHz

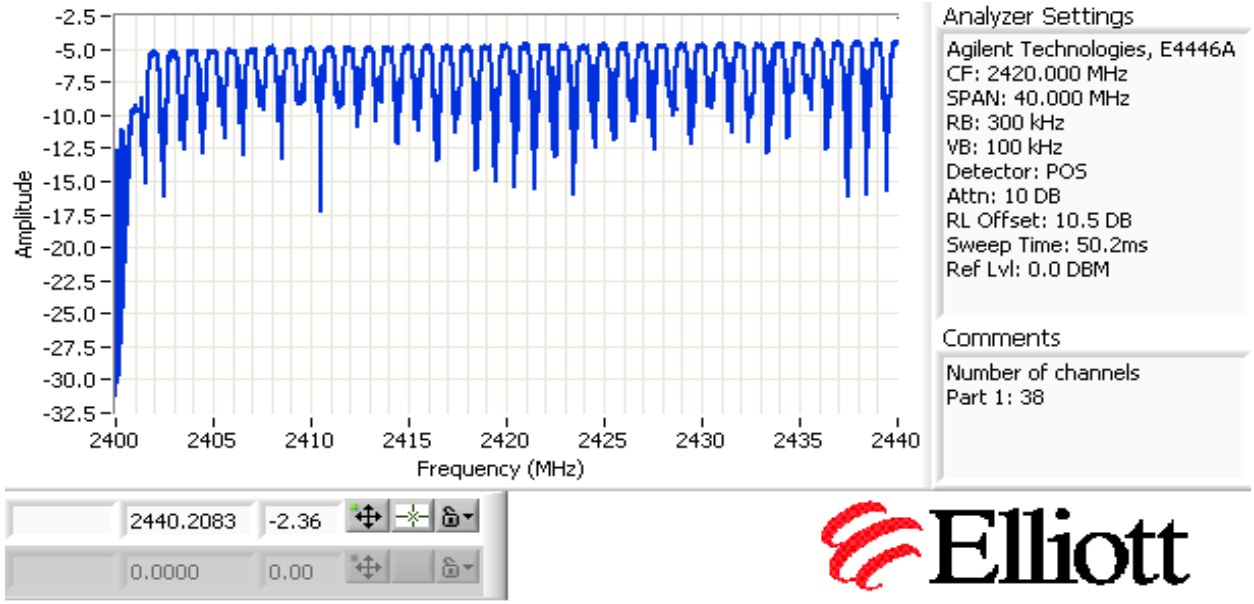
The channel spacing was measured in Basic rate mode with hopping enabled - see plot below showing channel spacing:
The channel spacing shall be greater than 2/3 times the widest 20dB bandwidth, as the ouput power is <0.125W.

Number of channels: 79 Max 20 Min (AFH enabled)

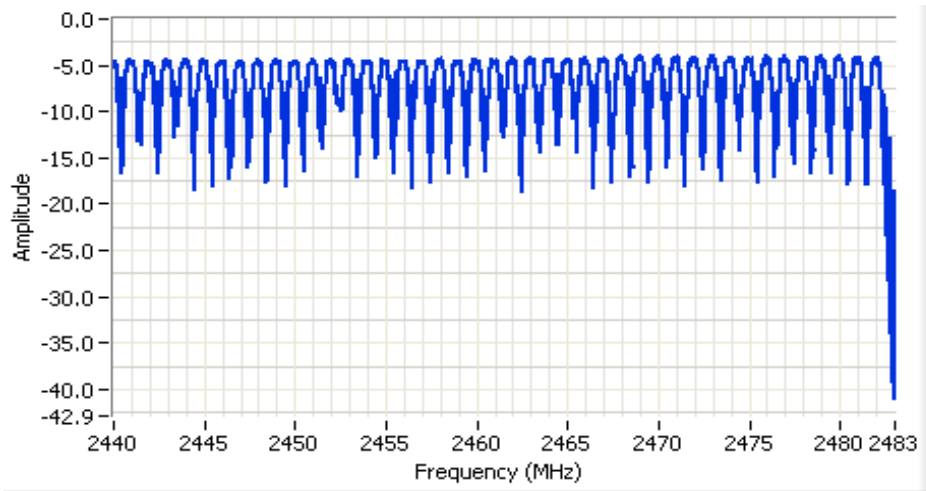
The number of channels was measured in Basic rate mode with hopping enabled with both the maximum (all) channels enabled and with the minimum number of channels enabled. The system shall employ a minimum of 15 hopping channels.

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



Analyzer Settings

Agilent Technologies, E4446A
CF: 2461.500 MHz
SPAN: 43.000 MHz
RB: 300 kHz
VB: 100 kHz
Detector: POS
Attn: 10 DB
RL Offset: 10.5 DB
Sweep Time: 50.2ms
Ref Lvl: 0.0 DBM

Comments

Number of channels
Part 2: 41

Elliott

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

FCC 15.247 FHSS - Power, 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: 10/19/2011 0:00
Test Engineer: Mark Hill / Joseph Cadigal
Test Location: FT Chamber#5

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

General Test Configuration

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

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

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

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	30 - 26500 MHz - Conducted Spurious Emissions	FCC Part 15.247(c)	Pass	All emissions < -20 dBc
2	Output Power	15.247(b)	Pass	-2.14 dBm (.000310942 W)
3	20dB Bandwidth	15.247(a)	Pass	1.47MHz
3	99% bandwidth	15.247(a)	Pass	1.223MHz
3	Number of Channels	15.247(a)	Pass	Device complies with the Bluetooth 2 specifications with a minimum of 20 hopping channels
4	Channel Occupancy	15.247(a)	Pass	

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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.

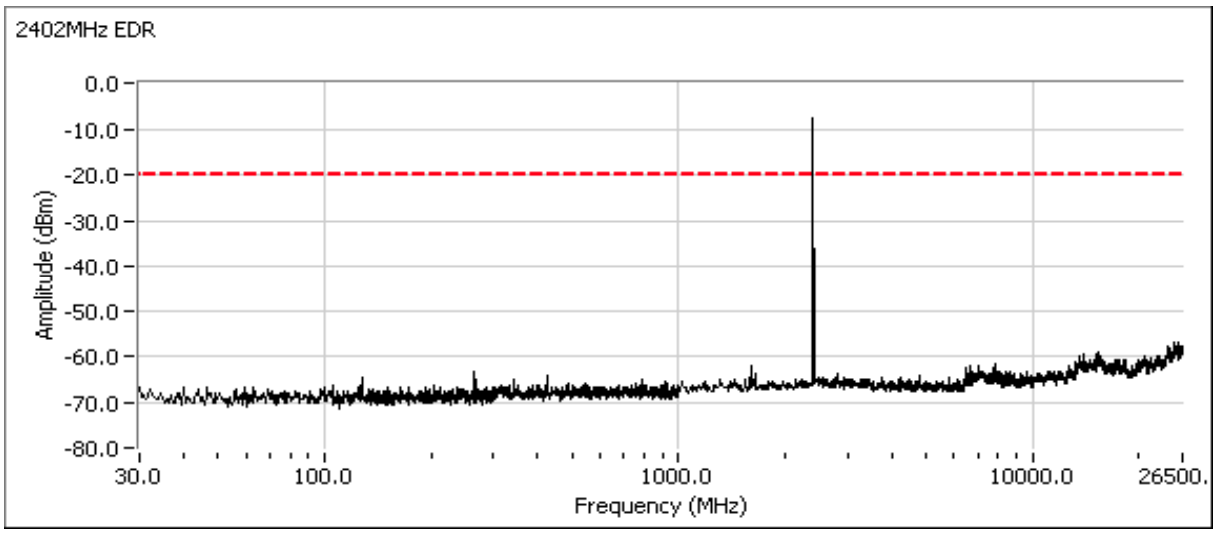
Run #1: Antenna Conducted Spurious Emissions, 30 - 26500 MHz.

Date of Test: 10/19/2011

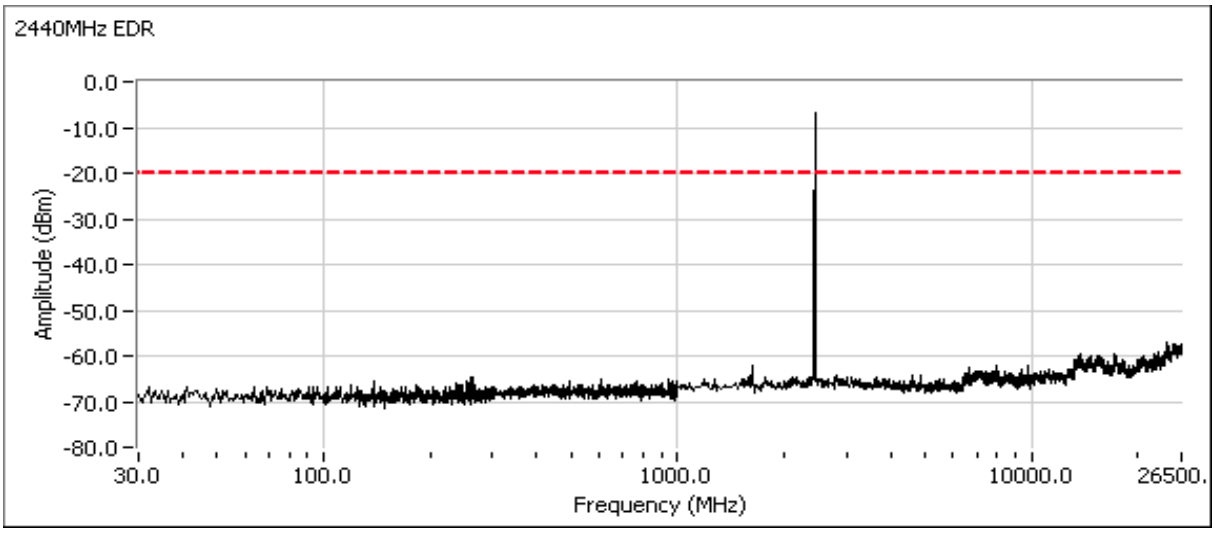
Test Engineer: Joseph Cadigal

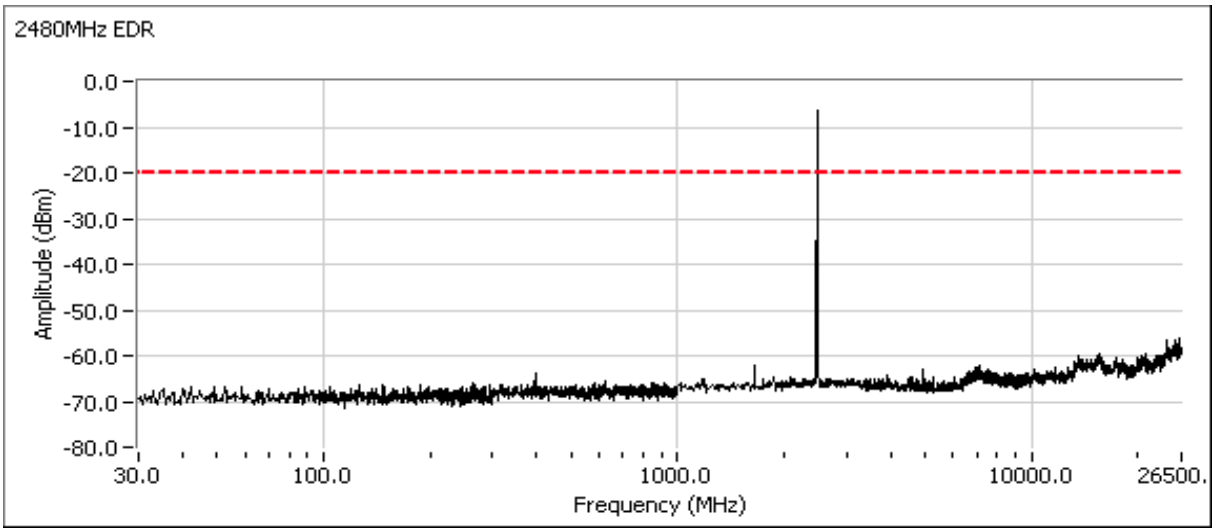
Test Location: FT Chamber#5

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



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		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-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #2: Output Power

Date of Test: 10/19/2011
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#5

For frequency hopping systems in the 2400-2483.5 MHz band employing less than 75 channels the maximum allowed output power is 0.125 watts.

Maximum antenna gain: 3 dBi

Channel	Frequency (MHz)	Res BW	Output Power (dBm)	Output Power (W)	EIRP (W)
Low	2402		-2.14	0.000610942	0.001219
Mid	2440		-1.53	0.000703072	0.0007031
High	2480		-1.27	0.000746449	0.0007464

Note 1: Output power measured using a peak power meter, spurious limit is -20dBc.

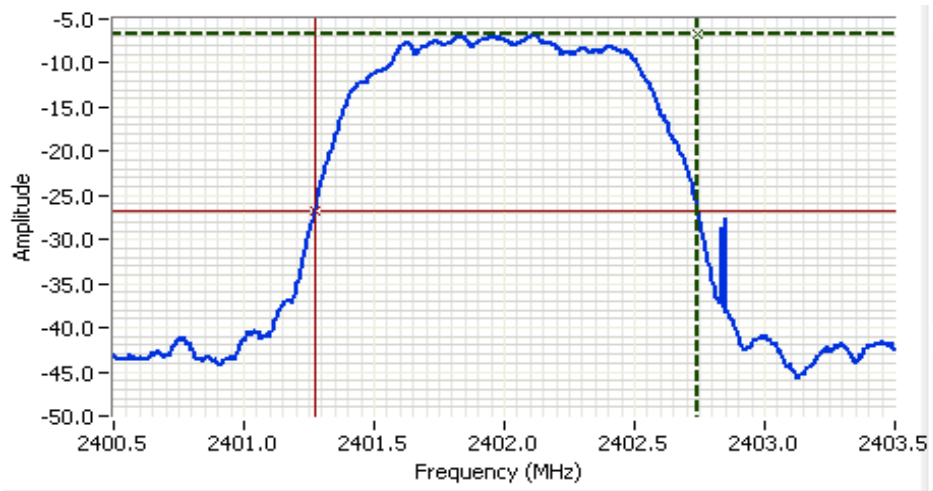
Run #3: Bandwidth, Spacing and Number of Channels

Date of Test: 10/19/2011
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#5

Channel	Frequency (MHz)	Resolution Bandwidth	20dB Bandwidth (kHz)	Resolution Bandwidth	99% Bandwidth (kHz)
Low	2402	100kHz	1.47	50kHz	1.223MHz
Mid	2440	100kHz	1.465	50kHz	1.215MHz
High	2480	100kHz	1.455	50kHz	1.223MHz

Note 1: 20dB bandwidth measured using RB = 100kHz, VB = 100kHz (VB > RB)
Note 2: 99% bandwidth measured using RB = 50kHz, VB = 150kHz (VB >=3RB)

Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A



Analyzer Settings

HP8564E
CF: 2402.000 MHz
SPAN: 3.000 MHz
RB: 100 kHz
VB: 100 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 10.5 DBM

Comments

20dB BW: 1.470 MHz

Cursor 1	2402.7450	-6.67	Delta Freq.	1.470
Cursor 2	2401.2750	-26.67	Delta Amplitude	20.00

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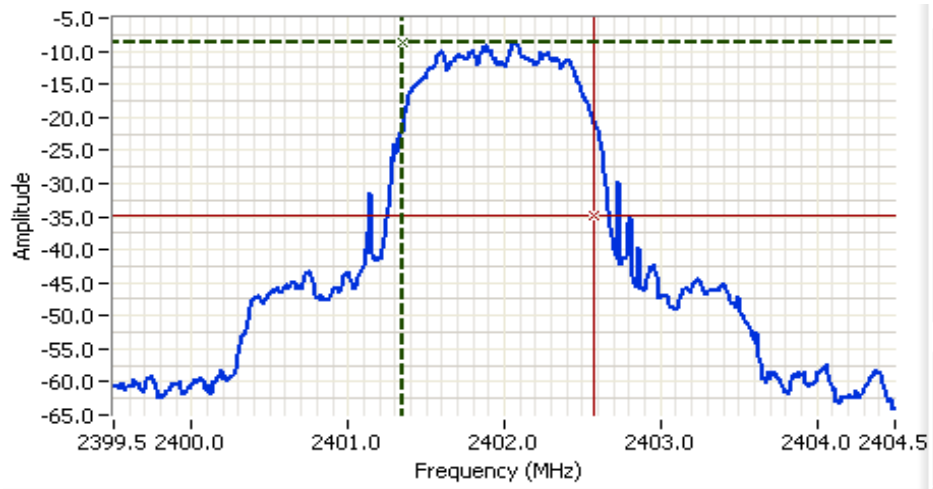

Analyzer Settings

Agilent Technologies, E4446A
CF: 2402.000 MHz
SPAN: 5.000 MHz
RB: 51.0 kHz
VB: 150 kHz
Detector: POS
Attn: 10 DB
RL Offset: 10.5 DB
Sweep Time: 50.0ms
Ref Lvl: 10.5 DBM

Comments

99% power BW: 1.223 MHz
Power over span: 1.87dBm

Cursor 1	2401.3552	-8.75	Delta Freq.	1.223
Cursor 2	2402.5782	-34.75	Delta Amplitude	26.00

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Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

Run #4: Channel Spacing and Number of Channels

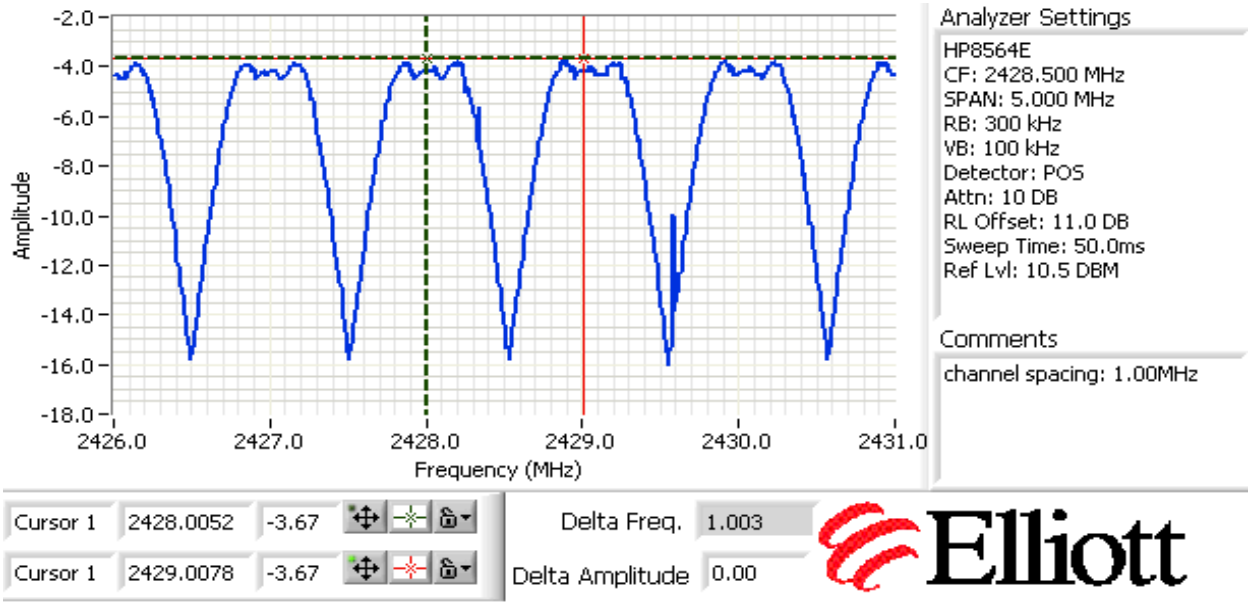
Basic Mode

Channel Spacing: 1000 kHz
20dB Bandwidth: 1470 kHz

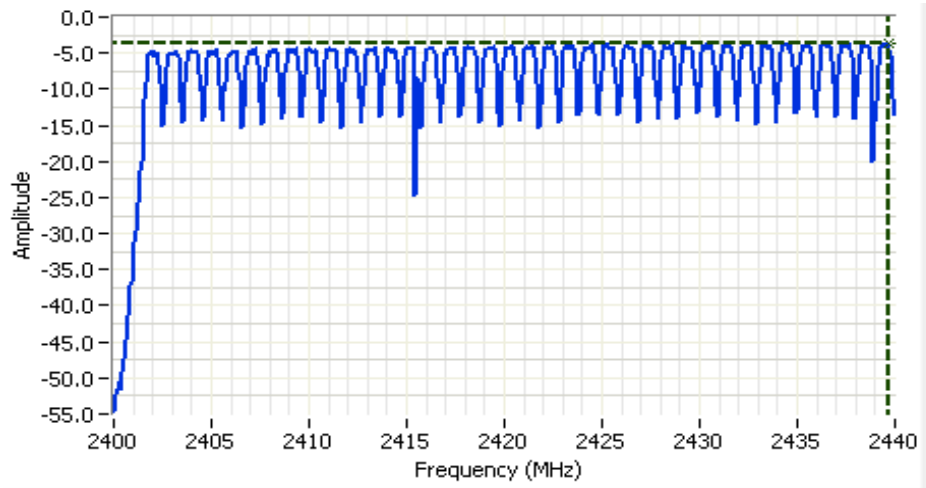
The channel spacing was measured in Basic rate mode with hopping enabled - see plot below showing channel spacing:
The channel spacing shall be greater than 2/3 times the widest 20dB bandwidth, as the ouput power is <0.125W.

Number of channels: 79 Max 20 Min (AFH enabled)

The number of channels was measured in Basic rate mode with hopping enabled with both the maximum (all) channels enabled and with the minimum number of channels enabled. The system shall employ a minimum of 15 hopping channels.



Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83113
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	FCC 15.247/RSS-210	Class:	N/A

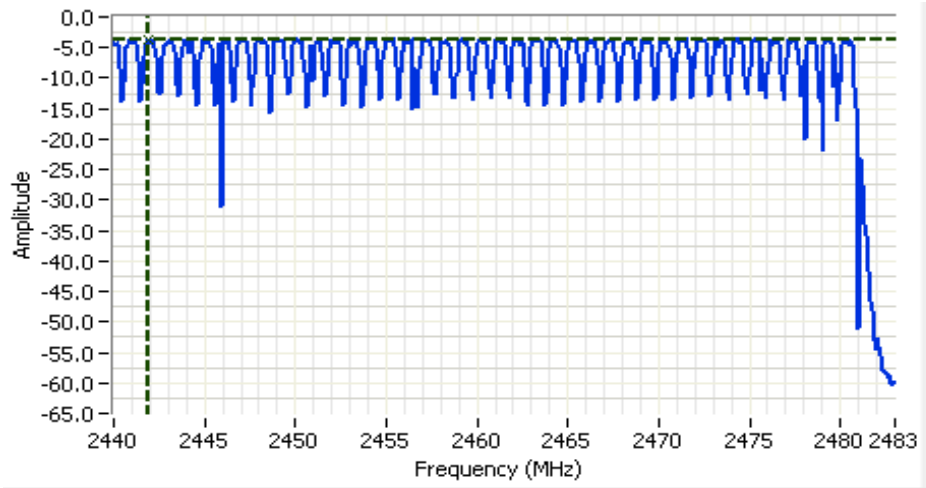


Analyzer Settings
HP8564E
CF: 2420.000 MHz
SPAN: 40.000 MHz
RB: 300 kHz
VB: 100 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 10.5 DBM

Comments
Number of channels
Part 1: 38

Cursor 1 2439.6667 -3.67
0.0000 0.00

Elliott



Analyzer Settings
HP8564E
CF: 2461.500 MHz
SPAN: 43.000 MHz
RB: 300 kHz
VB: 100 kHz
Detector: POS
Attn: 10 DB
RL Offset: 11.0 DB
Sweep Time: 50.0ms
Ref Lvl: 10.5 DBM

Comments
Munber of channels
Part 2: 41

Cursor 1 2441.9350 -3.67
0.0000 0.00

Elliott

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

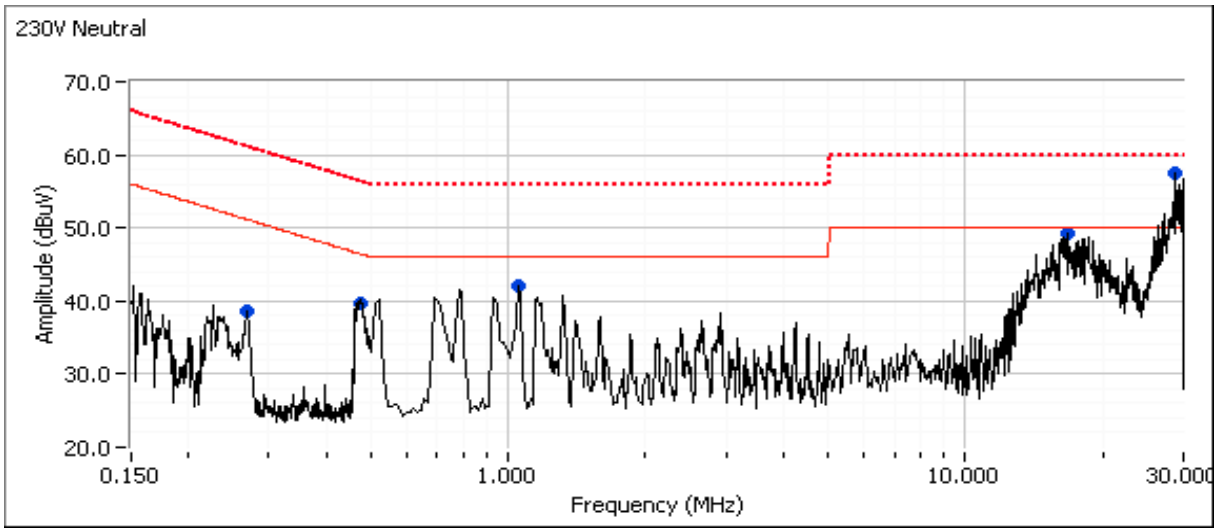
No modifications were made to the EUT during testing

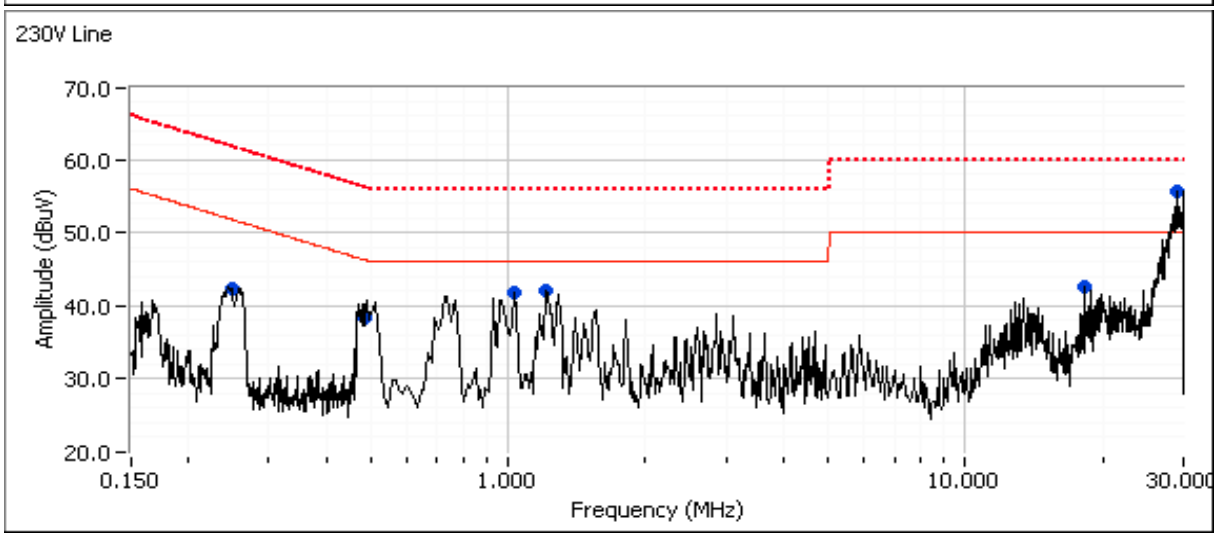
Deviations From The Standard

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)

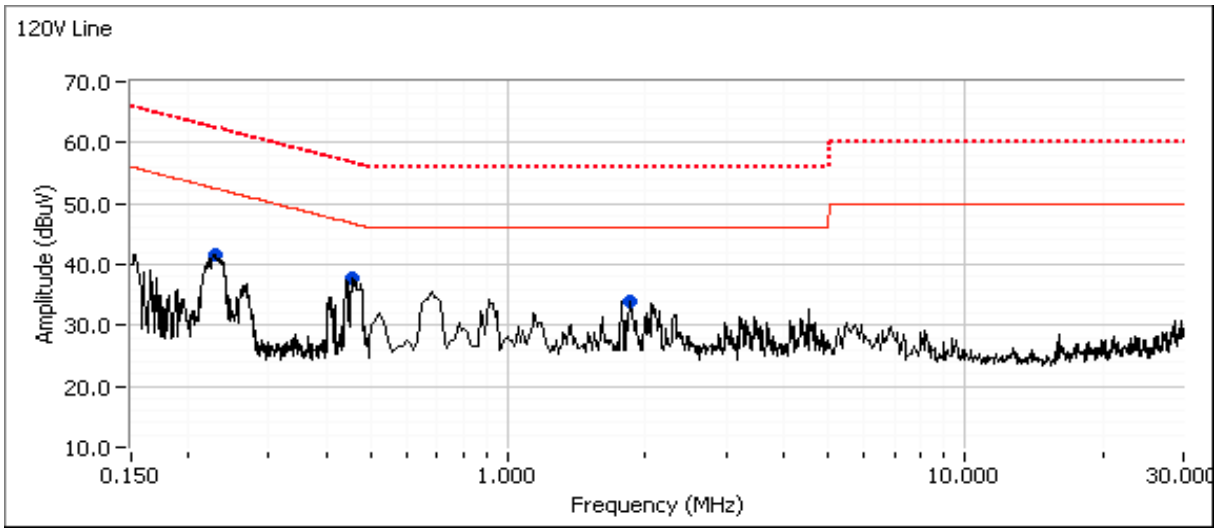
Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.469	39.8	Neutral	46.4	-6.6	Peak	
0.261	38.6	Neutral	51.1	-12.5	Peak	
1.044	42.1	Neutral	46.0	-3.9	Peak	
17.307	49.3	Neutral	50.0	-0.7	Peak	
29.071	57.5	Neutral	50.0	7.5	Peak	
0.485	38.4	Line 1	46.3	-7.9	Peak	
0.242	42.4	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	

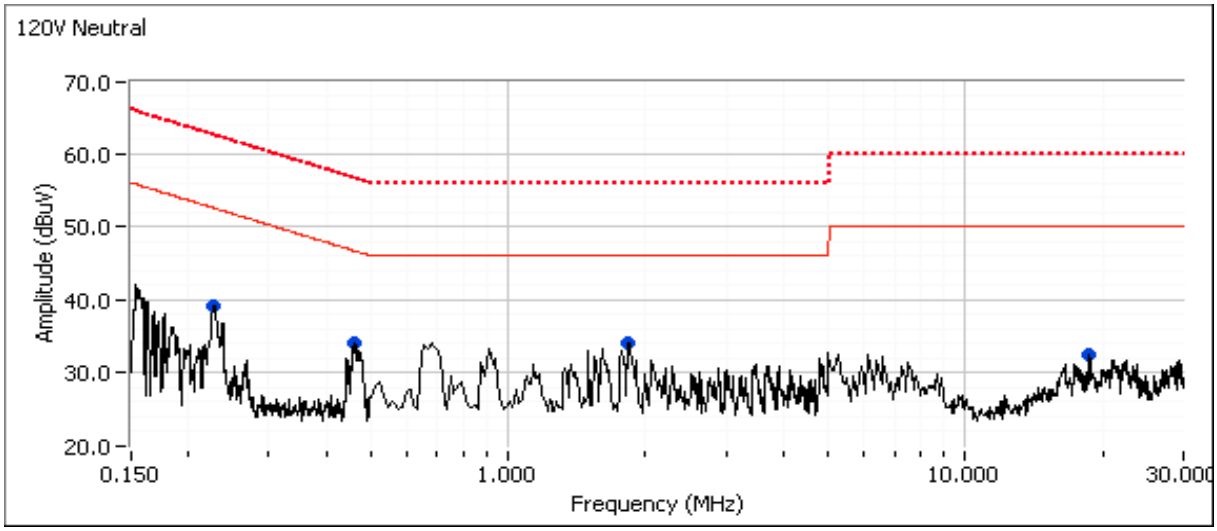
Final quasi-peak and average readings

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

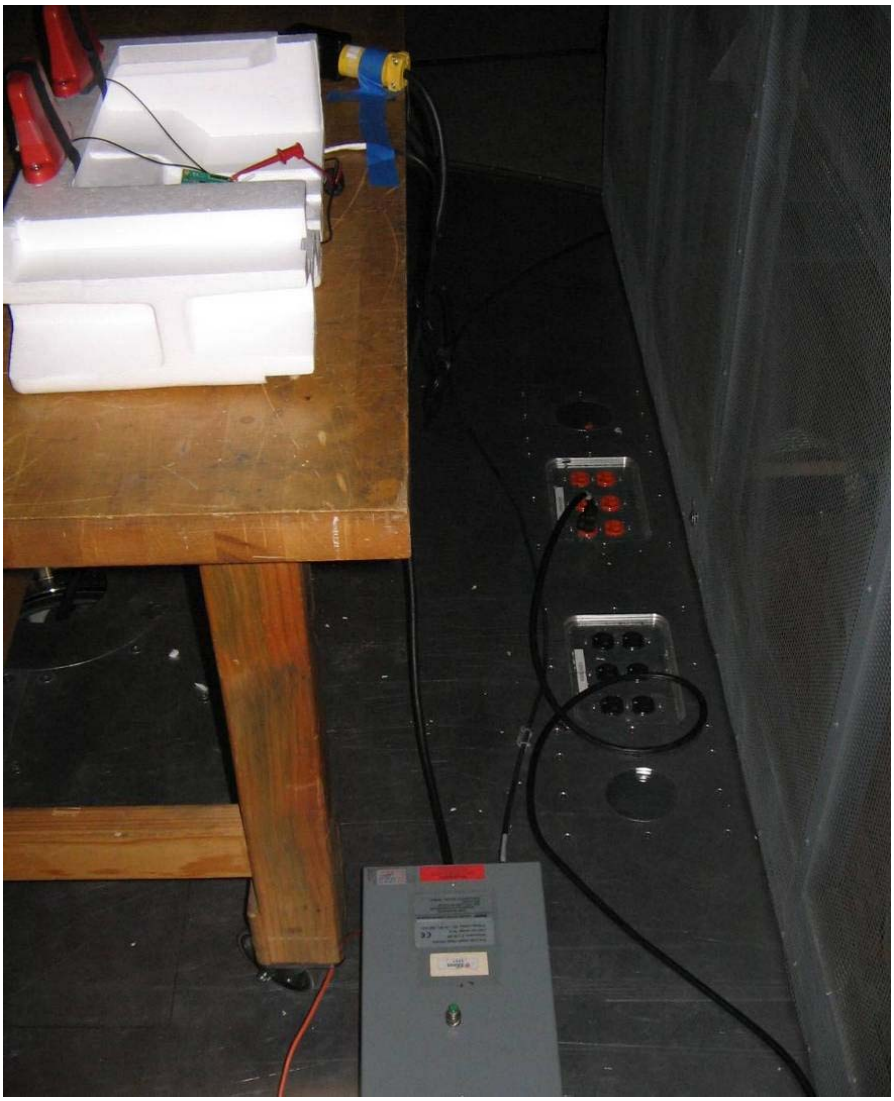
Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

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	

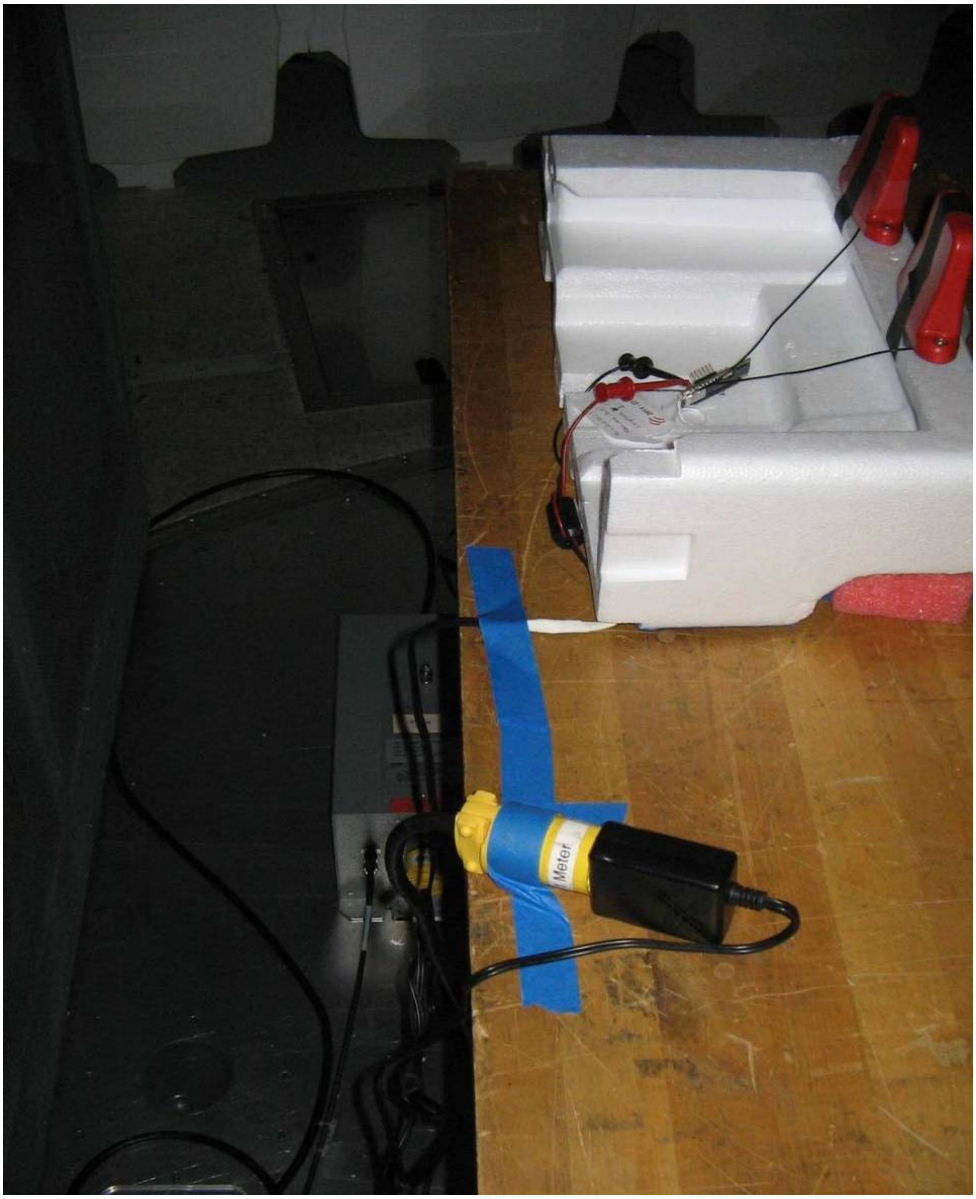
Final quasi-peak and average readings

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)

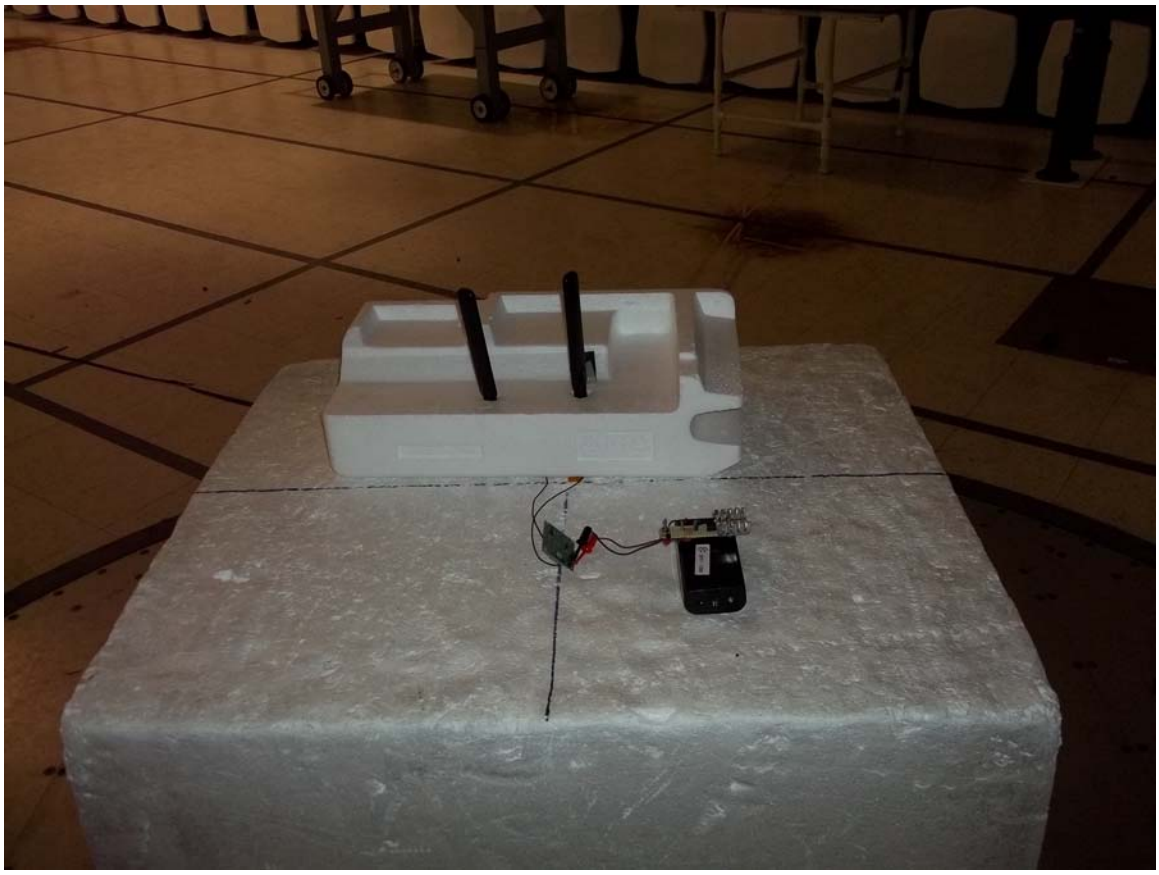
Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83198
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	EN 301 489-1 V1.8.1/ FCC Part 15B	Class:	B

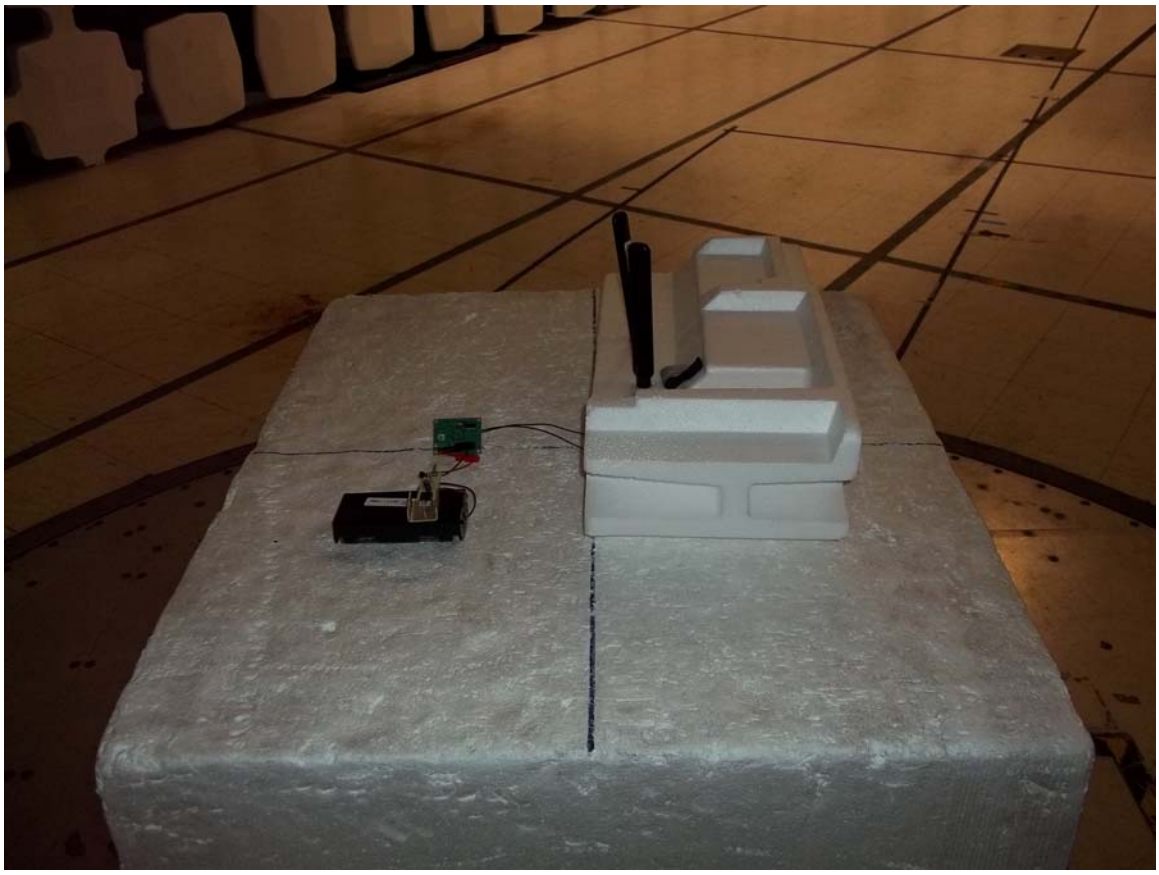


Client:	Summit Data Communications	Job Number:	J78403
Model:	SDC-WB40 and SDC-MSD40NBT (1x1 802.11abg + BT 2.1)	T-Log Number:	T83198
		Account Manager:	Christine Krebill
Contact:	Ron Seide		
Standard:	EN 301 489-1 V1.8.1/ FCC Part 15B	Class:	B



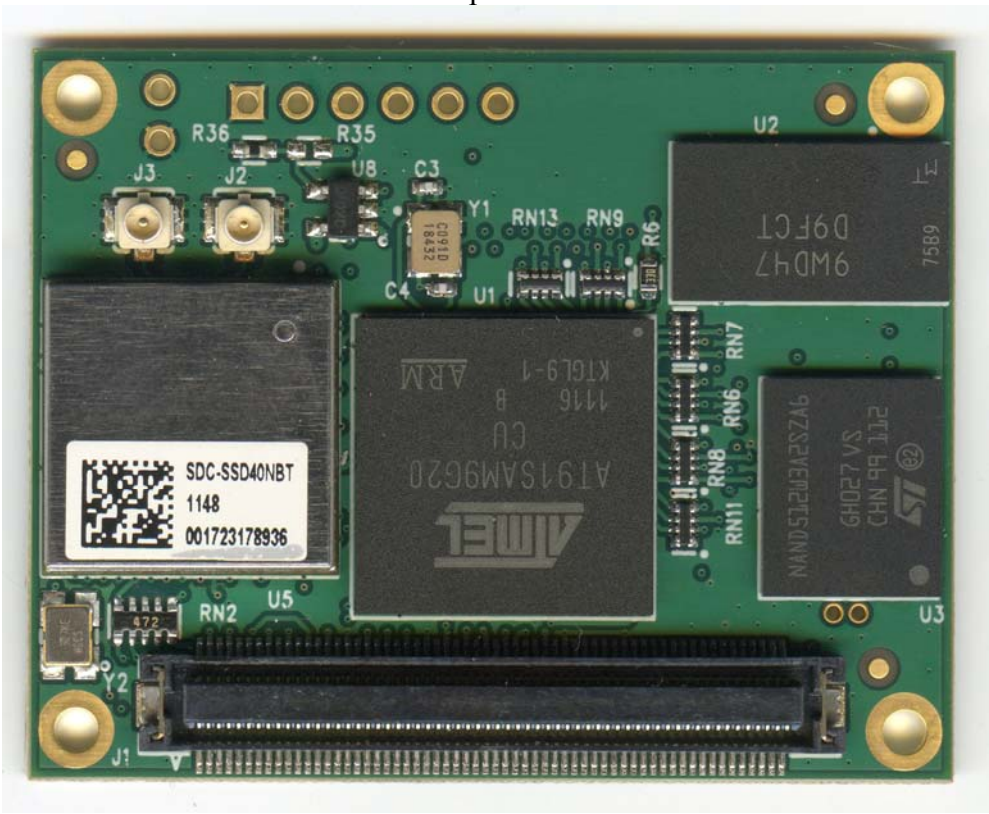
APPENDIX C RADIATED EMISSIONS TEST CONFIGURATION PHOTOGRAPHS



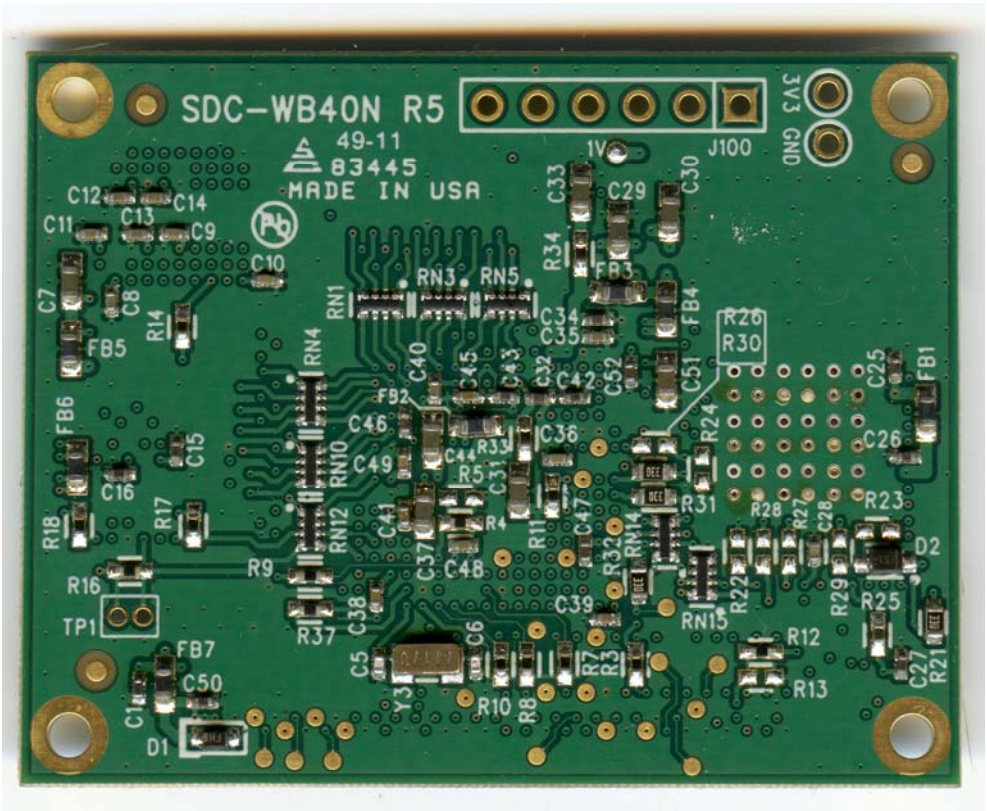


APPENDIX D DETAILED PHOTOGRAPHS OF CONSTRUCTION

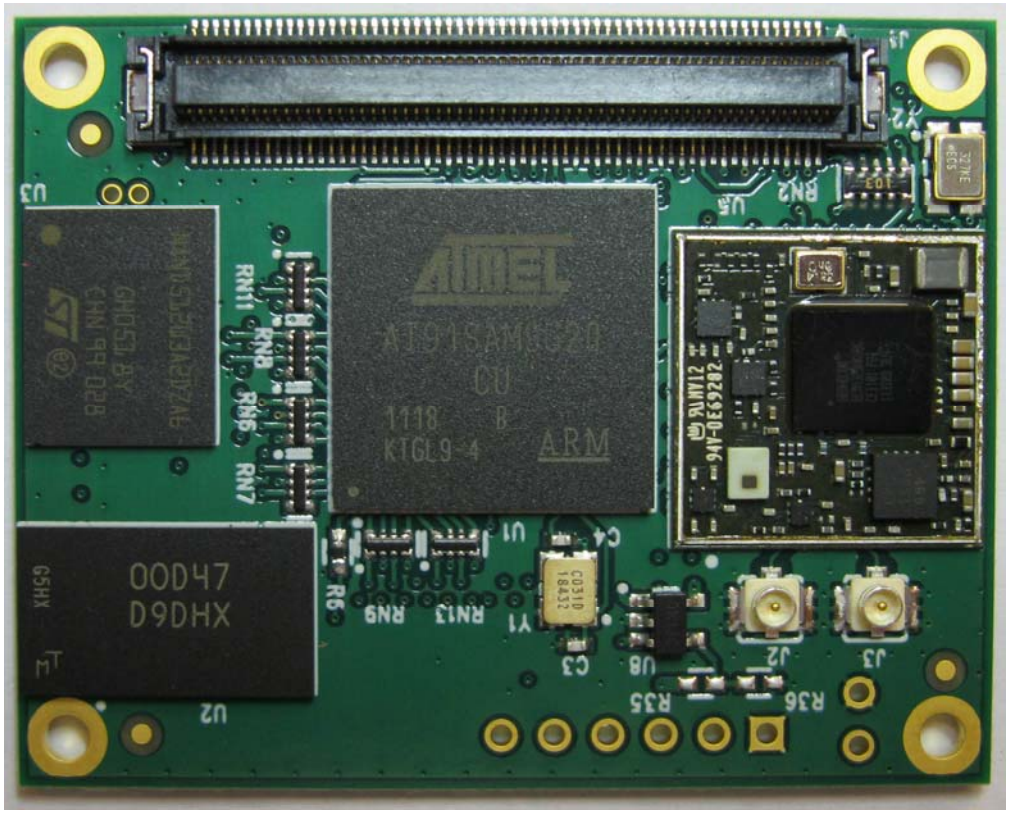
Top view



Bottom view



Without Shield



End Of Report

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