EMC Test Report
Application for Grant of Equipment Authorization
pursuant to
Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7
FCC Part 15 Subpart C

Model: SDC-MSD30AG

IC CERTIFICATION #:	6616A-SDCMSD30AG
FCC ID:	TWG-SDCMSD30AG
APPLICANT:	Summit Data Communications Inc. 526 South Main St. Suite 805 Akron, OH 44311
TEST SITE(S):	Elliott Laboratories 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-3; 2845B-4, 2845B-5
REPORT DATE:	March 2, 2010
FINAL TEST DATES:	January 6, 8, 13, 14, 21, 22, and February 26, 2010

AUTHORIZED SIGNATORY:

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Mark E. Hill
Staff Engineer
Elliott Laboratories

ACCREDITED

Testing Cert #2016-01

REVISION HISTORY

Rev#	Date	Comments	Modified By
-		First release	

TABLE OF CONTENTS

SCOPE

An electromagnetic emissions test has been performed on the Summit Data Communications Inc. model SDC-MSD30AG, pursuant to the following rules:

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

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

ANSI C63.4:2003
FCC DTS Measurement Procedure KDB558074, March 2005

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

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

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

OBJECTIVE

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

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

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

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

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

STATEMENT OF COMPLIANCE

The tested sample of Summit Data Communications Inc. model SDC-MSD30AG complied with the requirements of the following regulations:

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

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Summit Data Communications Inc. model SDC-MSD30AG and therefore apply only to the tested sample. The sample was selected and prepared by Jerry Pohmurski of Summit Data Communications Inc.

DEVIATIONS FROM THE STANDARDS

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

TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	-	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	802.11b: 12.41 MHz 802.11g: 16.5 MHz	>500kHz	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	802.11b: 17.4 dBm (0.056 Watts) EIRP = 0.111 W Note 1 802.11g: 20.9 dBm (0.123 Watts) EIRP = 0.245 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	802.11b: -6.7 dBm / MHz 802.11g: -7.9 dBm / MHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All emissions < -30dBc or <-20dBc Note 2	< -30dBc or < -20dBc Note 2	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.8dBµV/m @ 4924.0MHz (-0.2dB)	15.207 in restricted bands, all others < -20dBc <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 3 dBi for the highest EIRP multi-point system.

Note 2: Limit of -30dBc used when the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4). When peak power was measured, -20dBc was used.

DIGITAL TRANSMISSION SYSTEMS (5725 –5850 MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	16.5 MHz	>500kHz	Complies
15.247 (b)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	11.5 dBm (0.014 Watts) EIRP = 0.063 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	7.5 dBm / MHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions – 30MHz – 40 GHz	All spurious emissions < -30dBc	< -30dBc Note 2	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 40 GHz	51.6dBµV/m @ 5236.3MHz (-2.4dB)	15.207 in restricted bands, all others <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 6.5 dBi for the highest EIRP multi-point system.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst).

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	The EUT uses u.FL connectors	Refer to standard	Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	42.6dBµV/m (134.9µV/m) @ 3856.7MHz (-11.4dB)	Refer to standard	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	45.1dBµV @ 0.176MHz (-19.6dB)	Refer to standard	Complies
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual		Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	802.11b: 16.1 MHz 802.11g: 17.2 MHz 802.1a: 17.1 MHz	Information only	N/A

MEASUREMENT UNCERTAINTIES

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

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

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Summit Data Communications Inc. model SDC-MSD30AG is a 802.11ag compliant wireless LAN radio Module which is designed to provide wireless local area networking connectivity. Normally, the EUT would be embedded in various types of mobile and stationary computing devices such as handheld and vehicle mounted data terminals during operation. The EUT was, therefore, placed in this position during emissions testing to simulate the end user environment. The electrical rating of the EUT is 3.3 VDC =/-5%. It's typical power consumption is 400mA (1320mW) while in transmit mode, 180mA (594mW) while in receive mode and 10mA (33mW) while in standby mode.

The sample was received on November 8, 2009 and tested on January 6, 8, 13, 14, 21, 22, and February 26, 2010. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Summit Data Communications Inc.	SDC-MSD30AG	802.11AG Mini Compact Flash Module with antenna connectors		TWG-SDCMSD30AG

ANTENNA SYSTEM

The SDC-MSD30AG will be marketed with the following antenna options:

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)
Dipole Antenna #3 - 5GHz only - Cisco Air-Ant 5135 3.5dBi(5GHz)
Dipole Antenna #4 - 2.4GHz only - Summit SDC-CF22G - 0dBi

ENCLOSURE

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

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
Hewlett Packard	iPAQ	Handheld Computer	-	-

No remote support equipment was used during testing.

EUT INTERFACE PORTS

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

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

EUT OPERATION

During emissions testing the EUT was configured to transmit at the Low, Middle, and High Channel. Testing performed at 6Mbs for 802.11g and 802.11a modes and 1Mbs for 802.11b mode.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on January 6, 8, 13, 14, 21, 22, and February 26, 2010 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
Chamber 4	211948	2845B-4	Fremont,
Chamber 5	211948	2845B-5	CA 94538-2435

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.

CONDUCTED EMISSIONS CONSIDERATIONS

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

RADIATED EMISSIONS CONSIDERATIONS

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

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 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.

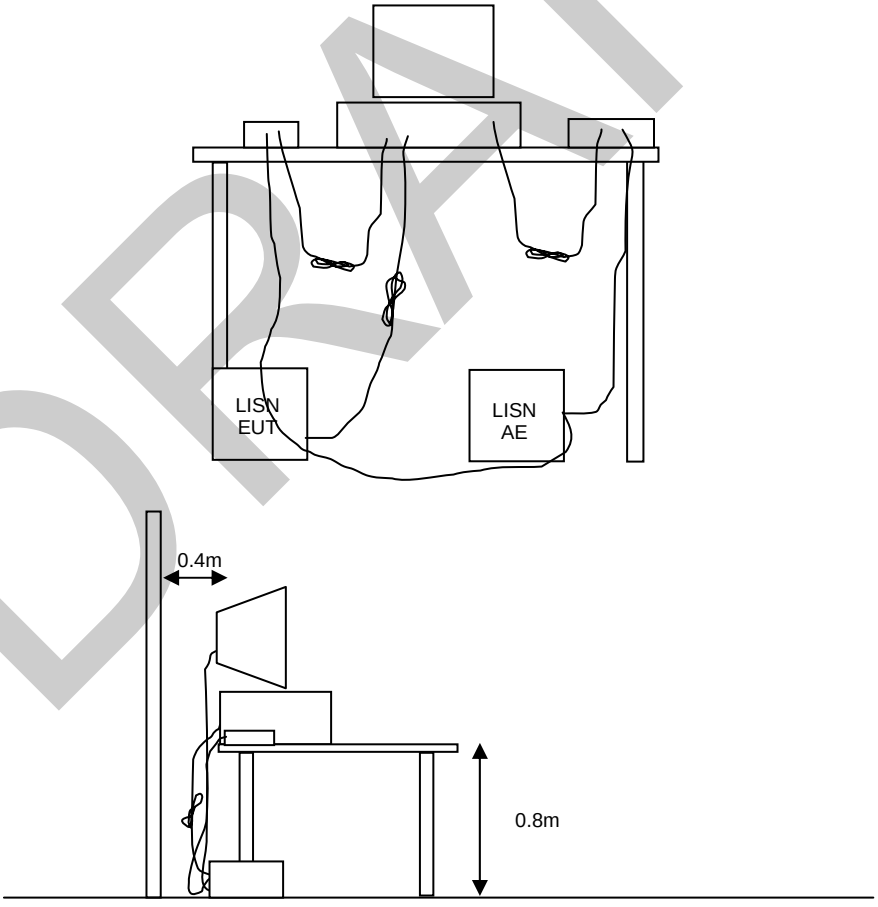
TEST PROCEDURES

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.



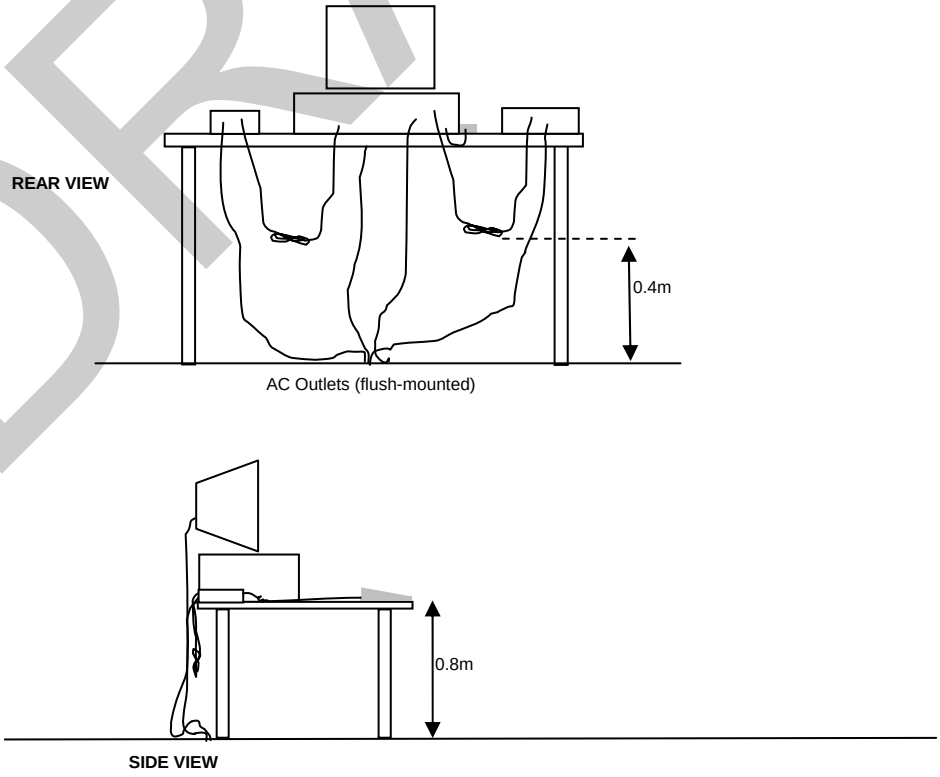
RADIATED EMISSIONS

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.

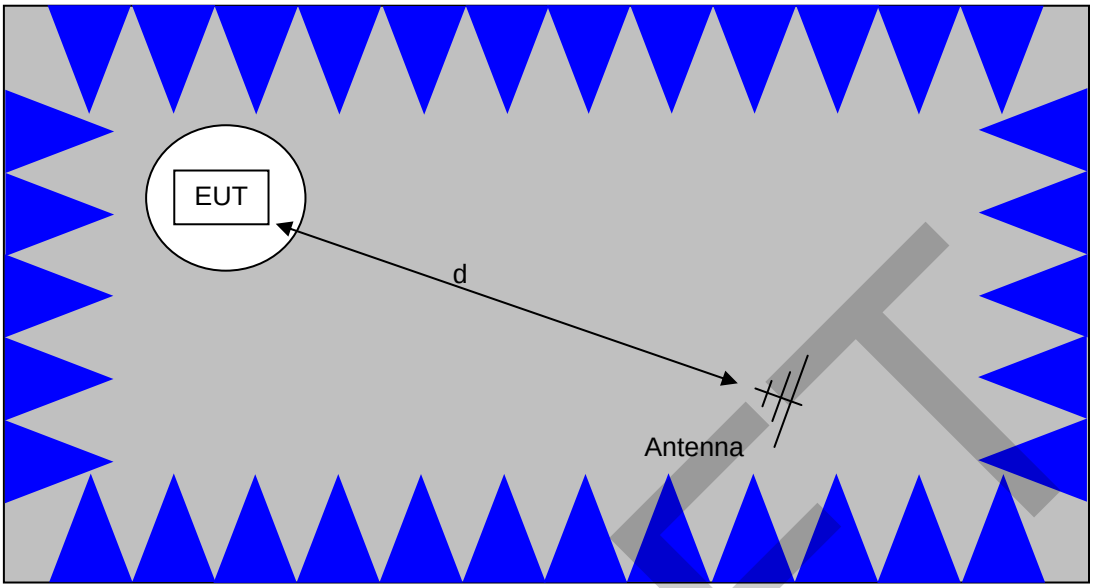
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

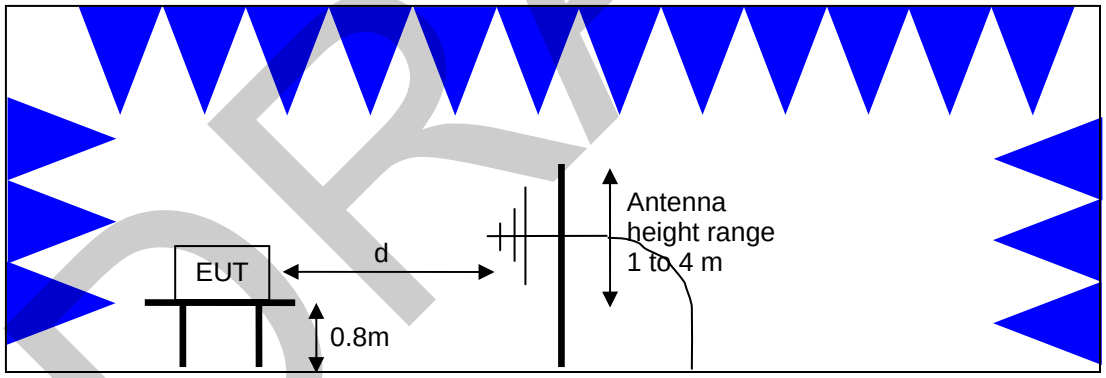


Typical Test Configuration for Radiated Field Strength Measurements



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

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



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

BANDWIDTH MEASUREMENTS

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

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: FCC 15.207; FCC 15.107(a), RSS GEN

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

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

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

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

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

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

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

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

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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

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

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

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

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

where P is the eirp (Watts)

Appendix A Test Equipment Calibration Data

Radiated Emissions, 30 - 6,500 MHz, 11-Nov-09

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	786	12/6/2009
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010

Radio Spurious Emissions, 11-Nov-09

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	11/4/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	9/30/2010

Radio Spurious Emissions, 02-Dec-09

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	11/4/2010

Radiated Emissions, DTS, 04-Dec-09

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	11/4/2010

Radiated Emissions, 30 - 26,500 MHz, 09-Dec-09

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	11/4/2010

Radiated Emissions, 1000 - 40000MHz, 10-Dec-09

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	9/25/2010
Micro-Tronics	Band Reject Filter, 2400-2500	BRM50702-02	1731	11/4/2010

	MHz			
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010
A.H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	3/17/2010

Radiated Emissions, 30 - 18,000 MHz, 06-Jan-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	11/4/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

DTS Spurious, 1000-25,000 MHz, 08-Jan-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1731	11/4/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

Radiated Emissions, 30 - 40,000 MHz, 08-Jan-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	7/29/2010
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	9/25/2010
Hewlett Packard	HF Amplifier, 45 MHz -50 GHz (with 1620)	83051A (84125C)	1742	5/6/2010
Hewlett Packard	HF Amplifier, 45 MHz -50 GHz (with 1620)	83051A (84125C)	1743	5/6/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010
A.H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	3/17/2010

Conducted Emissions - AC Power Ports, 14-Jan-10

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	3/18/2010
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	4/6/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	10/15/2010

Radio Antenna Port (Power and Spurious Emissions), 15-Jan-10

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Weinschel Corp	Attenuator, 10dB , 50 ohms, 25W, DC-18 GHz	SA18N-10	2099	N/A

Radio Antenna Port (Power and Spurious Emissions), 22-Jan-10

Manufacturer	Description	Model	Asset #	Cal Due
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	10/22/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts	NRV-Z32	1423	10/23/2010
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1555	1/28/2010

Appendix B Test Data

T77316 48 Pages
T77317 19 Pages

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Emissions Standard(s):	FCC 15.247/RSS 210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Summit Data Communications

Model

SDC-MSD30AG

Date of Last Test: 2/26/2010

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions (Summit Antenna)

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.

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.

Ambient Conditions:

Temperature: 10-20 °C
Rel. Humidity: 30-50 %

Date of Test: Refer to each run
Test Engineer: Refer to each run
Test Location: Refer to each run

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

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

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

NOTE 1: A preliminary check of output power was performed. The port with the highest power was used for the final testing. Preliminary tests showed no radio related emissions below 1 GHz.
NOTE 2: Preliminary scan showed that EUT located at its side has highest field strength. All test were performed with EUT at its side orientation.

Run #	Mode	Channel	Power Setting	Port	Test Performed	Limit	Result / Margin
1a	b mode	Low 2412 MHz	19	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	42.2dBµV/m @ 2385.7MHz (-11.8dB)
			19	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	48.5dBµV/m @ 4824.0MHz (-5.5dB)
1b	b mode	Center 2437 MHz	19	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.6dBµV/m @ 4874.0MHz (-1.4dB)
1c	b mode	High 2462 MHz	19	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	44.9dBµV/m @ 2487.9MHz (-9.1dB)
			17	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.8dBµV/m @ 4924.0MHz (-0.2dB)
2a	g mode	Low 2412 MHz	19	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.0dBµV/m @ 2389.9MHz (-2.0dB)
			19	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	46.8dBµV/m @ 1302.5MHz (-7.2dB)
2b	g mode	Center 2437 MHz	19	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	45.8dBµV/m @ 1302.5MHz (-8.2dB)
2c	g mode	High 2462 MHz	19	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	52.0dBµV/m @ 2483.5MHz (-2.0dB)
			19	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	45.5dBµV/m @ 1302.5MHz (-8.5dB)

Antenna: Johanson 0 dBi dipole antenna (Elliott 2009-1604)
Module: 00000002A **DRIVER:** V3.00.50 SCU: V2.03.18

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions (Cisco Air-Ant 4941, 2.4GHz)

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.

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.

Ambient Conditions:

Temperature: 10-20 °C
Rel. Humidity: 30-50 %

Date of Test: Refer to each run
Test Engineer: Refer to each run
Test Location: Refer to each run

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

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

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

NOTE 1: A preliminary check of output power was performed. The port with the highest power was used for the final testing. Preliminary tests showed no radio related emissions below 1 GHz and above 18GHz.

Run #	Mode	Channel	Power Setting	Port	Test Performed	Limit	Result / Margin
1a	b mode	Low 2412 MHz	19 dBm	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	49.9dBµV/m @ 2386.2MHz (-4.1dB)
			19 dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.5dBµV/m @ 4824.0MHz (-1.5dB)
1b	b mode	Center 2437 MHz	19 dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	49.0dBµV/m @ 4874.0MHz (-5.0dB)
1c	b mode	High 2462 MHz	19 dBm	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	46.4dBµV/m @ 2487.7MHz (-7.6dB)
			19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	53.0dBµV/m @ 4924.1MHz (-1.0dB)
2a	g mode	Low 2412 MHz	16 dBm	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.6dBµV/m @ 2390.0MHz (-1.4dB)
			19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	44.8dBµV/m @ 1345.4MHz (-9.2dB)
2b	g mode	Ch 2 2417 MHz	19dBm	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	48.3dBµV/m @ 2389.9MHz (-5.7dB)
2c	g mode	Center 2437 MHz	19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	46.5dBµV/m @ 3249.4MHz (-7.5dB)
2e	g mode	High 2462 MHz	19dBm	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	49.2dBµV/m @ 2483.6MHz (-4.8dB)
			19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	44.8dBµV/m @ 1302.5MHz (-9.2dB)

Antenna: Air Dipole Antenna (Elliott 2009-1387)
Module: 00000002A **DRIVER:** V3.00.50 SCU: V2.03.18

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 26500 MHz	1	3	-9.5

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 26000 MHz. Operating Mode: 802.11b
Run #1a: Low Channel @ 2412 MHz with Power Setting of 19 dBm.
Date: 1/21/2010 Engineer: Suhaila Khushzad Location: FT Chamber #4

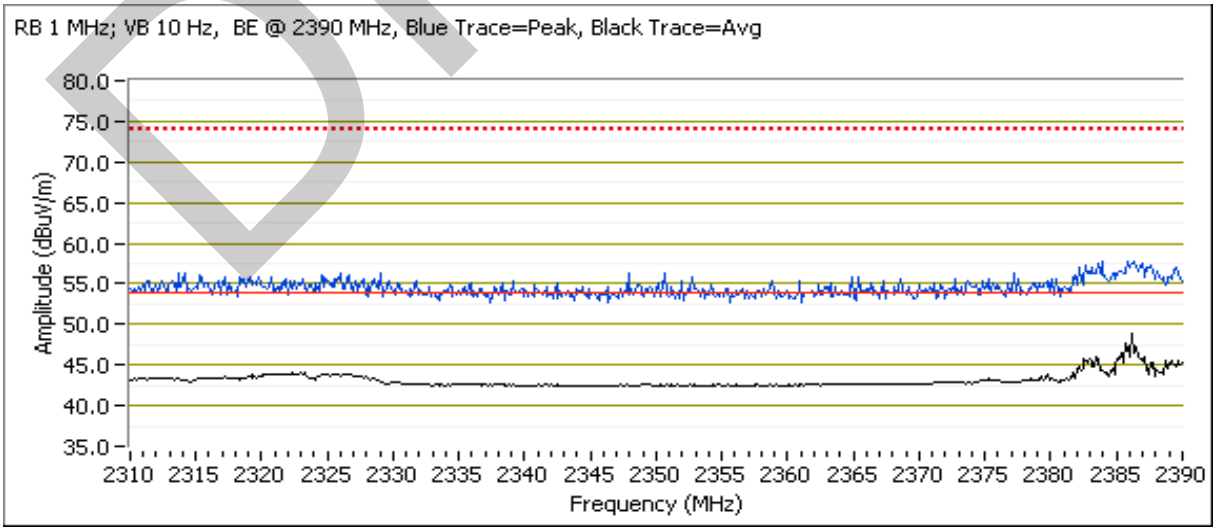
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.400	101.9	V	-	-	AVG	150	1.2	RB 1 MHz; VB: 10 Hz
2409.600	104.3	V	-	-	PK	150	1.2	RB 1 MHz; VB: 1 MHz
2410.400	95.3	H	-	-	AVG	224	1.5	RB 1 MHz; VB: 10 Hz
2409.670	98.5	H	-	-	PK	224	1.5	RB 1 MHz; VB: 1 MHz
2410.400	92.8	H	-	-	PK	224	1.5	RB 100 kHz; VB: 100 kHz
2411.330	98.5	V	-	-	PK	150	1.2	RB 100 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	98.5 dBµV/m	
Limit for emissions outside of restricted bands:	68.5 dBµV/m	Limit is -30dBc (UNII power measurement)

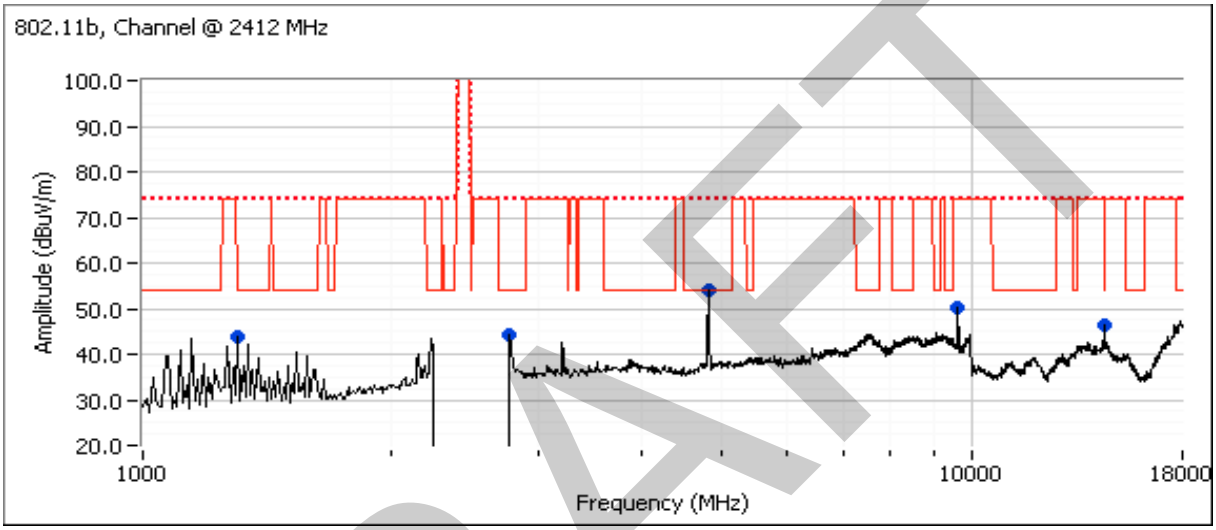
Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.200	49.9	V	54.0	-4.1	AVG	150	1.2	RB 1 MHz; VB: 10 Hz
2386.470	57.9	V	74.0	-16.1	PK	150	1.2	RB 1 MHz; VB: 1 MHz
2386.330	45.9	H	54.0	-8.1	AVG	224	1.5	RB 1 MHz; VB: 10 Hz
2386.400	56.8	H	74.0	-17.2	PK	224	1.5	RB 1 MHz; VB: 1 MHz



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Other Spurious Emissions

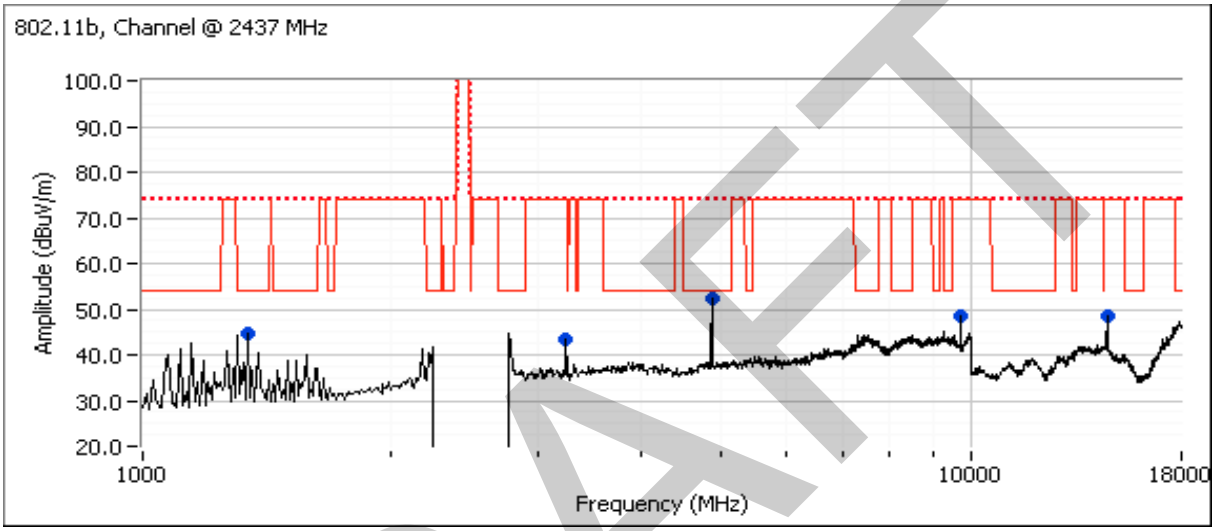


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.970	52.5	V	54.0	-1.5	AVG	200	1.3	RB 1 MHz; VB: 10 Hz
4824.030	54.2	V	74.0	-19.8	PK	200	1.3	RB 1 MHz; VB: 1 MHz
1306.320	45.1	V	54.0	-8.9	AVG	124	1.1	RB 1 MHz; VB: 10 Hz
1306.390	48.0	V	74.0	-26.0	PK	124	1.1	RB 1 MHz; VB: 1 MHz
2768.460	38.9	H	54.0	-15.1	AVG	282	1.0	RB 1 MHz; VB: 10 Hz
2779.990	51.5	H	74.0	-22.5	PK	282	1.0	RB 1 MHz; VB: 1 MHz
9648.020	42.0	V	54.0	-12.0	AVG	95	1.0	RB 1 MHz; VB: 10 Hz, Note 1
9631.350	48.7	V	74.0	-25.3	PK	95	1.0	RB 1 MHz; VB: 1 MHz
14472.010	43.6	V	54.0	-10.4	AVG	248	1.0	RB 1 MHz; VB: 10 Hz
14472.040	48.9	V	74.0	-25.1	PK	248	1.0	RB 1 MHz; VB: 1 MHz

Note 1: Restricted band limit used for emission in non-restricted band.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1b: Center Channel @ 2437 MHz with Power Setting of 19dBm.



Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4873.990	49.0	V	54.0	-5.0	AVG	73	1.8	RB 1 MHz; VB: 10 Hz
4873.890	51.9	V	74.0	-22.1	PK	73	1.8	RB 1 MHz; VB: 1 MHz
1345.380	44.6	V	54.0	-9.4	AVG	120	1.1	RB 1 MHz; VB: 10 Hz
1345.550	44.3	V	74.0	-29.7	PK	120	1.1	RB 1 MHz; VB: 1 MHz
14622.010	47.1	V	54.0	-6.9	AVG	248	1.0	RB 1 MHz; VB: 10 Hz, note 2
14621.980	50.9	V	74.0	-23.1	PK	248	1.0	RB 1 MHz; VB: 1 MHz
9748.050	48.6	V	54.0	-5.4	Peak	316	1.3	Peak vs Avg Limit, Note 2
3249.310	43.2	V	54.0	-10.8	Peak	360	1.3	Peak vs Avg Limit

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Restricted band limit used for emission in non-restricted band.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1c: High Channel @ 2462 MHz with power setting of 19 dBm.

Date: 1/21/2010 Engineer: Suhaila Khushzad Location: FT Chamber #4

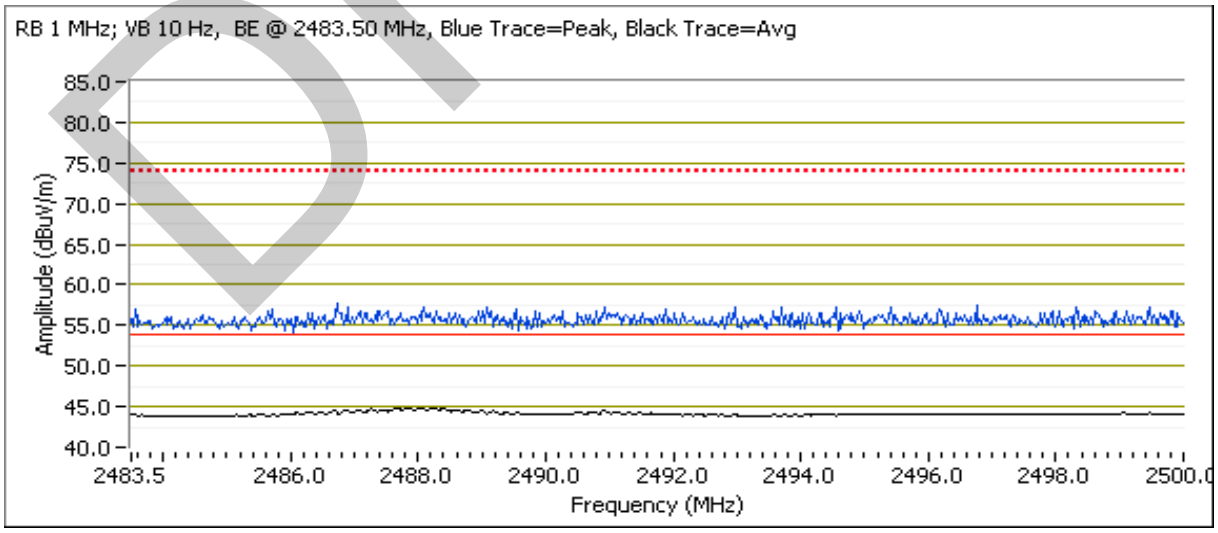
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2461.000	99.5	V	-	-	AVG	184	1.0	RB 1 MHz; VB: 10 Hz
2461.400	102.4	V	-	-	PK	184	1.0	RB 1 MHz; VB: 1 MHz
2460.530	95.5	H	-	-	AVG	225	1.2	RB 1 MHz; VB: 10 Hz
2461.330	98.5	H	-	-	PK	225	1.2	RB 1 MHz; VB: 1 MHz
2461.730	92.1	H	-	-	PK	225	1.2	RB 100 kHz; VB: 100 kHz
2461.330	96.2	V	-	-	PK	184	1.0	RB 100 kHz; VB: 100 kHz

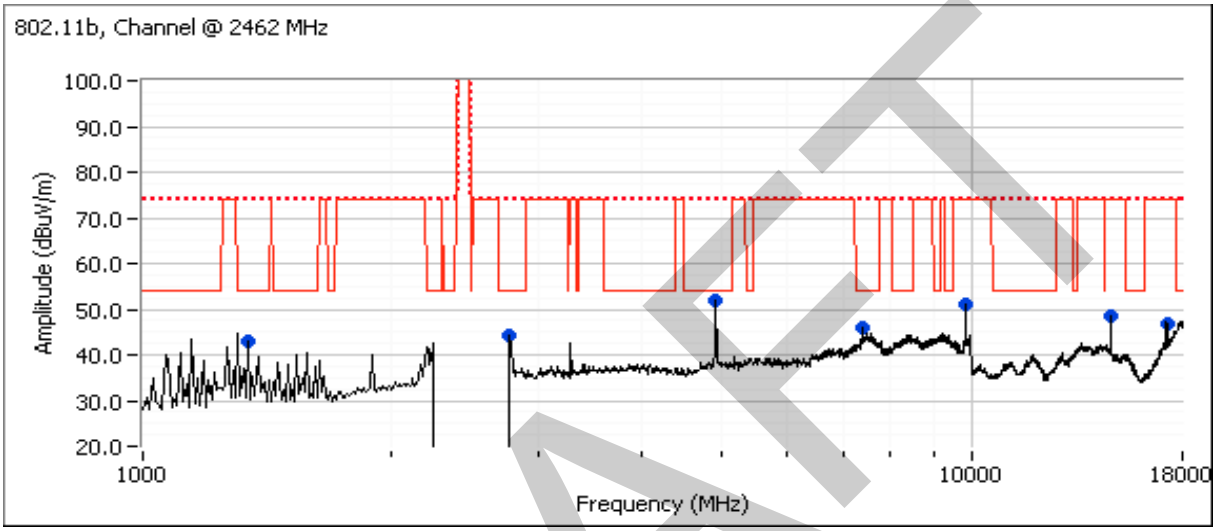
Fundamental emission level @ 3m in 100kHz RBW:	96.2 dBµV/m	
Limit for emissions outside of restricted bands:	66.2 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2487.730	46.4	V	54.0	-7.6	AVG	184	1.0	RB 1 MHz; VB: 10 Hz
2495.570	56.9	V	74.0	-17.1	PK	184	1.0	RB 1 MHz; VB: 1 MHz
2487.760	45.8	H	54.0	-8.2	AVG	225	1.2	RB 1 MHz; VB: 10 Hz
2486.880	56.7	H	74.0	-17.3	PK	225	1.2	RB 1 MHz; VB: 1 MHz



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A



Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.050	53.0	V	54.0	-1.0	AVG	35	2.2	RB 1 MHz; VB: 10 Hz
4924.050	54.5	V	74.0	-19.5	PK	35	2.2	RB 1 MHz; VB: 1 MHz
7388.830	42.0	V	54.0	-12.0	AVG	52	1.4	RB 1 MHz; VB: 10 Hz
7383.500	50.4	V	74.0	-23.6	PK	52	1.4	RB 1 MHz; VB: 1 MHz
2762.270	38.9	V	54.0	-15.1	AVG	184	2.2	RB 1 MHz; VB: 10 Hz
2771.170	50.9	V	74.0	-23.1	PK	184	2.2	RB 1 MHz; VB: 1 MHz
1345.350	42.9	V	54.0	-11.1	Peak	122	1.0	Peak vs Avg Limit
9848.010	51.1	V	54.0	-2.9	Peak	334	1.3	Peak vs Avg Limit, note 2
14772.130	48.6	V	54.0	-5.4	Peak	247	1.0	Peak vs Avg Limit, note 2
17238.470	46.8	H	54.0	-7.2	Peak	45	1.0	Peak vs Avg Limit, note 2

Note 2:	Restricted band limit used for emission in non-restricted band.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2: Radiated Spurious Emissions, 30 - 26000 MHz. Operating Mode: 802.11g
Run #2a: Low Channel @ 2412 MHz with power setting of 16 dBm.

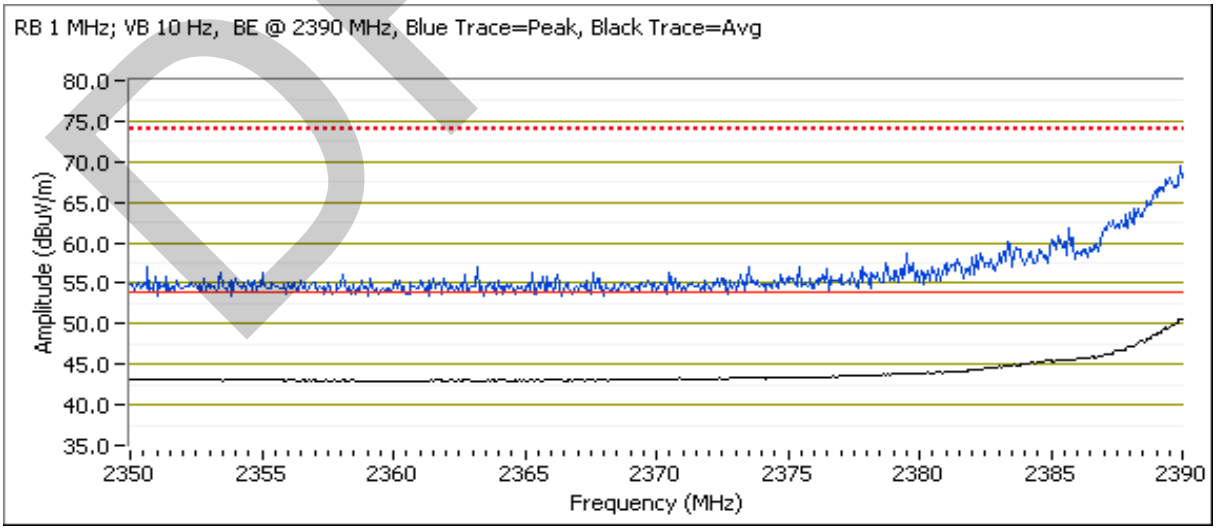
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
2405.000	97.2	V	-	-	AVG	150	1.5	RB 1 MHz; VB: 10 Hz	pwr 16dBm
2405.200	104.9	V	-	-	PK	150	1.5	RB 1 MHz; VB: 1 MHz	pwr 16dBm
2408.470	97.8	V	-	-	PK	150	1.5	RB 100 kHz; VB: 100 kH	pwr 16dBm
2405.270	90.9	H	-	-	AVG	222	1.5	RB 1 MHz; VB: 10 Hz	pwr 16dBm
2405.070	98.7	H	-	-	PK	222	1.5	RB 1 MHz; VB: 1 MHz	pwr 16dBm
2405.930	88.9	H	-	-	PK	222	1.5	RB 100 kHz; VB: 100 kH	pwr 16dBm

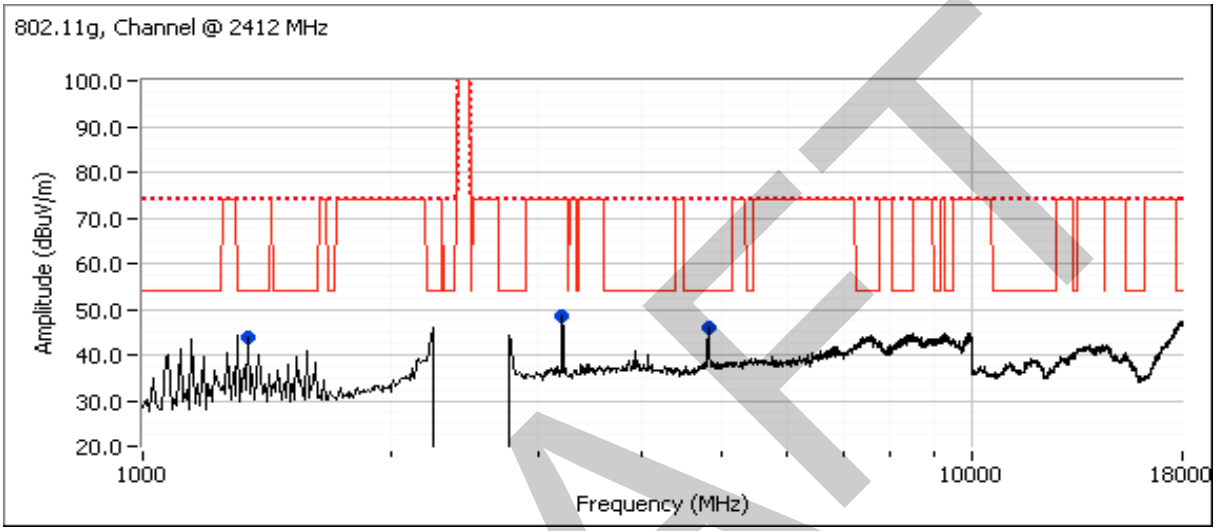
Fundamental emission level @ 3m in 100kHz RBW:	97.8 dBµV/m	
Limit for emissions outside of restricted bands:	67.8 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
2390.000	52.6	V	54.0	-1.4	AVG	150	1.5	RB 1 MHz; VB: 10 Hz	pwr 16dBm
2389.400	67.9	V	74.0	-6.1	PK	150	1.5	RB 1 MHz; VB: 1 MHz	pwr 16dBm
2390.000	47.6	H	54.0	-6.4	AVG	222	1.5	RB 1 MHz; VB: 10 Hz	pwr 16dBm
2389.800	60.0	H	74.0	-14.0	PK	222	1.5	RB 1 MHz; VB: 1 MHz	pwr 16dBm



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A



Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1345.400	44.8	V	54.0	-9.2	AVG	120	1.1	RB 1 MHz; VB: 10 Hz pwr 19dBm
1345.380	47.7	V	74.0	-26.3	PK	120	1.1	RB 1 MHz; VB: 1 MHz pwr 19dBm
4823.960	40.0	V	54.0	-14.0	AVG	201	1.2	RB 1 MHz; VB: 10 Hz pwr 19dBm
4826.430	51.8	V	74.0	-22.2	PK	201	1.2	RB 1 MHz; VB: 1 MHz pwr 19dBm
3216.050	47.9	V	54.0	-6.1	AVG	268	1.2	RB 1 MHz; VB: 10 Hz pwr 19dBm
3215.960	50.7	V	74.0	-23.3	PK	268	1.2	RB 1 MHz; VB: 1 MHz pwr 19dBm

Note 2: Restricted band limit used for emission in non-restricted band.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2b: 2nd Channel @ 2417 MHz with Power Setting of 19 dBm.

Date: 1/21/2010 Engineer: Suhaila Khushzad Location: FT Chamber #4

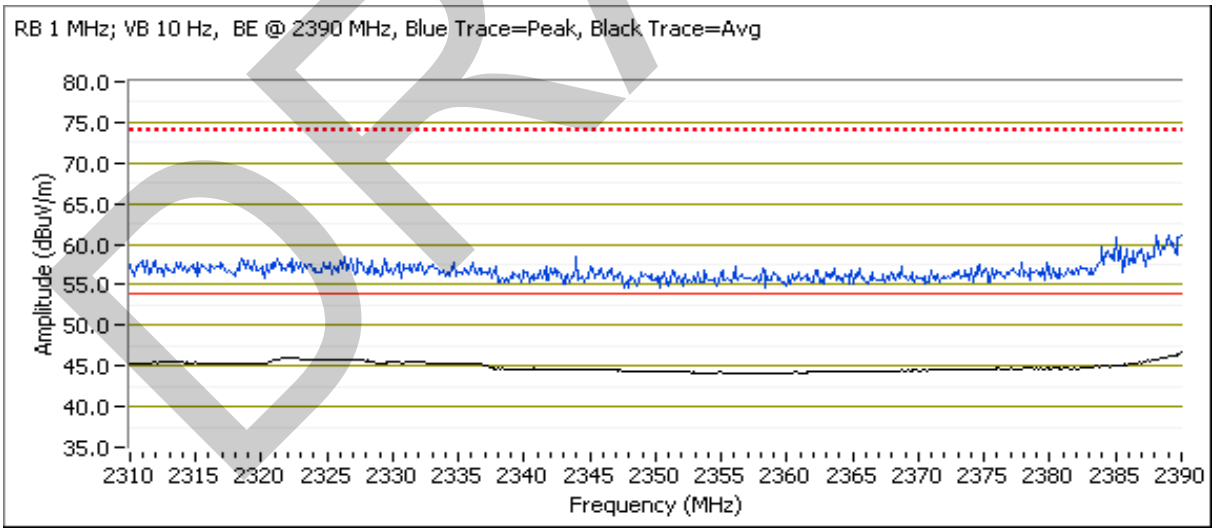
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2409.870	97.6	V	-	-	AVG	152	1.2	RB 1 MHz; VB: 10 Hz
2409.800	105.2	V	-	-	PK	152	1.2	RB 1 MHz; VB: 1 MHz
2415.930	97.2	V	-	-	PK	152	1.2	RB 100 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	97.2 dBµV/m	
Limit for emissions outside of restricted bands:	67.2 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

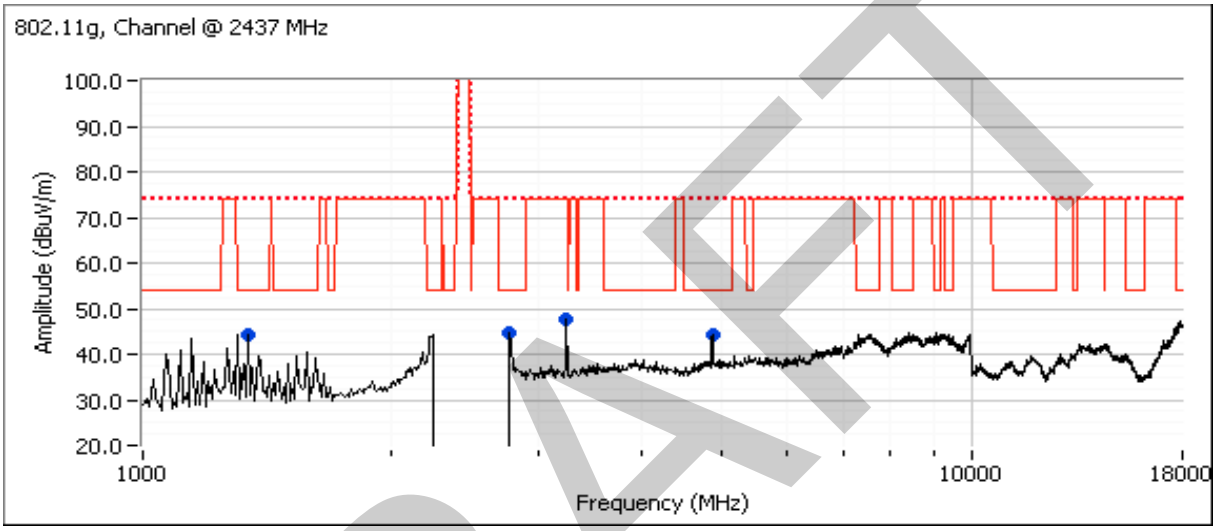
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.870	48.3	V	54.0	-5.7	AVG	152	1.2	RB 1 MHz; VB: 10 Hz
2389.930	60.0	V	74.0	-14.0	PK	152	1.2	RB 1 MHz; VB: 1 MHz



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2c: Center Channel @ 2437 MHz with power setting of 19dBm.

Date: 1/21/2010 Engineer: Suhaila Khushzad Location: FT Chamber #4



Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1345.420	44.9	V	54.0	-9.1	AVG	123	1.1	RB 1 MHz; VB: 10 Hz
2768.190	38.8	V	54.0	-15.2	AVG	180	1.3	RB 1 MHz; VB: 10 Hz
3249.370	46.5	V	54.0	-7.5	AVG	282	1.2	RB 1 MHz; VB: 10 Hz note 2
4874.090	39.4	V	54.0	-14.6	AVG	268	1.0	RB 1 MHz; VB: 10 Hz
1345.400	48.0	V	74.0	-26.0	PK	123	1.1	RB 1 MHz; VB: 1 MHz
2765.140	50.2	V	74.0	-23.8	PK	180	1.3	RB 1 MHz; VB: 1 MHz
3249.330	49.8	V	74.0	-24.2	PK	282	1.2	RB 1 MHz; VB: 1 MHz
4876.350	51.0	V	74.0	-23.0	PK	268	1.0	RB 1 MHz; VB: 1 MHz

Note 2:	Restricted band limit used for emission in non-restricted band.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2e: High Channel @ 2462 MHz with power setting of 19 dBm.

Date: 1/21/2010 Engineer: Suhaila Khushzad Location: FT Chamber #4

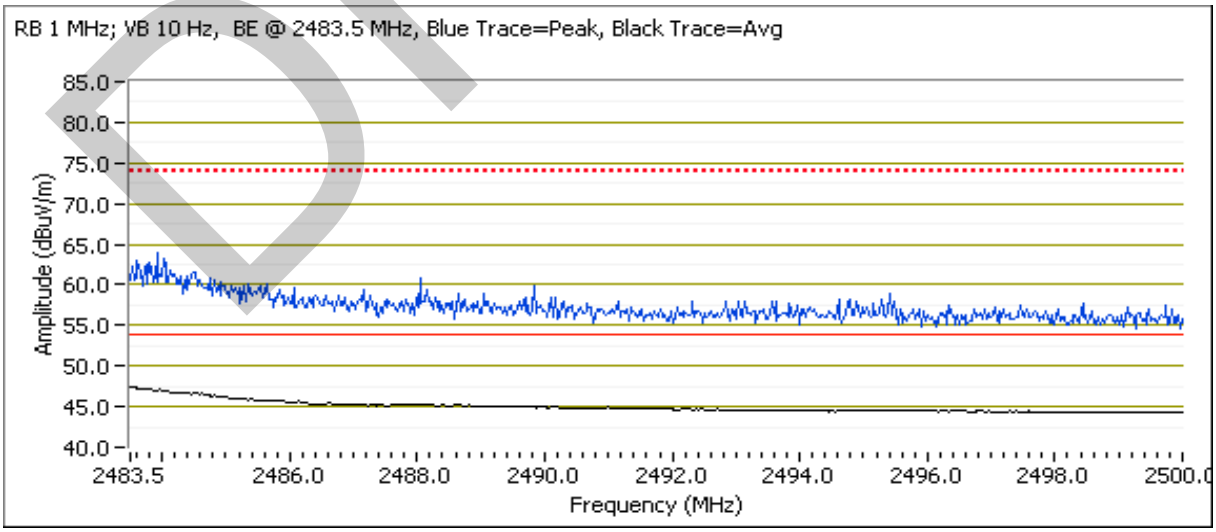
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2455.000	95.0	V	-	-	AVG	185	1.0	RB 1 MHz; VB: 10 Hz
2458.400	102.7	V	-	-	PK	185	1.0	RB 1 MHz; VB: 1 MHz
2455.730	90.6	H	-	-	AVG	222	1.2	RB 1 MHz; VB: 10 Hz
2456.270	98.2	H	-	-	PK	222	1.2	RB 1 MHz; VB: 1 MHz
2468.600	91.2	H	-	-	PK	222	1.2	RB 100 kHz; VB: 100 kHz
2457.270	95.8	V	-	-	PK	185	1.0	RB 100 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	95.8 dBµV/m	
Limit for emissions outside of restricted bands:	65.8 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

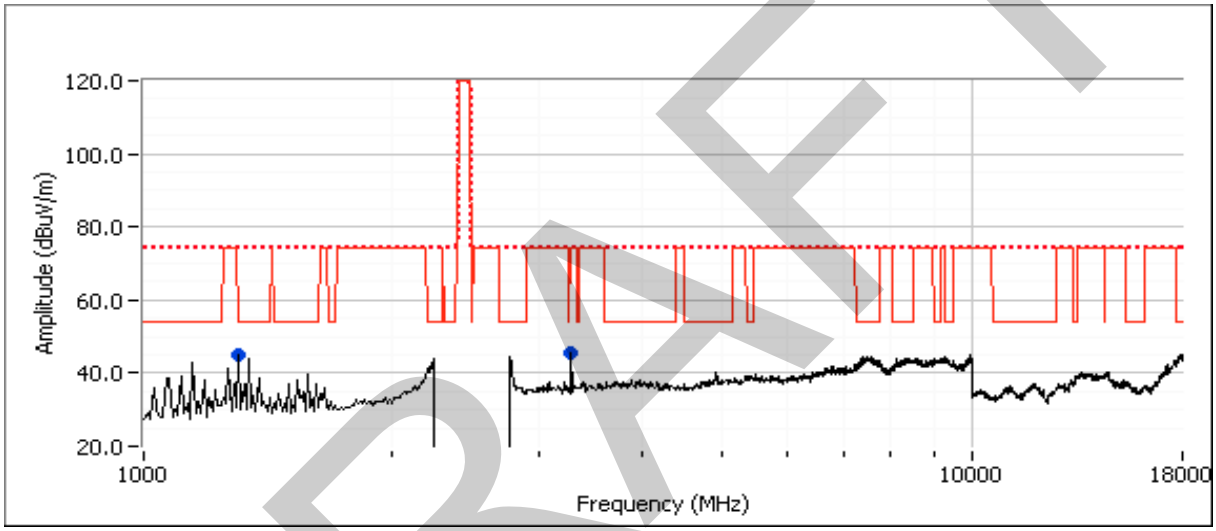
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.550	49.2	V	54.0	-4.8	AVG	185	1.0	RB 1 MHz; VB: 10 Hz
2483.530	62.0	V	74.0	-12.0	PK	185	1.0	RB 1 MHz; VB: 1 MHz
2483.500	47.6	H	54.0	-6.4	AVG	222	1.2	RB 1 MHz; VB: 10 Hz
2483.690	59.6	H	74.0	-14.4	PK	222	1.2	RB 1 MHz; VB: 1 MHz



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1302.500	44.8	V	54.0	-9.2	Peak	125	1.3	Peak reading with average limit
3282.500	45.6	V	74.0	-28.4	Peak	316	1.3	Peak reading with average limit



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions (Hubert & Suhner Antenna, 2.4GHz)

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.

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.

Ambient Conditions:

Temperature: 10-20 °C
Rel. Humidity: 30-50 %

Date of Test: Refer to each run
Test Engineer: Refer to each run
Test Location: Refer to each run

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

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

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

NOTE 1: A preliminary check of output power was performed. The port with the highest power was used for the final testing. Preliminary tests showed no radio related emissions below 1 GHz.

Run #	Mode	Channel	Power Setting	Port	Test Performed	Limit	Result / Margin
1a	b mode	Low 2412 MHz	19 dBm	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	51.0dBµV/m @ 2386.5MHz (-3.0dB)
			19 dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	52.6dBµV/m @ 4824.0MHz (-1.4dB)
1b	b mode	Center 2437 MHz	19 dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	50.4dBµV/m @ 4874.1MHz (-3.6dB)
1c	b mode	High 2462 MHz	19 dBm	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	49.5dBµV/m @ 2488.0MHz (-4.5dB)
			19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	49.8dBµV/m @ 4924.0MHz (-4.2dB)
2a	g mode	Low 2412 MHz	16 dBm	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.6dBµV/m @ 2389.9MHz (-1.4dB)
			19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	50.2dBµV/m @ 3209.2MHz (-3.8dB)
2b	g mode	Ch 2 2417 MHz	19dBm	Main	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	51.1dBµV/m @ 2389.6MHz (-2.9dB)
2c	g mode	Center 2437 MHz	19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	47.6dBµV/m @ 3245.8MHz (-6.4dB)
2d	g mode	Ch 10 2457 MHz	19 dBm	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	49.9dBµV/m @ 2483.5MHz (-4.1dB)
2e	g mode	High 2462 MHz	16 dBm	Main	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	51.9dBµV/m @ 2483.5MHz (-2.1dB)
			19dBm	Main	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	46.8dBµV/m @ 3282.6MHz (-7.2dB)

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Antenna: Hubert & Suhner monopole antenna (Elliott 2009-1388)
Module: 00000002A **DRIVER:** V3.00.50 SCU: V2.03.18

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 26500 MHz	1	3	-9.5

Run #1: Radiated Spurious Emissions, 30 - 26000 MHz. Operating Mode: 802.11b
Run #1a: Low Channel @ 2412 MHz with Power Setting of 19 dBm.
Date: 1/8/2010 Engineer: John Caizzi Location: FT Chamber #3

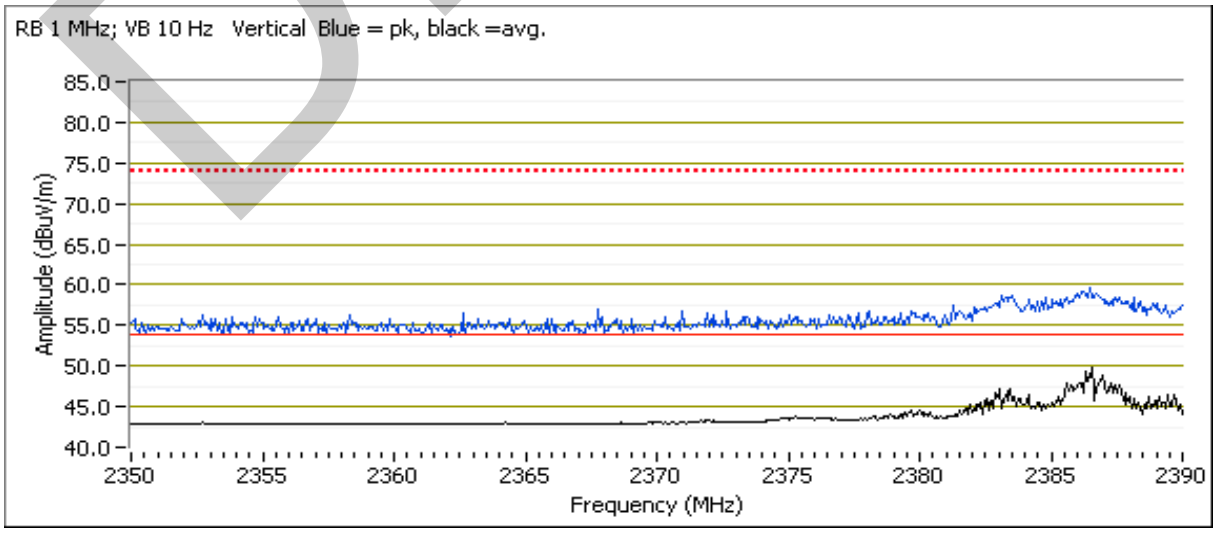
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2410.400	104.8	V	-	-	AVG	217	1.28	
2413.200	107.9	V	-	-	PK	217	1.28	

Fundamental emission level @ 3m in 100kHz RBW:	102.0 dBµV/m	
Limit for emissions outside of restricted bands:	72.0 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.470	51.0	V	54.0	-3.0	AVG	217	1.28	
2385.930	58.5	V	74.0	-15.5	PK	217	1.28	



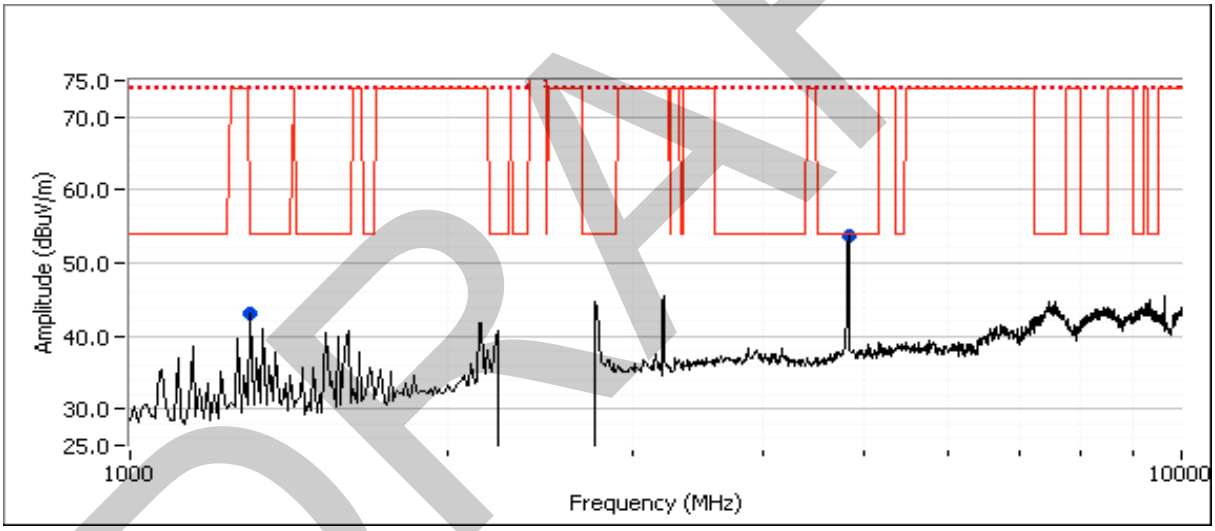
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Other Spurious Emissions

Date: 1/8/2010 Engineer: Mehran Birgani Location: FT Chamber #3

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4823.990	52.6	V	54.0	-1.4	AVG	66	1.0	
1318.550	43.2	H	54.0	-10.8	PK	112	1.3	Peak reading with average limit
4823.930	54.8	V	74.0	-19.2	PK	66	1.0	

Note 1:	No significant emissions found above 10 GHz.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1b: Center Channel @ 2437 MHz with Power Setting of 19dBm.

Date: 1/8/2010 Engineer: Mehran Birgani Location: FT Chamber #3

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

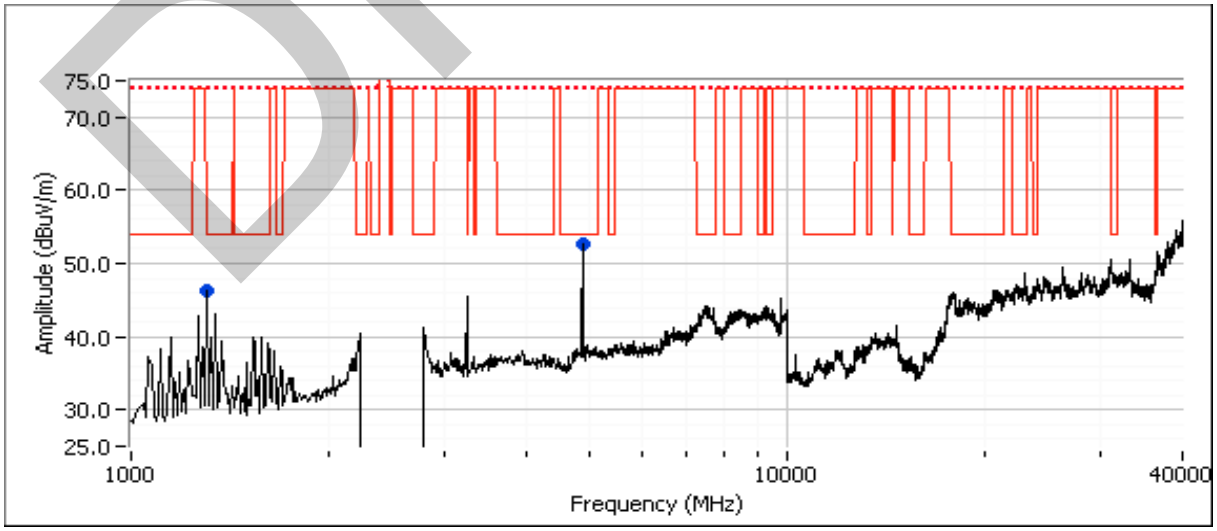
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2435.370	107.2	V	-	-	AVG	268	1.3	
2436.200	110.3	V	-	-	PK	268	1.3	
2438.900	98.2	H	-	-	AVG	207	1.6	
2438.070	101.5	H	-	-	PK	207	1.6	

Fundamental emission level @ 3m in 100kHz RBW:	104.8 dBµV/m	
Limit for emissions outside of restricted bands:	74.8 dBµV/m	Limit is -30dBc (UNII power measurement)

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.050	50.4	V	54.0	-3.6	AVG	86	1.0	
1302.500	46.4	H	54.0	-7.6	PK	105	1.3	Peak reading with average limit
4874.000	53.0	V	74.0	-21.0	PK	86	1.0	

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	No significant emissions found above 10 GHz.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1c: High Channel @ 2462 MHz with power setting of 19 dBm.

Date: 1/8/2010 Engineer: John Caizzi Location: FT Chamber #3

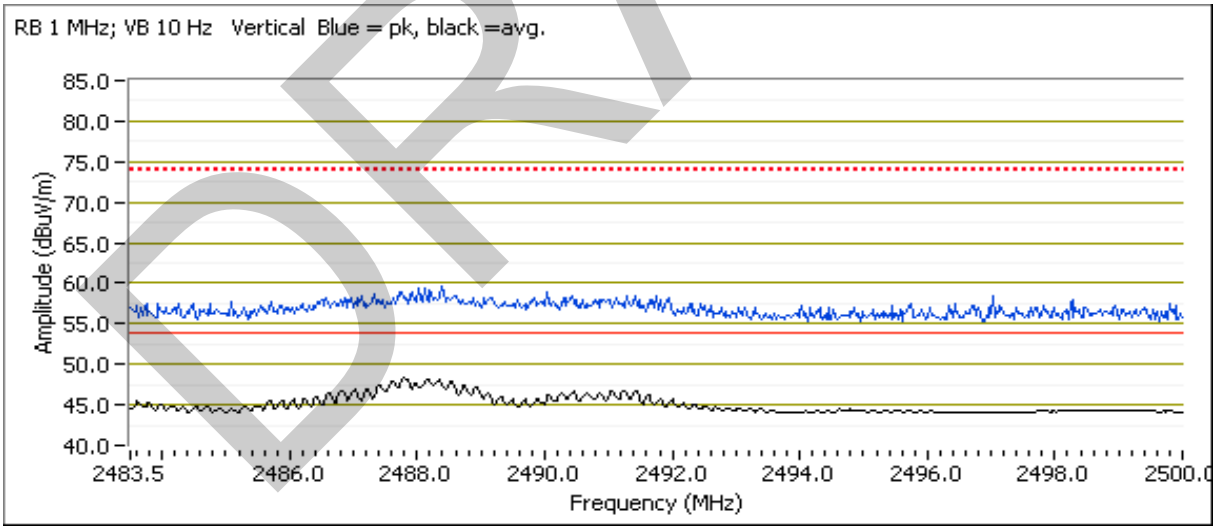
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2461.270	101.9	V	120.0	-18.1	Pk	217	1.28	
2460.470	104.8	V	120.0	-15.2	AVG	217	1.28	
2463.270	107.8	V	120.0	-12.2	PK	217	1.28	

Fundamental emission level @ 3m in 100kHz RBW:	101.9 dBµV/m	
Limit for emissions outside of restricted bands:	71.9 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2488.010	49.5	V	54.0	-4.5	AVG	217	1.28	
2491.090	58.0	V	74.0	-16.0	PK	217	1.28	



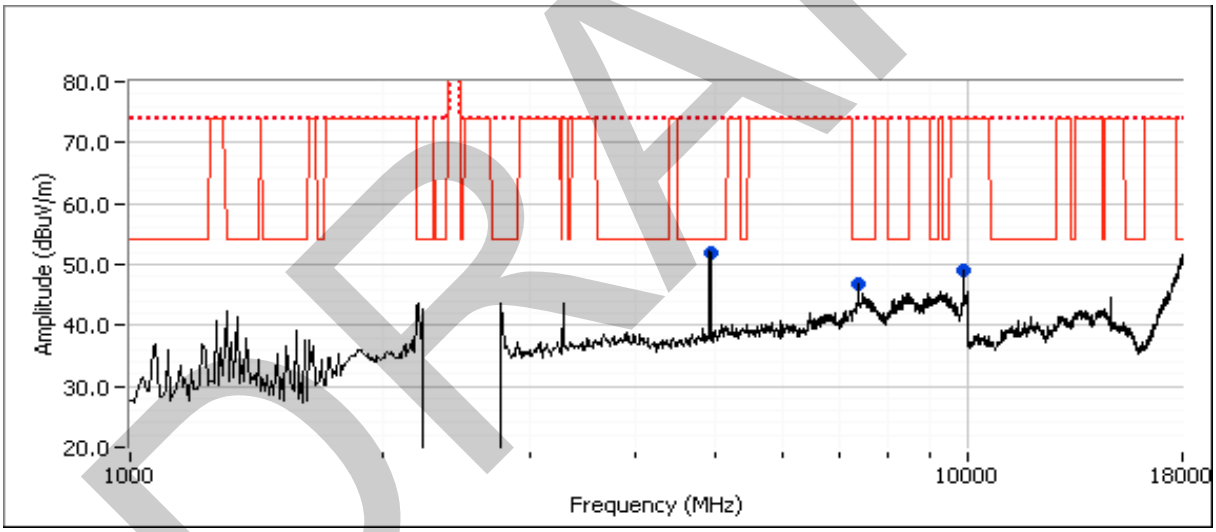
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Other Spurious Emissions

Date: 2/26/2010 Engineer: Rafael Varelas Location: Ft Chamber #4

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.000	49.8	V	54.0	-4.2	AVG	0	1.8	RB 1 MHz; VB: 10 Hz
4924.010	52.5	V	74.0	-21.5	PK	0	1.8	RB 1 MHz; VB: 1 MHz
7389.010	45.6	V	54.0	-8.4	AVG	0	1.5	RB 1 MHz; VB: 10 Hz
7382.960	53.7	V	74.0	-20.3	PK	0	1.5	RB 1 MHz; VB: 1 MHz
9848.040	47.8	V	54.0	-6.2	Peak	88	1.9	Peak reading vs avg limit, note 2

Note 2:	Restricted band limit was used.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2: Radiated Spurious Emissions, 30 - 26000 MHz. Operating Mode: 802.11g
Run #2a: Low Channel @ 2412 MHz with power setting of 16 dBm.
Date: 1/8/2010 Engineer: John Caizzi Location: FT Chamber #3

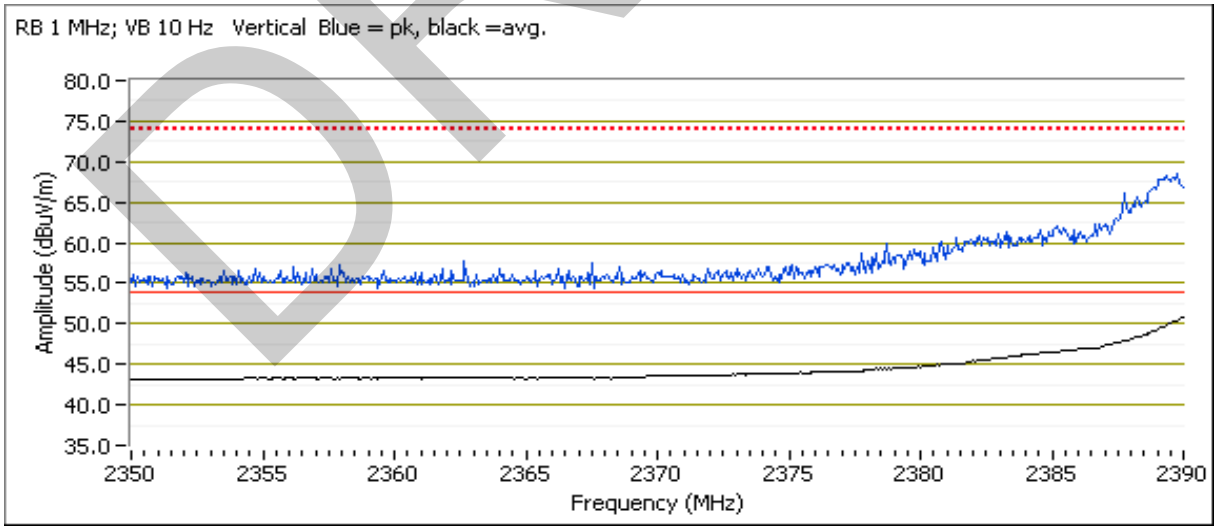
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2407.070	99.1	V	120.0	-20.9	Pk	319	1.00	16 dBm
2405.400	100.6	V	120.0	-19.4	AVG	319	1.00	16 dBm
2405.400	108.9	V	120.0	-11.1	PK	319	1.00	16 dBm
2407.400	92.7	H	120.0	-27.3	Pk	207	1.35	16 dBm
2404.930	94.2	H	120.0	-25.8	AVG	207	1.35	16 dBm
2405.470	102.4	H	120.0	-17.6	PK	207	1.35	16 dBm

Fundamental emission level @ 3m in 100kHz RBW:	99.1 dBµV/m	
Limit for emissions outside of restricted bands:	69.1 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.930	52.6	V	54.0	-1.4	AVG	319	1.00	16 dBm
2389.200	68.3	V	74.0	-5.7	PK	319	1.00	16 dBm



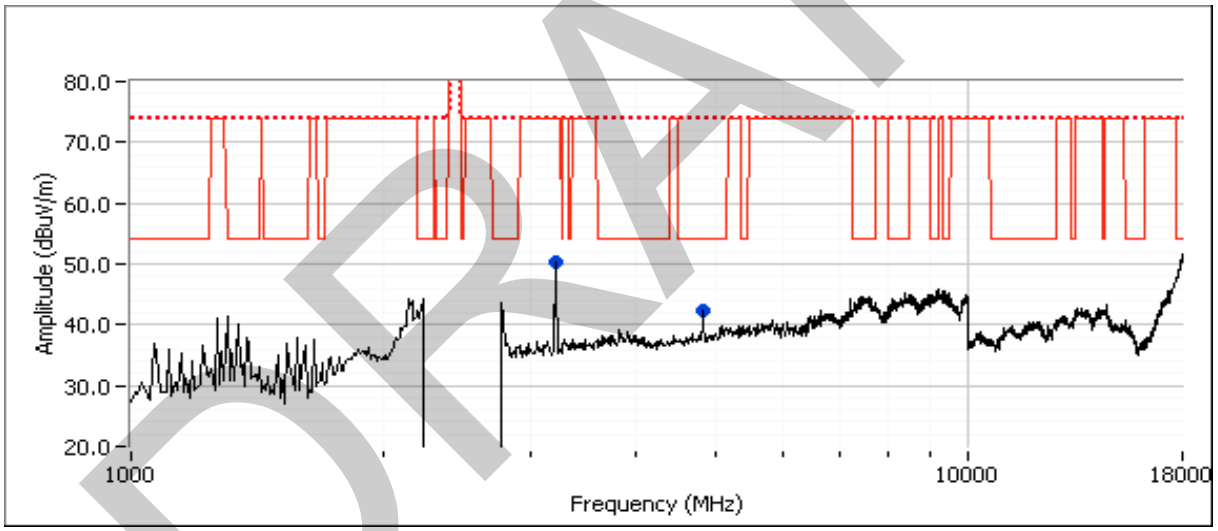
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Other Spurious Emissions

Date: 2/26/2010 Engineer: Rafael Varelas Location: Ft Chamber #4

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.040	36.2	V	54.0	-17.8	AVG	346	1.6	RB 1 MHz; VB: 10 Hz
3209.170	50.2	V	54.0	-3.8	Peak	349	1.3	Peak reading vs avg limit, note 2
4827.780	48.6	V	74.0	-25.4	PK	346	1.6	RB 1 MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 2:	Restricted band limit was used.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2b: 2nd Channel @ 2417 MHz with Power Setting of 19 dBm.

Date: 2/26/2010 Engineer: Rafael Varelas Location: Ft Chamber #4

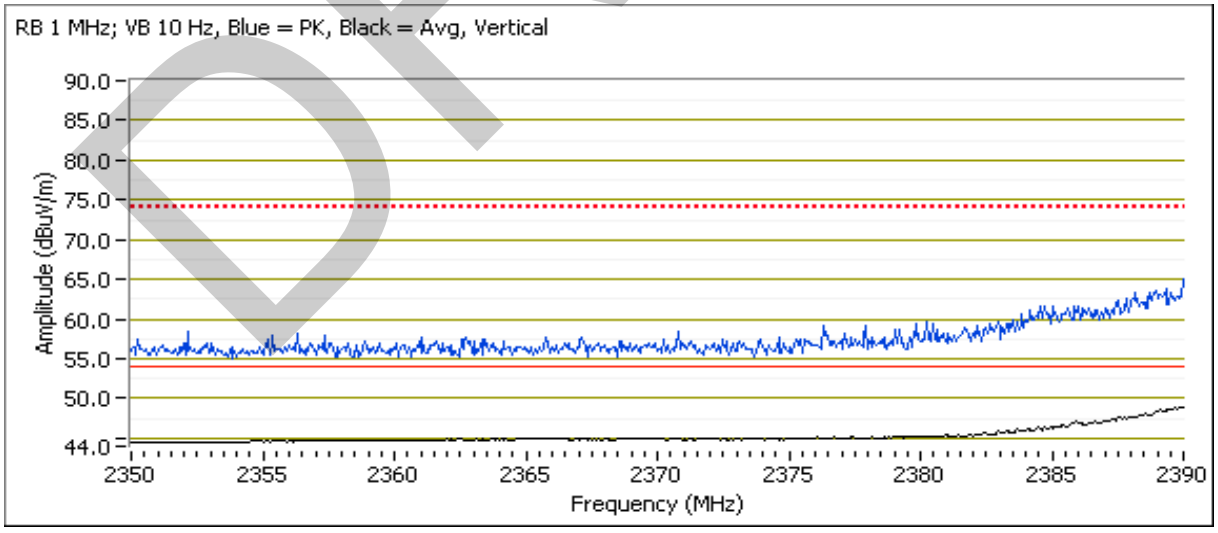
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2411.700	101.4	V	120.0	-18.6	AVG	202	1.2	RB 1 MHz; VB: 10 Hz
2413.170	109.6	V	120.0	-10.4	PK	202	1.2	RB 1 MHz; VB: 1 MHz
2424.700	100.8	V	120.0	-19.2	PK	202	1.2	RB 100 kHz; VB: 100 kHz
2413.200	93.4	H	120.0	-26.6	AVG	138	1.6	RB 1 MHz; VB: 10 Hz
2419.830	101.3	H	120.0	-18.7	PK	138	1.6	RB 1 MHz; VB: 1 MHz

Fundamental emission level @ 3m in 100kHz RBW:	100.8 dBµV/m	
Limit for emissions outside of restricted bands:	70.8 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.640	51.1	V	54.0	-2.9	AVG	202	1.2	RB 1 MHz; VB: 10 Hz
2388.880	64.8	V	74.0	-9.2	PK	202	1.2	RB 1 MHz; VB: 1 MHz
2389.950	46.6	H	54.0	-7.4	AVG	138	1.6	RB 1 MHz; VB: 10 Hz
2389.840	58.7	H	74.0	-15.3	PK	138	1.6	RB 1 MHz; VB: 1 MHz



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

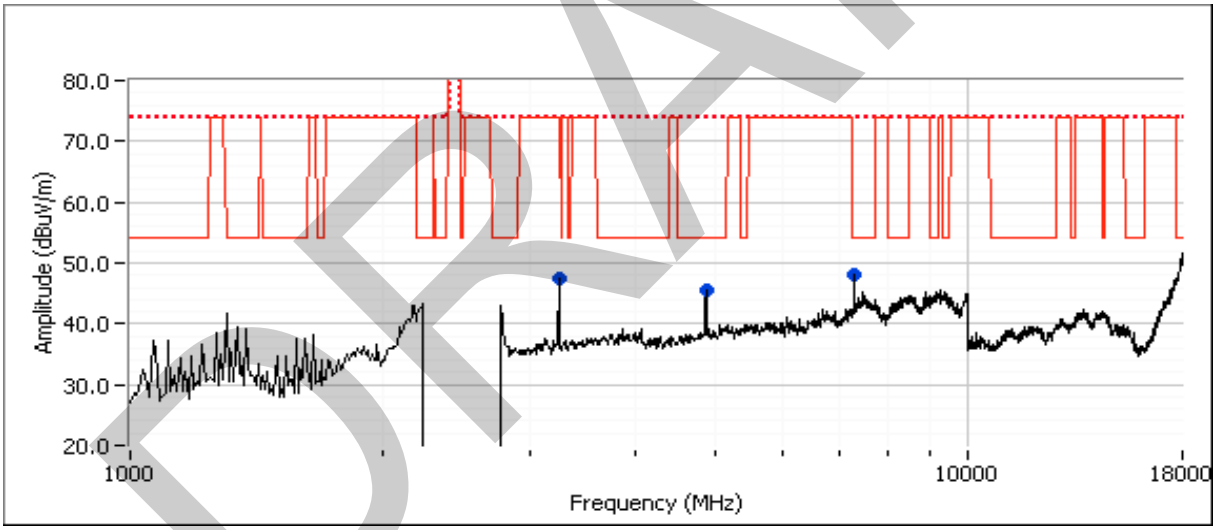
Run #2c: Center Channel @ 2437 MHz with power setting of 19dBm.

Date: 2/26/2010 Engineer: Rafael Varelas Location: Ft Chamber #4

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4874.010	38.6	V	54.0	-15.4	AVG	172	1.6	RB 1 MHz; VB: 10 Hz
7310.170	40.4	V	54.0	-13.6	AVG	350	1.6	RB 1 MHz; VB: 10 Hz
3245.830	47.6	V	54.0	-6.4	Peak	101	1.3	Peak reading vs avg limit, note 2
4867.770	51.0	V	74.0	-23.0	PK	172	1.6	RB 1 MHz; VB: 1 MHz
7310.190	52.2	V	74.0	-21.8	PK	350	1.6	RB 1 MHz; VB: 1 MHz

Note 2: Restricted band limit was used.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2d: Center Channel @ 2457 MHz with power setting of 19dBm.

Date: 2/26/2010 Engineer: Rafael Varelas Location: Ft Chamber #4

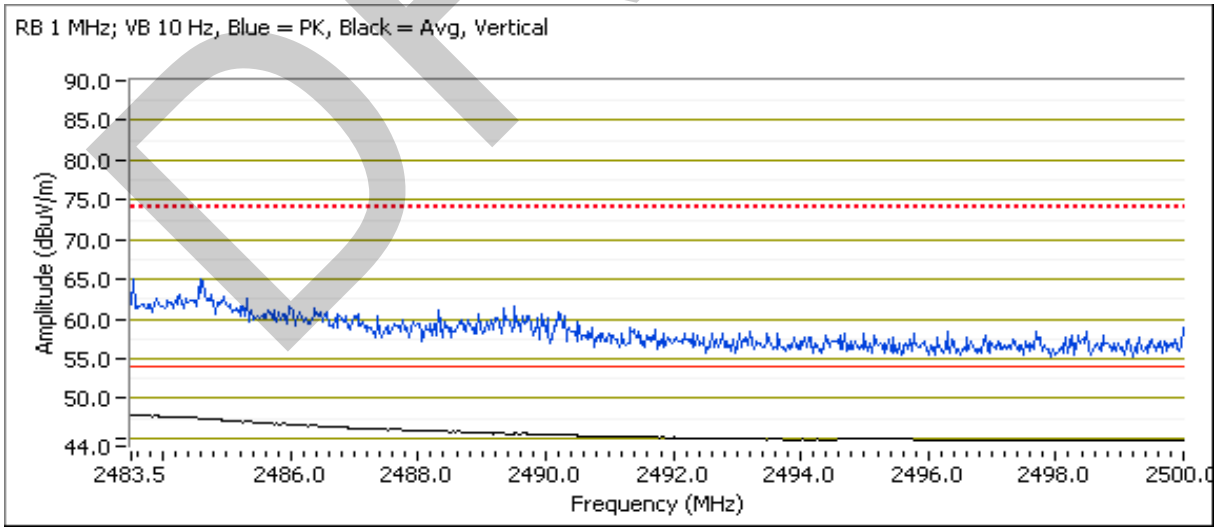
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2450.200	100.5	V	120.0	-19.5	AVG	176	1.5	RB 1 MHz; VB: 10 Hz
2450.700	108.4	V	120.0	-11.6	PK	176	1.5	RB 1 MHz; VB: 1 MHz
2449.630	99.9	V	120.0	-20.1	PK	176	1.5	RB 100 kHz; VB: 100 kHz
2450.100	93.7	H	120.0	-26.3	AVG	128	1.6	RB 1 MHz; VB: 10 Hz
2450.630	101.8	H	120.0	-18.2	PK	128	1.6	RB 1 MHz; VB: 1 MHz

Fundamental emission level @ 3m in 100kHz RBW:	99.9 dBµV/m	
Limit for emissions outside of restricted bands:	69.9 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	49.9	V	54.0	-4.1	AVG	176	1.5	RB 1 MHz; VB: 10 Hz
2484.840	64.2	V	74.0	-9.8	PK	176	1.5	RB 1 MHz; VB: 1 MHz
2483.520	46.0	H	54.0	-8.0	AVG	128	1.6	RB 1 MHz; VB: 10 Hz
2483.800	58.7	H	74.0	-15.3	PK	128	1.6	RB 1 MHz; VB: 1 MHz



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2e: High Channel @ 2462 MHz with power setting of 16 dBm.

Date: 1/8/2010 Engineer: John Caizzi Location: FT Chamber #3

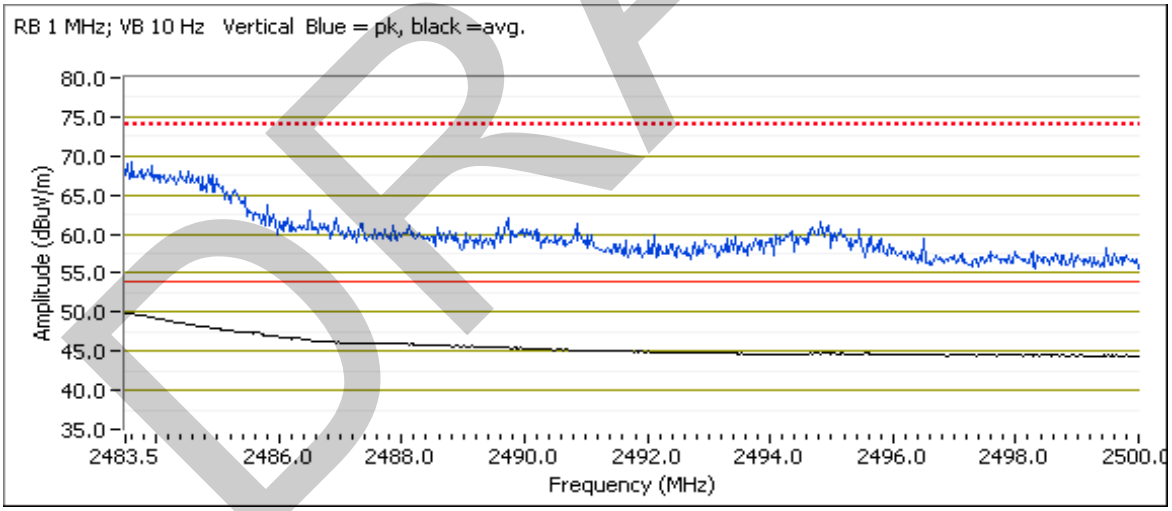
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2464.200	98.0	V	120.0	-22.0	Pk	254	1.28	
2467.070	99.3	V	120.0	-20.7	AVG	254	1.28	
2465.530	107.2	V	120.0	-12.8	PK	254	1.28	

Fundamental emission level @ 3m in 100kHz RBW:	98.0 dBµV/m	
Limit for emissions outside of restricted bands:	68.0 dBµV/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	51.9	V	54.0	-2.1	AVG	254	1.28	16 dBm
2483.800	68.8	V	74.0	-5.2	PK	254	1.28	16 dBm

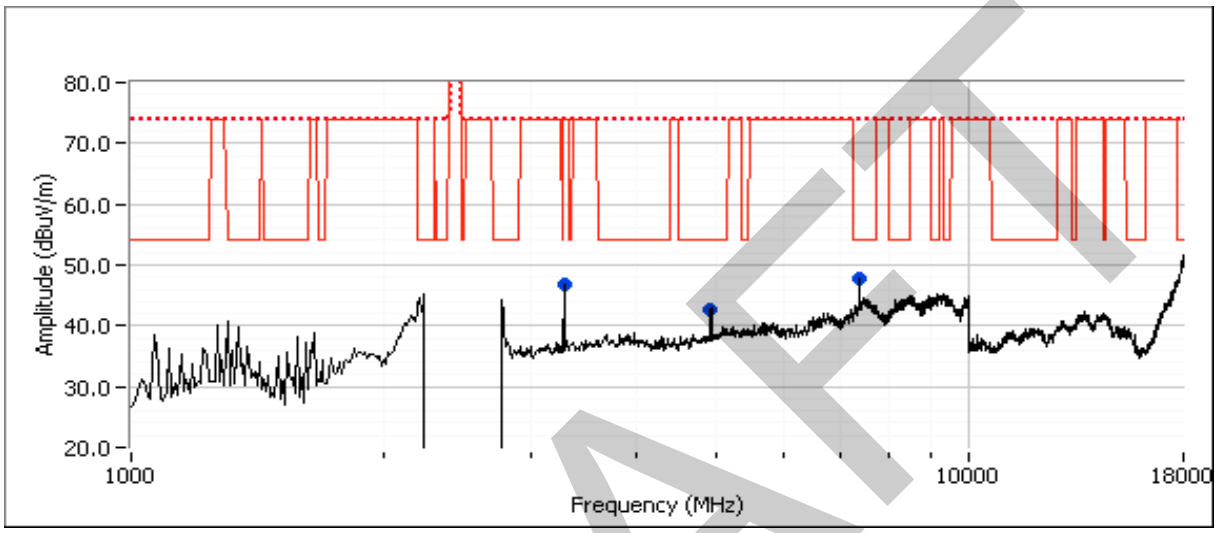


Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
4924.130	37.1	V	54.0	-16.9	AVG	197	1.7	RB 1 MHz; VB: 10 Hz
7385.100	40.7	V	54.0	-13.3	AVG	1	1.7	RB 1 MHz; VB: 10 Hz
3282.610	46.8	V	54.0	-7.2	Peak	90	1.3	Peak reading vs avg limit, note 2
4925.460	49.4	V	74.0	-24.6	PK	197	1.7	RB 1 MHz; VB: 1 MHz
7386.480	52.5	V	74.0	-21.5	PK	1	1.7	RB 1 MHz; VB: 1 MHz

Note 2:	Restricted band limit was used.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions (Monopole Antennas)

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.

Summary of Results - Device Operating in the 5745-5805 MHz Band

NOTE: A preliminary check of output power was performed. The port with the highest power was used for the final testing. Preliminary tests showed no radio related emissions below 1 GHz.

Run #	Mode	Channel	Power Setting	Port	Test Performed	Limit	Result / Margin
1a	a mode	low - 5745	19	Main	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	51.6dBµV/m @ 5236.3MHz (-2.4dB)
1b	a mode	center - 5785	19	Main	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	51.1dBµV/m @ 5262.6MHz (-2.9dB)
1c	a mode	high - 5805	19	Main	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	51.6dBµV/m @ 5279.7MHz (-2.4dB)

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.

Antenna: Larson antenna (Elliott 2009-2119)
Module: 00000002C **DRIVER:** v3.01.03 SCU: v2.03.30

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 40000 MHz	1	3	-9.5

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

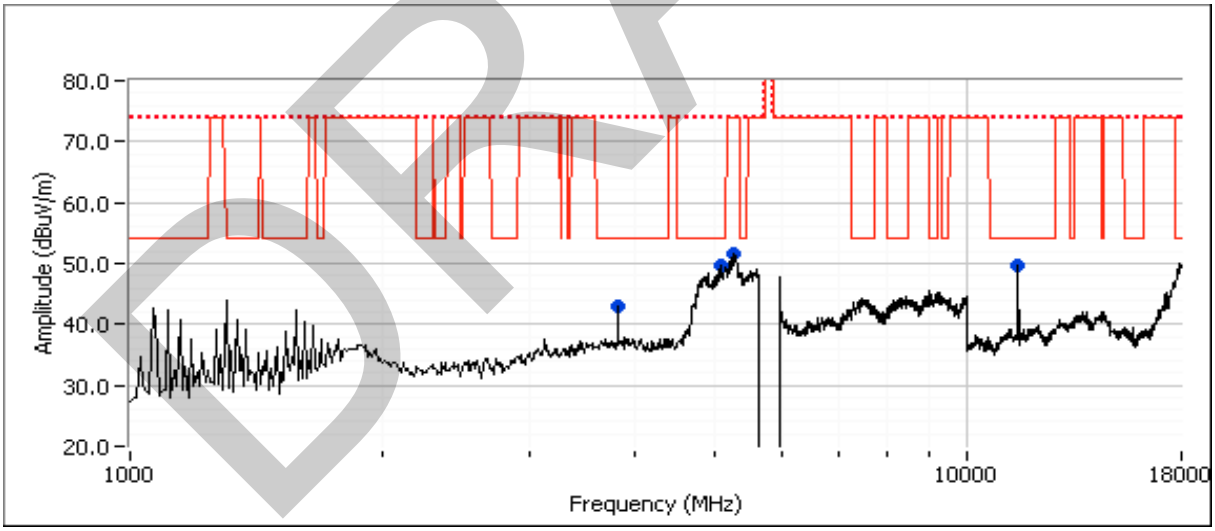
Run #1: Radiated Spurious Emissions, 30 - 40000 MHz. Operating Mode: 802.11a

Date: 2/26/2010 Engineer: Rafael Varelas Location: Ft Chamber #4

Run #3a: Low Channel @ 5745 MHz
Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3830.010	43.2	H	54.0	-10.8	AVG	330	1.8	RB 1 MHz; VB: 10 Hz
5060.980	42.8	V	54.0	-11.2	AVG	56	1.0	RB 1 MHz; VB: 10 Hz
11490.110	41.0	V	54.0	-13.0	AVG	7	1.3	RB 1 MHz; VB: 10 Hz
5236.270	51.6	V	54.0	-2.4	Peak	79	1.0	peak reading vs avg limit, note 1
3829.820	47.9	H	74.0	-26.1	PK	330	1.8	RB 1 MHz; VB: 1 MHz
5058.930	54.9	V	74.0	-19.1	PK	56	1.0	RB 1 MHz; VB: 1 MHz
11492.440	57.0	V	74.0	-17.0	PK	7	1.3	RB 1 MHz; VB: 1 MHz

Note 1:	Restricted band limit used.

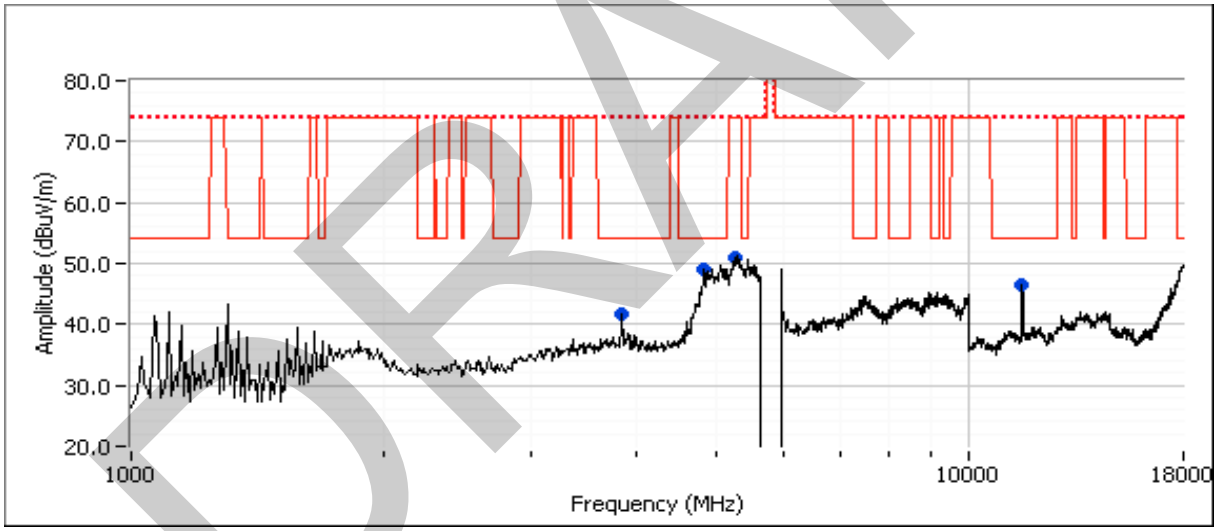


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1b: Center Channel @ 5785 MHz
Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3856.680	42.1	H	54.0	-11.9	AVG	329	1.8	RB 1 MHz; VB: 10 Hz
4829.690	44.8	V	54.0	-9.2	AVG	69	1.0	RB 1 MHz; VB: 10 Hz
11568.490	37.3	V	54.0	-16.7	AVG	9	1.2	RB 1 MHz; VB: 10 Hz
5262.640	51.1	V	54.0	-2.9	Peak	52	1.0	peak reading vs avg limit, note 1
3856.620	47.7	H	74.0	-26.3	PK	329	1.8	RB 1 MHz; VB: 1 MHz
4830.420	56.8	V	74.0	-17.2	PK	69	1.0	RB 1 MHz; VB: 1 MHz
11566.190	54.5	V	74.0	-19.5	PK	9	1.2	RB 1 MHz; VB: 1 MHz

Note 1:	Restricted band limit used.

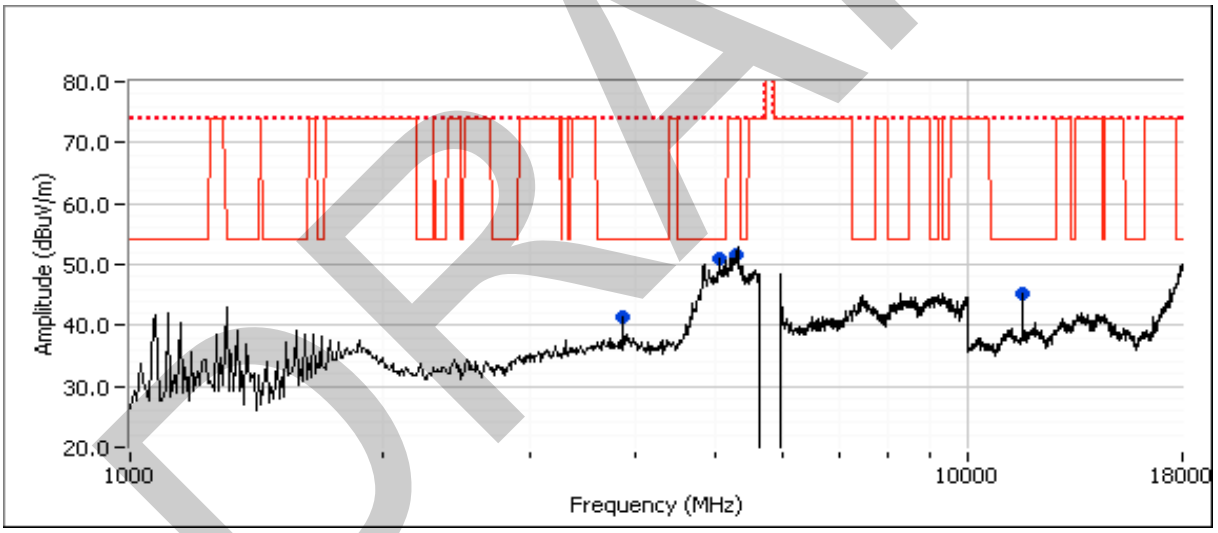


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1c: High Channel @ 5805 MHz (channel 161)
Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3870.010	42.2	H	54.0	-11.8	AVG	334	1.8	RB 1 MHz; VB: 10 Hz
5073.310	45.5	V	54.0	-8.5	AVG	300	1.0	RB 1 MHz; VB: 10 Hz
11611.430	36.5	V	54.0	-17.5	AVG	135	1.2	RB 1 MHz; VB: 10 Hz
5279.740	51.6	V	54.0	-2.4	Peak	68	1.0	peak reading vs avg limit, note 1
3869.850	47.3	H	74.0	-26.7	PK	334	1.8	RB 1 MHz; VB: 1 MHz
5072.210	57.6	V	74.0	-16.4	PK	300	1.0	RB 1 MHz; VB: 1 MHz
11611.160	53.9	V	74.0	-20.1	PK	135	1.2	RB 1 MHz; VB: 1 MHz

Note 1:	Restricted band limit used.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Radiated Spurious Emissions (Hubert & Suhner Antenna, 5GHz)

Test Specific Details

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

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: 10-20 °C
Rel. Humidity: 30-50 %

Date of Test: Refer to each run
Test Engineer: Refer to each run
Test Location: Refer to each run

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

Summary of Results - Device Operating in the 5745-5805 MHz Band

NOTE: A preliminary check of output power was performed. The port with the highest power was used for the final testing. Preliminary tests showed no radio related emissions below 1 GHz.

Run #	Mode	Channel	Power Setting	Port	Test Performed	Limit	Result / Margin
1a	a mode	Low	18	Main	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	49.2dBµV/m @ 3883.3MHz (-5.1dB)
1b	a mode	Center	18	Main	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	47.8dBµV/m @ 3856.7MHz (-6.2dB)
1c	a mode	High	18	Main	Radiated Emissions, 1 - 40GHz	FCC Part 15.209 / 15.247(c)	49.2dBµV/m @ 3883.3MHz (-4.8dB)

Antenna: Hubert & Suhner monopole antenna (Elliott 2009-1388)
Module: 00000002A **DRIVER:** V3.00.50 SCU: V2.03.18

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:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 12000 MHz	3	3	0.0
12000 - 40000 MHz	1	3	-9.5

Run #1: Radiated Spurious Emissions, 30 - 40000 MHz. Operating Mode: 802.11a

Date: 1/8/2010 Engineer: Mehran Birgani Location: FT Chamber #3

Run #1a: Low Channel @ 5745 MHz with power setting of 18dBm.

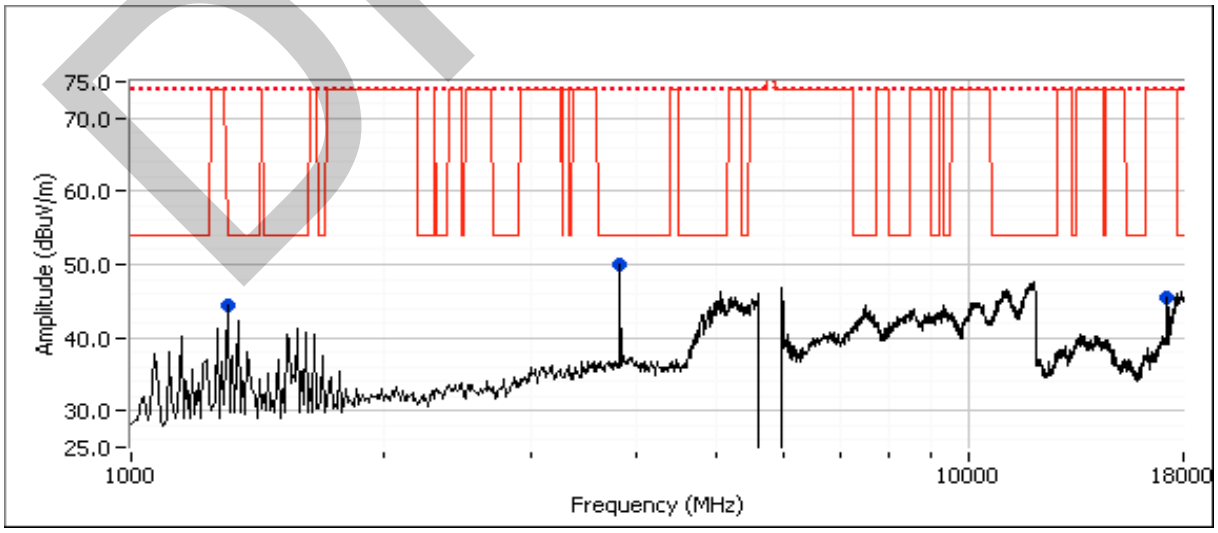
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5745.100	97.7	V	-	-	AVG	318	1.4	
5745.070	104.2	V	-	-	PK	318	1.4	

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3883.330	49.2	V	54.0	-5.1	AVG	244	1.4	
1302.500	44.3	V	54.0	-9.7	PK	341	1.0	Peak reading with average limit
3883.410	52.7	V	74.0	-21.3	PK	244	1.4	
17231.670	45.6	H	74.0	-28.4	PK	237	1.0	Peak reading with average limit

Note 1:	Signal is not in a restricted band but the more stringent restricted band limit was used.
Note 2:	Near field scan showed there were no signal above 18GHz.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2b: Center Channel @ 5785 MHz with power setting of 18dBm.

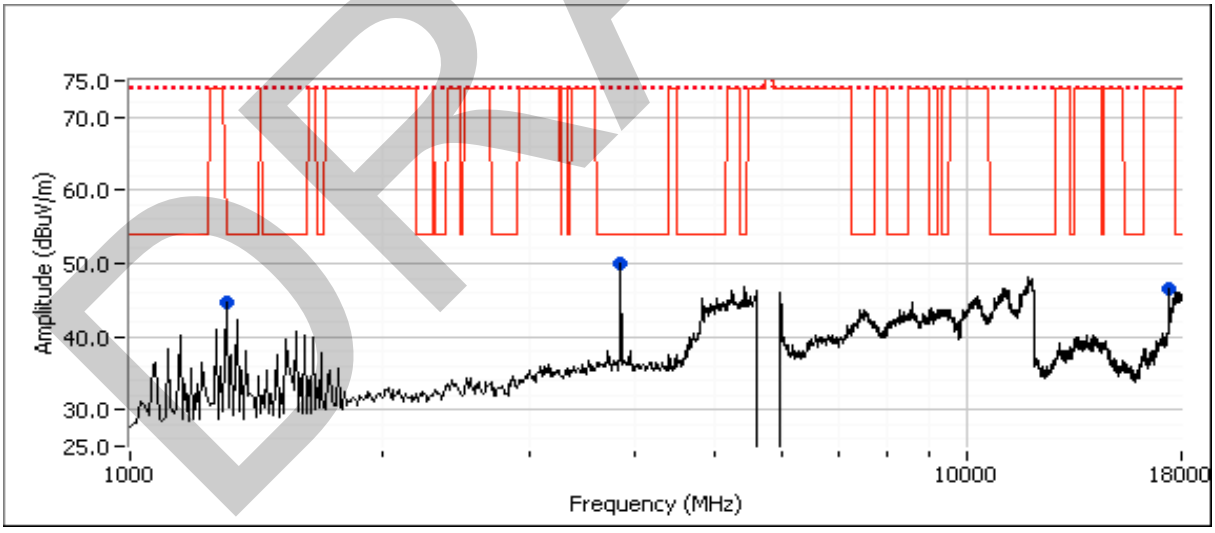
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5785.100	94.0	V	-	-	AVG	211	1.1	
5785.100	103.7	V	-	-	PK	211	1.1	

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3856.690	47.8	H	54.0	-6.2	AVG	20	1.2	
1306.390	44.8	H	54.0	-9.2	PK	105	1.3	Peak reading with average limit
3856.450	51.3	H	74.0	-22.7	PK	20	1.2	
17355.060	46.5	H	74.0	-27.5	PK	236	1.0	Peak reading with average limit

Note 1:	Signal is not in a restricted band but the more stringent restricted band limit was used.
Note 2:	Near field scan showed there were no signal above 18GHz.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

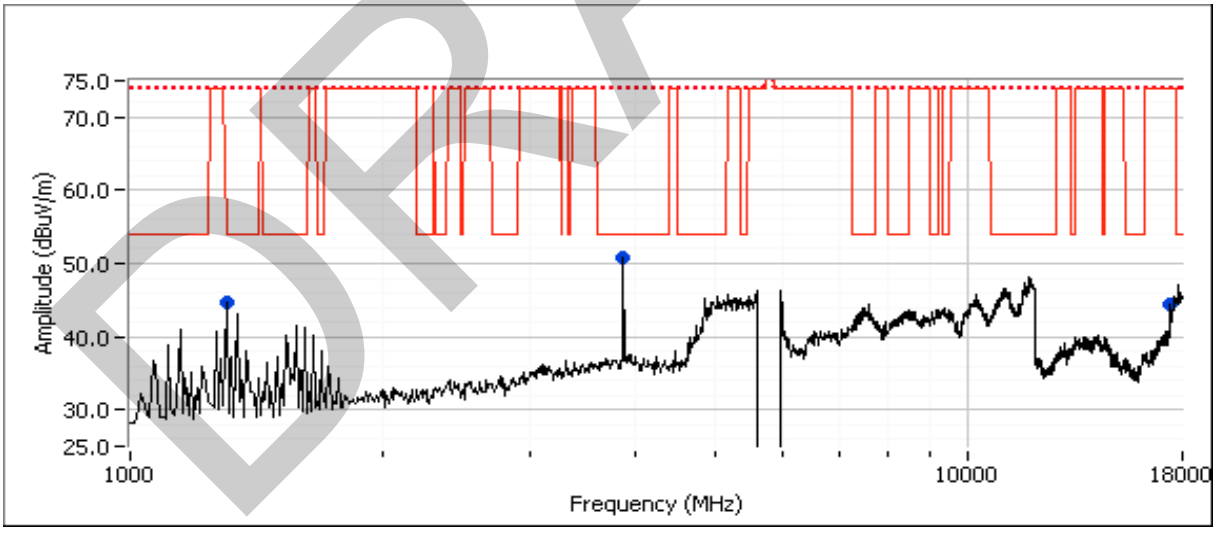
Run #1c: High Channel @ 5805 MHz with power setting of 18dBm.
Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
5805.100	99.4	V	-	-	AVG	176	1.8	
5804.830	104.2	V	-	-	PK	176	1.8	

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
3883.330	49.2	V	54.0	-4.8	AVG	246	1.4	
1306.340	44.6	H	54.0	-9.4	PK	106	1.3	Peak reading with average limit
3883.410	52.7	V	74.0	-21.3	PK	246	1.4	
17417.190	44.4	H	74.0	-29.6	PK	233	1.0	Peak reading with average limit

Note 1:	Signal is not in a restricted band but the more stringent restricted band limit was used.
Note 2:	Near field scan showed there were no signal above 18GHz.



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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

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

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

Ambient Conditions:

Temperature: 10-15 °C

Rel. Humidity: 39-50 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1 - 2437MHz Cisco 4941 Antenna	RE, 30 - 8000 MHz Maximized Emissions	RSS-GEN	Pass	40.8dBµV/m (109.6µV/m) @ 3249.4MHz (-13.2dB)
2 - 2437MHz H&S Monopole Antenna	RE, 1000 - 8000 MHz Maximized Emissions	RSS-GEN	Pass	41.7dBµV/m (121.6µV/m) @ 3249.4MHz (-12.3dB)
3 - 5785MHz Larson Antenna	RE, 1000 - 18000 MHz Maximized Emissions	RSS-GEN	Pass	42.6dBµV/m (134.9µV/m) @ 3856.7MHz (-11.4dB)
4- 5785MHz H&S Monopole Antenna	RE, 30 - 18000 MHz Maximized Emissions	RSS-GEN	Pass	36.4dBµV/m (66.1µV/m) @ 7410.7MHz (-17.6dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Antenna: Air Dipole Antenna (Elliott 2009-1387)
Antenna: Larsen 5.0 dBi dipole antenna (Elliott 2009-2119)
Antenna: H&S 6.5 dBi dipole antenna (Elliott 2009-1388)
Module: 00000002A **DRIVER:** V3.00.50 SCU: V2.03.18

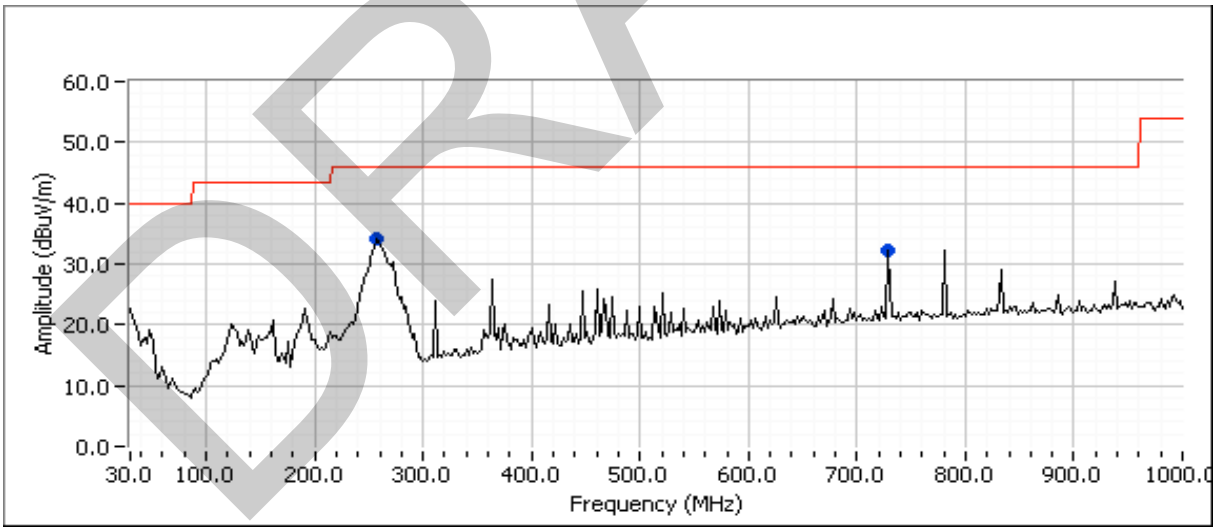
Note: For emission from 10-18GHz, the EUT was scanned manually. All signals were within noise floor.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #1: Maximized readings, 30 - 8000 MHz (Cisco Air-Ant Dipole Antenna), 2437 MHz

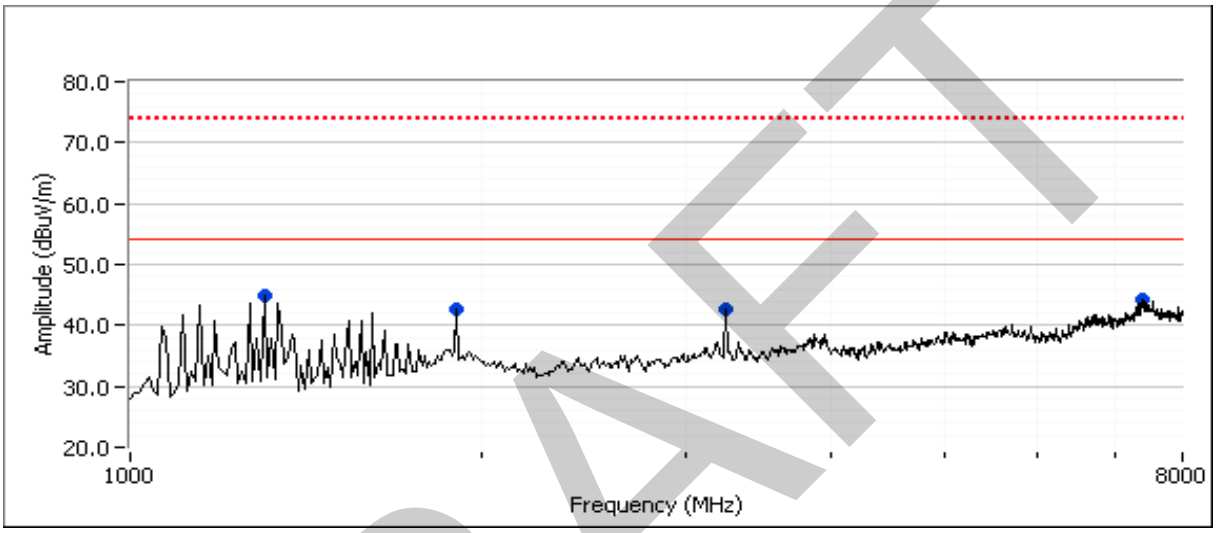
Date: 1/13/2010 Engineer: Joseph Cadigal Location: FT Chamber #5

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1267.480	38.5	V	54.0	-15.5	AVG	207	1.0	
1872.090	30.1	H	54.0	-23.9	AVG	222	2.2	
3249.390	40.8	H	54.0	-13.2	AVG	133	1.9	
7396.310	36.8	V	54.0	-17.2	AVG	107	2.2	
1267.460	43.5	V	74.0	-30.5	PK	207	1.0	
1871.380	42.7	H	74.0	-31.3	PK	222	2.2	
3249.230	46.0	H	74.0	-28.0	PK	133	1.9	
7394.990	48.0	V	74.0	-26.0	PK	107	2.2	
258.689	32.7	H	46.0	-13.3	QP	99	1.0	
727.943	29.8	H	46.0	-16.2	QP	240	1.0	



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #1: Maximized readings, 30 - 8000 MHz (Cisco Air-Ant Dipole Antenna), 2437 MHz



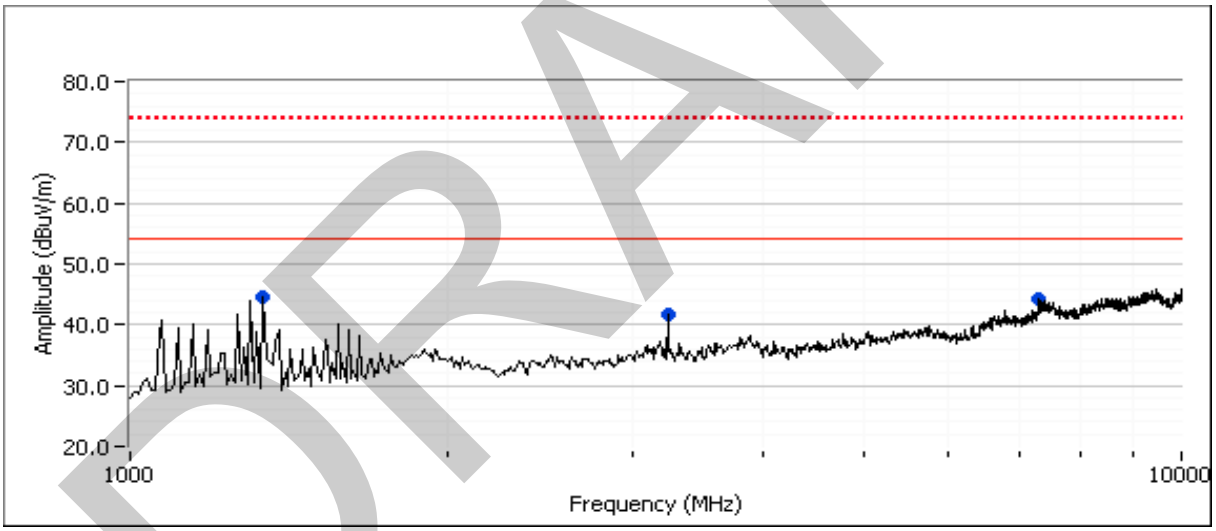
Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #2: Maximized readings, 1000 - 8000 MHz (H&S Monopole Antenna), 2437 MHz

Date: 1/13/2010 Engineer: Joseph Cadigal Location: FT Chamber #5

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1345.420	40.8	H	54.0	-13.2	AVG	245	1.3	
3249.350	41.7	H	54.0	-12.3	AVG	126	1.6	
7352.980	35.8	V	54.0	-18.2	AVG	32	1.9	
1345.490	45.1	H	74.0	-28.9	PK	245	1.3	
3249.190	46.4	H	74.0	-27.6	PK	126	1.6	
7350.970	47.5	V	74.0	-26.5	PK	32	1.9	



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

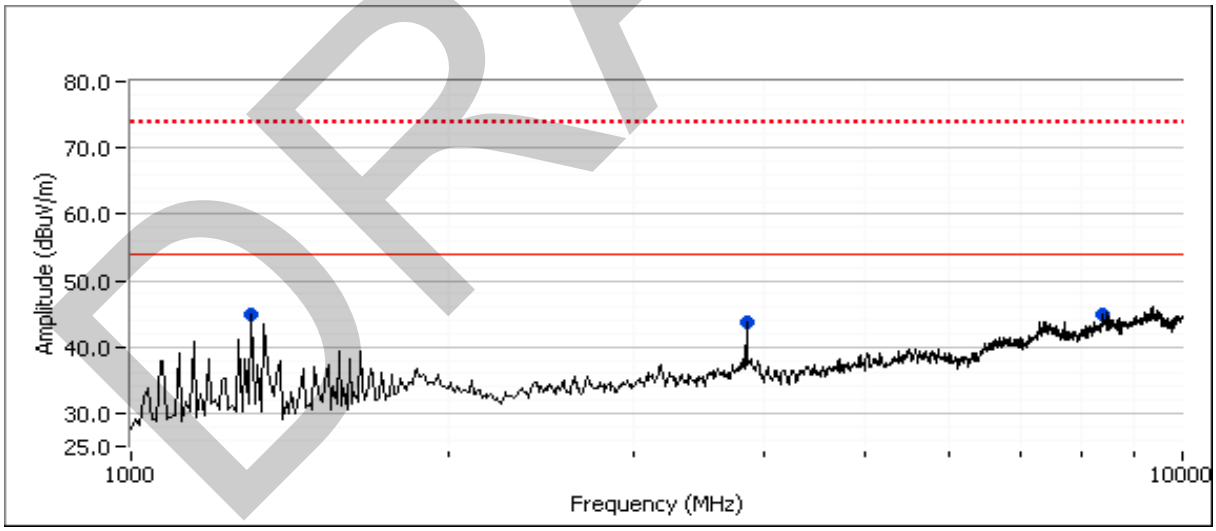
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #3: Maximized readings, 1000 - 18000 MHz, (Larson Dipole Antenna), 5785 MHz

Date: 1/13/2010 Engineer: Joseph Cadigal Location: FT Chamber #5

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1306.440	41.2	H	54.0	-12.8	AVG	244	1.0	
3856.710	42.6	H	54.0	-11.4	AVG	0	1.6	
8380.270	37.5	H	54.0	-16.5	AVG	0	1.6	
1306.380	44.9	H	74.0	-29.1	PK	244	1.0	
3856.800	47.9	H	74.0	-26.1	PK	0	1.6	
8380.120	50.1	H	74.0	-23.9	PK	0	1.6	

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

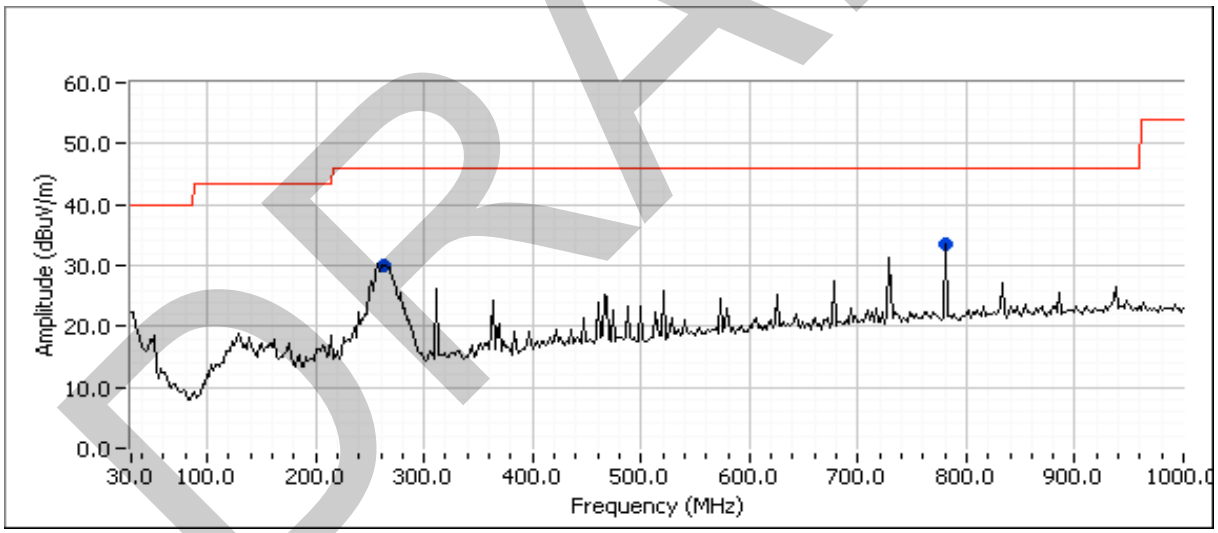


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #4: Maximized readings, 30 - 18000 MHz (H&S Monopole Antenna), 5785 MHz

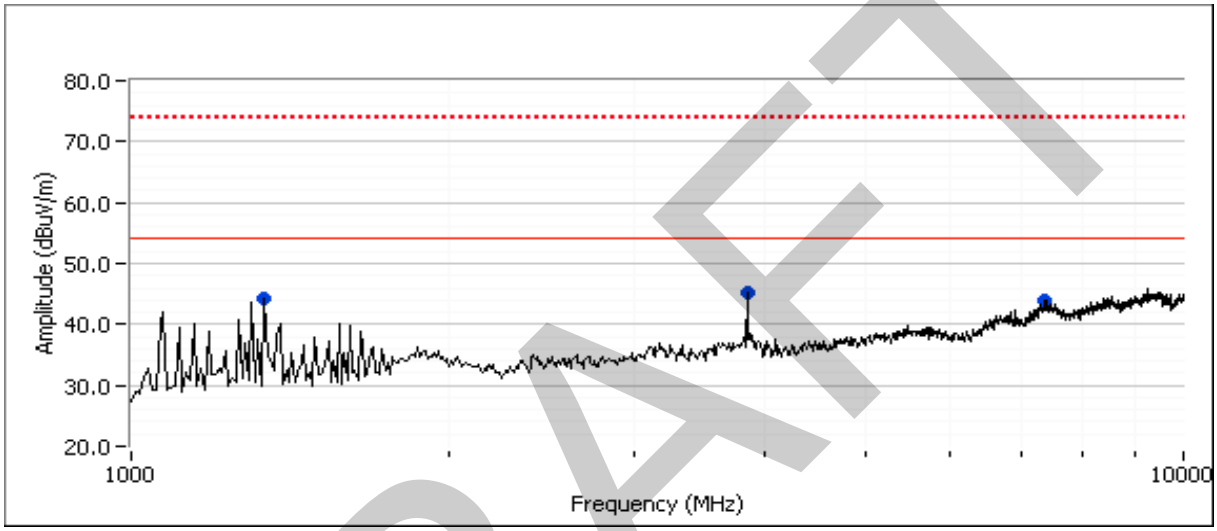
Date: 1/13/2010 Engineer: Joseph Cadigal Location: FT Chamber #5

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
1293.390	27.3	H	54.0	-26.7	AVG	246	1.3	
3884.190	31.9	H	54.0	-22.1	AVG	34	1.3	
7410.670	36.4	H	54.0	-17.6	AVG	278	2.2	
1294.410	38.6	H	74.0	-35.4	PK	246	1.3	
3884.870	44.5	H	74.0	-29.5	PK	34	1.3	
7411.980	48.3	H	74.0	-25.7	PK	278	2.2	
253.499	23.3	H	46.0	-22.7	QP	298	1.0	
778.504	19.1	H	46.0	-26.9	QP	234	1.0	



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #4: Maximized readings, 30 - 18000 MHz (H&S Monopole Antenna), 5785 MHz



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

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

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: 1/14/2010
Test Engineer: John Caizzi
Test Location: Fremont Chamber #5

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

General Test Configuration

For tabletop equipment, the EUT host system was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN.

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	EN 55022 Class B	Pass	45.1dBµV @ 0.176MHz (-19.6dB)

Modifications Made During Testing

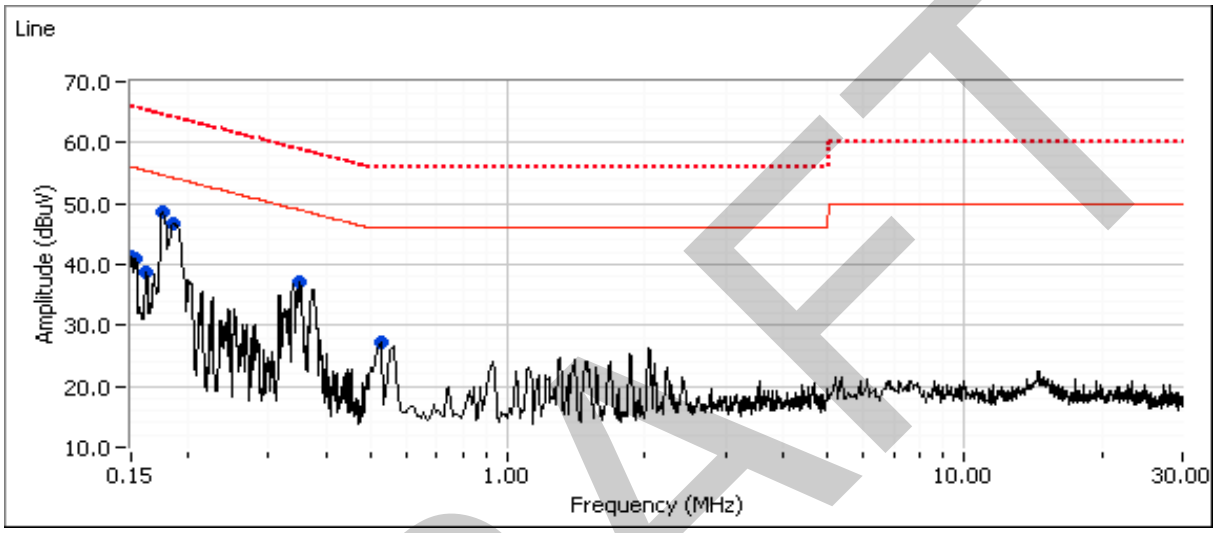
No modifications were made to the EUT during testing

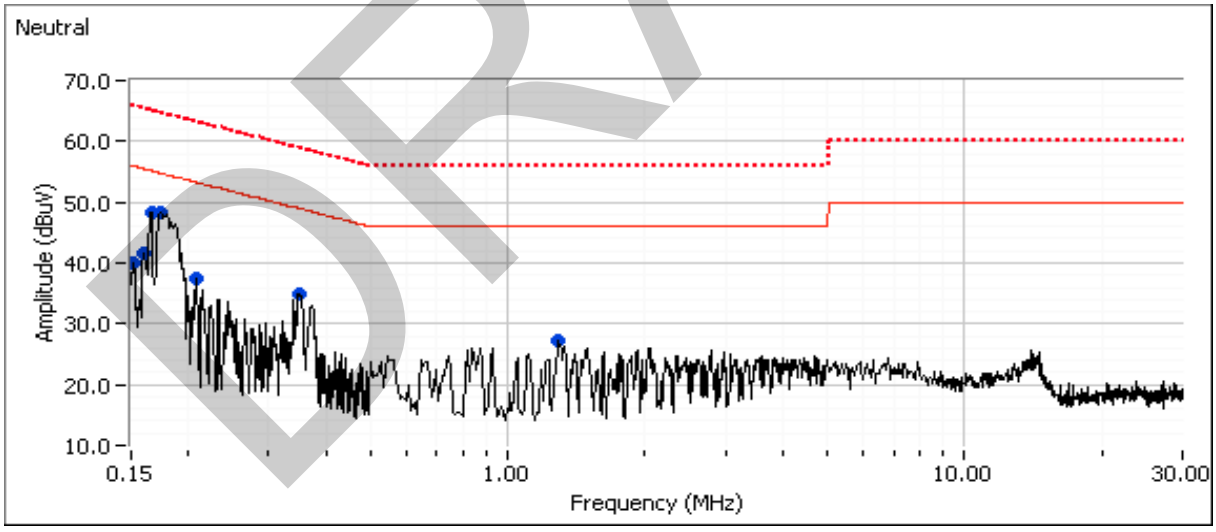
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz. 802.11b, 2412 MHz, 19 dBm, H&S antenna.





Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77316
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	-

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

Frequency	Level	AC	EN 55022 Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.176	48.6	Line	54.7	-6.1	Peak	
0.184	46.7	Line	54.2	-7.5	Peak	
0.351	37.2	Line	48.9	-11.7	Peak	
0.151	41.4	Line	56.0	-14.6	Peak	
0.152	40.8	Line	55.8	-15.0	Peak	
0.162	38.7	Line	55.4	-16.7	Peak	
0.527	27.3	Line	46.0	-18.7	Peak	
0.173	48.3	Neutral	54.8	-6.5	Peak	
0.167	48.4	Neutral	55.2	-6.8	Peak	
0.159	41.7	Neutral	55.5	-13.8	Peak	
0.349	34.8	Neutral	49.0	-14.2	Peak	
0.209	37.3	Neutral	53.3	-16.0	Peak	
0.153	39.9	Neutral	55.9	-16.0	Peak	
1.294	27.3	Neutral	46.0	-18.7	Peak	

Final quasi-peak and average readings

Frequency	Level	AC	EN 55022 Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.176	45.1	Line	64.7	-19.6	QP	
0.184	44.4	Line	64.3	-19.9	QP	
0.176	31.2	Line	54.7	-23.5	AVG	
0.184	30.2	Line	54.3	-24.1	AVG	
0.162	41.1	Line	65.4	-24.3	QP	
0.350	32.1	Line	59.0	-26.9	QP	
0.350	21.2	Line	49.0	-27.8	AVG	
0.151	33.8	Line	65.9	-32.1	QP	
0.152	33.1	Line	65.9	-32.8	QP	
0.162	19.7	Line	55.4	-35.7	AVG	
0.151	14.0	Line	55.9	-41.9	AVG	
0.152	13.6	Line	55.9	-42.3	AVG	
0.173	45.1	Neutral	64.8	-19.7	QP	
0.167	44.8	Neutral	65.1	-20.3	QP	
0.159	38.7	Neutral	65.5	-26.8	QP	
0.349	21.5	Neutral	49.0	-27.5	AVG	
0.173	26.0	Neutral	54.8	-28.8	AVG	
0.167	26.1	Neutral	55.1	-29.0	AVG	
0.349	29.7	Neutral	59.0	-29.3	QP	
0.153	35.7	Neutral	65.8	-30.1	QP	
0.209	27.2	Neutral	63.2	-36.0	QP	
0.159	15.3	Neutral	55.5	-40.2	AVG	
0.153	14.6	Neutral	55.8	-41.2	AVG	
0.209	11.5	Neutral	53.2	-41.7	AVG	

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Emissions Standard(s):	FCC 15.247/RSS 210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Summit Data Communications

Model

SDC-MSD30AG

Date of Last Test: 1/22/2010

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

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

Date of Test: 1/21&22/2010
Test Engineer: Rafael Varelas & Suhaila Khushzad
Test Location: FT Chamber #5

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

General Test Configuration

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

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

Ambient Conditions:

Temperature: 18.2 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	100%	-	Output Power	15.247(b)	Pass	17.4dBm
2	100%	-	Power spectral Density (PSD)	15.247(d)	Pass	-6.7 dBm/3kHz
3	100%	-	Minimum 6dB Bandwidth	15.247(a)	Pass	12.41 MHz
3	100%	-	99% Bandwidth	RSS GEN	-	16.1 MHz
4	100%	-	Spurious emissions	15.247(b)	Pass	All signal < -30dBc

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

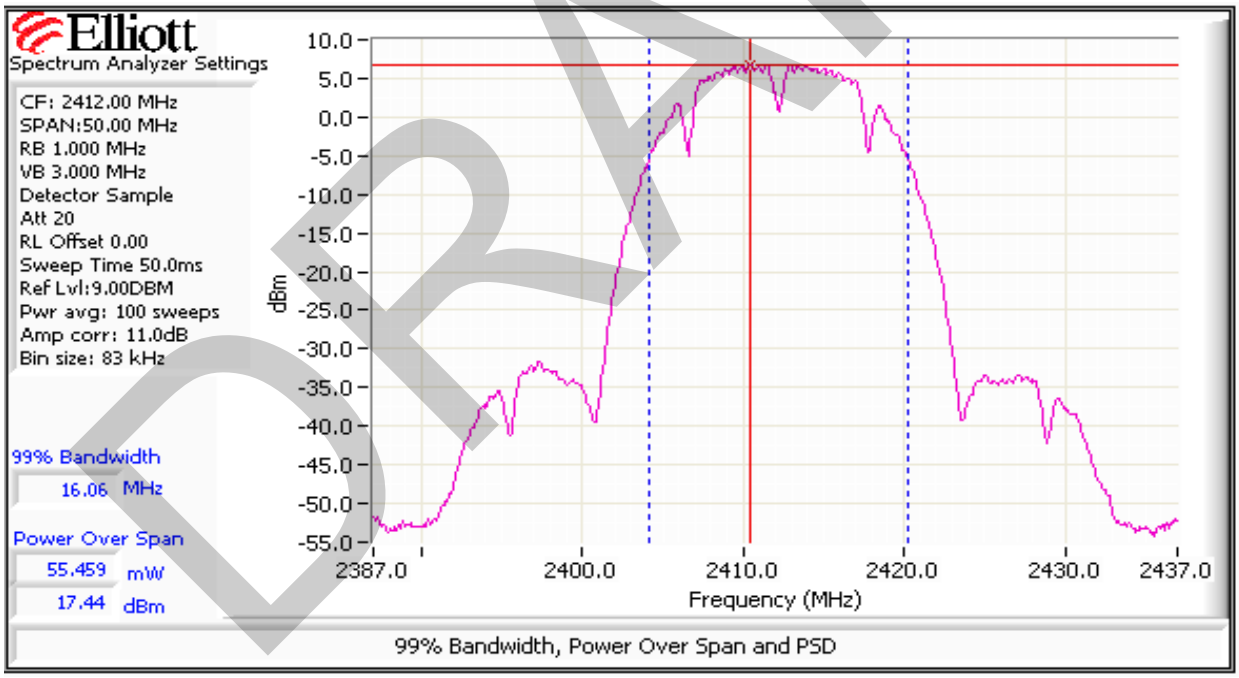
No deviations were made from the requirements of the standard.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1: Output Power

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP [Note 2] W	Output Power (dBm) [3]	Output Power mW
19	2412	17.4	55.5	3.0	Pass	20.4	0.111	17.7	58.9
19	2437	17.3	53.2	3.0	Pass	20.3	0.106	17.3	53.7
17	2462	16.7	46.7	3.0	Pass	19.7	0.093	16.5	44.7

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Avg power meter measurement, for reference only.

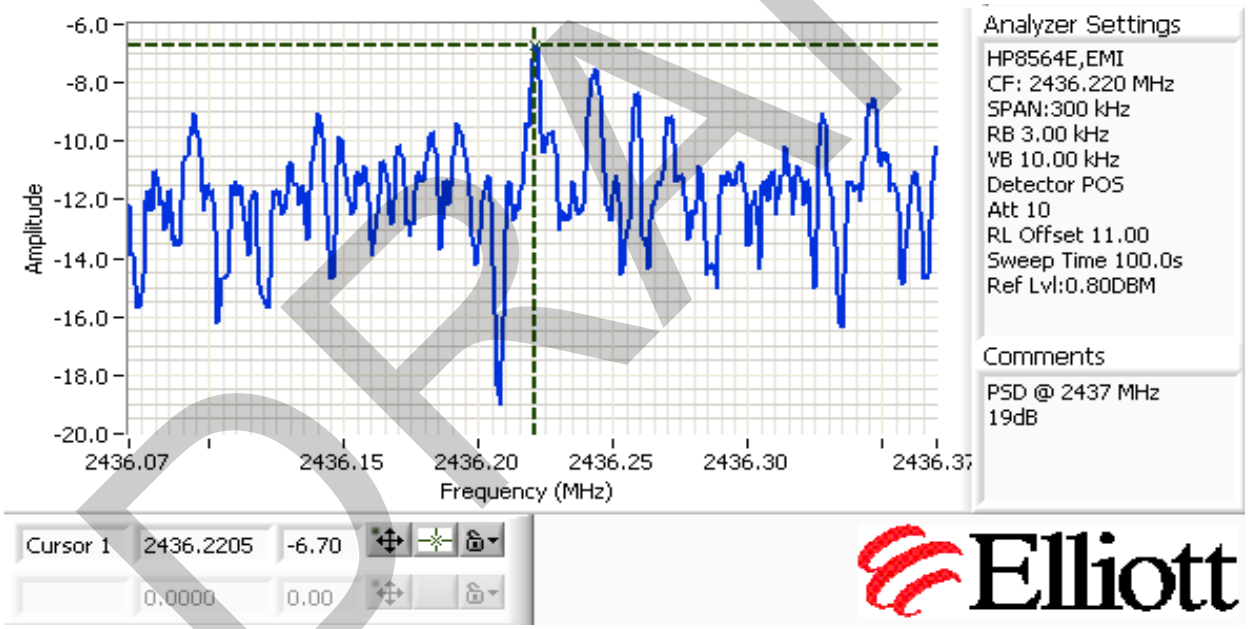


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
19	2412	-7.9	8.0	Pass
19	2437	-6.7	8.0	Pass
19	2462	-6.7	8.0	Pass

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

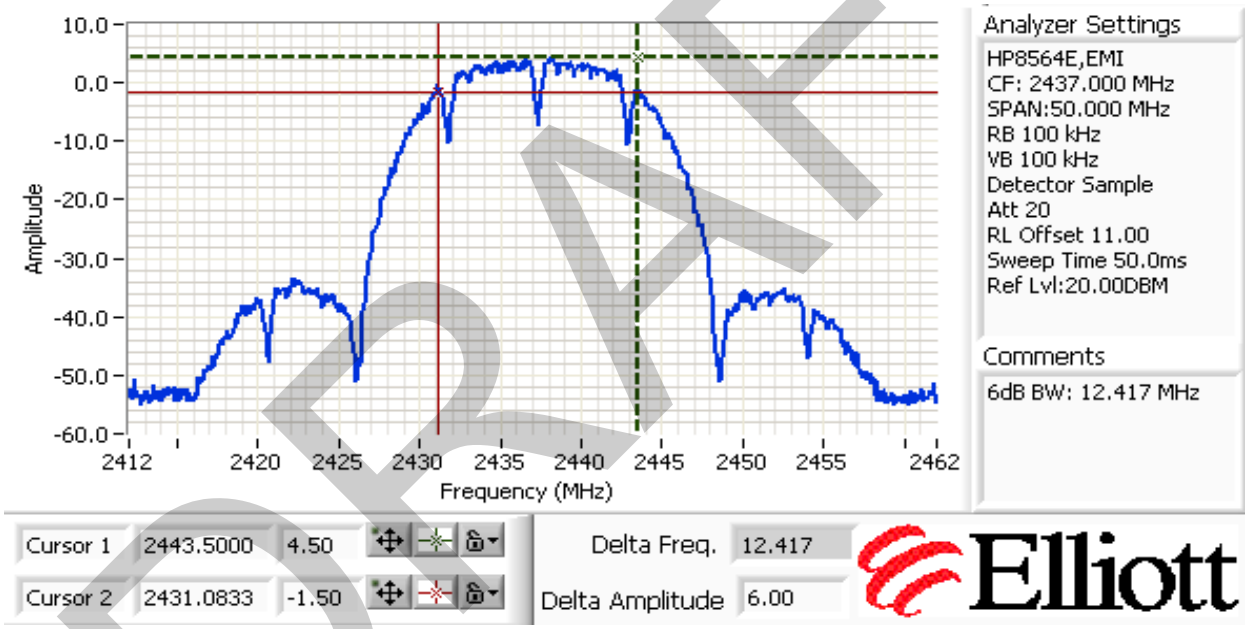


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	99%
19	2412	100kHz	12.66	16.06
19	2437	100kHz	12.41	16.06
19	2462	100kHz	12.58	16.14

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

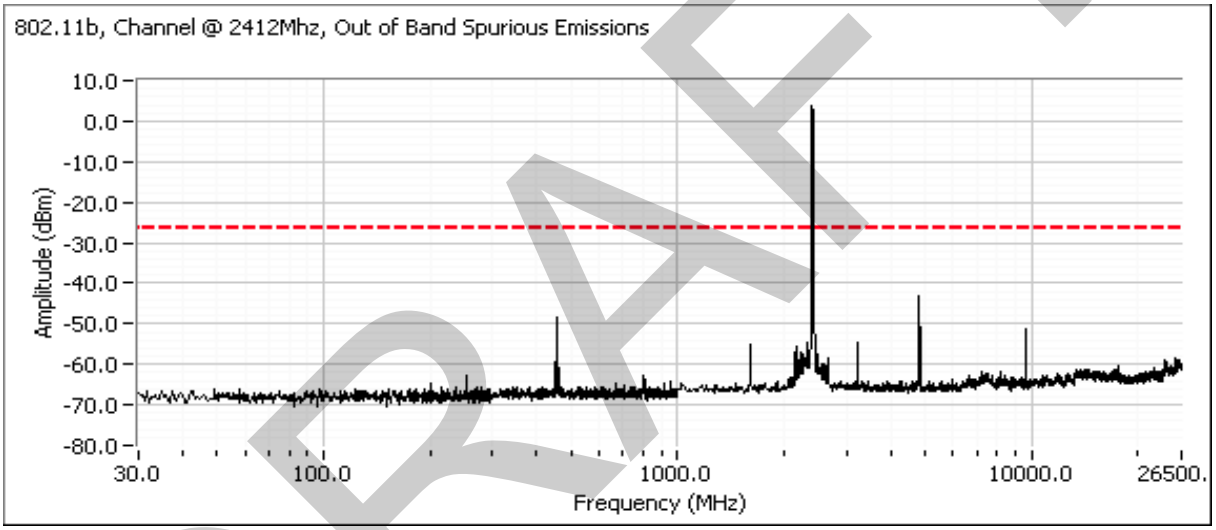


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

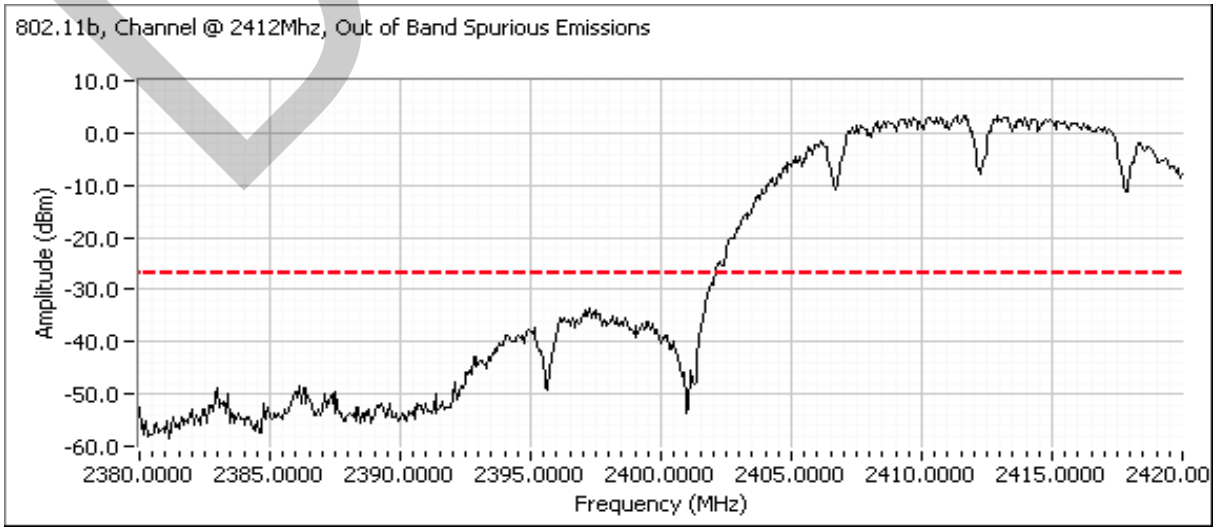
Run #4: Out of Band Spurious Emissions

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

Plots for low channel, power setting(s) = 19

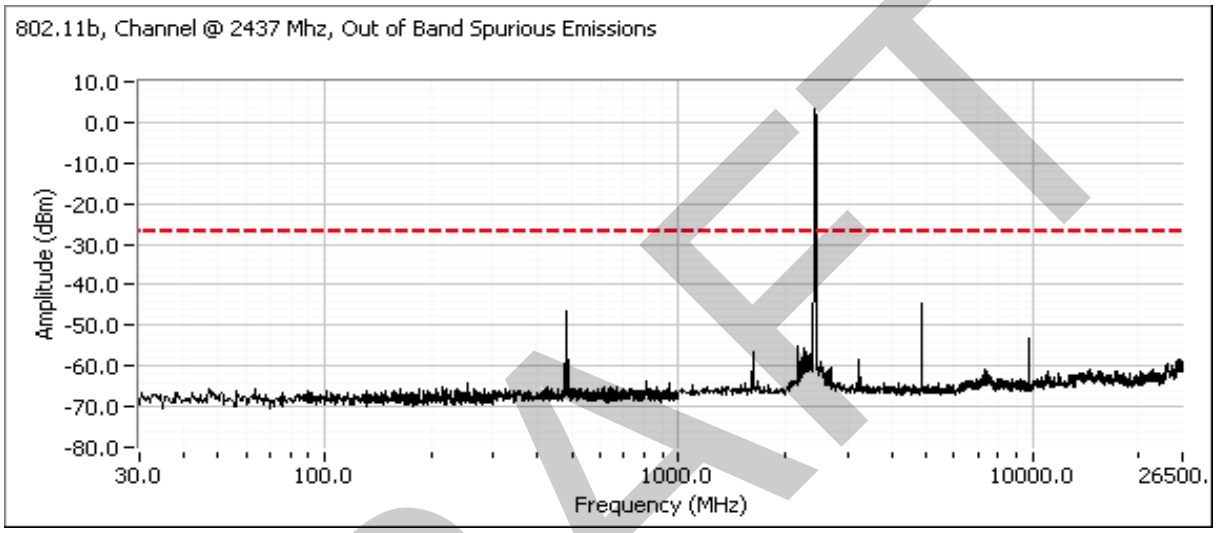


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

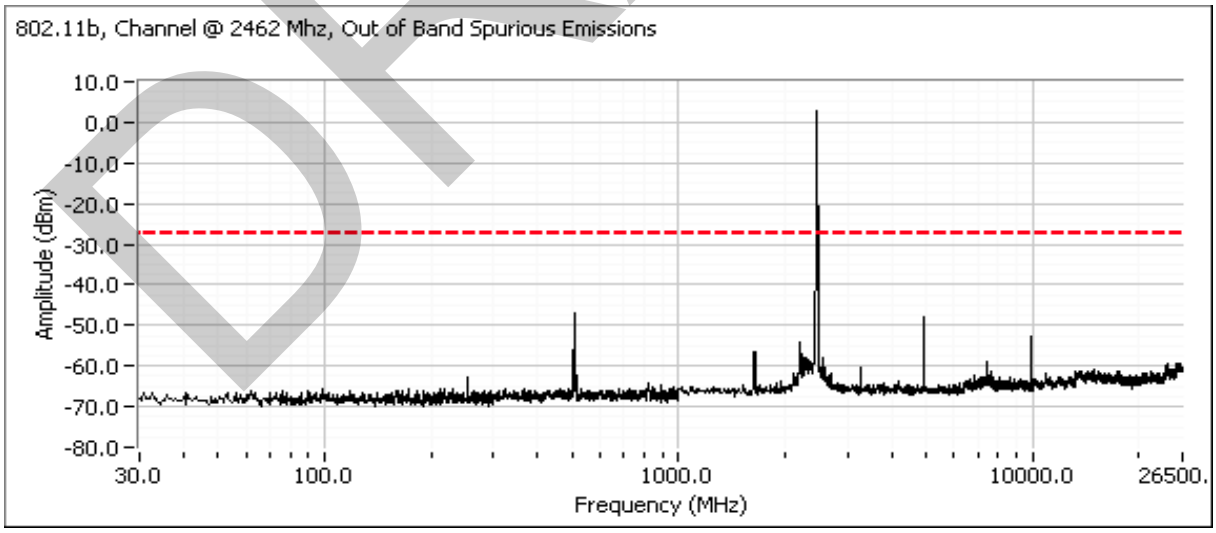


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Plots for center channel, power setting(s) = 19



Plots for high channel, power setting(s) = 19



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

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

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:
Test Engineer: Rafael Varelas
Test Location: FT Chamber #5

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

General Test Configuration

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

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

Ambient Conditions:

Temperature: 18.2 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	15.247(b)	Pass	16.5dBm
2	100%	-	Power spectral Density (PSD)	15.247(d)	Pass	-7.9 dBm/3kHz
3	100%	-	Minimum 6dB Bandwidth	15.247(a)	Pass	16.5 MHz
3	100%	-	99% Bandwidth	RSS GEN	-	17.2 MHz
4	100%	-	Spurious emissions	15.247(b)	Pass	All signal < -20dBc

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:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1: Output Power

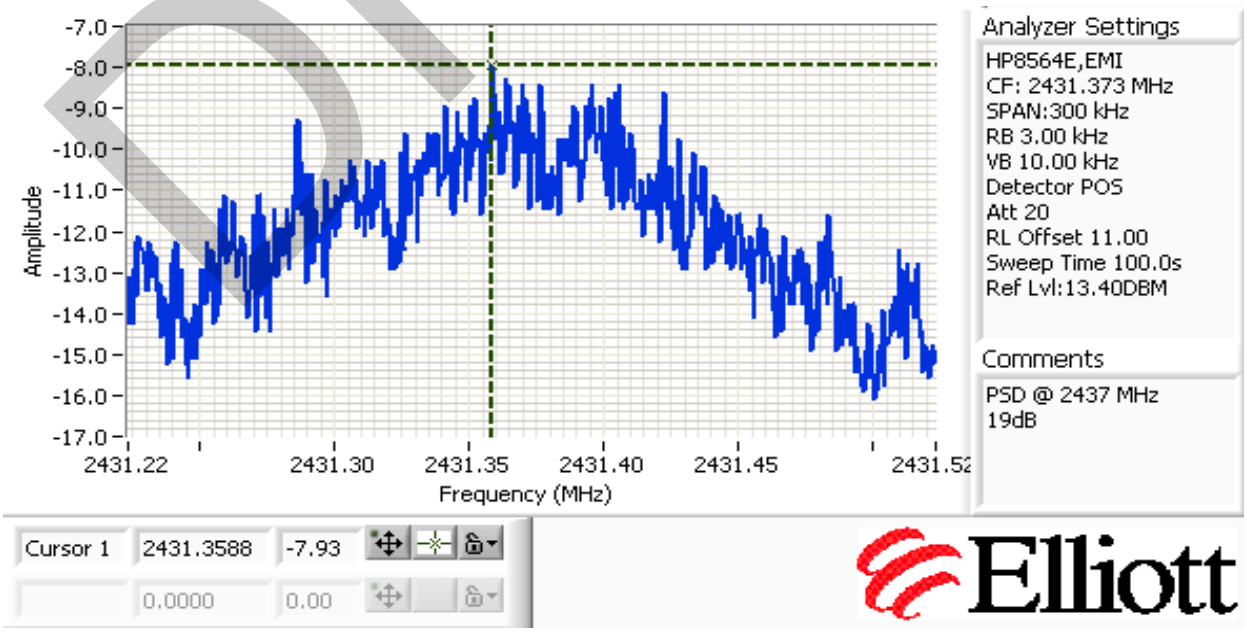
Power Setting [2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP W	Output Power (dBm) [3]	Output Power mW
19	2412	20.6	114.8	3.0	Pass	23.6	0.229	16.3	42.7
19	2437	20.9	123.0	3.0	Pass	23.9	0.245	17.4	55.0
19	2462	20.7	117.5	3.0	Pass	23.7	0.234	16.0	39.8

Note 1:	Output power measured using a peak power meter. Spurious limit is -20dBc because this method was used.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Avg power meter measurement, for reference only.

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) [Note 1]	Limit dBm/3kHz	Result
19	2412	-8.5	8.0	Pass
19	2437	-7.9	8.0	Pass
19	2462	-9.4	8.0	Pass

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

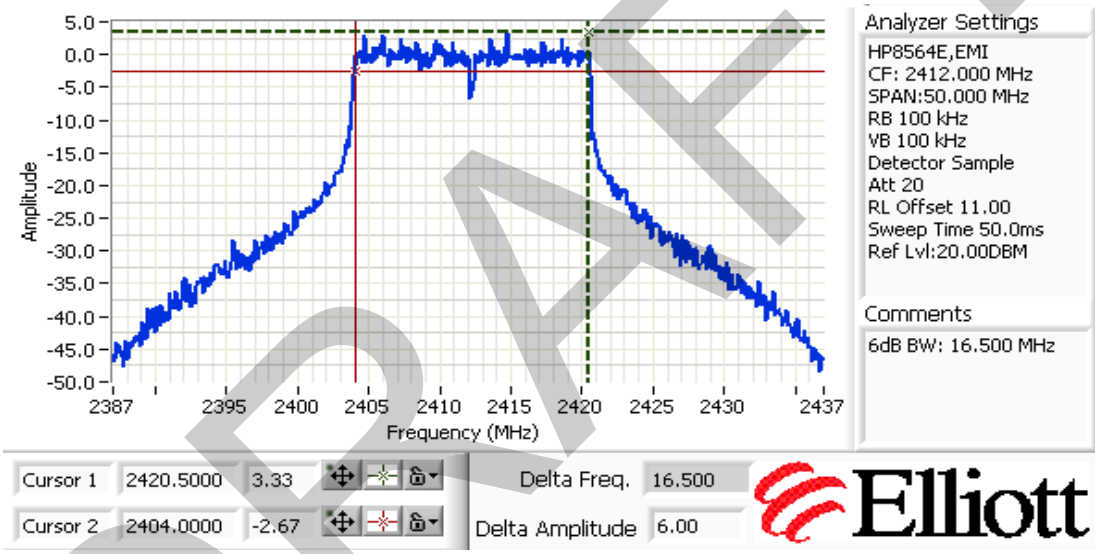


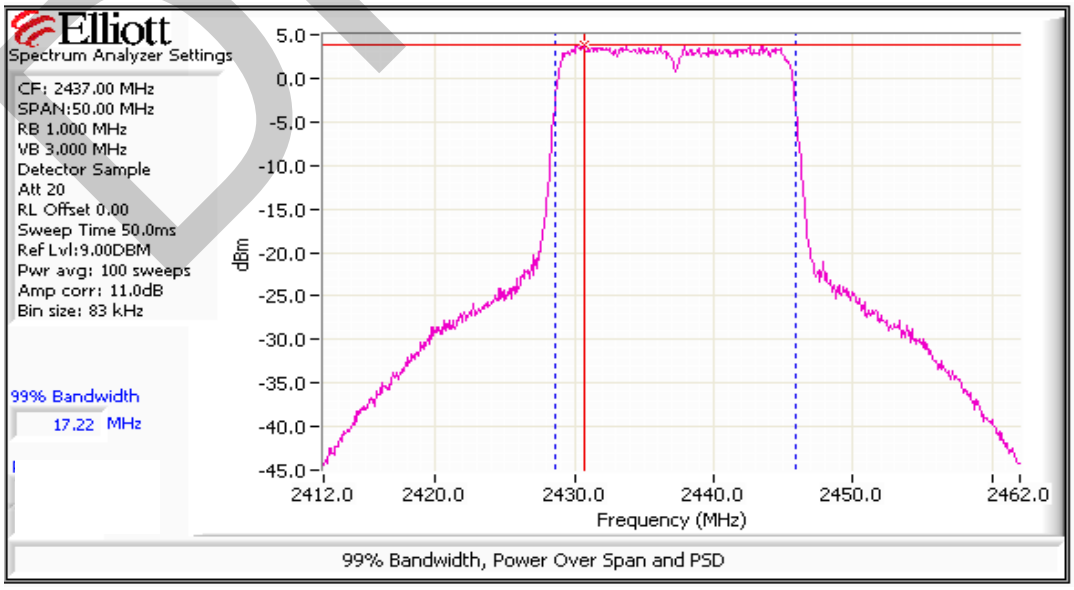
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz) 6dB	99%
19	2412	100kHz	16.5	17.22
19	2437	100kHz	16.58	17.22
19	2462	100kHz	16.58	17.22

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





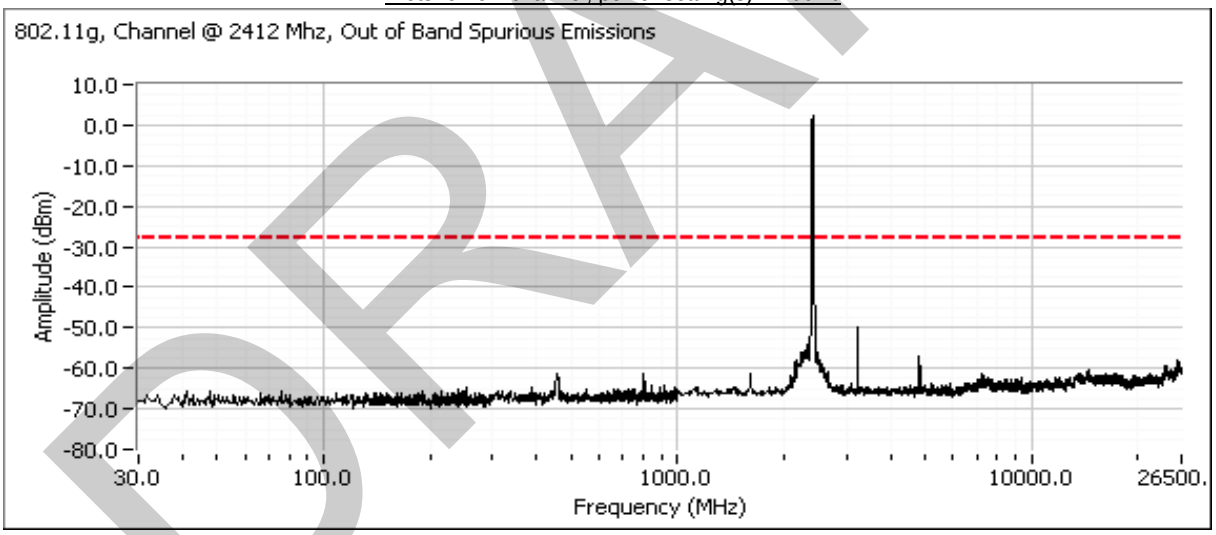
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #4: Out of Band Spurious Emissions

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

Note: The limit lines on the wideband plots show a -30dBc limit. Peak power measurement was use, actual limit is -20dBc.

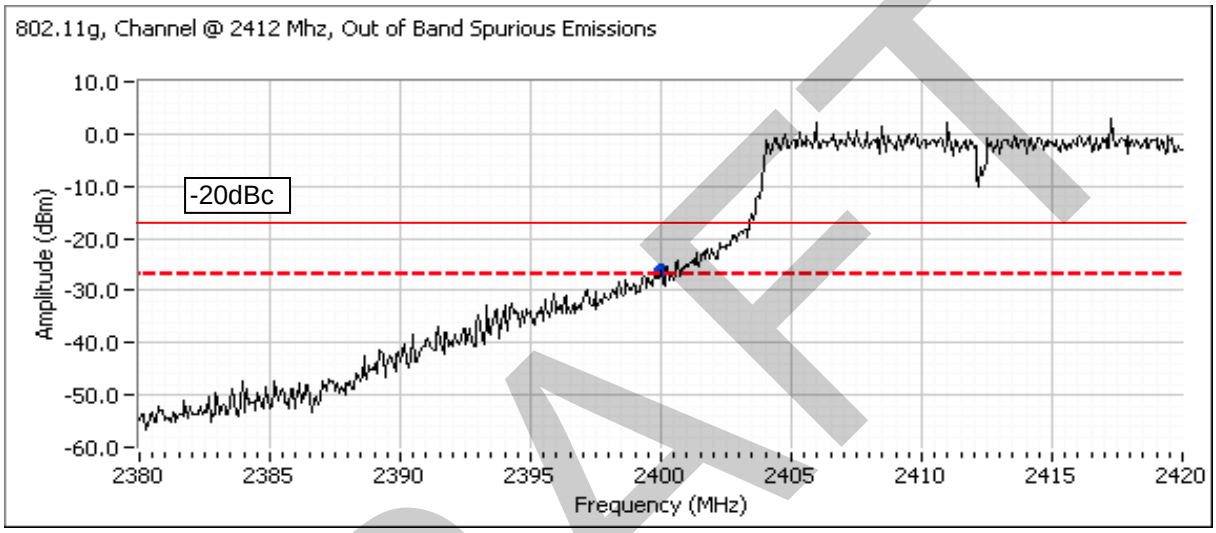
Plots for low channel, power setting(s) = 100 %



Plot at power setting 19dBm

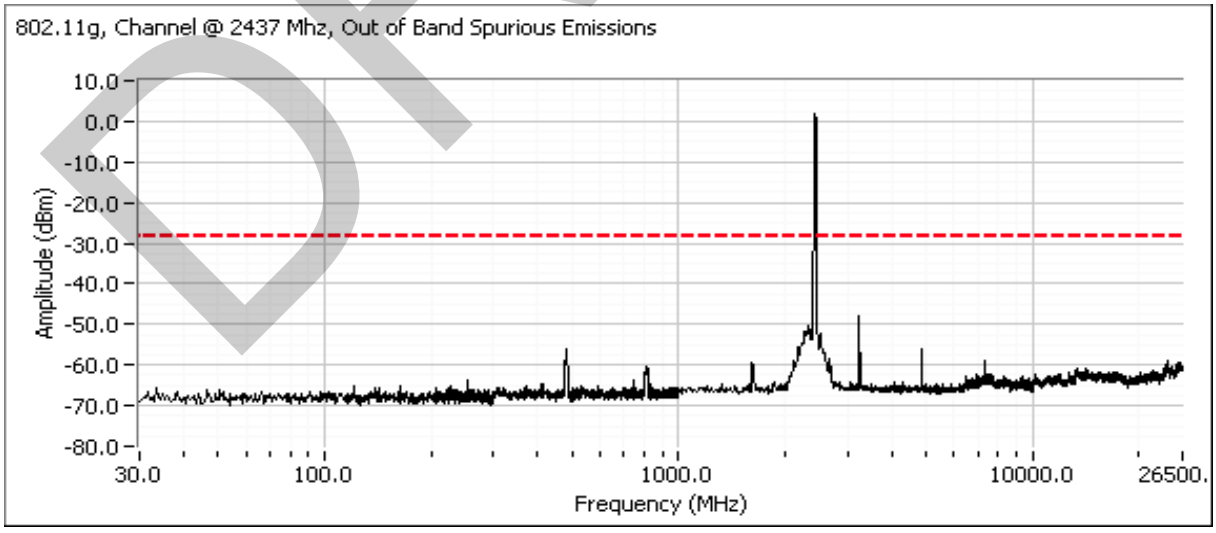
Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

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



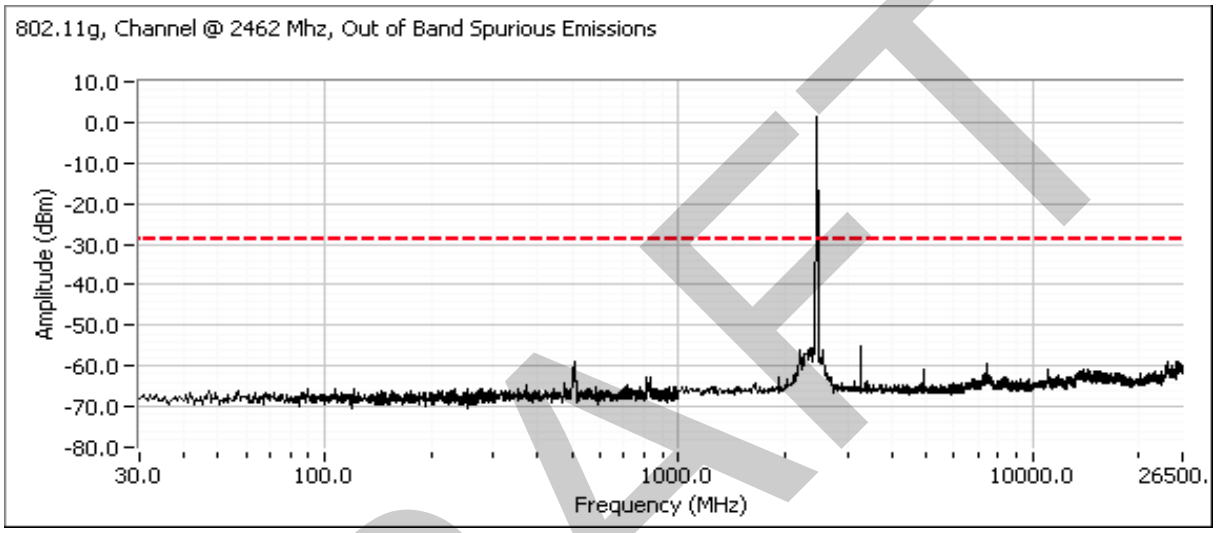
Plot at power setting 19dBm

Plots for center channel, power setting(s) = 19



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Plots for high channel, power setting(s) = 19



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements

Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

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

Date of Test: 1/14/2010
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#5

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

General Test Configuration

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

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

Ambient Conditions:

Temperature: 10-15 °C
Rel. Humidity: 30-50 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	15.247(b)	Pass	15.3dBm (33.7mW)
2	-	-	Power spectral Density (PSD)	15.247(d)	Pass	7.5 dBm/3kHz
3	-	-	Minimum 6dB Bandwidth	15.247(a)	Pass	16.5 MHz
3	-	-	99% Bandwidth	RSS GEN	-	16.8 MHz
4	18.0	-	Spurious emissions	15.247(b)	Pass	All signals were below the limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

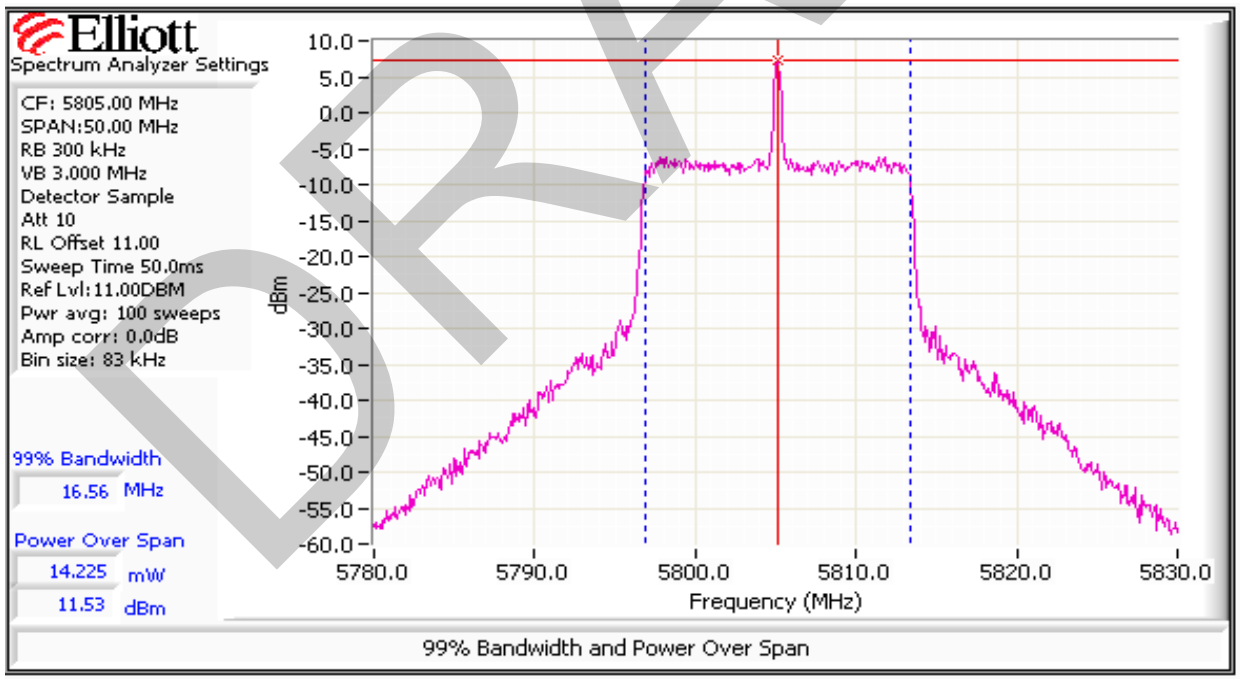
No deviations were made from the requirements of the standard.

Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1: Output Power

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP [Note 2] dBm	EIRP [Note 2] W	Output Power (dBm) [3]	Output Power mW
18.0	5745	10.5	11.2	6.5	Pass	17.0	0.050	20.5	112.2
18.0	5785	11.5	14.1	6.5	Pass	18.0	0.063	19.6	91.2
17.0	5805	11.5	14.1	6.5	Pass	18.0	0.063	19.5	89.1

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz. Spurious limit is -30dBc because this method was used. For Channel 161 (5805 MHz), the RBW=1MHz, VB=3 MHz, sample detector, max hold for at least 60 seconds (transmitted signal was not continuous) and power integration over 50 MHz.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Avg power meter measurement, for reference only.

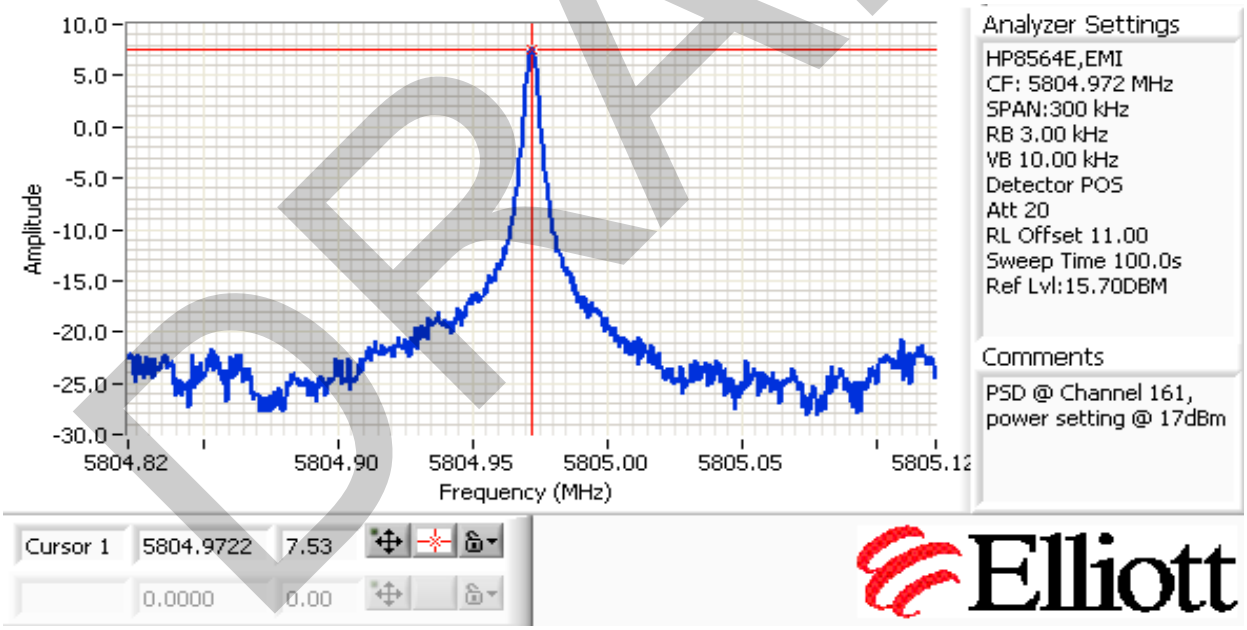


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1	Limit dBm/3kHz	Result
18.0	5745	2.0	8.0	Pass
18.0	5785	-12.7	8.0	Pass
17.0	5805	7.5	8.0	Pass

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



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #3: Signal Bandwidth

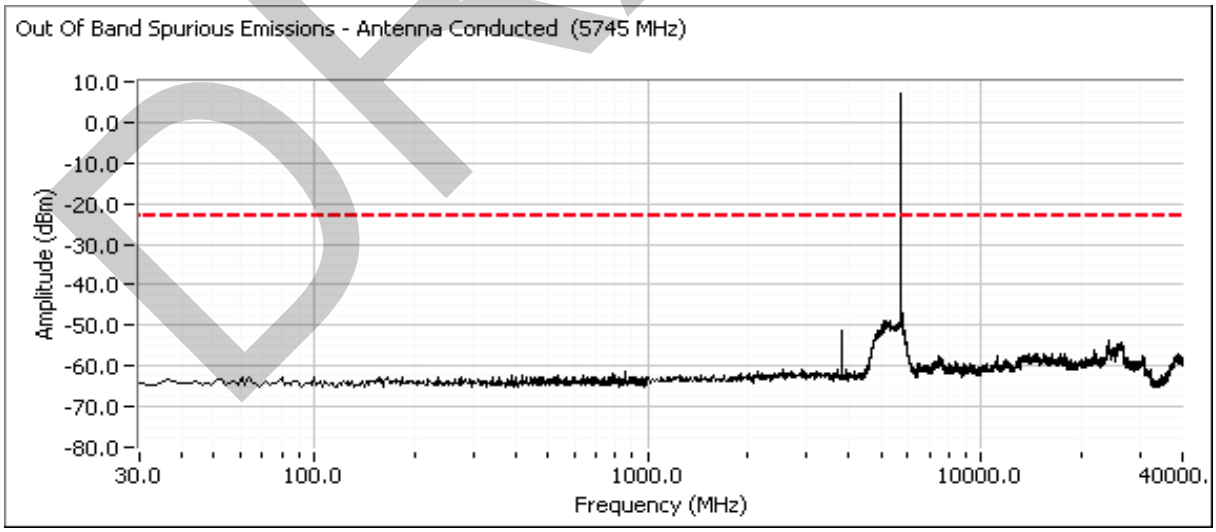
Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
18.0	5745	100kHz	16.6	17.1
18.0	5785	100kHz	16.5	16.8
17.0	5805	100kHz	16.5	16.6

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

Run #4: Out of Band Spurious Emissions

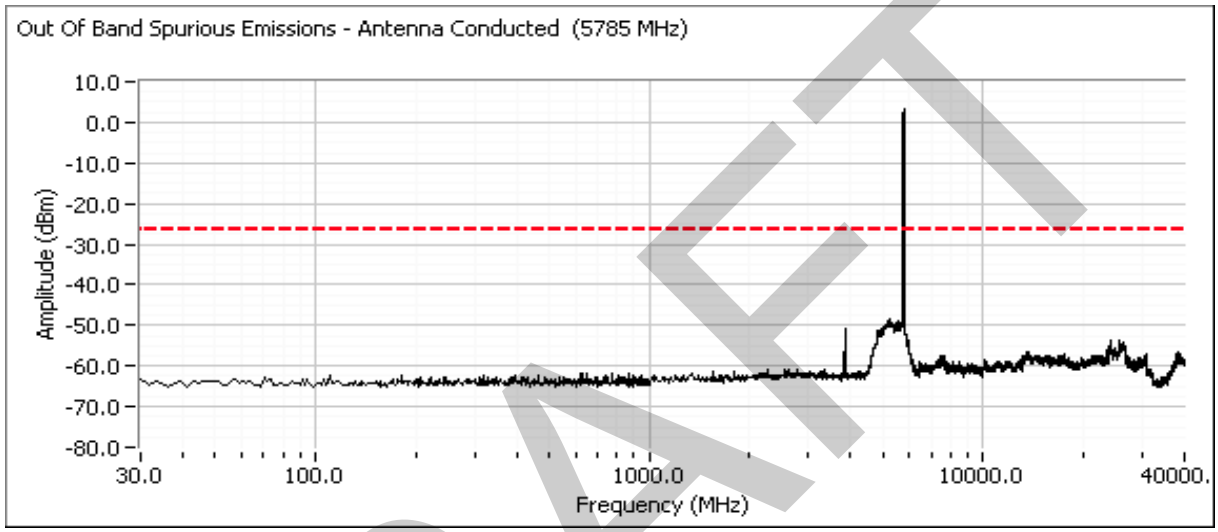
Frequency (MHz)	Limit	Result
5745	-30dBc	Pass
5785	-30dBc	Pass
5805	-30dBc	Pass

Plots for low channel, power setting(s) = 18.0dBm

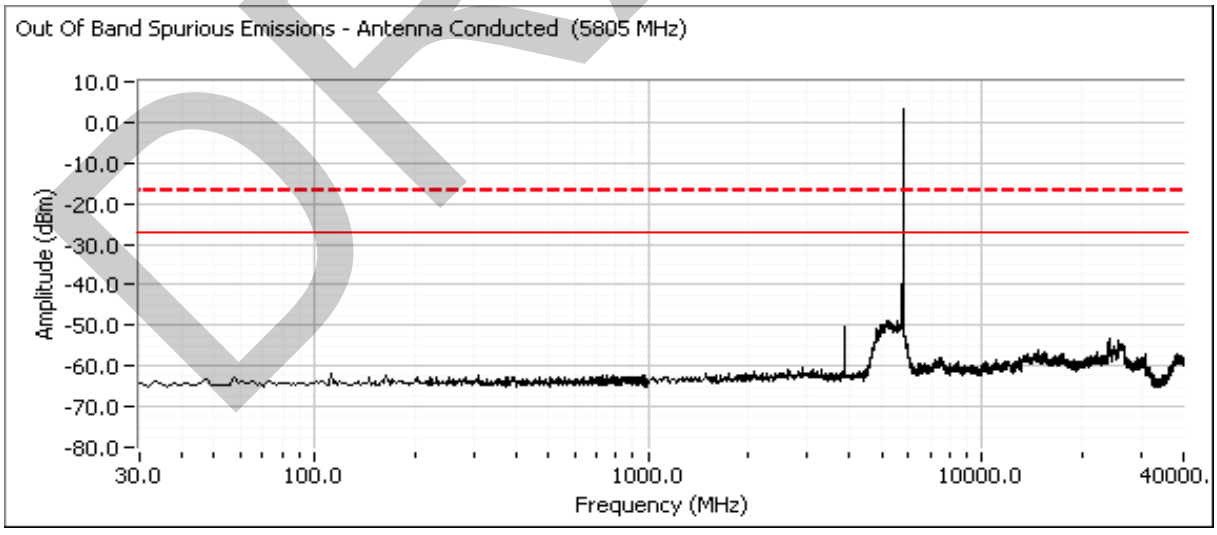


Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Plots for center channel, power setting(s) = 18.0dBm



Plots for high channel, power setting(s) = 18.0dBm



Client:	Summit Data Communications	Job Number:	J77268
Model:	SDC-MSD30AG	T-Log Number:	T77317
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Standard:	FCC 15.247/RSS 210	Class:	N/A

Additional plot from 5810 - 5850 MHz showing compliance with -20dBc at the band edge.