Test Certificate

A sample of the following product received on March 11, 2008 and tested on March 11 and 14, May 5 and 8 and June 2, 2008 complied with the requirements of

- **EN 301 893 V1.5.1 "Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive"**

given the measurement uncertainties detailed in Elliott report R87580.

Summit Data Communications

Model 802.11a/g Compact Flash Module (Model: SDC-CF10AG)

Mark E Hill
Staff Engineer

Summit Data Communications

Printed Name

Testing Cert #0214.26

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Radio Test Report

EN 301 893 V1.5.1
ElectroMagnetic Compatibility and Radio spectrum Matters (ERM); Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN

Model: 802.11a/g Compact Flash Module (Model: SDC-CF10AG)

COMPANY:	Summit Data Communications 526 South Main St. Suite 805 Akron, OH 44311
TEST SITE(S):	Elliott Laboratories 41039 Boyce Road. Fremont, CA. 94538-2435
REPORT DATE:	May 25, 2012
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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	05-25-2012	First release	

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SCOPE

The European Committee for Electrotechnical Standardization (CENELEC) and the European Telecommunications Standards Institute (ETSI) publish standards regarding ElectroMagnetic Compatibility and Radio spectrum Matters for radio-communications devices.

Tests have been performed on the Summit Data Communications model 802.11a/g Compact Flash Module (Model: SDC-CF10AG), pursuant to the relevant requirements of the following harmonized EN standard(s) covering essential requirements under article 3.2 of the R&TTE Directive:

- EN 301 893 V1.5.1 "Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive"

Note, testing was performed prior against the requirements of EN 301 893 v1.4.1, prior to the release of v1.5.1. A review of the results and the standards verified that the testing performed addressed all the DFS requirements of v1.5.1.

OBJECTIVE

The objective of the manufacturer is to comply with the harmonized standards identified in the previous section. In the case of most equipment, this document requires testing to other EN specifications. In order to demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

STATEMENT OF COMPLIANCE

The tested sample of Summit Data Communications model 802.11a/g Compact Flash Module (Model: SDC-CF10AG) complied with the requirements of:

EN 301 893 V1.5.1

Although all measurements were below the specification limit, one or more measurements were below the limit by a margin less than the measurement uncertainty. It is not therefore possible to state that the tested sample complied with the requirements based upon a 95% level of confidence. However, where a confidence level of less than 95% is acceptable, the device is considered to be in compliance with the requirements.

The test results recorded herein are based on a single type test of Summit Data Communications model 802.11a/g Compact Flash Module (Model: SDC-CF10AG) and therefore apply only to the tested sample. The sample was selected and prepared by Sue White of Summit Data Communications.

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.

DEVIATIONS FROM THE STANDARDS

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

TEST RESULTS

EN 301 893 V1.5.1

Section	Description	Channel	Measured Value	Limit	Result
4.2.2	Centre Frequencies	5180MHz – 10ppm 5320MHz – 4.7ppm 5500MHz – 9.1ppm 5700MHz – 13.2ppm		+/- 20ppm	Complies
4.3.2	Nominal Channel Bandwidth and Occupied Channel Bandwidth	5320MHz – 16.25 MHz 5500MHz – 16.3 MHz 5700MHz – 16.45 MHz		80-100% of the nominal channel bandwidth	Complies
4.4.2.1	RF output power and power density at the highest power level (5150-5350 MHz)	5180MHz – 22.1 dBm 5320MHz – 22.3 dBm		23.0 dBm	Complies
		5180 MHz: 9.0 dBm/MHz 5320 MHz: 8.8 dBm/MHz		10 dBm/MHz	Complies
	RF output power and power density at the highest power level (5470-5725MHz)	5500MHz: 20.3dBm 5700MHz: 22.1dBm		27.0 dBm	Complies
		5500MHz: 10.1 dBm/MHz 5700MHz: 9.8 dBm/MHz		17 dBm/MHz	Complies
4.4.2.2	RF output power at the lowest power level of the TPC range	-	TPC is not required if the device's output power is 3dB lower than the limits detailed in section 4.4.2.1		N/A
4.5.2	Transmitter In-Band Spurious Emissions	5180MHz 5320MHz 5500MHz 5700MHz	complied with the mask	Figure 2 Spectral mask	Complies
Spurious Emissions - Worst-case value for all modes					
4.5.1.2	Transmitter Out-Of Band Conducted Spurious Emissions	5180MHz: All signal more than 15dB below limit 5320MHz: -48.1dBm 5500MHz: -40.2dBm 5700MHz: -49.9dBm		Table 4	Complies
	Transmitter Out-Of Band Radiated Spurious Emissions	5180MHz	-60.2 dBm eirp @ 510.607MHz	Table 4	Complies
		5320MHz 5500MHz 5700MHz	-55.6dBm erp @ 843.2MHz		
4.6	Receiver Conducted Spurious Emissions	5180MHz	All signal more than 15dB below limit	25 – 1000 MHz: -57dBm 1 – 26.5 GHz: -47dBm	Complies
		5320MHz 5500MHz 5700MHz	-62.2dBm -57.7dBm -60.9dBm		
	Receiver Radiated Spurious Emissions	5180MHz:	-59.6 dBm eirp @ 416.322MHz		Complies
		5320MHz: 5500MHz: 5700MHz:	-59.0dBm erp @ 191.366 MHz		
Other Requirements					
4.7.2	DFS operational modes	-	Master Device	Slave Device	Complies
4.7.2.1.2 4.7.2.2.2 4.7.2.3.2 4.7.2.4.2	Requirements related to DFS	These requirements have been assessed separately and are covered under the scope of Elliott test report R87581.			

Section	Description	Channel	Measured Value	Limit	Result
4.7.2.5.2	Uniform Spreading – use of available spectrum and probability of channel selection.				
4.8.2	Medium Access Protocol	-	The system uses the 802.11 protocol to facilitate spectrum sharing.	A medium access protocol shall be implemented by the equipment and shall be active under all circumstances.	Complies
4.9.2	User Access Restrictions	-	The manufacturer attests to the fact that the DFS controls are not accessible and cannot be disabled/altered by the end user.	DFS controls (hardware or software) related to radar detection shall not be accessible to the user so that the DFS functions can neither be disabled nor altered.	Complies
Note – Although the measurement is below the specification limit, it is below the limit by a margin less than the measurement uncertainty.					

EXTREME CONDITIONS

Voltage extremes used during testing were those for AC-powered equipment, +/-10% of nominal and were applied to the AC adapter of the test fixture (hand-held PC). Temperature extremes used during testing were those for equipment intended for Indoor Use only (reference EN 300 328, range of 0°C to +35°C) extended to -10°C to +55°C (taken from AS/NZS 4268)

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 (based on a coverage factor (k=2) and were calculated in accordance with NAMAS document NIS 81 and M3003.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF frequency	Hz	25 to 7000 MHz	1.7×10^{-7}
RF power, conducted	dBm	25 to 7000 MHz	± 0.52 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBμV/m	25 to 1000 MHz	± 3.6 dB
Transmitter switch off time	Seconds	-	0.1 sec

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Summit Data Communications model 802.11a/g Compact Flash Module (Model: SDC-CF10AG) is an 802.11a/g compliant wireless LAN radio module which is designed to provide wireless local area networking connectivity. Normally, the EUT would be embedded in various types of mobile and stationary computing devices such as handheld and vehicle mounted data terminals during operation.

The electrical rating of the EUT is 3.3 VDC +/- 5% . Its typical power consumption is 400 mA (1320mW) while in transmit mode, 180 mA (594mW) while in receive mode and 10 mA (33 mW) while in standby mode.

The sample was received on March 11, 2008 and tested on March 11 and 14, May 5 and 8 and June 2, 2008. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number
Summit Data Communications, Inc.	SDC-CF10AG	802.11 a/g Compact Flash Adapter	Various

OTHER EUT DETAILS

The EUT operates in the 5250-5350 and 570-5725 MHz bands with a maximum 5.1dBi antenna.

ENCLOSURE

The EUT enclosure is primarily constructed of Stainless steel. It measures approximately 4.3 cm wide by 5.5 cm deep by 0.5 cm high.

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		

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	
Flash Module	iPAQ Module Port	-	-	

EUT OPERATION

For test purposes the EUT was installed into a test jig. The test jig was comprised of a Compact Flash extender card installed into the compact flash slot of a Hewlett Packard iPaq handheld PC. The PC was used to set the operating channel, mode (transmit or receive) and data rate.

EMISSIONS TESTING

GENERAL INFORMATION

Antenna port measurements were taken at the Elliott Laboratories test site located at 684 West Maude Avenue, Sunnyvale, California.

Final radiated spurious emissions measurements were taken at the Elliott Laboratories Anechoic Chambers and/or Open Area Test Site(s) listed below. The sites conform to the requirements of ANSI C63.4: 2003 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* and CISPR 16-1-4:2007 - *Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances*. They are registered with the VCCI and are on file with the FCC and industry Canada.

	Site	VCCI Registration #	Location
	SVOATS #1	R458	684 West Maude Avenue, Sunnyvale CA 94086-3518
	SVOATS #1	C469	

In the case of Open Area Test Sites, ambient levels are at least 6 dB below the specification limits with the exception of predictable local TV, radio, and mobile communications traffic.

Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions measurements are performed with the EUT's rf input/output connected to the input of a spectrum analyzer. When required an attenuator or dc block is placed between the EUT and the spectrum analyzer.

RADIATED EMISSIONS CONSIDERATIONS

CISPR has determined that radiated measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an Open Area Test Site or anechoic chamber, as defined in CISPR 16-1-4 and Annex A of EN 300 328 / EN 301 893 / EN 300 440-1. The test site is maintained free of conductive objects within the CISPR defined elliptical area.

EMISSIONS MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 is used for radiated emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7000 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.

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.

Measurement bandwidths for the test instruments are set in accordance with the requirements of the standards referenced in this document.

INSTRUMENT CONTROL COMPUTER

Software control is used to convert the receiver measurements to the field strength at an antenna, 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 exported in a graphic and/or tabular format, as appropriate.

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

FILTERS/ATTENUATORS

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

ANTENNAS

A combination of biconical, log periodic or bi-log antennas are used to cover the range from 25 MHz to 1000 MHz. Broadband antennas or tuned dipole antennas are used over the entire 25 to 1000 MHz frequency range as the reference antenna for substitution measurements.

Above 1000 MHz, a dual-ridge guide horn antenna or octave horn antenna are used as reference and measurement antennas.

The antenna calibration factors are included in site factors that are programmed into the test receivers and instrument control software when measuring the radiated field strength.

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.

The test height above ground for non-body worn devices shall be 150 centimeters. Floor mounted equipment will 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.

RADIO STANDARD TEST PROCEDURES

OUTPUT POWER

Output power is measured using an average sensor head. If the device is operating with a duty cycle during the measurement the measurement time is set to exceed the on/off duty cycle and the measured value is then corrected by adding a factor of 10 log(1/duty cycle) to the measured value.

Power density is initially measured as a peak bandwidth (RBW=VBW=1MHz). If the power density is within 3dB of the limit it is re-measured via the IF output of the spectrum analyzer using an average sensor.

Power measurements made directly on the rf power port are, when appropriate, converted to an EIRP by adding the gain of the highest gain antenna that can be used with the device under test, as specified by the manufacturer.

CARRIER FREQUENCIES

If the device can operate in an un-modulated mode then the carrier frequency is measured in that mode, otherwise the carrier frequency is calculated using the (f1 +f2)/2 method, where f1 and f2 are the –10dB points.

CONDUCTED SPURIOUS EMISSIONS

Conducted emissions are measured at the output of the device using a RF cable and attenuator if required. Initial scans are made using a peak detector (RBW=VBW) and using scan rates to ensure that the EUT transmits before the sweep moves out of each resolution bandwidth (for transmit mode).

When devices being evaluated against the requirements of EN 301 893 have emissions close to the limit are tested using Video Averaging[1], with video gating used where the transmit duty cycle is less than 1.

RADIATED SPURIOUS EMISSIONS

Radiated emissions measurements are performed in two phases. A preliminary scan of emissions is conducted in either an anechoic chamber or on an OATS during which all significant EUT frequencies are identified with the system in a nominal configuration.

At least two scans are performed across the complete frequency range of interest and at each operating frequency identified in the reference standard. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. Initial scans are made using a peak detector (RBW=VBW) and using scan rates to ensure that the EUT transmits before the sweep moves out of each resolution bandwidth (for transmit mode). Where applicable, final measurements may be made with video averaging enabled.

[1] When using video averaging the span is set to ensure the analyzer bin size does not exceed one half the measurement bandwidth.

During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit. The limit is a field strength limit derived from the ERP limit specified in the standard(s).

All signals within 10dB of this calculated limit are re-measured on an OATS or Semi-anechoic chamber. The field strength is recorded and the EUT is then replaced with a substitution antenna of known gain (typically a dipole antenna or a double-ridged horn antenna). The erp of the substitution antenna is measured and used to calculate the erp of the EUT as outlined in section C3 of EN 300 328 and EN 301 893.

DFS – THRESHOLD, CHANNEL CLOSING TRANSMISSION TIME AND CHANNEL MOVE TIME

The threshold level for DFS radar detection is determined by using the test methods outlined in section 5.3.7 of EN 301 893 (section 5.3.6 of EN 302 502). Typically the unit under test is configured to report when it detects a burst of radar rather than to change channel on detecting radar to expedite these measurements.

Channel clearing and closing times are measured by applying a radar burst with the device configured to change channel and by observing the original channel for transmissions.

DFS CHANNEL AVAILABILITY CHECK TIME

The channel availability check time is determined by using the test methods outlined in section 5.3.7 of EN 301 893 (section 5.3.6 of EN 302 502). Radar bursts are applied during the EUT boot sequence to verify that a check for radar on the selected channel is performed for at least 60 seconds prior to commencing transmissions on that channel.

UNIFORM LOADING

The channel loading, where appropriate (i.e. when channel selection is not determined under control of the network), is determined by re-booting the EUT multiple times and recording the channel initially selected. The number of times each channel is selected is divided by the total number of times the device was re-booted to calculate the utilization. This is compared to the theoretical loading of 1/n, where n is the total number of channels available.

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS - CONDUCTED SPURIOUS EMISSIONS

Measurements are compared directly to the conducted emissions specification limit (decibel form). The calculation is as follows:

$$R_r - S = M$$

where:

R_r = Measured value in dBm
S = Specification Limit in dBm
M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED SPURIOUS EMISSIONS

Receiver readings are compared directly to a converted specification limit (decibel form). The conversion uses the effective radiated power limit specified in the standard to calculate the expected field strength in free space using the following formula:

$$E = \frac{\sqrt{30\,P\,G}}{d}$$

where:

E = Field Strength in V/m
P = Power in Watts
G = Gain of antenna in numeric gain[2]
D = distance in meters

The field strength limit is then converted to decibel form (dBuV/m) and the margin of a given emission peak relative to the limit is calculated as follows:

$$M = R_c - L_s$$

where:

R_c = Corrected Receiver Reading in dBuV/m
L_s = Calculated specification Limit in dBuV/m
M = Margin in dB Relative to Spec

When substitution measurements are required (all signals with less than 6dB of margin relative the field strength limit) the margin of the emissions relative to the effective radiated power limit is calculated from:

$$P_s - S = M$$

where:

P_s = effective radiated power determined from antenna substitution (dBm)
S = Specification Limit in dBm
M = Margin to Specification in +/- dB

[2] Although the gain relative to a dipole should be used for limits expressed as an erp, the isotropic gain is used as this produces a more conservative limit.

Appendix A Test Equipment Calibration Data

T70349

Radio Antenna Port (Power and Spurious Emissions), 04-Jan-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	3/26/2008
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	1/25/2008
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	11/29/2008
Hewlett Packard	Head (Inc W1-W4, 1143, 1144) Red	84125C	1145	11/16/2008
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/24/2008
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Red)	3160-09 (84125C)	1150	11/5/2008
Hewlett Packard	Microwave Preamplifier 0.5-26.5 GHz	83017A	1257	1/8/2009
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	3/21/2008
Hewlett Packard	Preamplifier	8447D OPT 010	1826	5/25/2008

Radiated Emissions, 30 - 26,500 MHz, 07-Jan-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	3/26/2008
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	1/25/2008
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	11/29/2008
Hewlett Packard	Microwave Preamplifier 0.5-26.5 GHz	83017A	1257	11/29/2008
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	3/21/2008
Hewlett Packard	Preamplifier	8447D OPT 010	1826	5/25/2008

Radio Spurious Emissions, 21-Jan-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	1/25/2008
EMCO	Antenna, Horn, 1-18 GHz	3115	487	5/24/2008
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	780	10/9/2008
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/24/2008
EMCO	Log Periodic Antenna, 0.2-1 GHz	3146	1294	8/28/2008
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	9/21/2008
EMCO	Biconical Antenna, 30-300 MHz	3110B	1498	3/20/2008
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	3/21/2008

Radiated Emissions, 30 - 26,500 MHz, 24-Jan-08

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	5/29/2008
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	7/12/2008
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	7/11/2008
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	4/12/2008
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	5/23/2009

EMCO	Antenna, Horn, 1-18 GHz	3115	1561	5/10/2008
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	1/25/2008
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632	5/25/2008
Anritsu	Signal Generator, 100MHz-20GHz	68347C	1785	N/A
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1796	2/12/2008

Radiated Emissions, 30 - 26,500MHz, 11-Mar-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	3/26/2008
EMCO	Log Periodic Antenna, 0.3-1 GHz	3146A	364	12/13/2008
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	11/8/2008
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	11/29/2008
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447D OPT 010	1826	5/25/2008

Radiated Emissions, 30 - 26,500MHz, 11-Mar-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	3/26/2008
EMCO	Log Periodic Antenna, 0.3-1 GHz	3146A	364	12/13/2008
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	6/11/2008
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	1/29/2009
EMCO	Log Periodic Antenna, 0.2-2 GHz	3148	1404	3/30/2008
EMCO	Biconical Antenna, 30-300 MHz	3110B	1497	7/3/2008
Rohde & Schwarz	Power Sensor, 1 nW-20 mW, 10 MHz-18 GHz, 50ohms	NRV-Z1	1798	8/21/2008

Environmental Test, 14-Mar-08

Manufacturer	Description	Model	Asset #	Cal Due
Hewlett Packard	Spectrum Analyzer 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	8/24/2008
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1539	8/21/2008
Rohde & Schwarz	Power Sensor, 1 uW-100 mW, DC-18 GHz, 50ohms	NRV-Z51	1797	8/21/2008

T71588

Radiated Emissions, 25 - 25000 MHz, 06-May-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	3/26/2009
EMCO	Log Periodic Antenna, 0.3-1 GHz	3146A	364	12/13/2008
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	11/8/2008
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	4/11/2010
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447D OPT 010	1826	5/25/2008
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40)	8564E	CH5273	7/20/2008

Radiated Emissions, 25 - 25,000 MHz, 07-May-08

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Biconical Antenna, 30-300 MHz	3110B	801	9/19/2009
Rohde & Schwarz	Signal Generator, 9 kHz-2.080 GHz	SMY02	1302	10/29/2008
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	9/21/2008

EMCO	Log Periodic Antenna, 0.2-2 GHz	3148	1347	1/17/2009
EMCO	Biconical Antenna, 30-300 MHz	3110B	1497	7/3/2008
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1786	1/7/2009
Rohde & Schwarz	Power Sensor, 1 nW-20 mW, 10 MHz-18 GHz, 50ohms	NRV-Z1	1798	8/21/2008
EMCO	Log Periodic Antenna, 0.3-1 GHz	EL300.1000	297	1/30/2009

Environmental Test, 08-May-08

Manufacturer	Description	Model	Asset #	Cal Due
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1539	8/21/2008
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1796	4/16/2009
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40)	8564E	CH5273	7/20/2008

Radiated Emissions, 30 - 26,500 MHz, 23-Jul-08

Manufacturer	Description	Model	Asset #	Cal Due
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	5/23/2009
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	2/22/2009
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632	5/22/2009
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	5/23/2009
Anritsu	Signal Generator, 100MHz-20GHz	68347C	1785	N/A
Rohde & Schwarz	Power Sensor, 1 uW-100 mW, DC-18 GHz, 50ohms	NRV-Z51	1797	8/21/2008
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1786	1/7/2009

Radiated Emissions, 30 - 1,000 MHz, 24-Jul-08

Manufacturer	Description	Model	Asset #	Cal Due
EMCO	Log Periodic Antenna, 0.2-1 GHz	3146	1294	8/28/2008
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	1/29/2009
EMCO	Biconical Antenna, 30-300 MHz	3110B	1497	9/3/2008

Radiated Emissions, 30 - 1,000 MHz, 25-Jul-08

Manufacturer	Description	Model	Asset #	Cal Due
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	2/27/2009
EMCO	Biconical Antenna, 30-300 MHz	3110B	801	9/19/2009
Fluke Mfg Co	Signal Generator, 100KHz - 2100MHz	6062A	852	N/A
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	7/1/2009
EMCO	Log Periodic Antenna, 0.2-1 GHz	3146	1294	8/28/2008
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	1/29/2009
EMCO	Biconical Antenna, 30-300 MHz	3110B	1497	9/3/2008
Rohde & Schwarz	Power Sensor, 1 nW-20 mW, 10 MHz-18 GHz, 50ohms	NRV-Z1	1798	8/21/2008

Appendix B Test Data

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T71588 Pages 34 – 83

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		-
Emissions Standard(s):	EN 300 328, EN 301 893	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Summit Data Corp

Model

SDC-CF10AG

Date of Last Test: 3/14/2008

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Radio Performance Test - EN 301 893 (V1.4.1)

RF Port Measurements

Test Specific Details

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

Date of Test: 3/14/2008
Test Engineer: Mehran Birgani
Test Location: Environmental Chamber

Config. Used: 1
Config Change: None
Host Unit Voltage 230V/50Hz

General Test Configuration

The EUT's rf port was connected to the measurement instrument's rf port, via an attenuator or dc-block if necessary.

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a	Power spectral density at normal conditions	EN 301 893	Pass	9.0 dBm(eirp) 7.9 mW(eirp)
1b	Output Power over extreme conditions (5150-5250 MHz)	EN 301 893	Pass	22.1 dBm(eirp) 162.2 mW(eirp)
2	Carrier Frequency	EN 301 893	Pass	10ppm
3	Occupied Bandwidth	EN 301 893		802.11a: 16.40 MHz
4	Conducted spurious emissions 30 - 26,500MHz, Transmit Mode	EN 301 893	Pass	Met in-band mask. Out of band spurs more than 20dB below limit
5	Conducted spurious emissions 30 - 26,500MHz, Receive Mode	EN 301 893	Pass	More than 15dBm margin

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Note - Drive revision V2.00.37, SCU revision V2.00.34 and BG mode set to 85%

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Normal and Extreme Operating Conditions:

Voltage extremes:

X	Voltage extremes for AC-powered equipment +/10% of nominal (nominal/normal voltage defined as 230 V)
	Voltage extremes for Lead-Acid Battery 1.3 and 0.9 times nominal
	Voltage extremes for Leclanché or lithium type battery: 0.85 and 1.15 times the nominal voltage of the battery
	Voltage extremes for Mercury or nickel-cadmium type of battery: 0.9 times and 1.15 times the nominal voltage of the batter

Temperature extremes:

	-20°C to +55°C (Limits for unrestricted use taken from EN 300 328 / EN 300 220)
	0°C to +35°C (Limits for indoor use taken from EN 300 328 / EN 300 220)
X	-10°C to +55°C (taken from AS/NZS 4268)

Run #1: Power Measurements - Spread spectrum (Digital Modulation)

Initial measurements made on the center channel to determine the data rate with the highest output power. All final measurements made with device operating at the highest power level.

Rate	Setting	Pmeas	Duty Cycle	Pout
6	Max	10.4	0.84	9.642793
9	Max	10.2	0.84	9.442793
12	Max	10.1	0.84	9.342793
18	Max	10.0	0.84	9.242793
24	Max	9.8	0.84	9.042793
36	Max	9.6	0.84	8.842793
48	Max	8.9	0.84	8.142793
54	Max	7.3	0.84	6.542793

Setting: software power setting of EUT
Pmeas: Measured output power (average)
Duty Cycle: Duty cycleof transmissions (1 = 100%)

Run #1a: Power Measurements - PSD at normal and Average Power under normal and extreme conditions

Power spectral Density under normal operating conditions

Channel	Frequency	PSD[2]	Gain[3]	Duty	EIRP[5]	PSD[6]	
MHz	MHz	dBm	dBi	Cycle[4]	PSD	Limit	Margin
5180	5182.438	3.1	5.1	0.84	9.0	11.0	-2.0

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Highest Average Power under normal and extreme operating conditions

Power Setting	Channel (MHz)	Average Power (dBm)[1] For Operating Condition Normal 20°C 230.0 V	Extreme -10°C 207.0 V	Extreme -10°C 253.0 V	Extreme 55°C 207.0 V	Extreme 55°C 253.0 V	Max Antenna Gain[3]	Duty Cycle[4]	Max Average Power (EIRP)[5]	Maximum permitted EIRP
Max	5180	16.1	12.7	12.7	16.1	16.2	5.1	0.84	22.1	23.0

Note 1:	Power measured using a wideband, calibrated RF power meter with a thermocouple detector (or an equivalent thereof).
Note 2:	PSD measured using a thermocouple detector (or an equivalent thereof) connected to the IF output of the spectrum analyzer, with the analyzer set to positive peak detector with RB= VB = 1MHz.
Note 3:	Gain is the maximum gain of the antenna assembly that can be used with the EUT at this power level.
Note 4:	Duty Cycle - the duty cycle of the transmitter during the power measurement [time on /(time off + time on)]
Note 5:	EIRP levels are the measured levels corrected for duty cycle [10log(1/duty cycle)] and EUT antenna gain.
Note 6:	Power spectral density is limited to 11dBm/MHz for the 5150-5250 MHz band.

Run #2: Carrier Frequency - Extreme and Normal Temperature

Carrier frequency measured over extreme conditions for top and bottom chanel in each band.

Frequency error was measured on the modulated carrier. The operating frequency was calculated by dividing the sum of the frequencies for the upper and lower -10dBc points on the modulated signal by 2.

Channel Frequency (MHz)	Measured Frequency (MHz) For Operating Condition Normal 20°C 230.0 V	Extreme -10°C 207.0 V	Extreme -10°C 253.0 V	Extreme 55°C 207.0 V	Extreme 55°C 253.0 V	Maximum Frequency Error (kHz)	Maximum Frequency Error (ppm)
Nominal: 5180.0							
Actual	5180.040	5180.050	5180.025	5180.025	5180.025	50	10
Lower -10dBc freq	5171.782	5171.750	5171.750	5171.750	5171.750		
Upper -10dBc freq	5188.298	5188.350	5188.300	5188.300	5188.300		
						Worst case error (ppm):	10

Run #3: Occupied Channel Bandwidth

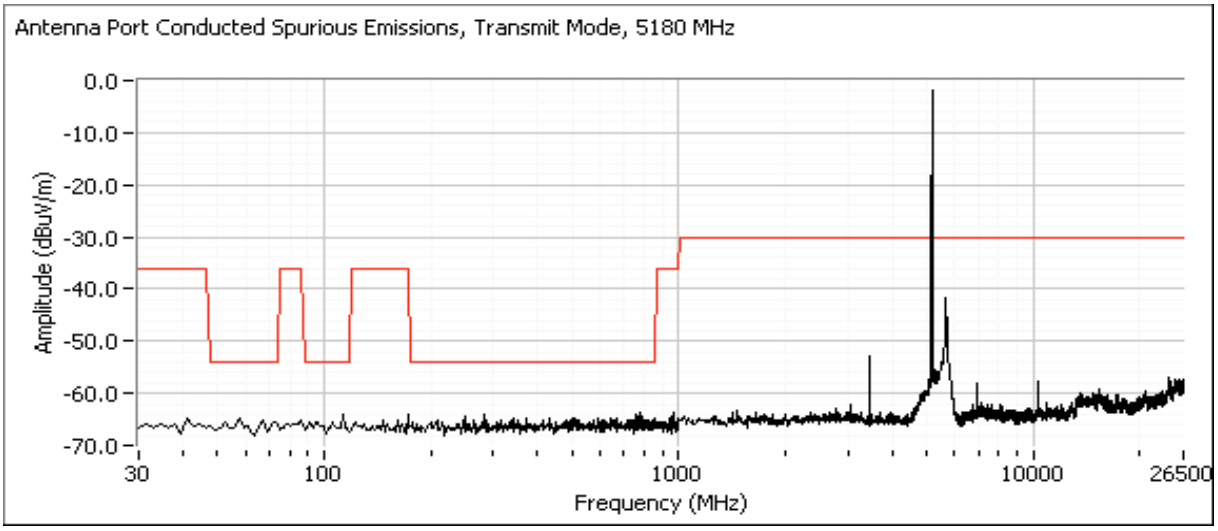
The occupied channel bandwidth measurement is performed on the lowest and highest frequencies in each band for every declared nominal bandwidth within each band (5150 - 5250 MHz). Measurements are made under normal conditions only.

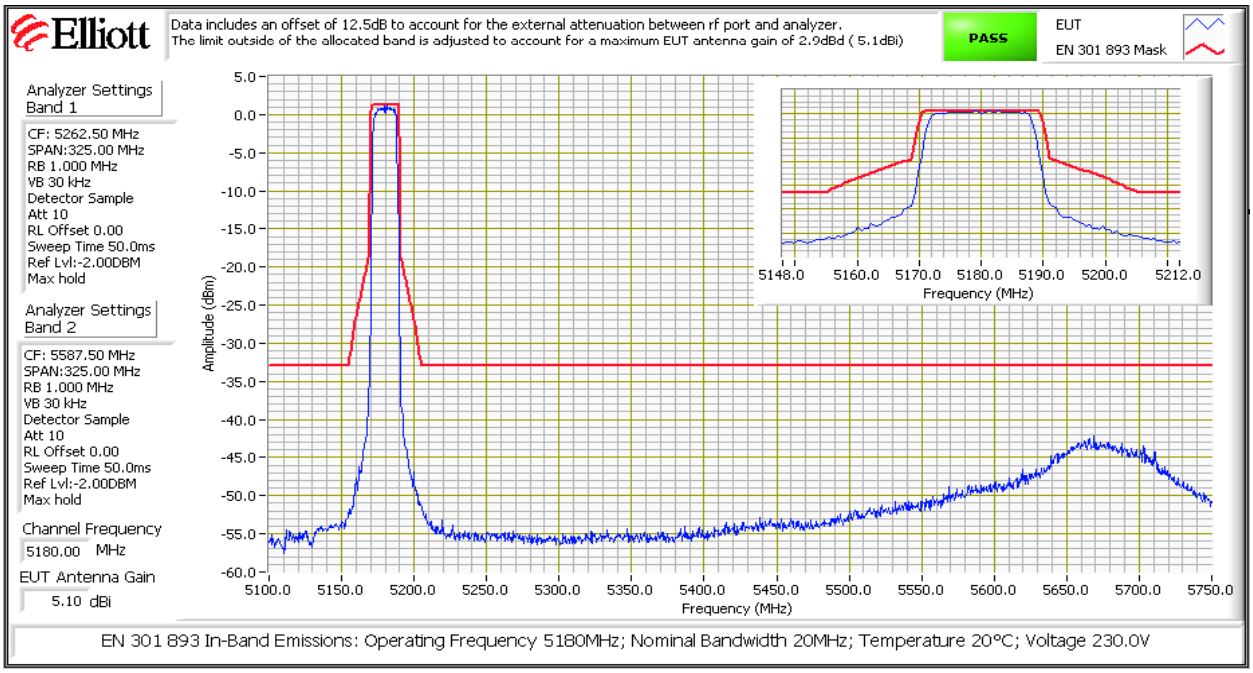
The measurement is made using the spectrum analyzer to meausre the 6dB bandwidth of the modulated signal. The analyzer is configred with RB=VB=100kHz, peak detector and max hold, with the span set to twice the nominal bandwidth.

Channel frequency MHz	Mode	Nominal Bandwidth MHz	Occupied Channel Bandwidth Measured (MHz)	Occupied Channel Bandwidth Limit (MHz)	Result
5180	802.11a	20.00	16.40	16 - 20	Pass

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #4: Antenna Port Conducted Spurious Emissions, Transmit Mode, 30 - 26,500 MHz
Run #4a: Transmit Mode, 5180 MHz



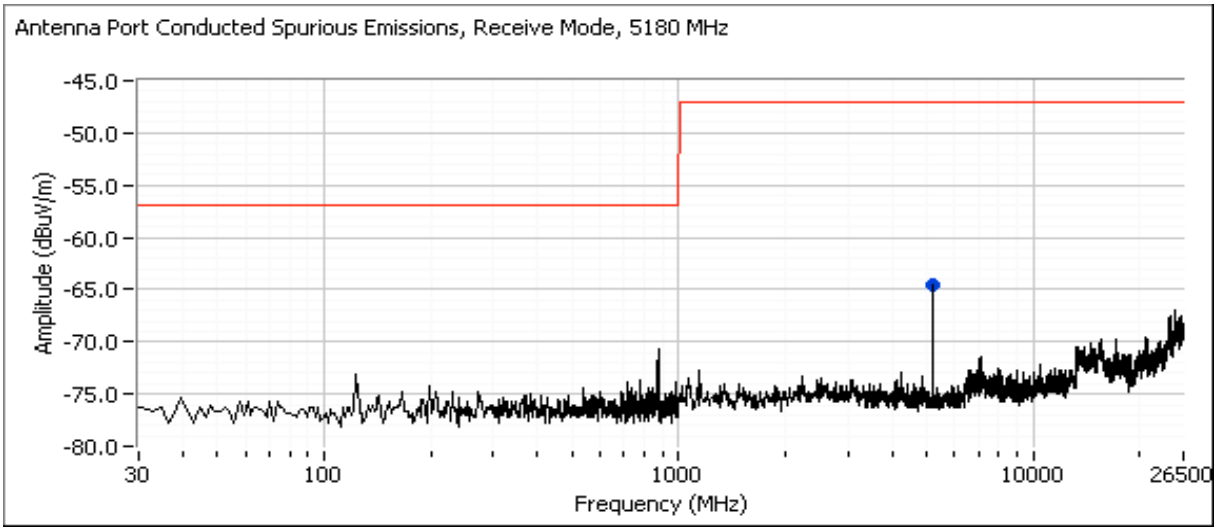


Frequency MHz	Level dBm	Port	EN 301 893 Limit	Margin	Detector	Channel	Mode	Comments
All signals outside the 5150 - 5350 Mhz and 5460 - 5725 MHz bands were more than 20dB below the limit								

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #5: Antenna Port Conducted Spurious Emissions, Receive Mode, 30 - 26,500 MHz

Run #5a: Receivce Mode, 5180 MHz



Frequency MHz	Level dBm	Port	EN 301 893 Limit	EN 301 893 Margin	Detector	Channel	Mode	Comments
5180.000	-64.5	Antenna	-47.0	-17.5	Peak	36	802.11a	

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Radiated Spurious Emissions, EN 301 893 v1.4.1

Test Specific Details

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

Date of Test: 3/11/2008
Test Engineer: Mehran Birgani
Test Location: Refer to each run

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

General Test Configuration

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

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 16 °C
Rel. Humidity: 43 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Transmit Mode 30 - 26500 MHz	EN 301 893	Pass	-60.2 dBm eirp @ 510.607MHz (Margin -6.2dBm eirp)
4	Spurious Emissions Receive/Stand-By Mode 30 - 26500 MHz	EN 301 893	Pass	-59.6 dBm eirp @ 416.322MHz (Margin -2.6dBm eirp)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

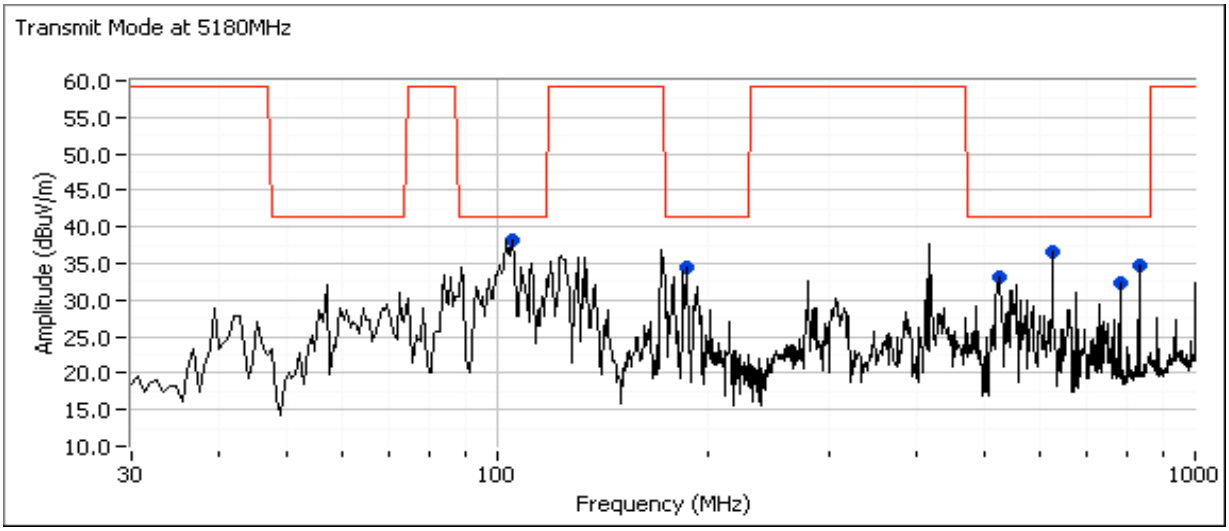
No deviations were made from the requirements of the standard.

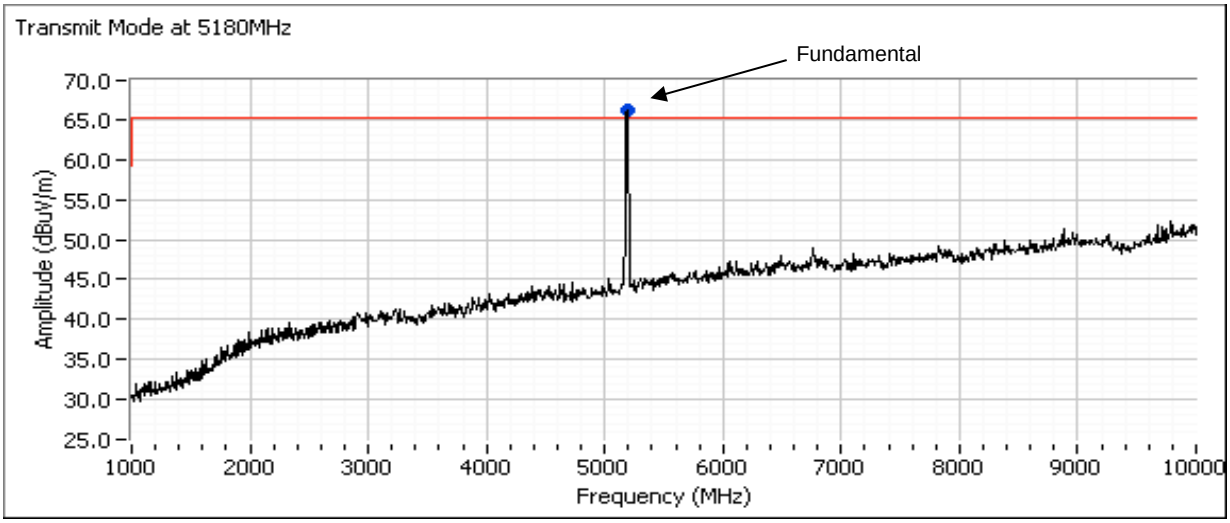
Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

EMC Test Data

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #1: Radiated Spurious Emissions, Transmit Mode (EUT @ 5180MHz), 30 - 26500 MHz (Performed at chamber #2)





Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
832.000	34.7	H	41.3	-6.6	Peak	57	1.7	
781.250	32.3	H	41.3	-9.0	Peak	57	1.7	
624.500	36.7	H	41.3	-4.6	Peak	260	1.7	
528.210	33.2	H	41.3	-8.1	Peak	250	1.7	
182.275	34.5	H	41.3	-6.8	Peak	91	1.7	
104.925	38.2	V	41.3	-3.1	Peak	329	1.7	
Note 1:	No signal was found above 10GHz.							

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #2: Radiated Spurious Emissions, Transmit Mode: Final Field Strength and Substitution Measurements
Performed at SVOATS #1

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
831.937	38.6	H	41.3	-2.7	PK	301	1.0	
510.607	37.9	H	41.3	-3.4	PK	132	1.9	
108.425	36.2	V	41.3	-5.1	PK	161	1.0	
781.250	33.7	H	41.3	-7.6	PK	60	1.1	
621.968	33.2	H	41.3	-8.1	PK	212	1.9	
182.275	32.8	H	41.3	-8.5	PK	89	1.0	

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
510.607	-55.0	7.5	50.6	98.1	37.9	-60.2	-62.4	-54.0		-6.2
182.275	-55.0	-1.4	41.7	98.1	32.8	-65.3	-67.5	-54.0		-11.3
621.968	-55.0	8.0	50.6	97.6	33.2	-64.4	-66.6	-54.0		-10.4
781.250	-55.0	7.4	48.6	96.2	33.7	-62.5	-64.7	-54.0		-8.5
831.937	-55.0	7.1	50.9	98.8	38.6	-60.2	-62.4	-54.0		-6.2

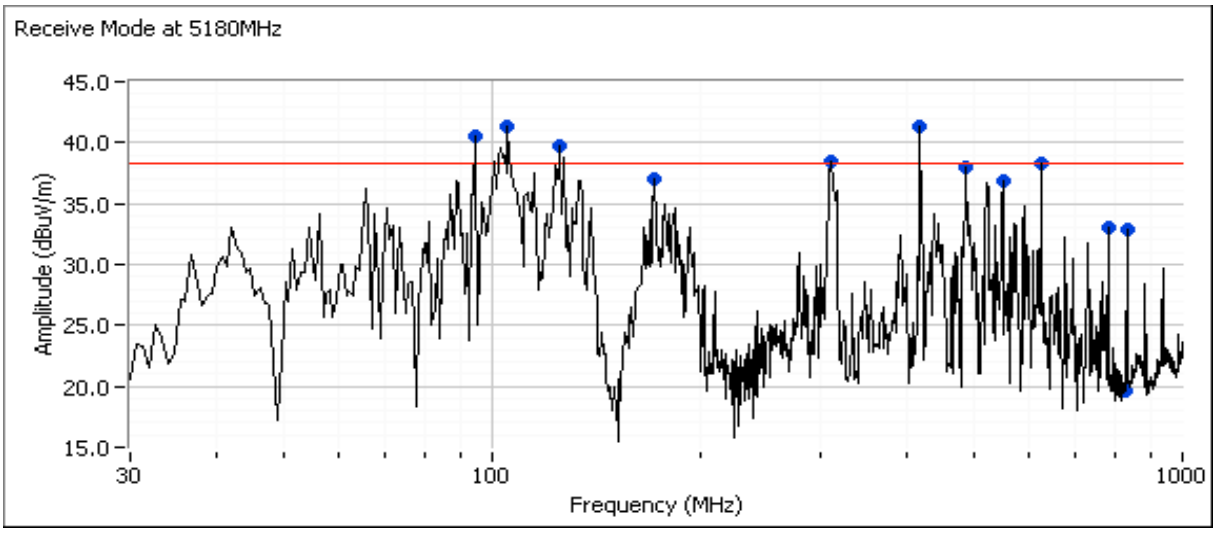
Vertical

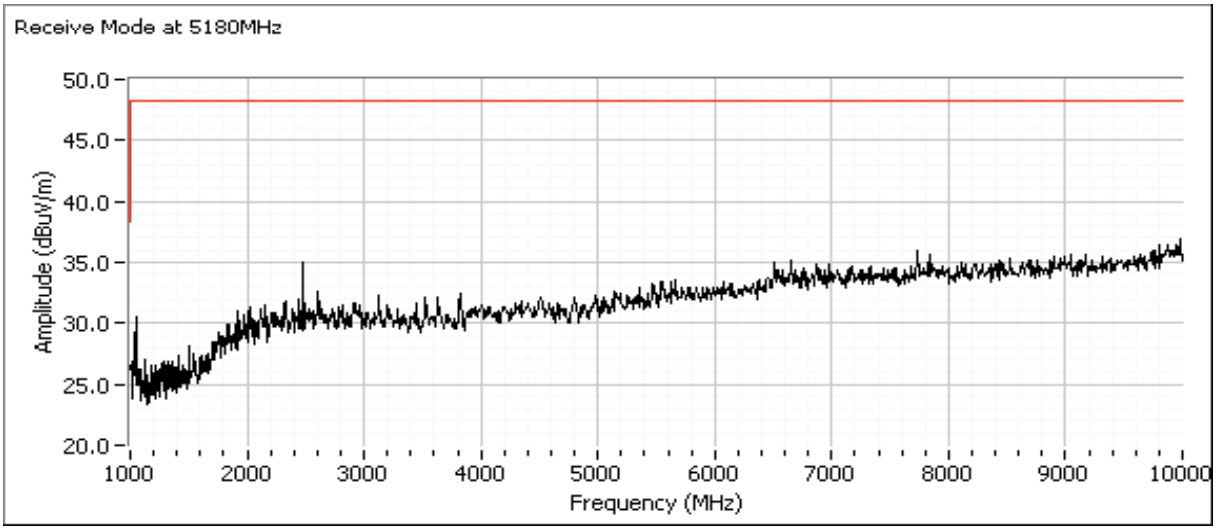
Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
108.425	-55.0	-1.1	40.0	96.1	36.2	-59.9	-62.1	-47.0		-12.9

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #3: Radiated Spurious Emissions, Receive Mode (EUT @ 5180MHz), 30 - 26500 MHz (Performent at chamber #2)





EMC Test Data

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #3: Radiated Spurious Emissions, Receive Mode (EUT @ 5180MHz), 30 - 26500 MHz (Performent at chamber #2)

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
829.931	32.9	H	38.3	-5.4	Peak	319	1.7	
781.119	33.0	H	38.3	-5.3	Peak	94	1.7	
623.968	38.3	H	38.3	0.0	Peak	212	1.7	
530.041	36.9	H	38.3	-1.4	Peak	217	1.7	
487.486	37.9	H	38.3	-0.4	Peak	222	1.7	
415.980	41.4	H	38.3	3.1	Peak	212	1.7	
312.019	38.4	H	38.3	0.1	Peak	45	1.7	
181.750	37.1	H	38.3	-1.2	Peak	89	1.7	
125.850	39.7	V	38.3	1.4	Peak	0	1.7	
105.600	41.3	V	38.3	3.0	Peak	31	1.7	
94.800	40.5	V	38.3	2.2	Peak	0	1.7	

Note 1: No signal was found above 10GHz.

EMC Test Data

Client:	Summit Data Corp	Job Number:	J68959
Model:	SDC-CF10AG	T-Log Number:	T70349
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 300 328, EN 301 893	Class:	N/A

Run #4: Radiated Spurious Emissions, Receive Mode: Final Field Strength and Substitution Measurements
Performed at SVOATS #1

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
831.937	38.6	H	38.3	0.3	PK	301	1.0	
416.322	38.6	H	38.3	0.3	PK	212	2.0	
510.607	37.9	H	38.3	-0.4	PK	132	1.9	
108.425	36.2	V	38.3	-2.1	PK	161	1.0	
125.650	36.1	V	38.3	-2.2	PK	158	1.1	
486.823	33.8	H	38.3	-4.5	PK	222	2.0	
781.250	33.7	H	38.3	-4.6	PK	60	1.1	
621.968	33.2	H	38.3	-5.1	PK	212	1.9	
182.275	32.8	H	38.3	-5.5	PK	89	1.0	
312.019	31.2	H	38.3	-7.1	PK	45	1.9	
94.636	21.9	V	38.3	-16.4	PK	0	1.0	

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
416.322	-55.0	6.0	49.2	98.2	38.6	-59.6	-61.8	-57.0		-2.6
182.275	-55.0	-1.4	41.7	98.1	32.8	-65.3	-67.5	-57.0		-8.3
312.019	-55.0	6.6	48.7	97.1	31.2	-65.9	-68.1	-57.0		-8.9
486.823	-55.0	6.5	49.2	97.7	33.8	-63.9	-66.1	-57.0		-6.9
510.607	-55.0	7.5	50.6	98.1	37.9	-60.2	-62.4	-57.0		-3.2
621.968	-55.0	8.0	50.6	97.6	33.2	-64.4	-66.6	-57.0		-7.4
781.250	-55.0	7.4	48.6	96.2	33.7	-62.5	-64.7	-57.0		-5.5
831.937	-55.0	7.1	50.9	98.8	38.6	-60.2	-62.4	-57.0		-3.2

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
108.425	-55.0	-1.1	40.0	96.1	36.2	-59.9	-62.1	-57.0		-2.9
125.650	-55.0	-0.7	41.9	97.6	36.1	-61.5	-63.7	-57.0		-4.5

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a nominal gain of 2.2dBi, however the dipole balun loss may reduce the gain of the substituion dipole used.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna, maximized for receive antenna height and transmit antenna azimuth.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		-
Emissions Standard(s):	EN 301 893	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Summit Data Communications

Model

SDC-CF00AG(DFS Bands)

Date of Last Test: 7/25/2008

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Radio Performance Test - EN 301 893 V1.4.1

RF Port Measurements

Test Specific Details

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

Date of Test: 5/8/2008
Test Engineer: Mehran Birgani
Test Location: Environmental Chamber

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

General Test Configuration

The EUT's rf port was connected to the measurement instrument's rf port, via an attenuator or dc-block if necessary.

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power spectral density at normal conditions	EN 301 893	Pass	802.11a: 8.8 dBm/MHz
1	Output Power over extreme conditions (5250-5350 MHz)	EN 301 893	Pass	802.11a: 22.3 dBm
1	Output Power over extreme conditions (5470-5725 MHz)	EN 301 893	Pass	802.11a: 22.1 dBm
2	Carrier Frequency	EN 301 893	Pass	Error = 13.2 ppm
3	Occupied Bandwidth	EN 301 893	Pass	802.11a: 16.45 MHz
4	Transmitter conducted spurious emissions, 30MHz - 26,500MHz	EN 301 893	Pass	-48.1dBm @ 5592.50 MHz
5	Receiver conducted spurious emissions, 30MHz - 26,500MHz	EN 301 893	Pass	-57.7dBm @ 1962.50 MHz

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Normal and Extreme Operating Conditions:

Voltage extremes:

X	Voltage extremes for AC-powered equipment +/10% of nominal (nominal/normal voltage defined as 230 V)
	Voltage extremes for Lead-Acid Battery 1.3 and 0.9 times nominal
	Voltage extremes for Leclanché or lithium type battery: 0.85 and 1.15 times the nominal voltage of the battery
	Voltage extremes for Mercury or nickel-cadmium type of battery: 0.9 times and 1.15 times the nominal voltage of the batt

Temperature extremes:

	-20°C to +55°C (Limits for unrestricted use taken from EN 300 328 / EN 300 220)
	0°C to +35°C (Limits for indoor use taken from EN 300 328 / EN 300 220)
X	-10°C to +55°C (taken from AS/NZS 4268)

Run #1: Power Measurements - Spread spectrum (Digital Modulation)

Initial measurements made on the center channel to determine the data rate with the highest output power. All final measurements made with device operating at the highest power level.

Rate	Setting	Pmeas	Duty Cycle	Pout
6	Max	10.4	0.84	9.642793
9	Max	10.2	0.84	9.442793
12	Max	10.1	0.84	9.342793
18	Max	10.0	0.84	9.242793
24	Max	9.8	0.84	9.042793
36	Max	9.6	0.84	8.842793
48	Max	8.9	0.84	8.142793
54	Max	7.3	0.84	6.542793

Setting: software power setting of EUT
Pmeas: Measured output power (average)
Duty Cycle: Duty cycleof transmissions (1 = 100%)

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1: Power Measurements - PSD under normal conditions, Average Power under normal and extreme conditions
Single-chain or single-transmitter operation

Note 1:	Power measured using a wideband, calibrated RF power meter with a thermocouple detector (or an equivalent thereof).
Note 2:	PSD measured using a thermocouple detector (or an equivalent thereof) connected to the IF output of the spectrum analyzer, with the analyzer set to positive peak detector with RB= VB = 1MHz.
Note 3:	Gain is the maximum gain of the antenna assembly that can be used with the EUT at this power level for each individual chain.
Note 4:	Duty Cycle - the duty cycle of the transmitter during the power measurement [time on /(time off + time on)]
Note 5:	EIRP levels are the measured levels corrected for duty cycle [10log(1/duty cycle)] and EUT antenna gain.

Power spectral Density under normal operating conditions

Channel MHz	Frequency MHz	PSD[2] dBm	Gain[3] dBi	Duty Cycle[4]	EIRP[5] PSD	PSD[6] Limit	PSD[6] Margin
5320	5324.253	2.9	5.1	0.84	8.8	10.0	-1.2
5500	5497.632	4.2	5.1	0.84	10.1	17.0	-6.9
5700	5695.200	3.9	5.1	0.84	9.8	17.0	-7.2

Highest Average Power under normal and extreme operating conditions

Power Setting	Channel (MHz)	Average Power (dBm)[1] For Operating Condition: Normal 20°C 230.0 V	Extreme -10°C 207.0 V	Extreme -10°C 253.0 V	Extreme 55°C 207.0 V	Extreme 55°C 253.0 V	Max Antenna Gain[3]	Duty Cycle[4]	Max Average Power (EIRP)[5]	Maximum permitted EIRP
Max	5320	14.6	15.9	15.9	16.4	16.4	5.1	0.84	22.3	23.0
Max	5500	14.4	14.1	14.1	13.0	13.2	5.1	0.84	20.3	30.0
Max	5700	12.5	16.1	16.2	14.0	14.1	5.1	0.84	22.1	30.0

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #2: Carrier Frequency - Extreme and Normal Temperature

Carrier frequency measured over extreme conditions at the lowest and highest centre frequencies (carrier frequencies) in each band. The carrier frequency shall remain within 20ppm of the nominal carrier frequency.

Frequency error was measured on the modulated carrier. The operating frequency was calculated by dividing the sum of the frequencies for the upper and lower -10dBc points on the modulated signal by 2.

Channel Frequency (MHz)	Measured Frequency (MHz) For Operating Condition					Maximum Frequency Error (kHz)	Maximum Frequency Error (ppm)
	Normal	Extreme					
	20°C	-10°C		55°C			
	230.0 V	207.0 V	253.0 V	207.0 V	253.0 V		
5320.00	5319.950	5320.025	5320.000	5320.000	5320.025	25.000	4.699
5500.00	5500.000	5500.025	5500.050	5500.000	5500.000	50.000	9.091
5700.00	5700.075	5700.075	5700.075	5700.050	5700.075	75.000	13.158
						Worst case error (ppm):	13.158

Run #3: Occupied Channel Bandwidth

The occupied channel bandwidth measurement is performed on the frequencies in each band specifed in EN 301 893 for every declared nominal bandwidth within each band (5150 - 5350 MHz and/or 5470 - 5725 MHz). Measurements are made under normal conditions only.

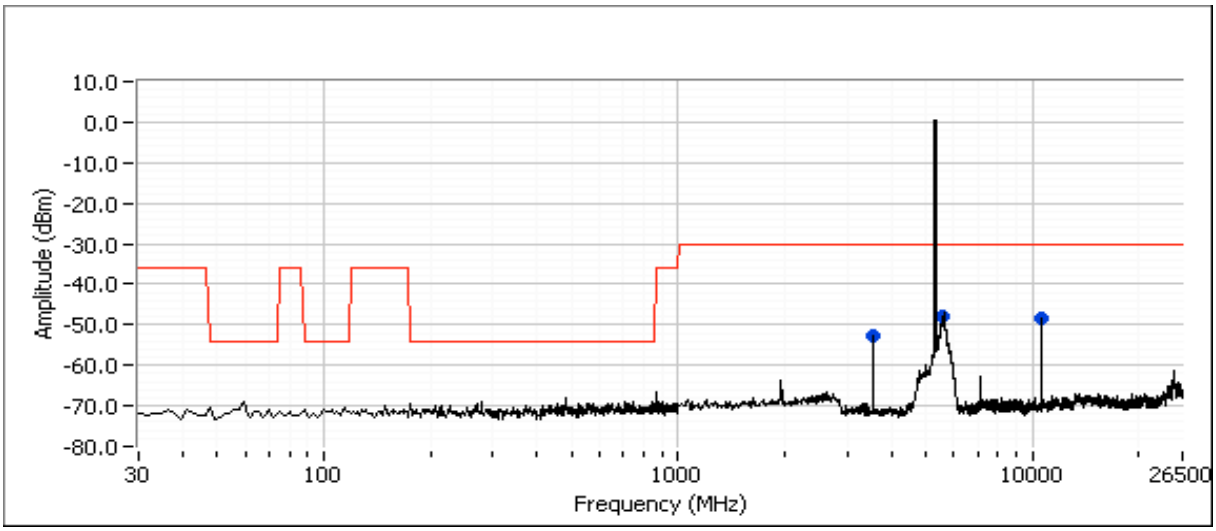
The measurement is made using the spectrum analyzer to meausre the 6dB bandwidth of the modulated signal. The analyzer is configred with RB=VB=100kHz, peak detector and max hold, with the span set to twice the nominal bandwidth.

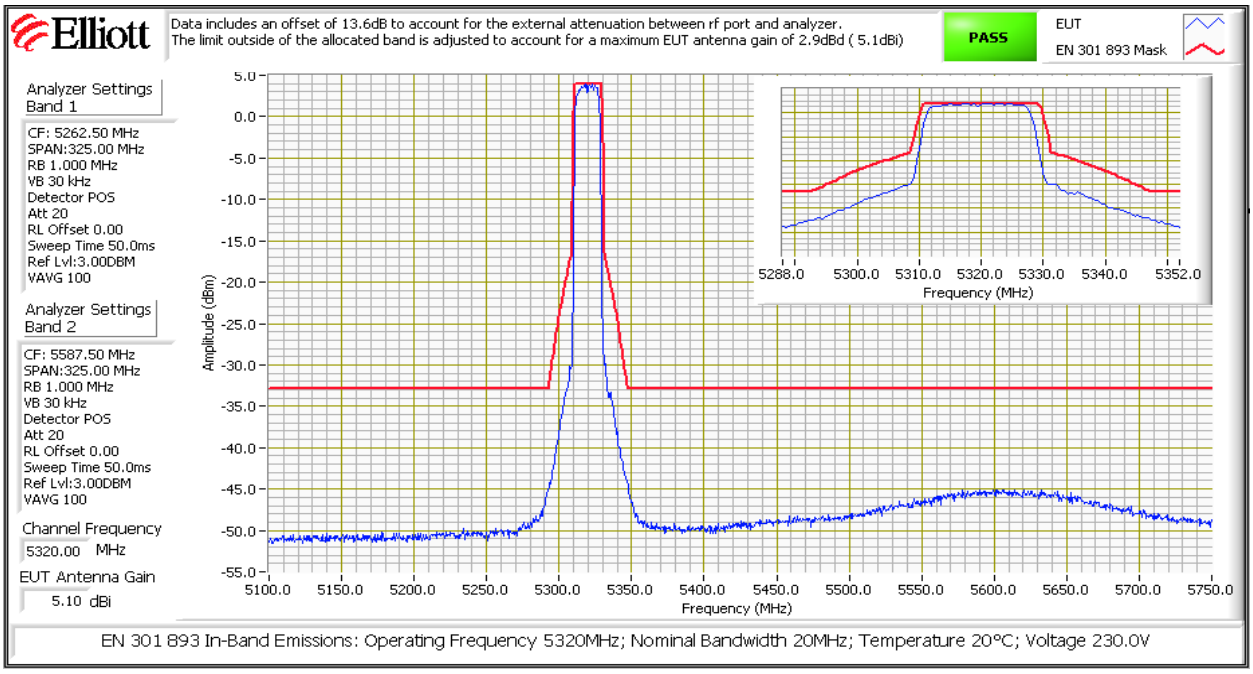
Channel frequency MHz	Mode	Nominal Bandwidth MHz	Occupied Channel Bandwidth		Result
			Measured (MHz)	Limit (MHz)	
5320	802.11a	20.00	16.25	16 - 20	Pass
5500	802.11a	20.00	16.30	16 - 20	Pass
5700	802.11a	20.00	16.45	16 - 20	Pass

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #4: Antenna Port Conducted Spurious Emissions, Transmit Mode, 30 - 26,500 MHz
Run #4a: Transmit Mode, 5320 MHz



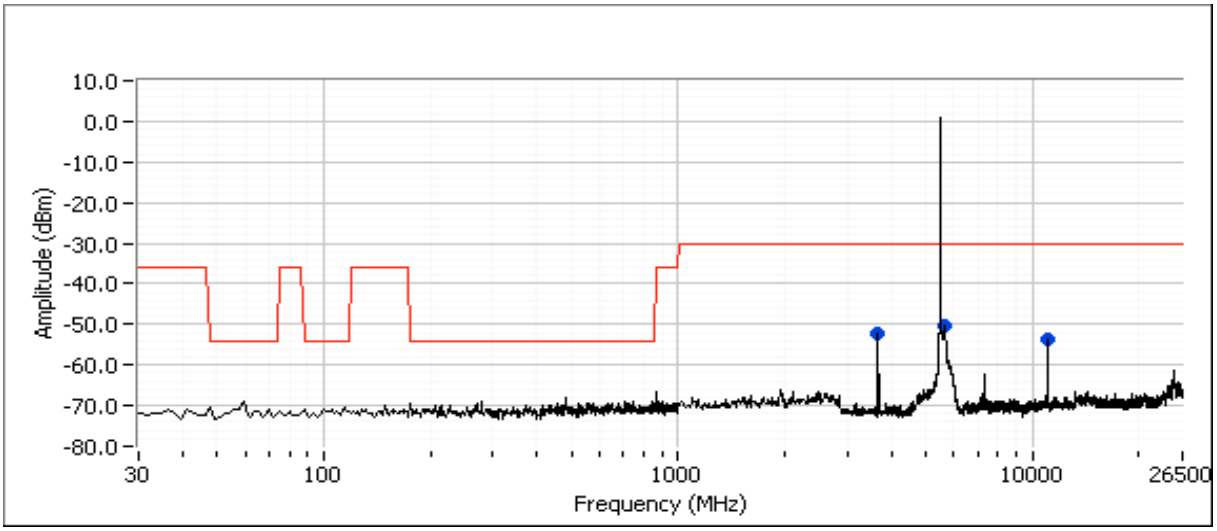


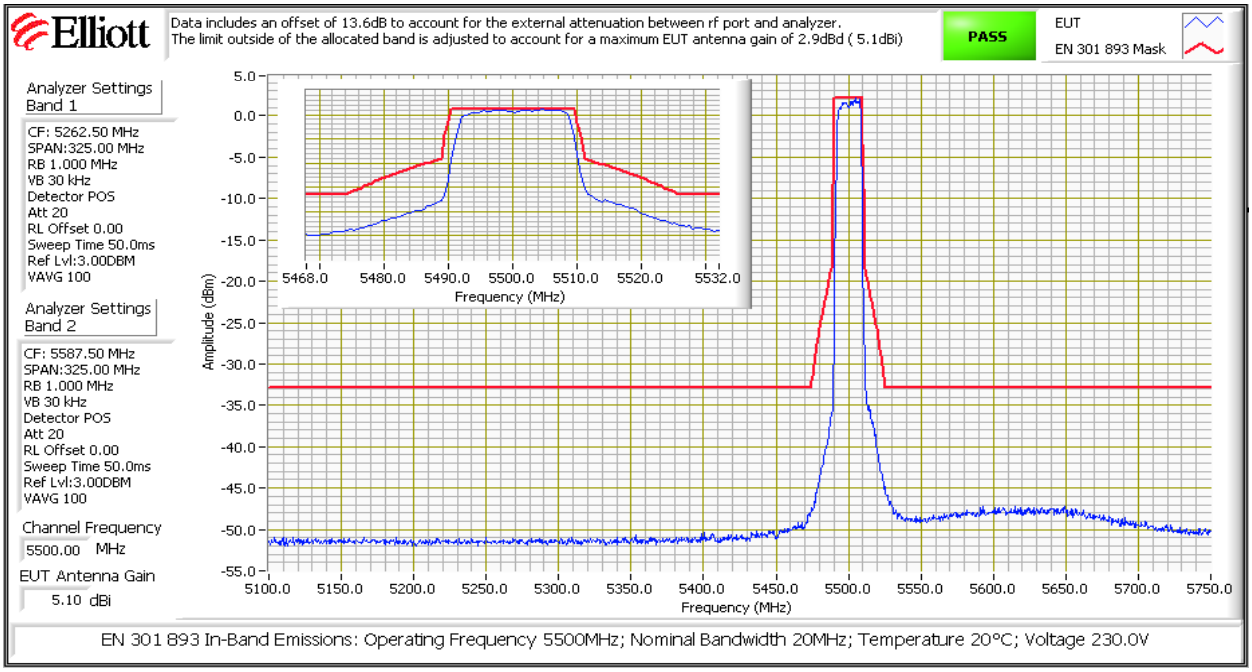
Frequency MHz	Level dBm	Port	EN 301 893 Limit	EN 301 893 Margin	Detector	Channel	Mode	Comments
5592.500	-48.1	RF Port	-30.0	-18.1	Peak	64	a	
10640.00	-48.2	RF Port	-30.0	-18.2	Peak	64	a	
3548.330	-52.9	RF Port	-30.0	-22.9	Peak	64	a	

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #4b: Transmit Mode, 5500 MHz



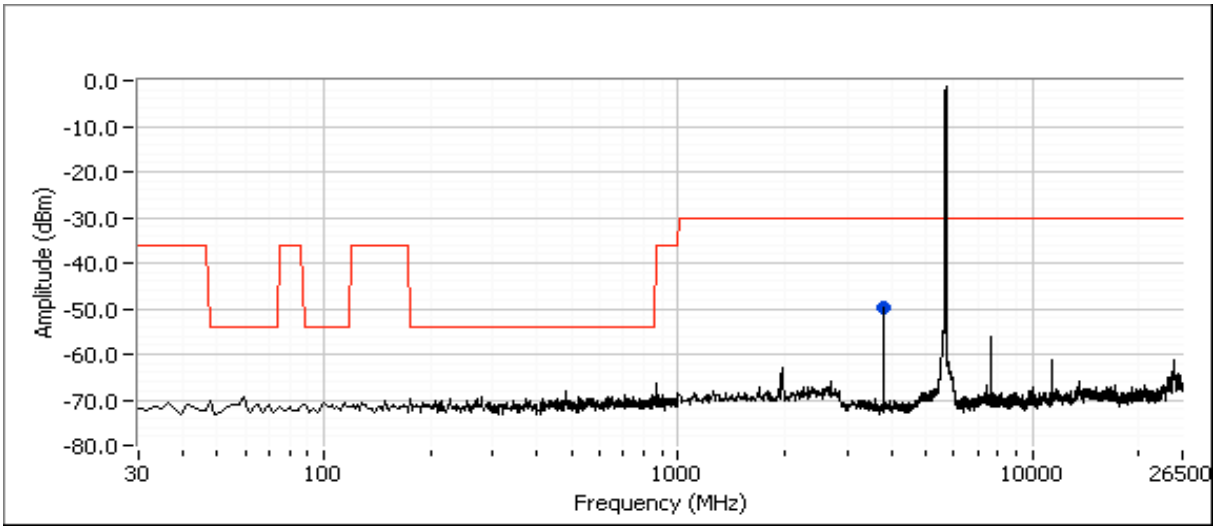


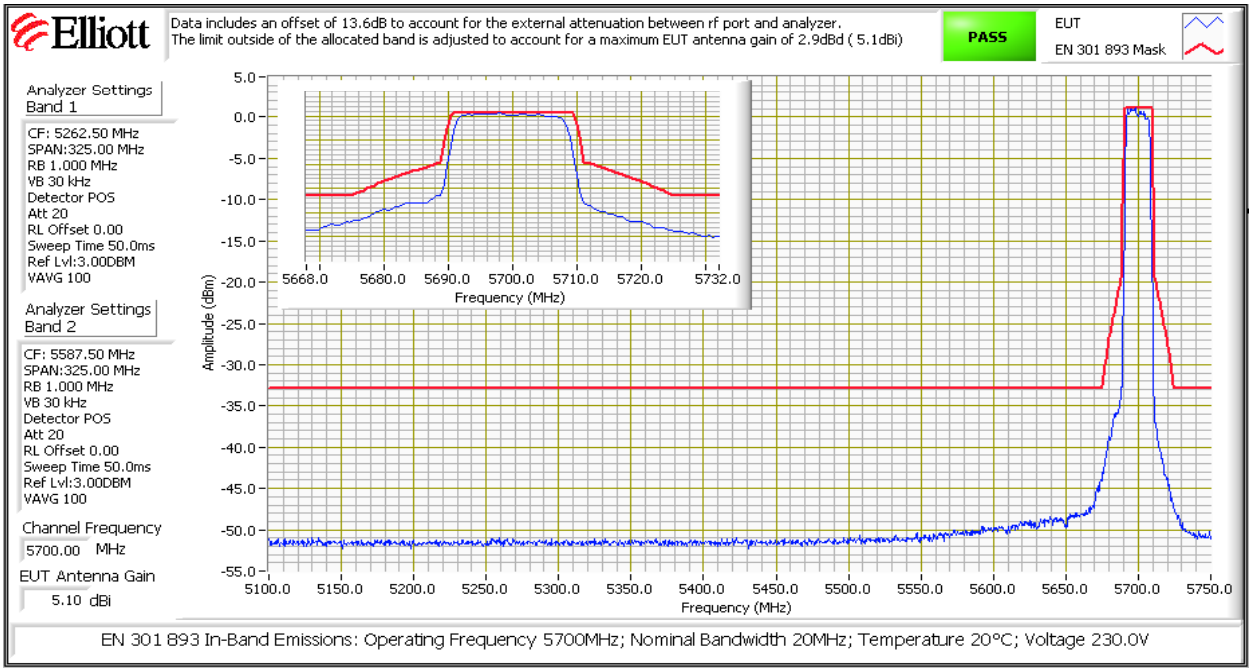
Frequency MHz	Level dBm	Port	EN 301 893 Limit	EN 301 893 Margin	Detector	Channel	Mode	Comments
5629.170	-50.2	RF Port	-30.0	-20.2	Peak	100	a	
3667.500	-52.1	RF Port	-30.0	-22.1	Peak	100	a	
11000.00	-53.7	RF Port	-30.0	-23.7	Peak	100	a	

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #4c: Transmit Mode, 5700 MHz

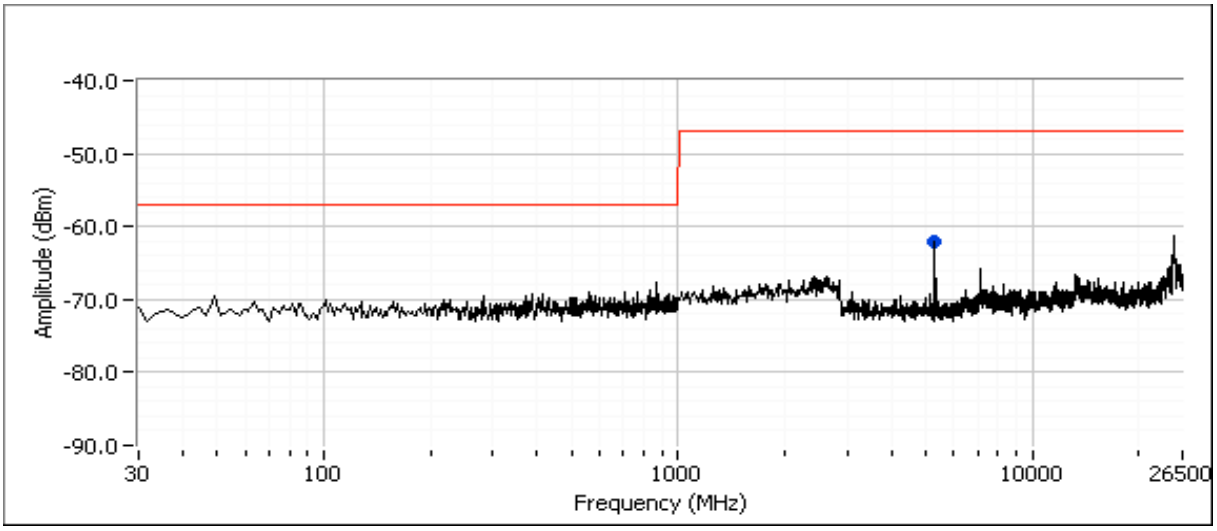




Frequency MHz	Level dBm	Port	EN 301 893 Limit	EN 301 893 Margin	Detector	Channel	Mode	Comments
3795.830	-49.9	RF Port	-30.0	-19.9	Peak	140	4.0	

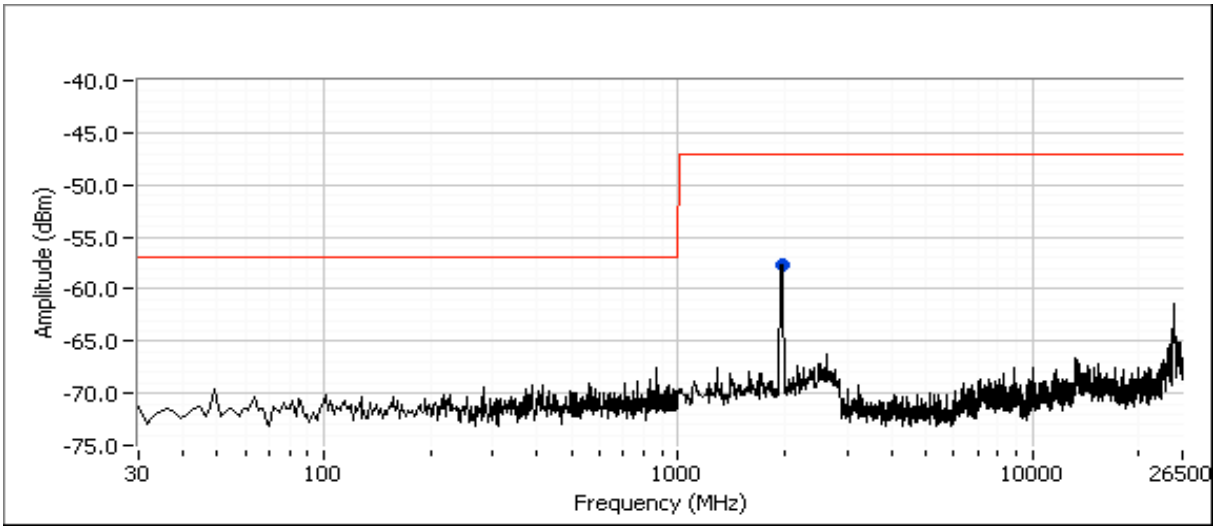
Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #5: Antenna Port Conducted Spurious Emissions, Receive Mode, 30 - 26,500 MHz
Run #5a: Receive Mode, 5320 MHz



Frequency MHz	Level dBm	Port	EN 301 893 Limit	Margin	Detector	Channel	Mode	Comments
5308.330	-62.2	RF Port	-47.0	-15.2	Peak	64.0	4.0	

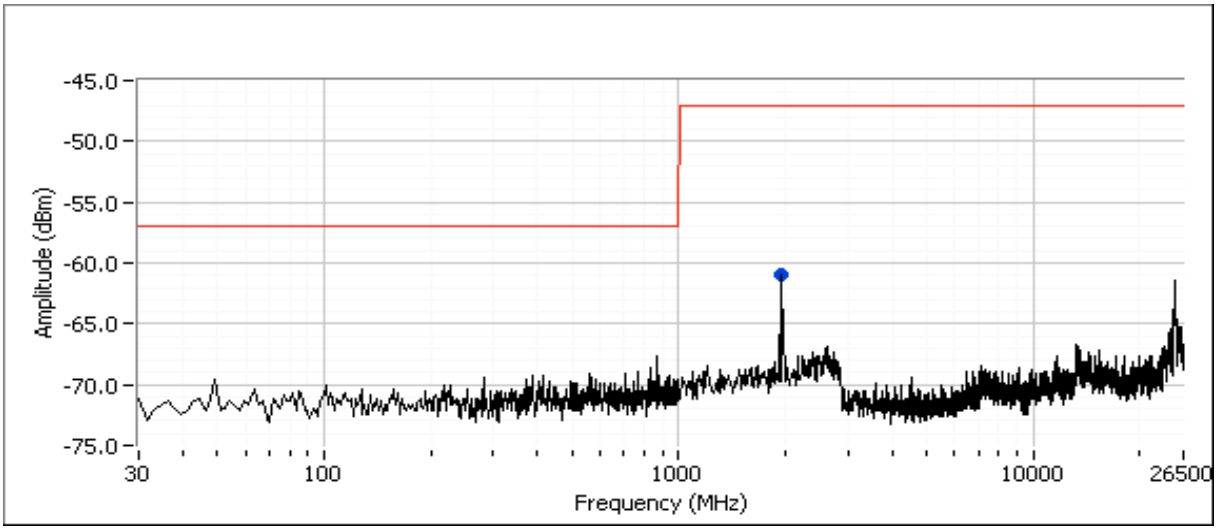
Run #5b: Receive Mode, 5500 MHz



Frequency MHz	Level dBm	Port	EN 301 893 Limit	Margin	Detector	Channel	Mode	Comments
1962.500	-57.7	RF Port	-47.0	-10.7	Peak	100	a	

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #5c: Receive Mode, 5700 MHz



Frequency MHz	Level dBm	Port	EN 301 893 Limit	EN 301 893 Margin	Detector	Channel	Mode	Comments
1944.170	-60.9	RF Port	-47.0	-13.9	Peak	140	a	

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Transmitter Radiated Spurious Emissions, EN 301 893

Test Specific Details

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

Date of Test: 5/5/2008 18:46
Test Engineer: Rafael Varelas
Test Location: Chamber #2 & OATS #1

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

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. Spurious measurements below 1GHz with the device tranmsitting at 5260MHz and 5700 MHz suggested that the emsisions below 1GHz were independent of operating frequency, therefore only measurements above 1GHz were made for the 5320 MHz and 5500 MHz channels.

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 23.2 °C
Rel. Humidity: 35 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Transmit Mode, 25 - 25000 MHz	EN 301 893	Pass	-55.6dBm erp @ 843.2MHz (-1.6dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

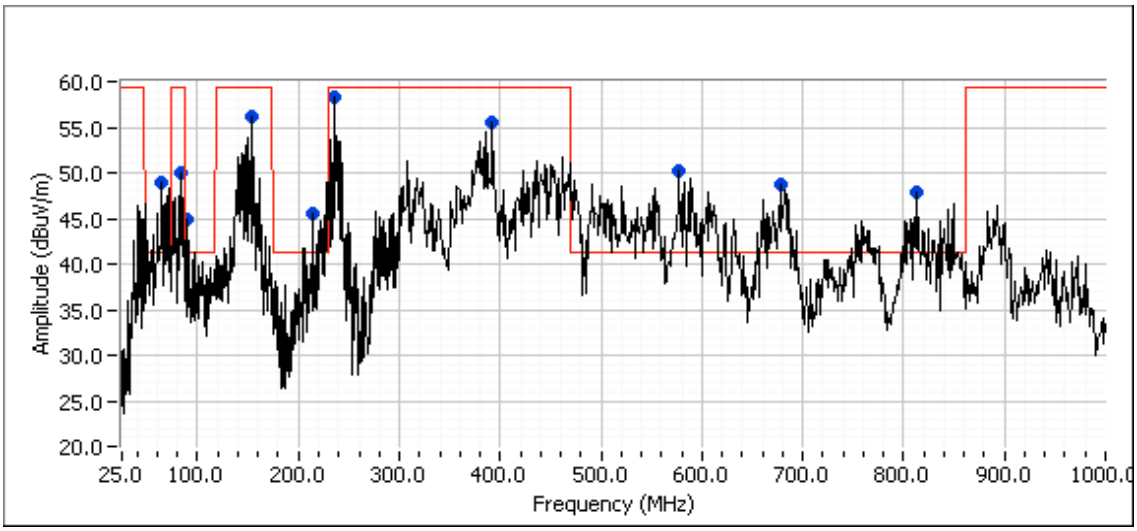
Deviations From The Standard

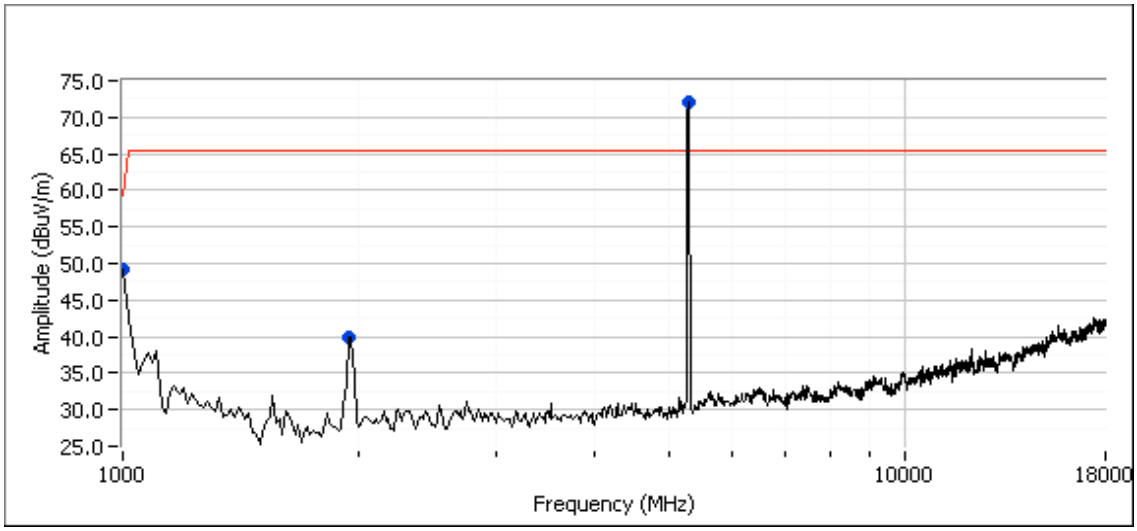
No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

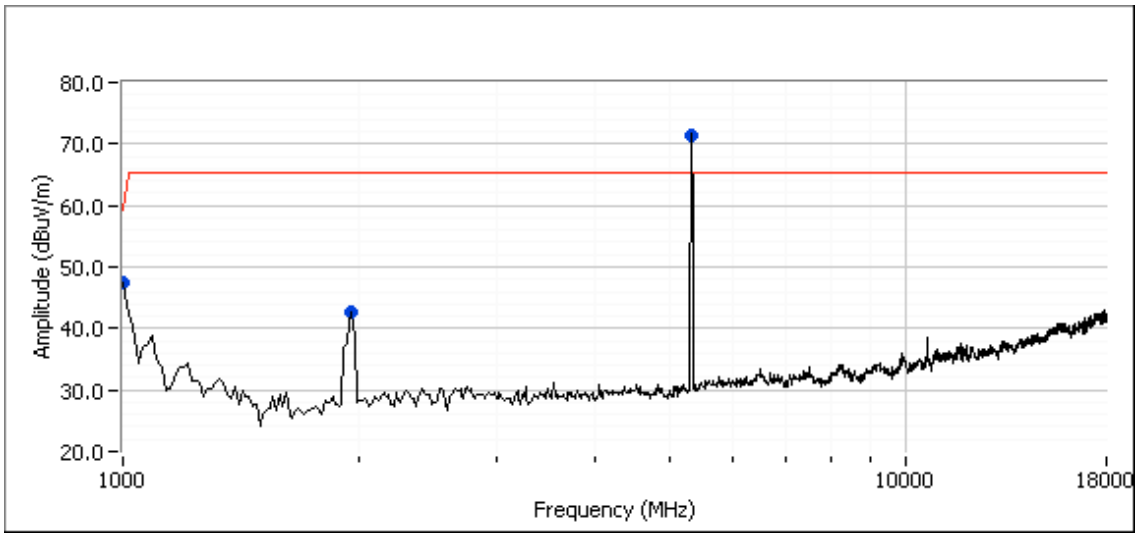
Run #1: Radiated Spurious Emissions, Transmit Mode, 25 - 25000 MHz
Measurements made at 3m
Run #1a: EUT @ 5280 MHz

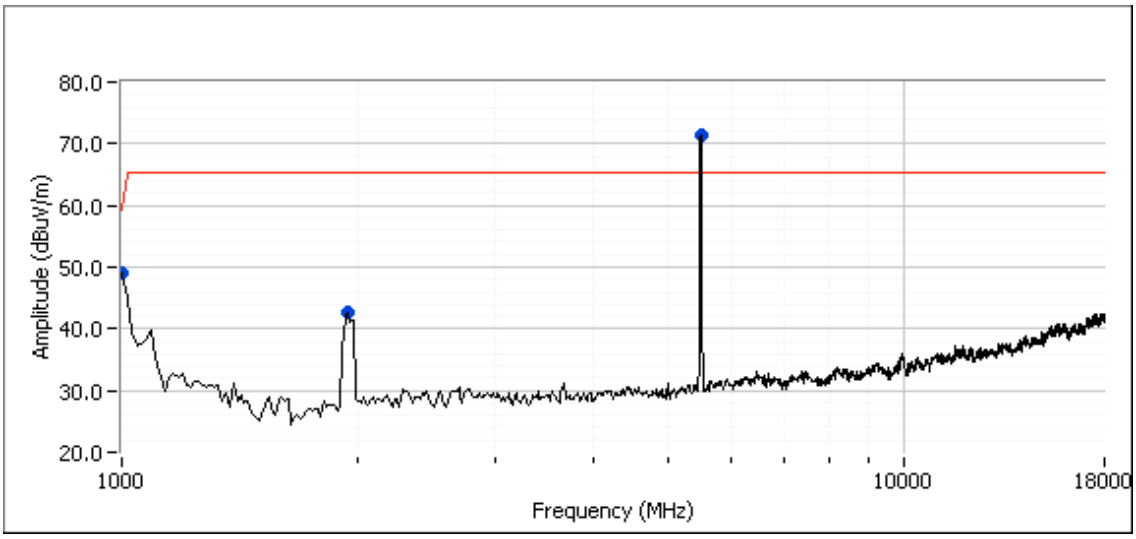




Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

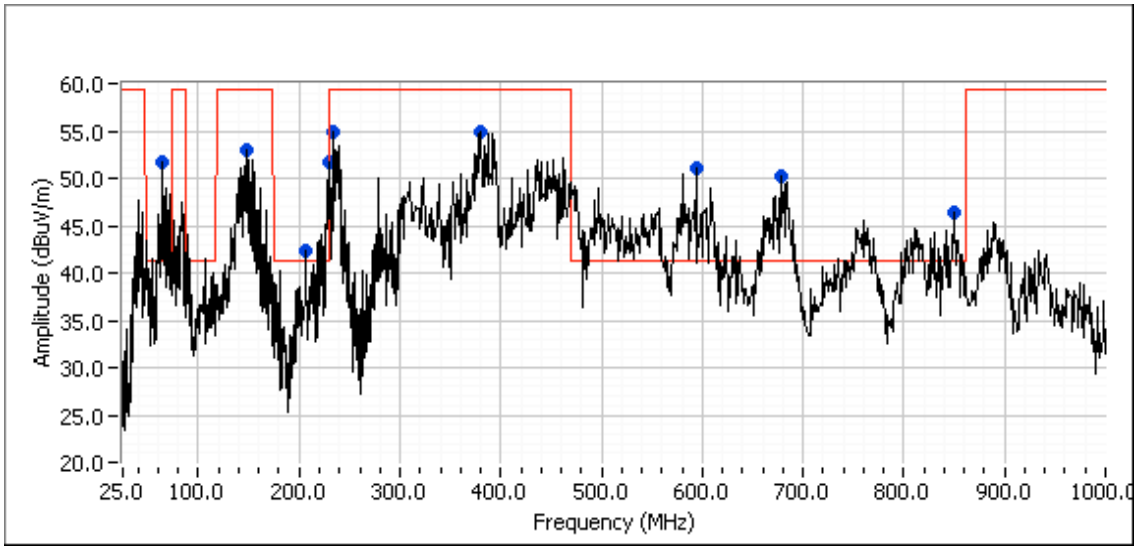
Run #1b: EUT @ 5320 MHz

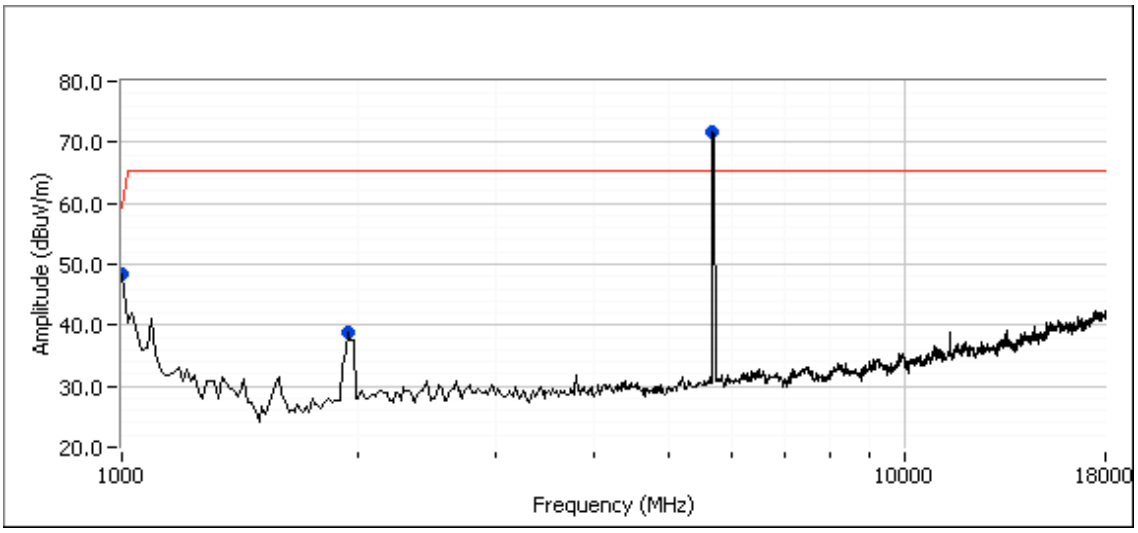




Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

EUT @ 5700 MHz





EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Prelimnary Data - Field Strength Measurements in Anechoic Chamber

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments	EUT
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		Frequency
227.906	51.7	H	41.3	10.4	Peak	271	1.7		5700
63.957	51.6	V	41.3	10.3	Peak	28	1.7		5700
590.576	51.0	H	41.3	9.7	Peak	79	1.7		5700
578.469	50.3	H	41.3	9.0	Peak	82	1.7		5280
681.384	50.3	H	41.3	9.0	Peak	266	1.7		5700
63.948	48.9	V	41.3	7.6	Peak	360	1.7		5280
675.962	48.8	H	41.3	7.5	Peak	276	1.7		5280
812.830	47.8	H	41.3	6.5	Peak	80	1.7		5280
848.289	46.3	H	41.3	5.0	Peak	73	1.7		5700
214.495	45.6	H	41.3	4.3	Peak	91	1.7		5280
89.572	44.8	V	41.3	3.5	Peak	28	1.7		5280
208.000	42.3	H	41.3	1.0	Peak	242	1.7		5700
234.600	58.2	H	59.3	-1.1	Peak	272	1.7		5280
151.482	56.1	H	59.3	-3.2	Peak	122	1.7		5280
388.213	55.5	H	59.3	-3.8	Peak	252	1.7		5280
380.215	54.9	H	59.3	-4.4	Peak	275	1.7		5700
234.017	54.8	H	59.3	-4.5	Peak	242	1.7		5700
148.132	52.9	H	59.3	-6.4	Peak	271	1.7		5700
83.054	50.1	V	59.3	-9.2	Peak	298	1.7		5280
1040.008	49.3	H	59.3	-10.0	Peak	139	1.7		5280
1009.347	49.1	H	59.3	-10.2	Peak	148	1.7		5500
1007.600	48.3	H	59.3	-11.0	Peak	134	1.7		5700
1039.921	47.3	H	59.3	-12.0	Peak	154	1.7		5320
1988.480	42.6	V	65.3	-22.7	Peak	126	1.7		5320
1988.500	42.6	H	65.3	-22.7	Peak	352	1.7		5500
1951.460	39.8	H	65.3	-25.5	Peak	109	1.7		5280
1951.460	38.9	V	65.3	-26.4	Peak	9	1.7		5700
5280.240	72.2	V	-	-	Peak	135	1.7	Fundamental	5280
5320.000	71.4	H	-	-	Peak	117	1.7	Fundamental	5320
5500.000	71.3	V	-	-	Peak	125	1.7	Fundamental	5500

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #2a: OATS Field Strength and Substitution Measurements, made on 5/5/2008

Note - highlighted frequencies were re-measured on 7/20/2008, refer to Run #2b

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments	Tx
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		Frequency
63.957	49.8	V	41.3	8.5	PK	56	1.0		5700 MHz
227.906	47.1	H	41.3	5.8	PK	210	2.2		5700 MHz
812.830	47.0	H	41.3	5.7	PK	15	1.0		5280 MHz
843.289	45.6	H	41.3	4.3	PK	243	1.9		
675.962	44.9	H	41.3	3.6	PK	46	2.4	Partial ambient	
578.469	43.4	H	41.3	2.1	PK	283	2.3		
681.384	43.1	H	41.3	1.8	PK	115	2.9	Partial ambient	
590.576	42.7	H	41.3	1.4	PK	92	2.7	Partial ambient	
89.572	42.6	V	41.3	1.3	PK	321	1.0		
380.215	58.4	H	59.3	-0.9	PK	225	2.5		
214.495	39.8	H	41.3	-1.5	PK	24	1.0		
388.213	57.7	H	59.3	-1.6	PK	233	1.2		
234.600	50.5	H	59.3	-8.8	PK	95	2.6		
151.482	48.7	H	59.3	-10.6	PK	240	1.2		
148.132	44.1	H	59.3	-15.2	PK	240	1.4		
83.054	41.8	V	59.3	-17.5	PK	78	1.0		

Horizontal Substitution Measurements

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
227.906	-12.0	1.1	87.4	98.3	47.1	-51.2	-53.4		-54.0	0.6
812.830	-14.0	7.2	91.7	98.5	47.0	-51.5	-53.7		-54.0	0.3
843.289	-14.1	6.7	91.6	99.0	45.6	-53.4	-55.6		-54.0	-1.6
675.962	-13.7	7.3	92.0	98.4	44.9	-53.5	-55.7		-54.0	-1.7
578.469	-13.3	6.8	92.4	98.9	43.4	-55.5	-57.7		-54.0	-3.7
681.384	-13.7	7.4	92.3	98.6	43.1	-55.5	-57.7		-54.0	-3.7
590.576	-13.3	7.1	92.2	98.4	42.7	-55.7	-57.9		-54.0	-3.9
380.215	-14.1	5.7	91.9	100.3	58.4	-41.9	-44.1		-36.0	-8.1
214.495	-11.8	1.0	88.1	98.9	39.8	-59.1	-61.3		-54.0	-7.3
388.213	-12.8	5.2	91.9	99.5	57.7	-41.8	-44.0		-36.0	-8.0
234.600	-12.0	1.2	87.7	98.5	50.5	-48.0	-50.2		-36.0	-14.2

Vertical Substitution Measurements

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
63.957	-11.0	-3.4	83.6	98.0	49.8	-48.2	-50.4		-54.0	3.6
89.572	-11.2	-0.5	87.6	99.3	42.6	-56.7	-58.9		-54.0	-4.9

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #2b: Radiated Spurious Emissions, Transmit Mode: Final Field Strength and Substitution Measurements

Date of Test: 7/20/2008 0:00
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber 3
(10m Semi-anechoic chamber)

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

The frequencies highlighted in run #2 on the previous page were re-measured with the product removed from the extender card and connected directly into the host device. The field strength of the emissions at these three frequencies was considerably lower, indicating that the extender card was the contributor to these emissions.

Measurements w/o card extender

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments	Tx
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		Frequency
64.671	27.5	V	41.3	-13.8	PK	106	1.0		5700 MHz
227.954	35.9	H	41.3	-5.4	PK	56	1.0		5700 MHz
812.213	37.3	H	41.3	-4.0	PK	98	1.0		5280 MHz

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
227.906	-11.1	5.7	91.5	96.9	35.9	-61.0	-63.2		-54.0	-9.2
812.830	-12.7	6.6	92.3	98.4	37.3	-61.1	-63.3		-54.0	-9.3

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
63.957	-10.3	-1.7	83.9	95.9	27.5	-68.4	-70.6		-54.0	-16.6

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Receiver Radiated Spurious Emissions, 25 - 1000 MHz

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: 7/24/2008 0:07
Test Engineer: Rafael Varelas
Test Location: Chamber #2

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

General Test Configuration

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

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 20.8 °C
Rel. Humidity: 42 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Receive/Stand-By Mode, 25 - 1000 MHz	EN 301 893	Pass	-59.0dBm erp @ 191.366 MHz (-20.dB)

Modifications Made During Testing

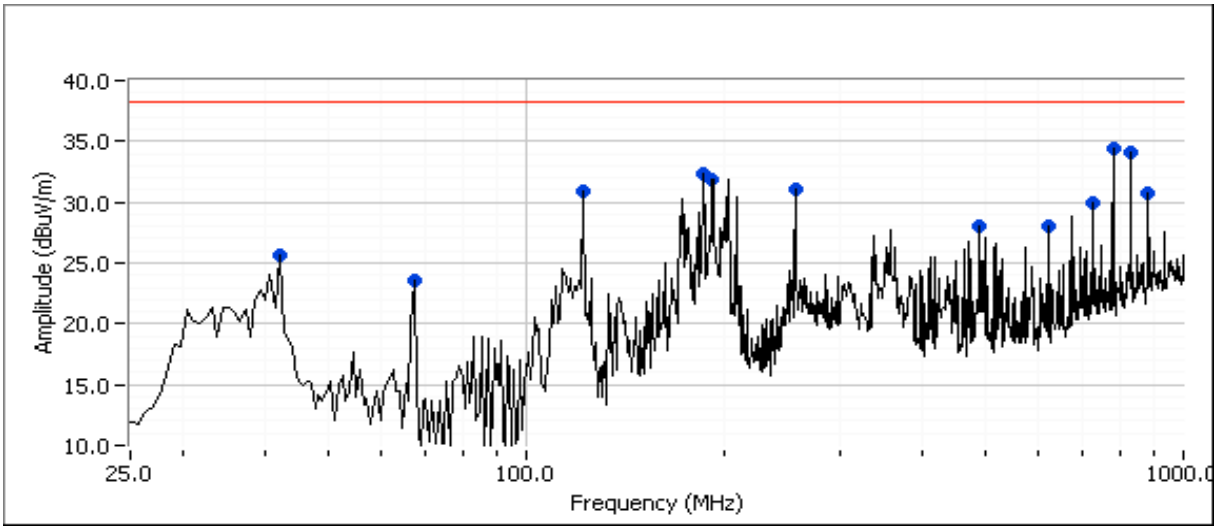
No modifications were made to the EUT during testing

Deviations From The Standard

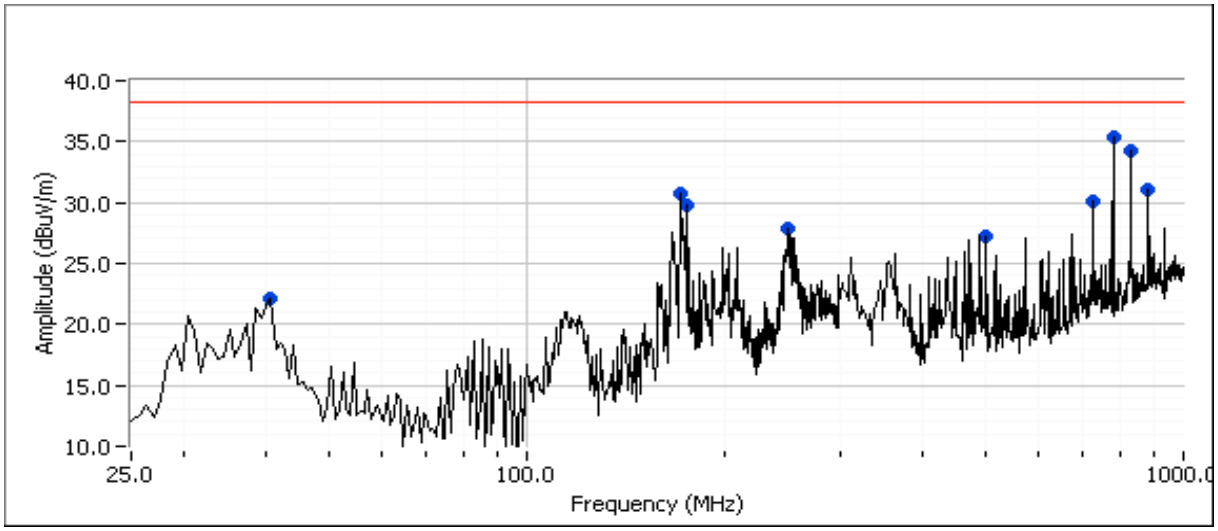
No deviations were made from the requirements of the standard.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

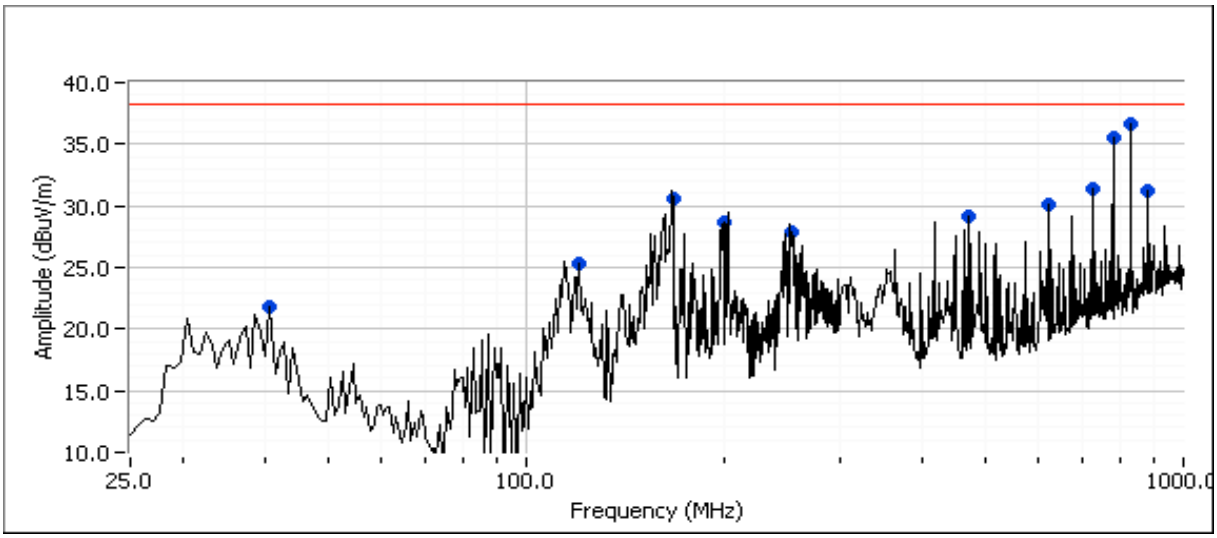
Run #1a: Radiated Spurious Emissions, Receive Mode, 25 - 1000 MHz
Measurements made at 3m
Graph - low channel at 5280 MHz



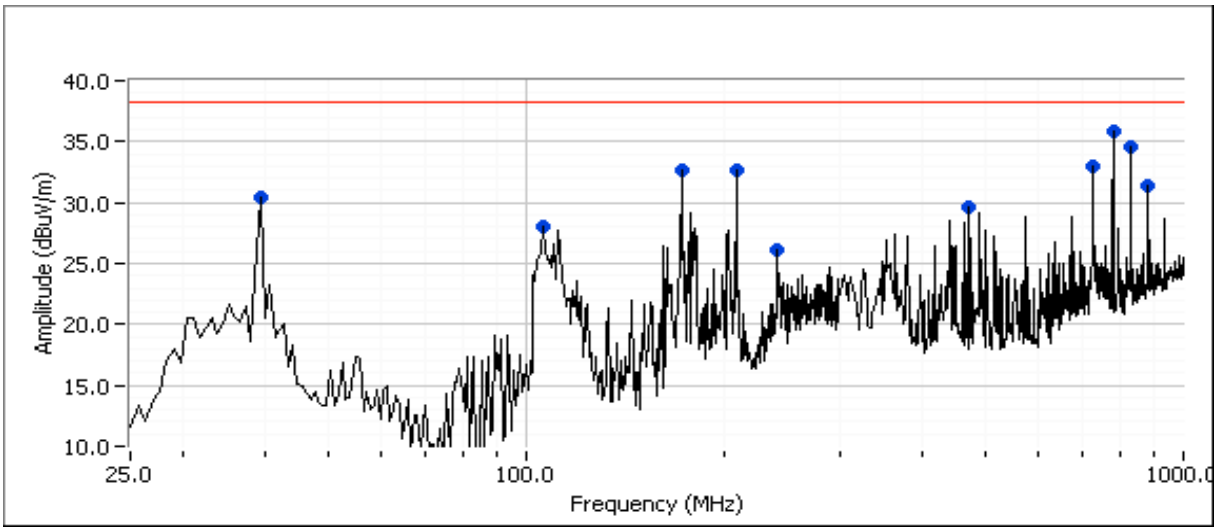
Graph - high channel at 5320 MHz



Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A



Graph - high channel at 5700 MHz



EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Results Table - All channels

Frequency MHz	Level dBμV/m	Pol v/h	EN 301 893 Note 1 Limit	Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	Channel Frequency
38.909	30.5	V	38.3	-7.8	Peak	272	1.7		140
121.757	30.9	V	38.3	-7.4	Peak	0	1.7		56
166.412	30.6	H	38.3	-7.7	Peak	269	1.7		100
171.213	32.6	H	38.3	-5.7	Peak	88	1.7		140
171.557	30.8	H	38.3	-7.5	Peak	89	1.7		64
175.247	29.8	H	38.3	-8.5	Peak	89	1.7	broad band	64
185.770	32.3	H	38.3	-6.0	Peak	149	1.7		56
191.366	31.9	V	38.3	-6.4	Peak	301	1.7		56
199.253	28.6	V	38.3	-9.7	Peak	211	1.7	broad band	100
208.550	32.6	V	38.3	-5.7	Peak	301	1.7		140
258.499	31.1	H	38.3	-7.2	Peak	269	1.7		56
468.009	29.1	H	38.3	-9.2	Peak	248	1.7		100
469.078	29.7	H	38.3	-8.6	Peak	121	1.7		140
624.003	30.1	H	38.3	-8.2	Peak	122	1.7		100
727.986	31.4	H	38.3	-6.9	Peak	225	1.7		100
728.017	32.9	V	38.3	-5.4	Peak	295	1.7		140
728.017	30.1	H	38.3	-8.2	Peak	230	1.7		64
728.964	29.9	H	38.3	-8.4	Peak	224	1.7		56
779.997	35.8	H	38.3	-2.5	Peak	92	1.7		140
779.997	35.5	H	38.3	-2.8	Peak	282	1.7		100
779.997	35.4	H	38.3	-2.9	Peak	280	1.7		64
780.028	34.4	H	38.3	-3.9	Peak	257	1.7		56
831.969	36.6	H	38.3	-1.7	Peak	248	1.7		100
832.000	34.5	H	38.3	-3.8	Peak	71	1.7		140
832.000	34.2	H	38.3	-4.1	Peak	87	1.7		64
832.000	34.1	H	38.3	-4.2	Peak	130	1.7		56
883.981	31.4	H	38.3	-6.9	Peak	139	1.7		140
883.981	31.3	H	38.3	-7.0	Peak	87	1.7		100
883.981	31.0	H	38.3	-7.3	Peak	98	1.7		64
883.981	30.7	H	38.3	-7.6	Peak	86	1.7		56

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	The **bolded** frequencies represent the worst case emissions at the frequency for all four channels at frequencies where the worst-case margin relative to the calculated limit was less than 10dB.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Results Table - All channels, continued

Frequency MHz	Level dBμV/m	Pol v/h	EN 301 893 Note 1 Limit	Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	Channel Frequency
105.765	28.1	V	38.3	-10.2	Peak	212	1.7		140
489.061	28.1	H	38.3	-10.2	Peak	241	1.7		56
624.003	28.1	H	38.3	-10.2	Peak	305	1.7		56
250.032	27.9	H	38.3	-10.4	Peak	269	1.7		64
253.013	27.9	H	38.3	-10.4	Peak	269	1.7		100
500.486	27.3	H	38.3	-11.0	Peak	232	1.7		64
241.490	26.1	V	38.3	-12.2	Peak	212	1.7		140
42.007	25.7	V	38.3	-12.6	Peak	151	1.7		56
120.526	25.3	H	38.3	-13.0	Peak	269	1.7		100
67.853	23.5	V	38.3	-14.8	Peak	360	1.7		56
40.812	22.2	V	38.3	-16.1	Peak	181	1.7		64
39.984	21.8	V	38.3	-16.5	Peak	181	1.7		100

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #2: Radiated Spurious Emissions, Receive Mode: Final Field Strength and Substitution Measurements

EN 301 893 allows video averaging to be used provided averaging only occurs when signal is present. Where peak field strength measurement was above the field strength limit a measurement with video averaging enabled was also made. The video averaged measurement was used to determine the erp of the emissions. (When video averaging was used, span << RB, video triggered if signal was intermittent).

Field Strength Measurements made at 3m

Frequency MHz	Level dBµV/m	Pol v/h	EN 301 893 Note 1 Limit	Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	Channel Frequency
Vertical									
38.987	20.8	V	38.3	-17.5	PK	292	1.0		140
121.757	29.7	V	38.3	-8.6	PK	71	1.4		56
191.366	37.1	V	38.3	-1.2	PK	204	1.0		56
197.753	35.8	V	38.3	-2.5	PK	12	1.0		100
208.550	30.0	V	38.3	-8.3	PK	360	1.0		140
728.279	46.7	V	38.3	8.4	PK	169	1.0		140
728.279	38.3	V	38.3	0.0	AVG	169	1.0	Video averaging used	140
Horizontal									
166.243	33.2	H	38.3	-5.1	PK	250	1.0		100
171.557	36.0	H	38.3	-2.3	PK	98	1.0		140
173.947	34.9	H	38.3	-3.4	PK	100	1.0		64
185.770	40.6	H	38.3	2.3	PK	138	1.0		56
185.770	31.5	H	38.3	-6.8	AVG	138	1.0	Video averaging used	56
250.032	24.6	H	38.3	-13.7	PK	3	1.2		64
258.499	22.1	H	38.3	-16.2	PK	0	1.2		56
469.078	21.4	H	38.3	-16.9	PK	136	1.0		140
624.000	42.7	H	38.3	4.4	PK	196	1.0		100
624.000	30.9	H	38.3	-7.4	AVG	196	1.0	Video averaging used	100
779.943	41.0	H	38.3	2.7	PK	85	1.0		140
779.943	35.9	H	38.3	-2.4	AVG	85	1.0	Video averaging used	140
831.944	35.6	H	38.3	-2.7	PK	240	1.6		100
883.981	33.4	H	38.3	-4.9	PK	0	1.0		140

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Substitution Measurements for all signals with less than 10dB of margin to the calculated field strength limit:

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
121.757	-11.3	0.5	83.6	94.4	29.7	-64.7	-66.9		-57.0	-9.9
191.366	-11.3	1.7	84.3	93.9	37.1	-56.8	-59.0		-57.0	-2.0
197.753	-11.4	1.7	83.9	93.6	35.8	-57.8	-60.0		-57.0	-3.0
208.550	-11.4	1.3	83.7	93.8	30.0	-63.8	-66.0		-57.0	-9.0
728.279	-23.2	6.7	80.7	97.2	38.3	-58.9	-61.1		-57.0	-4.1

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
166.243	-11.3	1.5	89.8	99.6	33.2	-66.4	-68.6		-57.0	-11.6
171.557	-11.3	1.6	90.0	99.7	36.0	-63.7	-65.9		-57.0	-8.9
173.947	-11.3	1.6	90.3	100.0	34.9	-65.1	-67.3		-57.0	-10.3
185.770	-11.3	1.6	90.1	99.8	31.5	-68.3	-70.5		-57.0	-13.5
624.000	-23.1	7.1	82.0	98.0	30.9	-67.1	-69.3		-57.0	-12.3
779.943	-23.3	6.3	80.2	97.2	35.9	-61.3	-63.5		-57.0	-6.5
831.944	-23.3	6.5	79.7	96.5	35.6	-60.9	-63.1		-57.0	-6.1
883.981	-23.3	5.8	79.4	96.9	33.4	-63.5	-65.7		-57.0	-8.7

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a nominal gain of 2.2dBi, however the dipole balun loss may reduce the gain of the substitution dipole used.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna, maximized for receive antenna height and transmit antenna azimuth.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Receiver Radiated Spurious Emissions, 1,000 - 26,500 MHz

Test Specific Details

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

Date of Test: 5/5/2008 18:46
Test Engineer: Rafael Varelas
Test Location: Chamber #2 & OATS #1

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

General Test Configuration

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

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 23.2 °C
Rel. Humidity: 35 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Spurious Emissions Receive/Stand-By Mode, 1000 - 25000 MHz	EN 301 893	Pass	erp ~ -57.3dBm (10dB below the -47dBm 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.

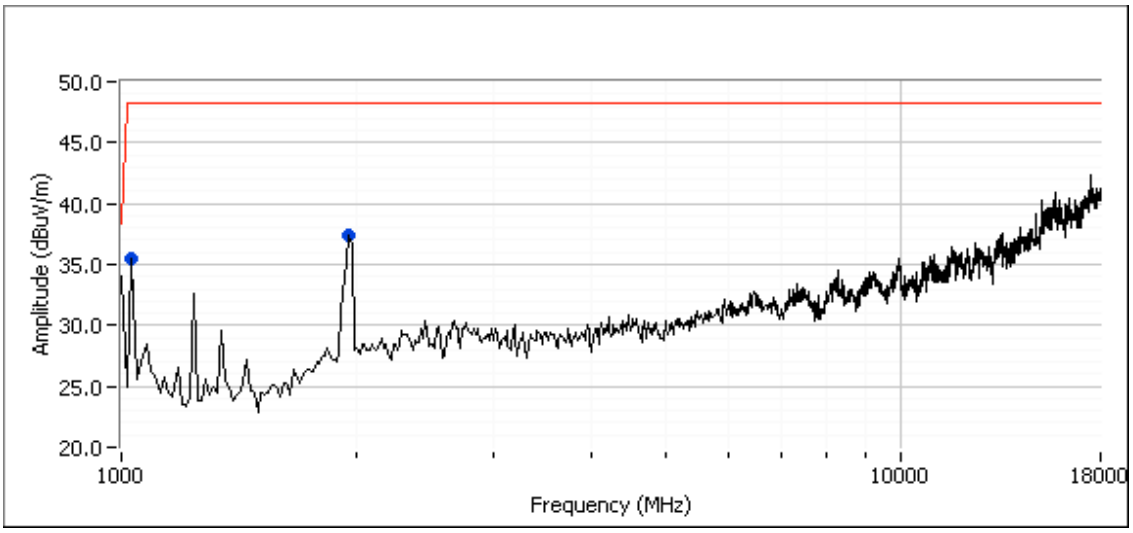
Notes/Comments

The field strength limit in the plots that follow was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d for a measurement distance of 3m. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

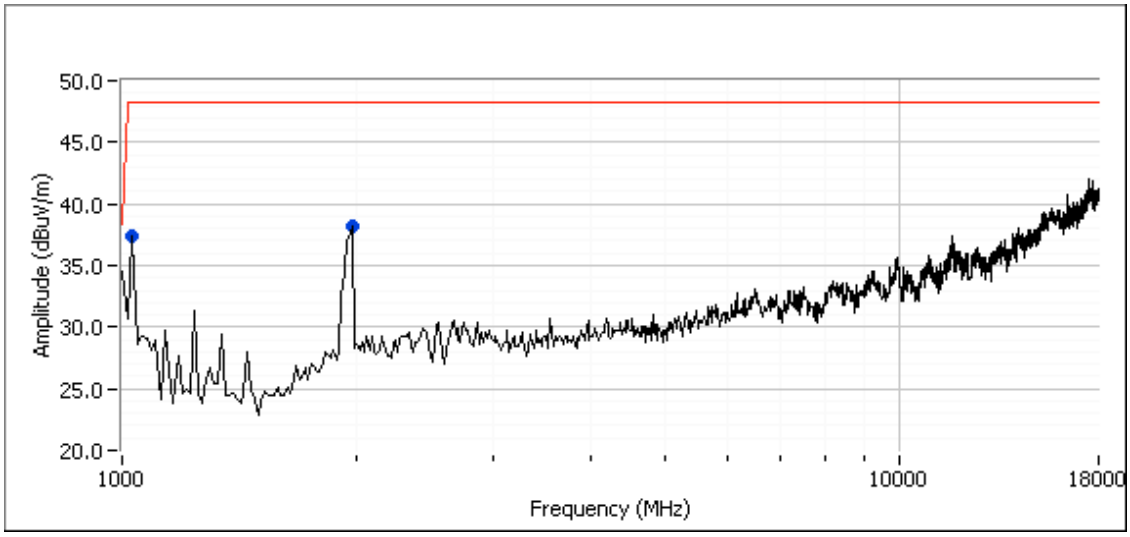
The field strength limit in the tables that follow was calculated as above but includes the dipole gain (2.2dBi) The erp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1: Radiated Spurious Emissions, Receive Mode, 25 - 25000 MHz
EUT @ 5280 MHz

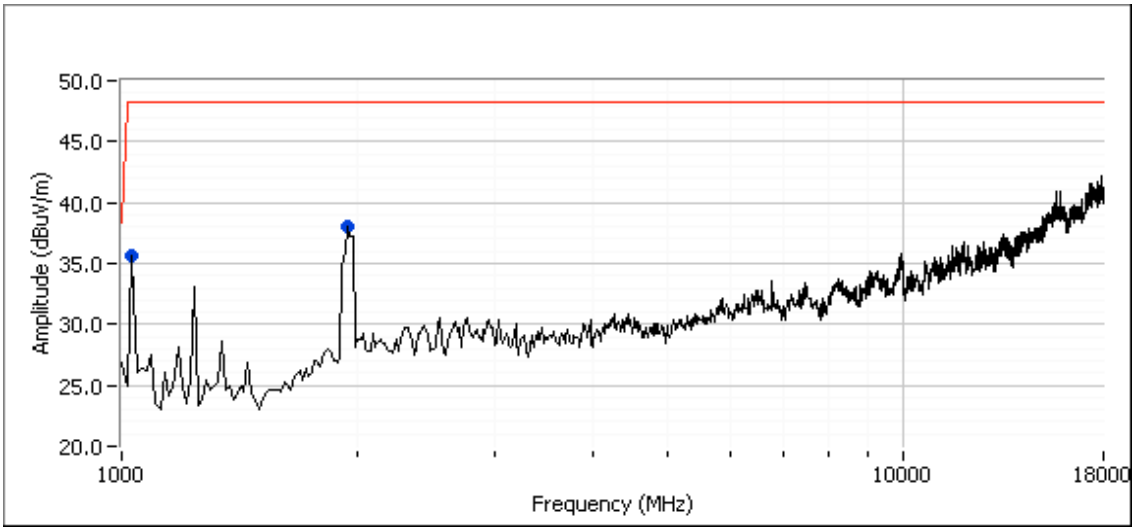


Run #1b: EUT @ 5320 MHz

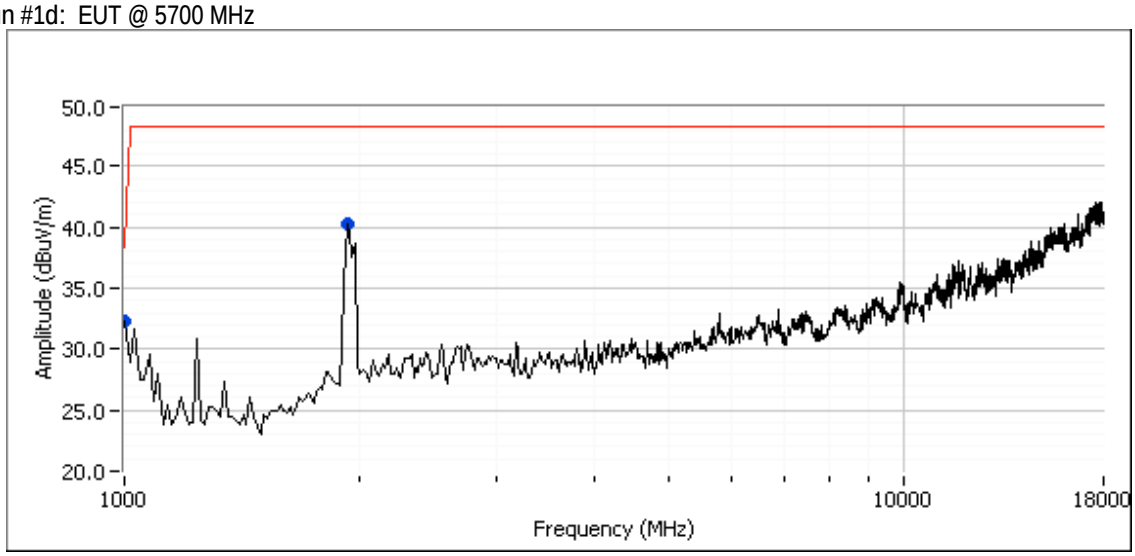


Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1c: EUT @ 5500 MHz



Run #1d: EUT @ 5700 MHz



Frequency	Level	Pol	EN 301 893		Detector	Azimuth	Height	Comments	EUT
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		Frequency
1951.490	40.2	H	50.5	-10.3	Peak	356	1.7	erp ~ -57.3dBm	5700
1951.590	38.2	H	50.5	-12.3	Peak	273	1.7		5320
1951.460	38.1	V	50.5	-12.4	Peak	359	1.7		5500
1012.225	37.4	H	50.5	-13.1	Peak	170	1.7		5320
1951.440	37.4	H	50.5	-13.1	Peak	140	1.7		5280
1012.911	35.7	V	50.5	-14.8	Peak	352	1.7		5500
1014.010	35.4	H	50.5	-15.1	Peak	151	1.7		5280
1010.745	32.3	H	50.5	-18.2	Peak	356	1.7		5700

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Receiver Radiated Spurious Emissions, EN 301 893

Test Specific Details

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

Date of Test: 5/5/2008 18:46
Test Engineer: Rafael Varelas
Test Location: Chamber #2 & OATS #1

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

General Test Configuration

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

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 23.2 °C
Rel. Humidity: 35 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Receive/Stand-By Mode, 25 - 25000 MHz	EN 301 893	Pass	-58.3dBm @ 71.500MHz (-1.3dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

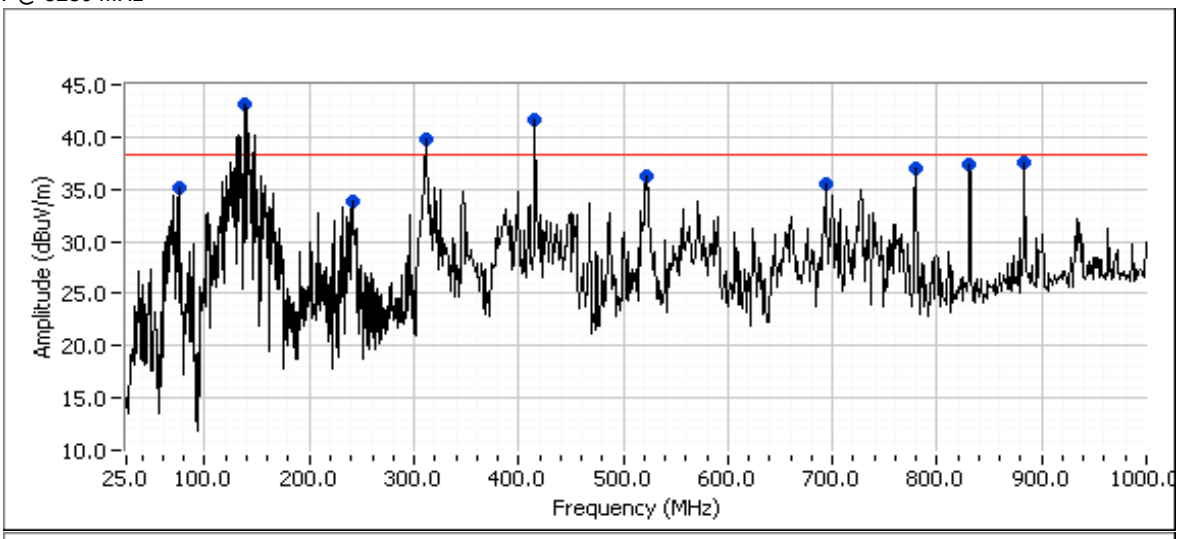
No deviations were made from the requirements of the standard.

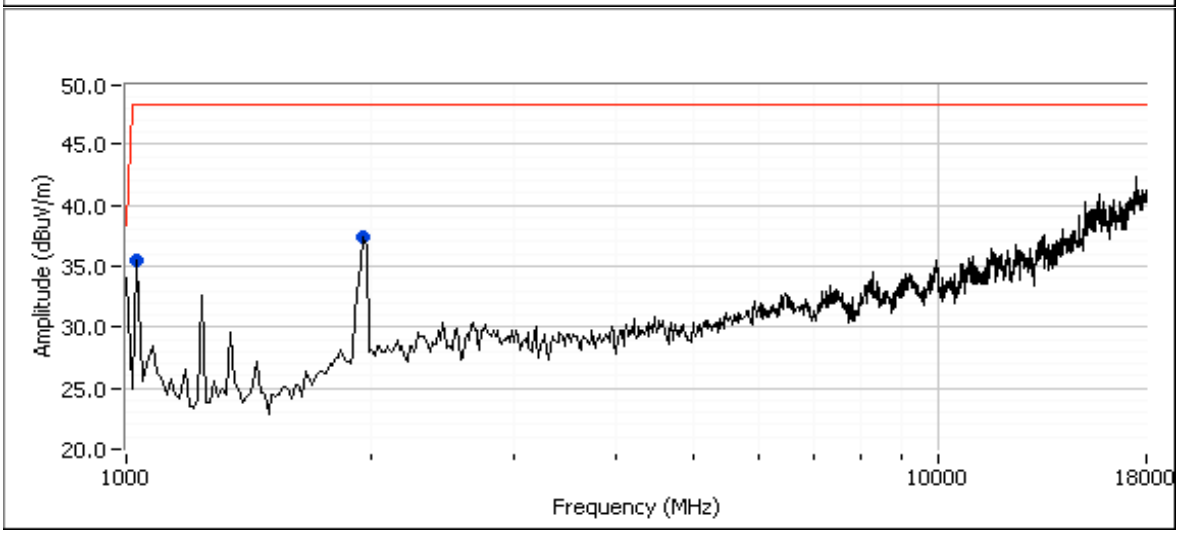
Notes/Comments

The field strength limit in the tables and plots that follow was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d for a measurement distance of 3m. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1: Radiated Spurious Emissions, Receive Mode, 25 - 25000 MHz
EUT @ 5280 MHz

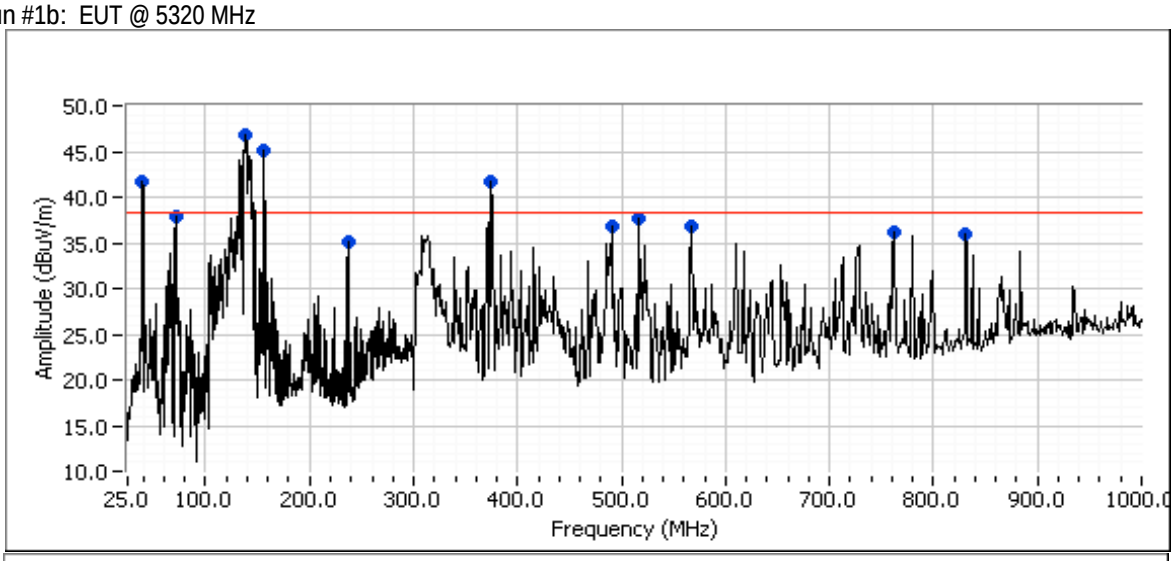


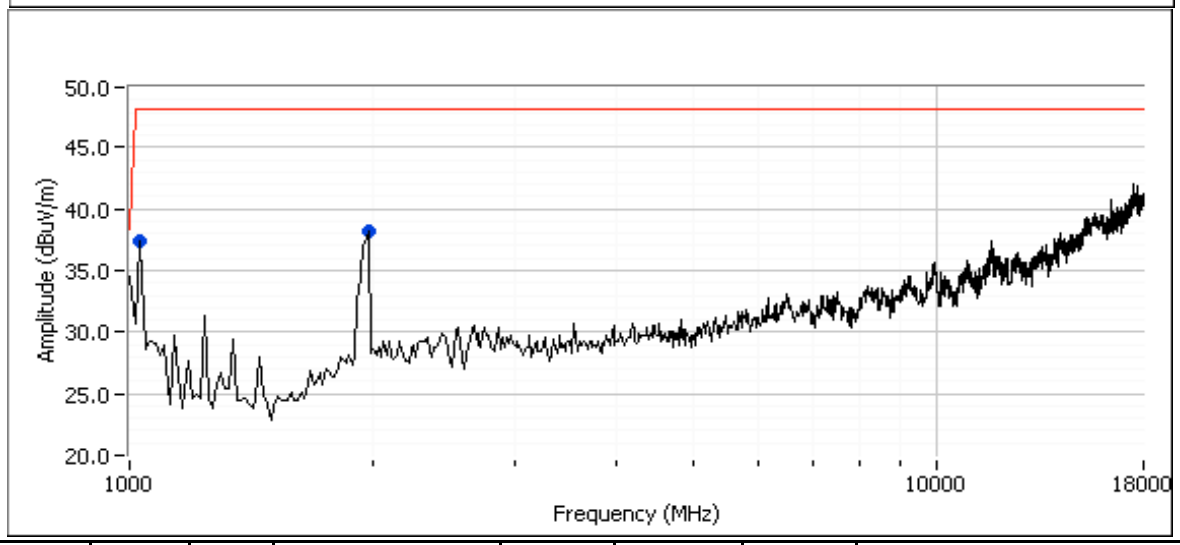


Frequency	Level	Pol	EN 301 893		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
137.004	43.2	H	38.3	4.9	Peak	298	1.7	
415.976	41.7	H	38.3	3.4	Peak	66	1.7	
311.015	39.8	H	38.3	1.5	Peak	128	1.7	
883.944	37.6	H	38.3	-0.7	Peak	65	1.7	
830.058	37.4	H	38.3	-0.9	Peak	269	1.7	
779.962	37.0	H	38.3	-1.3	Peak	49	1.7	
521.042	36.3	H	38.3	-2.0	Peak	294	1.7	
695.463	35.5	H	38.3	-2.8	Peak	318	1.7	
74.995	35.2	V	38.3	-3.1	Peak	31	1.7	
241.007	33.9	H	38.3	-4.4	Peak	298	1.7	
1951.440	37.4	H	48.3	-10.9	Peak	140	1.7	
1014.010	35.4	H	48.3	-12.9	Peak	151	1.7	

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1b: EUT @ 5320 MHz

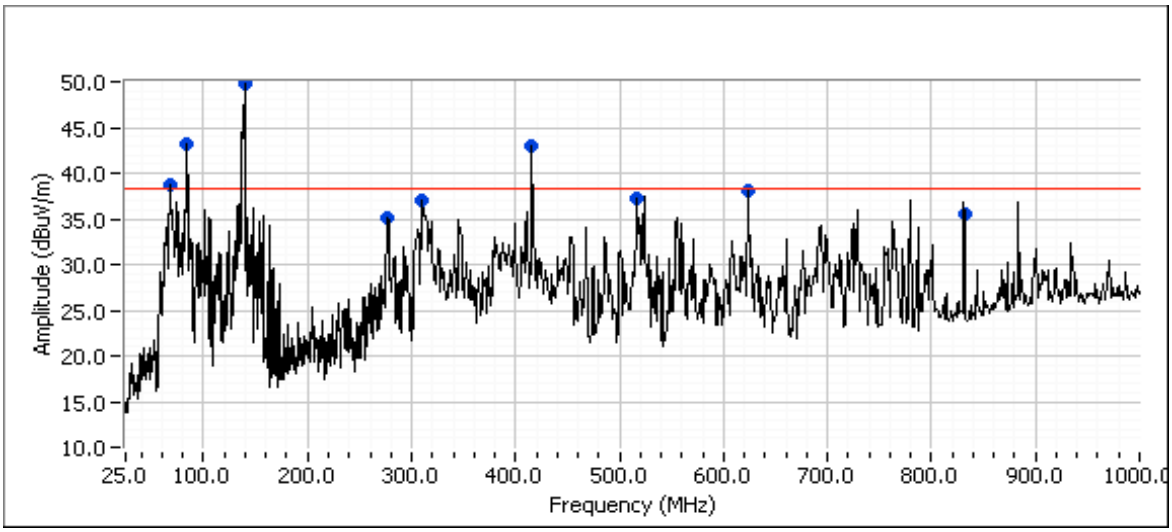


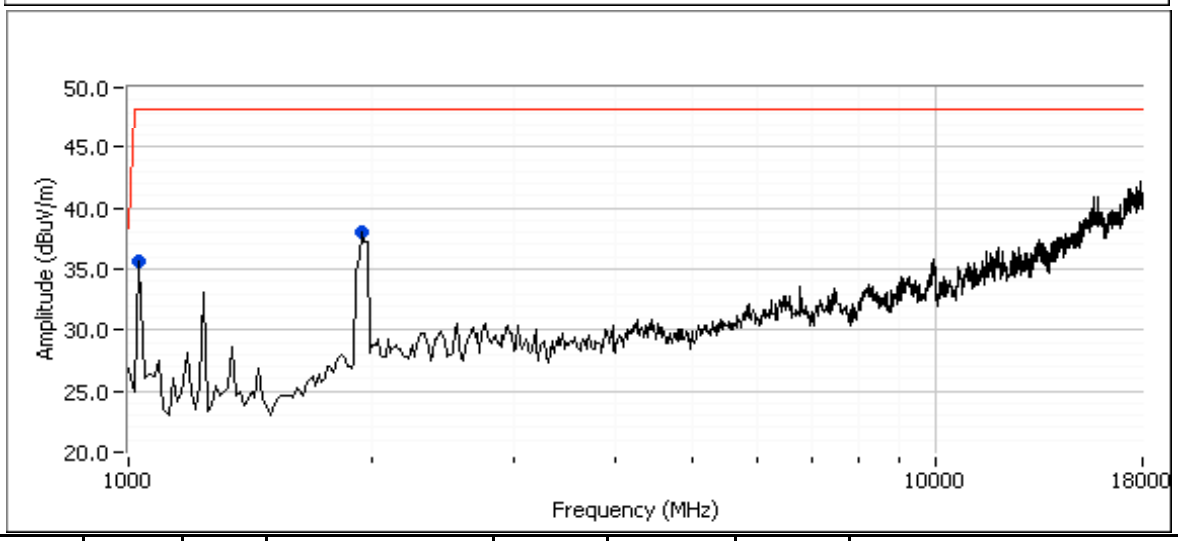


Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
38.989	41.6	V	38.3	3.3	Peak	119	1.7	
71.500	37.9	V	38.3	-0.4	Peak	59	1.7	
137.532	46.8	H	38.3	8.5	Peak	121	1.7	
155.640	45.1	H	38.3	6.8	Peak	271	1.7	
236.109	35.2	H	38.3	-3.1	Peak	271	1.7	
373.050	41.7	V	38.3	3.4	Peak	31	1.7	
488.034	36.8	V	38.3	-1.5	Peak	241	1.7	
513.481	37.7	H	38.3	-0.6	Peak	239	1.7	
565.468	36.9	H	38.3	-1.4	Peak	239	1.7	
760.464	36.1	H	38.3	-2.2	Peak	269	1.7	
831.961	35.9	H	38.3	-2.4	Peak	269	1.7	
1012.225	37.4	H	48.3	-10.9	Peak	170	1.7	
1951.590	38.2	H	48.3	-10.1	Peak	273	1.7	

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1c: EUT @ 5500 MHz

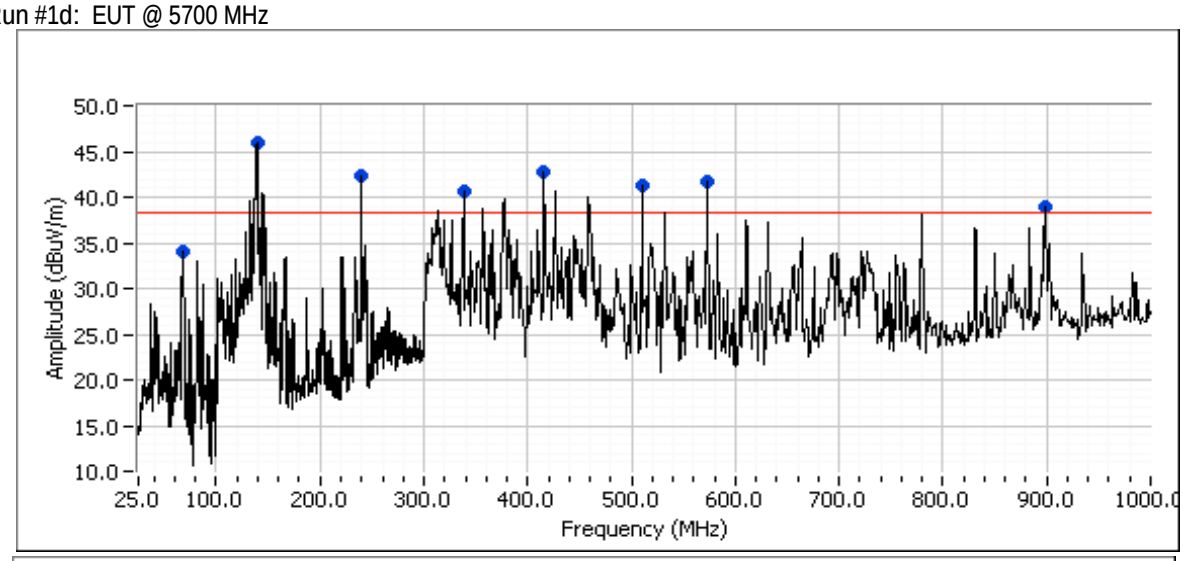


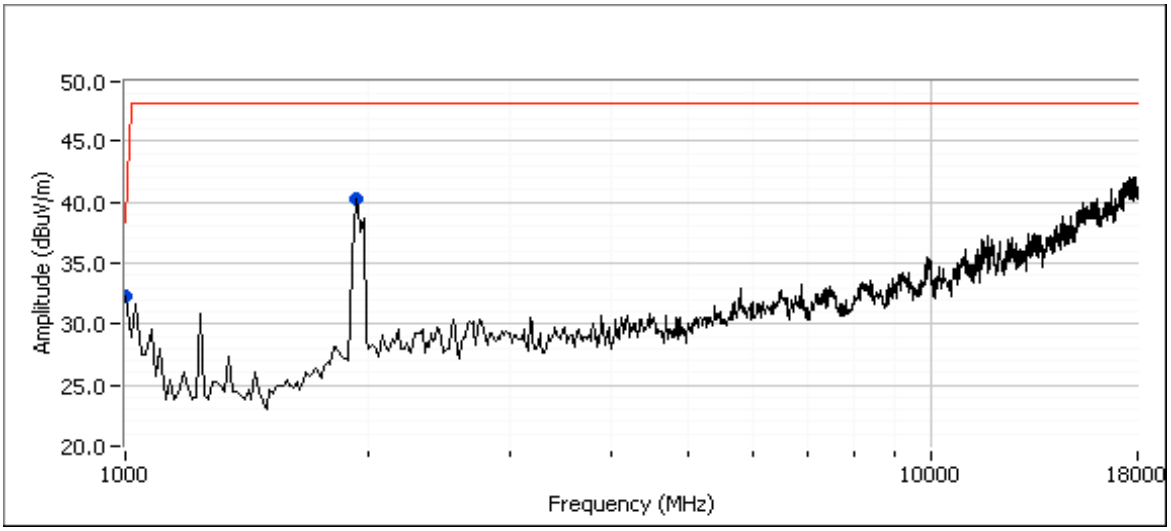


Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
65.774	38.7	V	38.3	0.4	Peak	28	1.7	
83.250	43.1	V	38.3	4.8	Peak	28	1.7	
139.008	49.7	H	38.3	11.4	Peak	92	1.7	
276.011	35.1	H	38.3	-3.2	Peak	242	1.7	
309.019	37.0	H	38.3	-1.3	Peak	80	1.7	
415.976	43.0	H	38.3	4.7	Peak	87	1.7	
513.494	37.2	H	38.3	-1.1	Peak	59	1.7	
623.955	38.0	H	38.3	-0.3	Peak	284	1.7	
831.973	35.6	H	38.3	-2.7	Peak	75	1.7	
1012.911	35.7	V	48.3	-12.6	Peak	352	1.7	
1951.460	38.1	V	48.3	-10.2	Peak	359	1.7	

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1d: EUT @ 5700 MHz





Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
67.784	34.0	H	38.3	-4.3	Peak	332	1.7	
138.569	46.0	H	38.3	7.7	Peak	91	1.7	
238.288	42.4	H	38.3	4.1	Peak	122	1.7	
341.000	40.7	H	38.3	2.4	Peak	136	1.7	
416.546	42.8	H	38.3	4.5	Peak	74	1.7	
513.492	41.2	H	38.3	2.9	Peak	253	1.7	
571.967	41.6	H	38.3	3.3	Peak	106	1.7	
900.063	38.9	H	38.3	0.6	Peak	66	1.7	
1010.745	32.3	H	38.3	-6.0	Peak	356	1.7	
1951.490	40.2	H	48.3	-8.1	Peak	356	1.7	

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #3: Radiated Spurious Emissions, Receive Mode: Final Field Strength and Substitution Measurements
Measurements made at 3m on an OATS
Preliminary Field Strength Measurements

Frequency MHz	Level dBµV/m	Pol v/h	EN 301 893 Note 1 Limit	Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	RX Frequency
38.989	37.7	V	38.3	-0.6	PK	0	1.0	41.6	5320
65.776	26.7	V	38.3	-11.6	PK	162	1.0	EUT installed directly on Host system	
67.784	39.7	H	38.3	1.4	PK	237	2.5	34.0	5700
71.500	44.6	V	38.3	6.3	PK	52	1.0	37.9	5320
74.995	41.6	V	38.3	3.3	PK	218	1.0	35.2	5280
83.250	42.8	V	38.3	4.5	PK	303	1.0	43.1	5500
138.569	36.9	H	38.3	-1.4	PK	68	1.0	49.7	5500
155.640	44.6	H	38.3	6.3	PK	190	1.0	45.1	5320
238.288	39.7	H	38.3	1.4	PK	90	1.0	42.4	5700
276.011	35.7	H	38.3	-2.6	PK	234	1.0	35.1	5500
309.019	31.2	H	38.3	-7.1	PK	67	1.0	39.8	5280
341.000	33.6	H	38.3	-4.7	PK	186	1.0	40.7	5700
373.050	43.8	V	38.3	5.5	PK	101	1.0	41.7	5320
416.546	37.7	H	38.3	-0.6	PK	206	2.1	43.0	5500
488.034	41.0	V	38.3	2.7	PK	208	1.0	36.8	5320
513.967	28.7	H	38.3	-9.6	PK	253	2.7	41.2	5500
523.955	33.2	H	38.3	-5.1	PK	59	1.0	36.3	5280
565.468	32.8	H	38.3	-5.5	PK	0	1.0	Partial amb 36.9	5320
760.464	39.5	H	38.3	1.2	PK	88	1.0	36.1	5320
831.973	41.4	H	38.3	3.1	PK	9	1.0	37.4	5280
883.944	43.7	H	38.3	5.4	PK	0	1.0	Partial amb 37.6	5280
900.063	40.4	H	38.3	2.1	PK	0	2.0	38.9	5500

The field strength limit in the tables and plots that follow was calculated from the erp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d for a measurement distance of 3m. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurement (refer to the next page).

241.007	33.9	5280.0
779.962	37.0	5280.0
623.955	38.0	5500.0
571.967	41.6	5700.0

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Substitution Measurements
Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
831.973	-14.1	6.9	91.5	98.7	41.4	-57.3	-59.5		-57.0	-2.5
67.784	-11.0	-2.9	85.2	99.1	39.7	-59.4	-61.6		-57.0	-4.6
155.640	-12.7	1.4	88.2	99.5	39.5	-60.0	-62.2		-57.0	-5.2
760.464	-13.9	7.6	91.0	97.3	39.5	-57.8	-60.0		-57.0	-3.0
523.955	-12.9	6.4	91.7	98.2	33.2	-65.0	-67.2		-57.0	-10.2
565.468	-13.0	6.0	92.7	99.7	32.8	-66.9	-69.1		-57.0	-12.1

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
71.500	-11.0	-2.4	87.3	100.7	44.6	-56.1	-58.3		-57.0	-1.3
373.500	-15.0	6.7	92.0	100.3	43.8	-56.5	-58.7		-57.0	-1.7
488.034	-12.9	5.5	91.0	98.4	41.0	-57.4	-59.6		-57.0	-2.6

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a nominal gain of 2.2dBi, however the dipole balun loss may reduce the gain of the substituion dipole used.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna, maximized for receive antenna height and transmit antenna azimuth.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Radiated Spurious Emissions, EN 301 893

Test Specific Details

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

Date of Test: 5/5/2008 18:46
Test Engineer: Rafael Varelas
Test Location: Chamber #2 & OATS #1

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

General Test Configuration

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

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 23.2 °C
Rel. Humidity: 35 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Transmit Mode, 25 - 25000 MHz	EN 301 893	Pass	-55.6dBm @ 843.2MHz (-1.6dB)
4	Spurious Emissions Receive/Stand-By Mode, 25 - 25000 MHz	EN 301 893	Pass	-58.3dBm @ 71.500MHz (-1.3dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

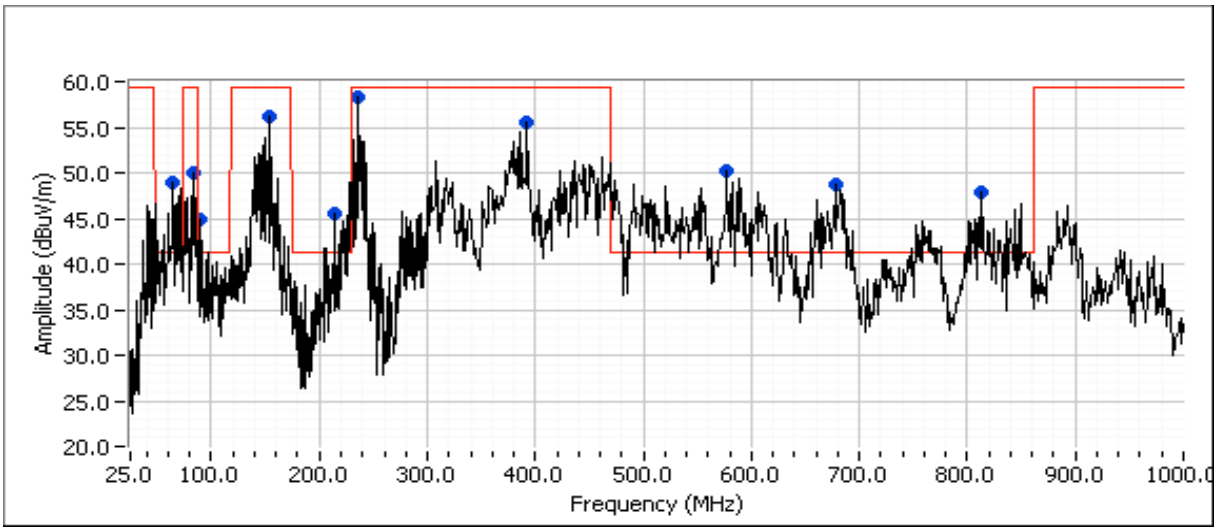
Deviations From The Standard

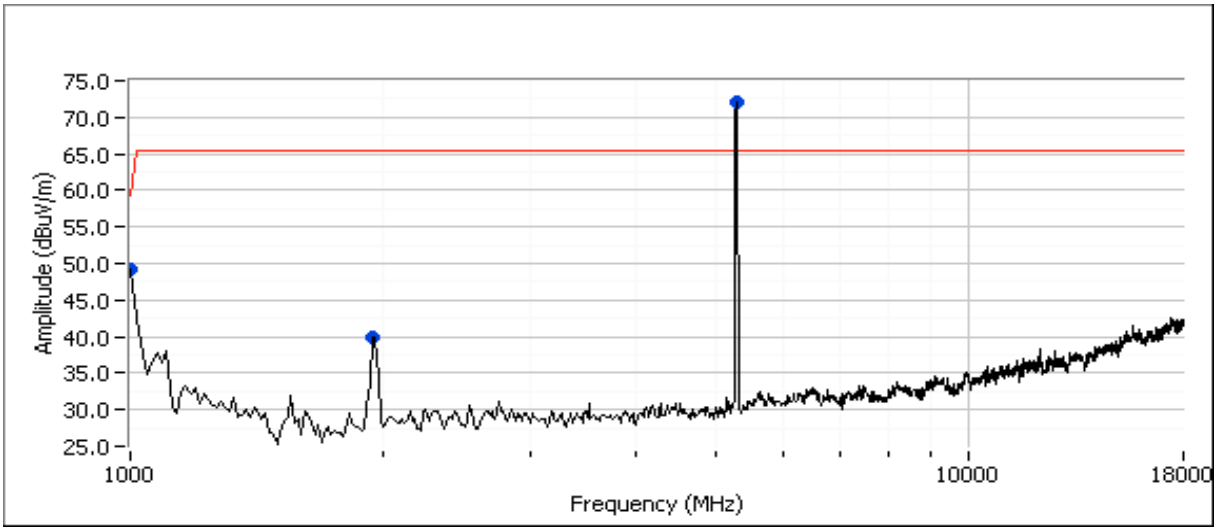
No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1: Radiated Spurious Emissions, Transmit Mode, 25 - 25000 MHz
Measurements made at 3m
Run #1a: EUT @ 5280 MHz





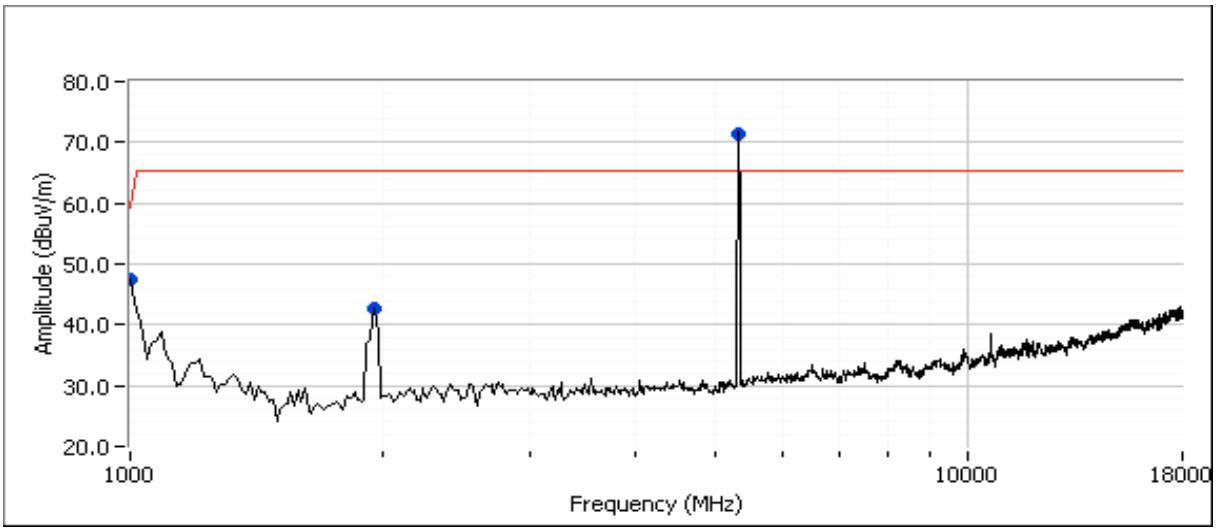
EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
63.948	48.9	V	41.3	7.6	Peak	360	1.7	
83.054	50.1	V	59.3	-9.2	Peak	298	1.7	
89.572	44.8	V	41.3	3.5	Peak	28	1.7	
151.482	56.1	H	59.3	-3.2	Peak	122	1.7	
214.495	45.6	H	41.3	4.3	Peak	91	1.7	
234.600	58.2	H	59.3	-1.1	Peak	272	1.7	
388.213	55.5	H	59.3	-3.8	Peak	252	1.7	
578.469	50.3	H	41.3	9.0	Peak	82	1.7	
675.962	48.8	H	41.3	7.5	Peak	276	1.7	
812.830	47.8	H	41.3	6.5	Peak	80	1.7	
1040.008	49.3	H	59.3	-10.0	Peak	139	1.7	
1951.460	39.8	H	65.3	-25.5	Peak	109	1.7	
5280.240	72.2	V	-	-	Peak	135	1.7	Fundamental

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Run #1b: EUT @ 5320 MHz

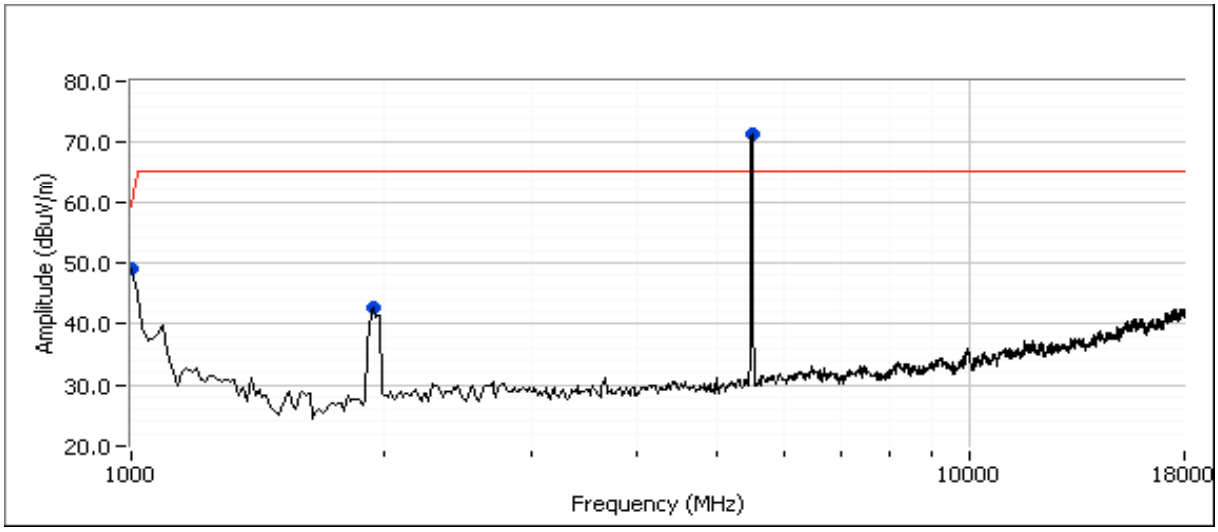


Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1039.921	47.3	H	59.3	-12.0	Peak	154	1.7	
1988.480	42.6	V	65.3	-22.7	Peak	126	1.7	
5320.000	71.4	H	-	-	Peak	117	1.7	Fundamental

Note 1: The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Run #1c: EUT @ 5500 MHz

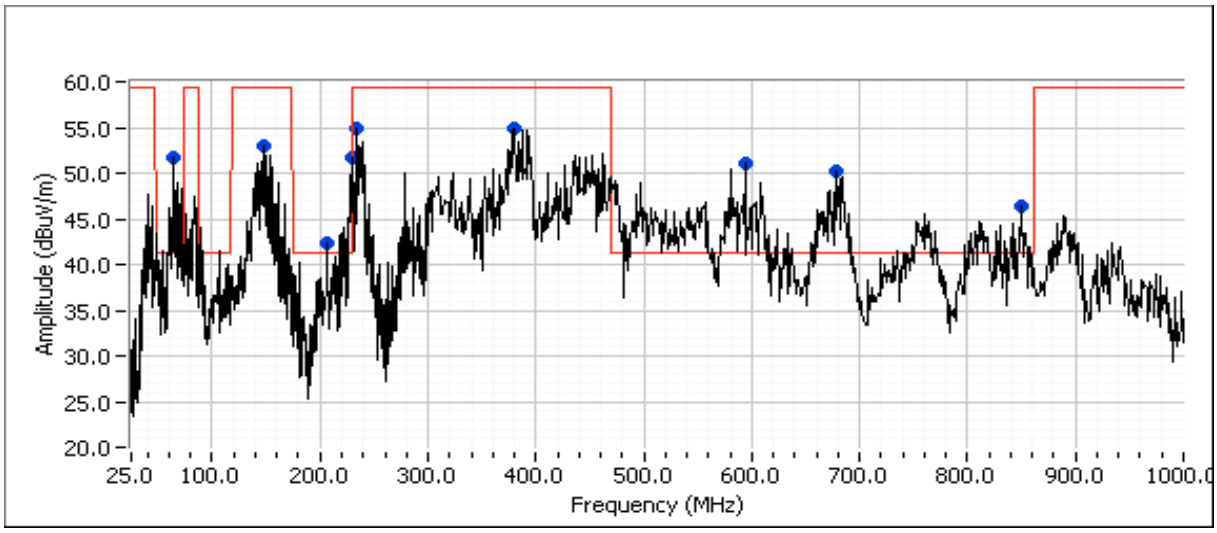


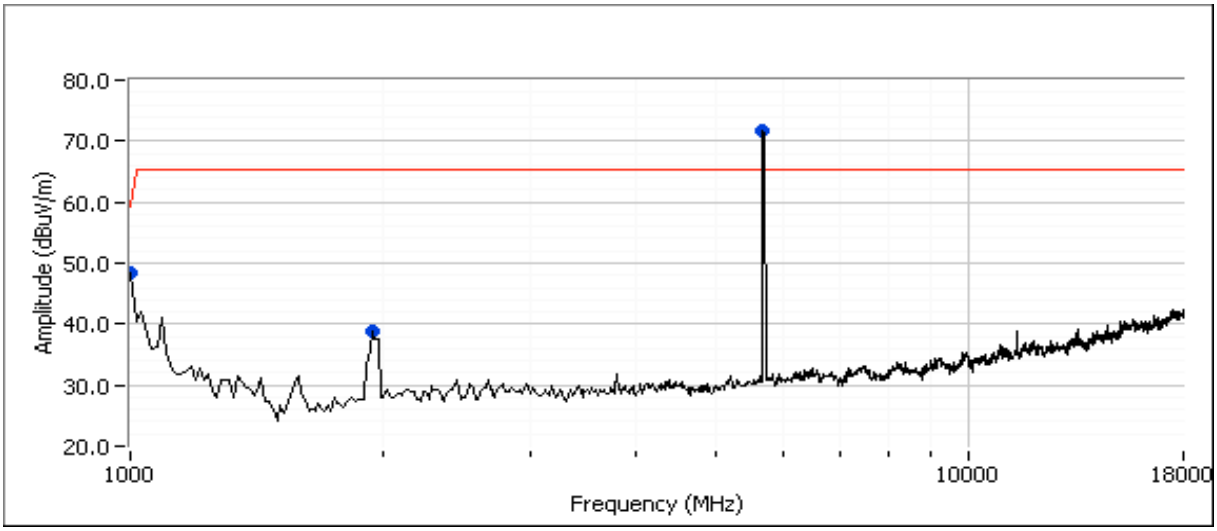
Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1009.347	49.1	H	59.3	-10.2	Peak	148	1.7	
1988.500	42.6	H	65.3	-22.7	Peak	352	1.7	
5500.000	71.3	V	-	-	Peak	125	1.7	

Note 1: The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #1d: EUT @ 5700 MHz





EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
148.132	52.9	H	59.3	-6.4	Peak	271	1.7	
234.017	54.8	H	59.3	-4.5	Peak	242	1.7	
380.215	54.9	H	59.3	-4.4	Peak	275	1.7	
208.000	42.3	H	41.3	1.0	Peak	242	1.7	
848.289	46.3	H	41.3	5.0	Peak	73	1.7	
681.384	50.3	H	41.3	9.0	Peak	266	1.7	
590.576	51.0	H	41.3	9.7	Peak	79	1.7	
63.957	51.6	V	41.3	10.3	Peak	28	1.7	
227.906	51.7	H	41.3	10.4	Peak	271	1.7	
1007.600	48.3	H	59.3	-11.0	Peak	134	1.7	
1951.460	38.9	V	65.3	-26.4	Peak	9	1.7	
5700.270	71.8	V	-	-	Peak	1	1.7	Fundamental

Note 1: The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: $E=\sqrt{(30PG)}/d$. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #2: Radiated Spurious Emissions, Transmit Mode: Final Field Strength and Substitution Measurements

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
FT Chamber #3 Data								
Mesurements using card extender								
64.671	35.9	V	41.3	-5.4	QP	89	1.1	QP (1.00s)
64.671	21.1	V	41.3	-20.2	AVG	89	1.1	AVG (0.10s)
64.671	44.3	V	41.3	3.0	PK	89	1.1	PK (0.10s)
227.954	40.1	H	41.3	-1.2	QP	132	1.0	QP (1.00s)
227.954	22.7	H	41.3	-18.6	AVG	132	1.0	AVG (0.10s)
227.954	45.1	H	41.3	3.8	PK	132	1.0	PK (0.10s)
812.213	39.0	H	41.3	-2.3	QP	63	1.0	QP (1.00s)
812.213	19.5	H	41.3	-21.8	AVG	63	1.0	AVG (0.10s)
812.213	50.1	H	41.3	8.8	PK	63	1.0	PK (0.10s)
Mesurements w/o card extender								
812.213	30.1	H	41.3	-11.2	QP	98	1.0	QP (1.00s)
812.213	18.0	H	41.3	-23.3	AVG	98	1.0	AVG (0.10s)
812.213	37.3	H	41.3	-4.0	PK	98	1.0	PK (0.10s)
227.954	30.5	H	41.3	-10.8	QP	56	1.0	QP (1.00s)
227.954	15.0	H	41.3	-26.3	AVG	56	1.0	AVG (0.10s)
227.954	35.9	H	41.3	-5.4	PK	56	1.0	PK (0.10s)
64.671	17.6	V	41.3	-23.7	QP	106	1.0	QP (1.00s)
64.671	6.9	V	41.3	-34.4	AVG	106	1.0	AVG (0.10s)
64.671	27.5	V	41.3	-13.8	PK	106	1.0	PK (0.10s)
OATS Data								
63.957	49.8	V	41.3	8.5	PK	56	1.0	5700 MHz
227.906	47.1	H	41.3	5.8	PK	210	2.2	5700 MHz
812.830	47.0	H	41.3	5.7	PK	15	1.0	5280 MHz
843.289	45.6	H	41.3	4.3	PK	243	1.9	
675.962	44.9	H	41.3	3.6	PK	46	2.4	Partial ambient
578.469	43.4	H	41.3	2.1	PK	283	2.3	
681.384	43.1	H	41.3	1.8	PK	115	2.9	Partial ambient
590.576	42.7	H	41.3	1.4	PK	92	2.7	Partial ambient
89.572	42.6	V	41.3	1.3	PK	321	1.0	
380.215	58.4	H	59.3	-0.9	PK	225	2.5	
214.495	39.8	H	41.3	-1.5	PK	24	1.0	
388.213	57.7	H	59.3	-1.6	PK	233	1.2	
234.600	50.5	H	59.3	-8.8	PK	95	2.6	
151.482	48.7	H	59.3	-10.6	PK	240	1.2	
148.132	44.1	H	59.3	-15.2	PK	240	1.4	
83.054	41.8	V	59.3	-17.5	PK	78	1.0	

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
FT Chamber #3 Data										
227.906	-11.1	5.7	91.5	96.9	35.9	-61.0	-63.2		-54.0	-9.2
812.830	-12.7	6.6	92.3	98.4	37.3	-61.1	-63.3		-54.0	-9.3
OATS Data										
227.906	-12.0	1.1	87.4	98.3	47.1	-51.2	-53.4		-54.0	0.6
812.830	-14.0	7.2	91.7	98.5	47.0	-51.5	-53.7		-54.0	0.3
843.289	-14.1	6.7	91.6	99.0	45.6	-53.4	-55.6		-54.0	-1.6
675.962	-13.7	7.3	92.0	98.4	44.9	-53.5	-55.7		-54.0	-1.7
578.469	-13.3	6.8	92.4	98.9	43.4	-55.5	-57.7		-54.0	-3.7
681.384	-13.7	7.4	92.3	98.6	43.1	-55.5	-57.7		-54.0	-3.7
590.576	-13.3	7.1	92.2	98.4	42.7	-55.7	-57.9		-54.0	-3.9
380.215	-14.1	5.7	91.9	100.3	58.4	-41.9	-44.1		-36.0	-8.1
214.495	-11.8	1.0	88.1	98.9	39.8	-59.1	-61.3		-54.0	-7.3
388.213	-12.8	5.2	91.9	99.5	57.7	-41.8	-44.0		-36.0	-8.0
234.600	-12.0	1.2	87.7	98.5	50.5	-48.0	-50.2		-36.0	-14.2

Vertical

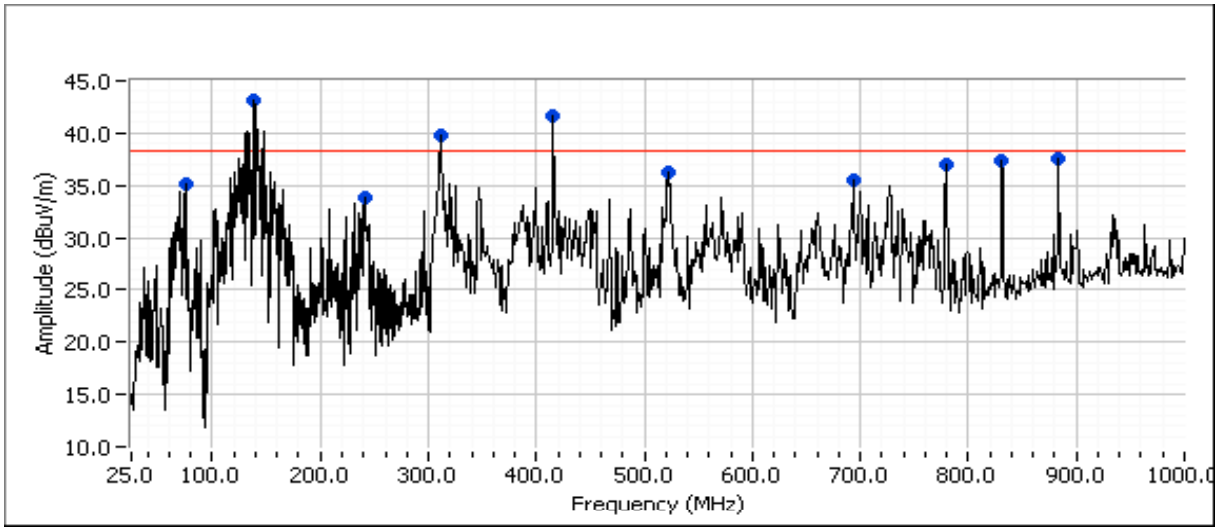
Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
FT Chamber #3 Data										
63.957	-10.3	-1.7	83.9	95.9	27.5	-68.4	-70.6		-54.0	-16.6
OATS Data										
63.957	-11.0	-3.4	83.6	98.0	49.8	-48.2	-50.4		-54.0	3.6
89.572	-11.2	-0.5	87.6	99.3	42.6	-56.7	-58.9		-54.0	-4.9

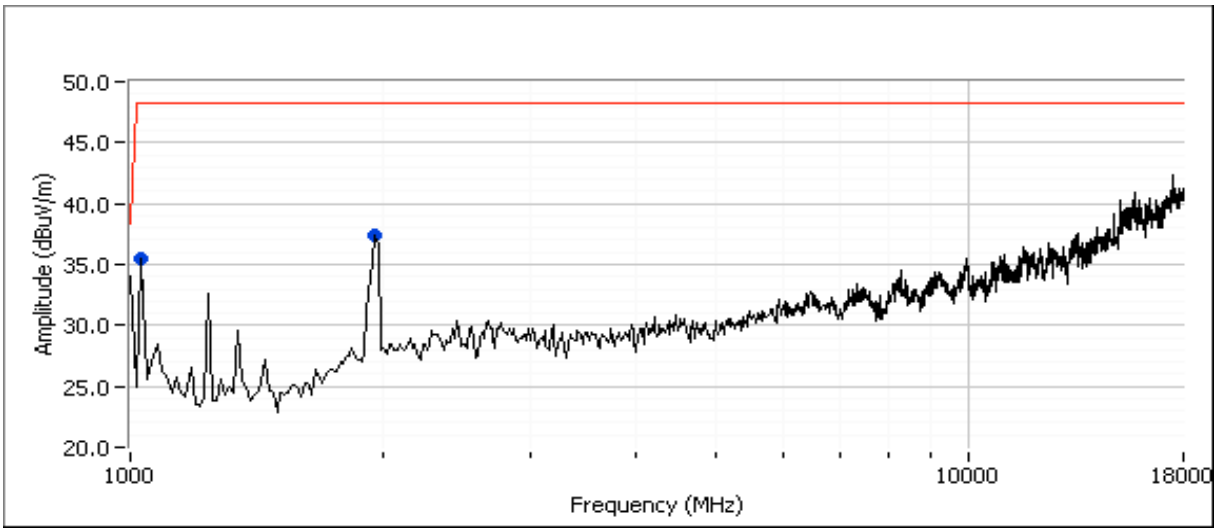
Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #3: Radiated Spurious Emissions, Receive Mode, 25 - 25000 MHz
Measurements made at 3m

Run #3a: EUT @ 5280 MHz





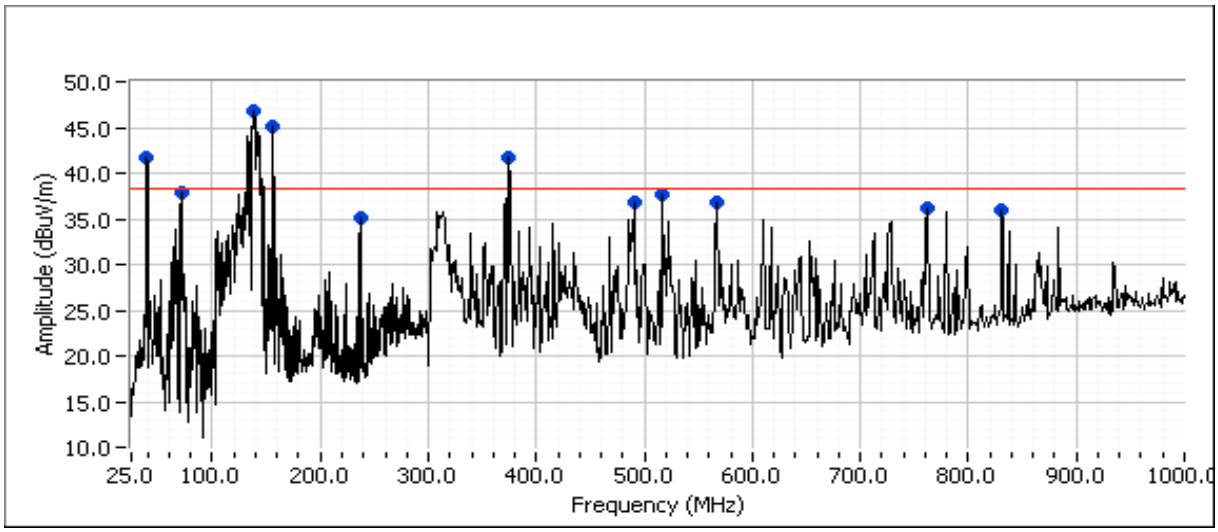
EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
74.995	35.2	V	38.3	-3.1	Peak	31	1.7	
137.004	43.2	H	38.3	4.9	Peak	298	1.7	
241.007	33.9	H	38.3	-4.4	Peak	298	1.7	
311.015	39.8	H	38.3	1.5	Peak	128	1.7	
415.976	41.7	H	38.3	3.4	Peak	66	1.7	
521.042	36.3	H	38.3	-2.0	Peak	294	1.7	
695.463	35.5	H	38.3	-2.8	Peak	318	1.7	
779.962	37.0	H	38.3	-1.3	Peak	49	1.7	
830.058	37.4	H	38.3	-0.9	Peak	269	1.7	
883.944	37.6	H	38.3	-0.7	Peak	65	1.7	
1014.010	35.4	H	48.3	-12.9	Peak	151	1.7	
1951.440	37.4	H	48.3	-10.9	Peak	140	1.7	

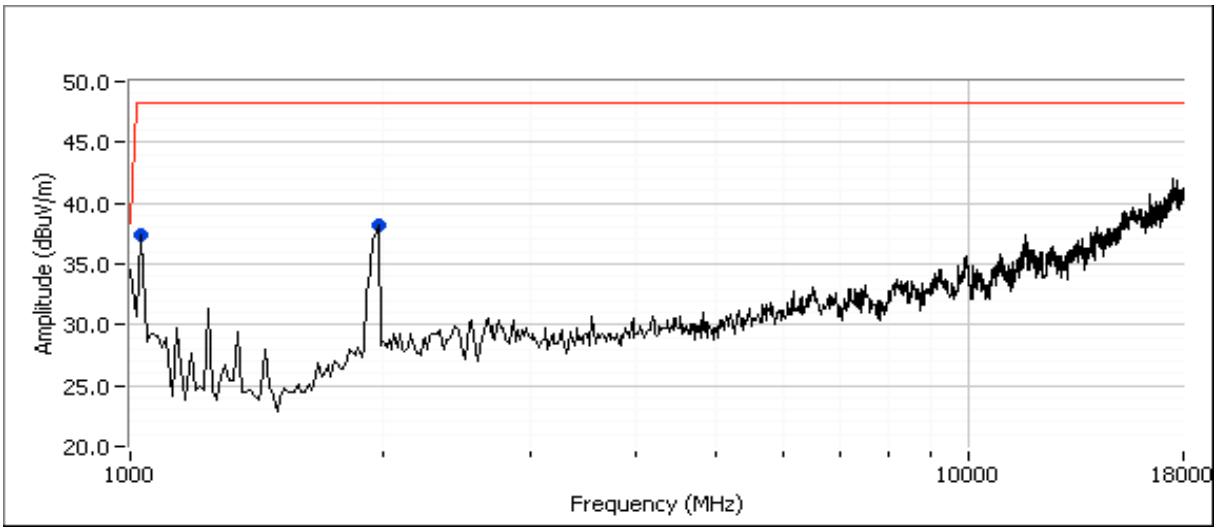
Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Run #3b: EUT @ 5320 MHz



EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

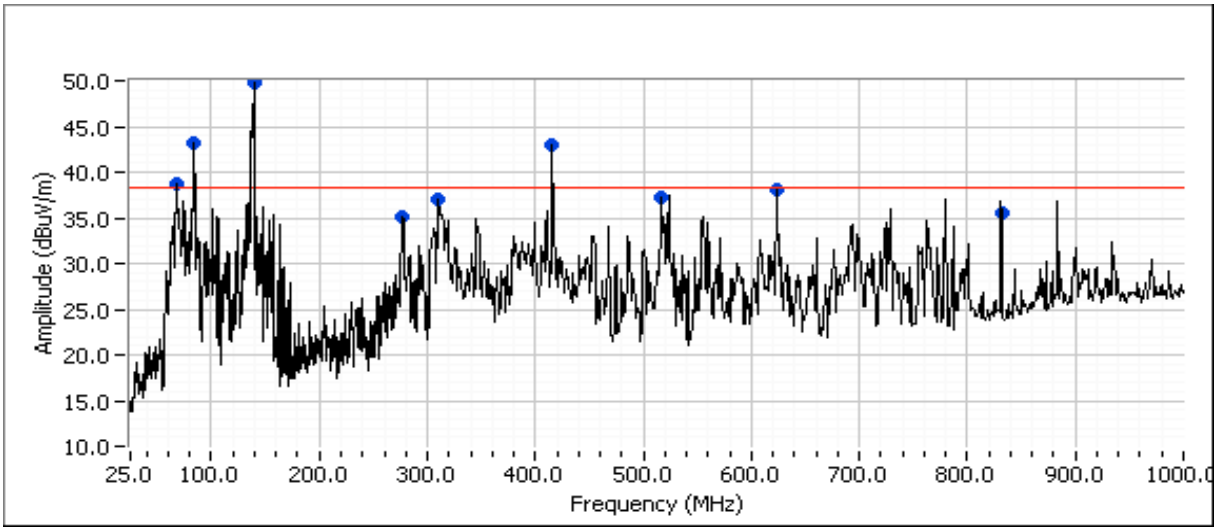


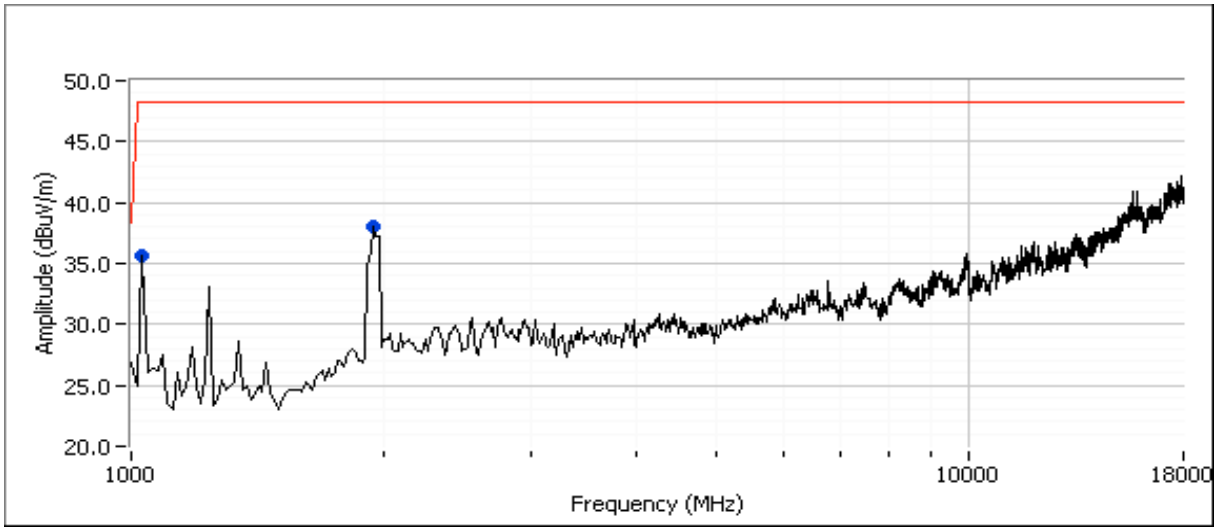
Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
38.989	41.6	V	38.3	3.3	Peak	119	1.7	
71.500	37.9	V	38.3	-0.4	Peak	59	1.7	
137.532	46.8	H	38.3	8.5	Peak	121	1.7	
155.640	45.1	H	38.3	6.8	Peak	271	1.7	
236.109	35.2	H	38.3	-3.1	Peak	271	1.7	
373.050	41.7	V	38.3	3.4	Peak	31	1.7	
488.034	36.8	V	38.3	-1.5	Peak	241	1.7	
513.481	37.7	H	38.3	-0.6	Peak	239	1.7	
565.468	36.9	H	38.3	-1.4	Peak	239	1.7	
760.464	36.1	H	38.3	-2.2	Peak	269	1.7	
831.961	35.9	H	38.3	-2.4	Peak	269	1.7	
1012.225	37.4	H	48.3	-10.9	Peak	170	1.7	
1951.590	38.2	H	48.3	-10.1	Peak	273	1.7	

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #3c: EUT @ 5500 MHz





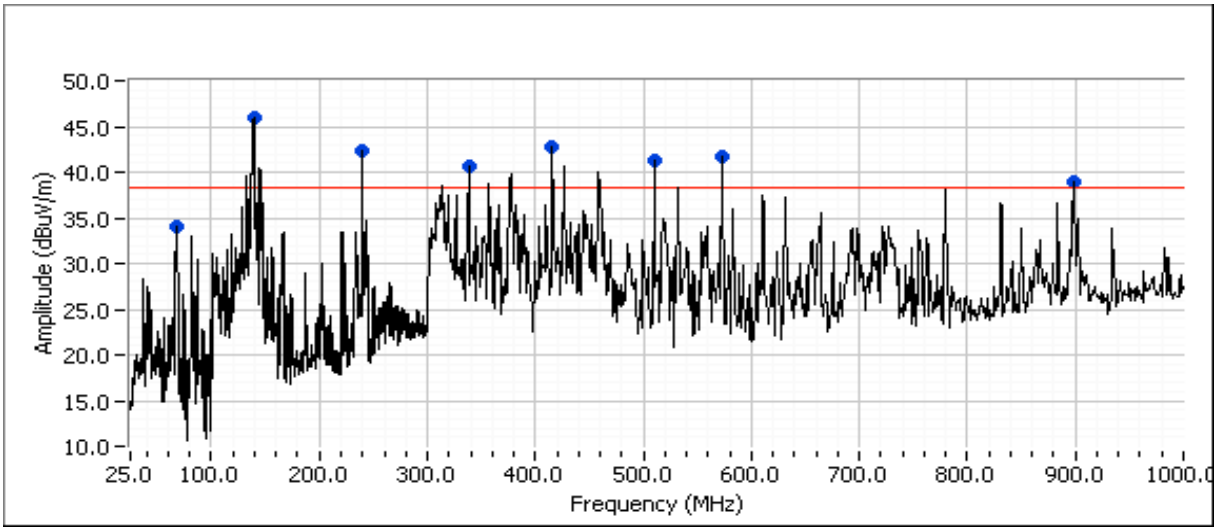
EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
65.774	38.7	V	38.3	0.4	Peak	28	1.7	
83.250	43.1	V	38.3	4.8	Peak	28	1.7	
139.008	49.7	H	38.3	11.4	Peak	92	1.7	
276.011	35.1	H	38.3	-3.2	Peak	242	1.7	
309.019	37.0	H	38.3	-1.3	Peak	80	1.7	
415.976	43.0	H	38.3	4.7	Peak	87	1.7	
513.494	37.2	H	38.3	-1.1	Peak	59	1.7	
623.955	38.0	H	38.3	-0.3	Peak	284	1.7	
831.973	35.6	H	38.3	-2.7	Peak	75	1.7	
1012.911	35.7	V	48.3	-12.6	Peak	352	1.7	
1951.460	38.1	V	48.3	-10.2	Peak	359	1.7	

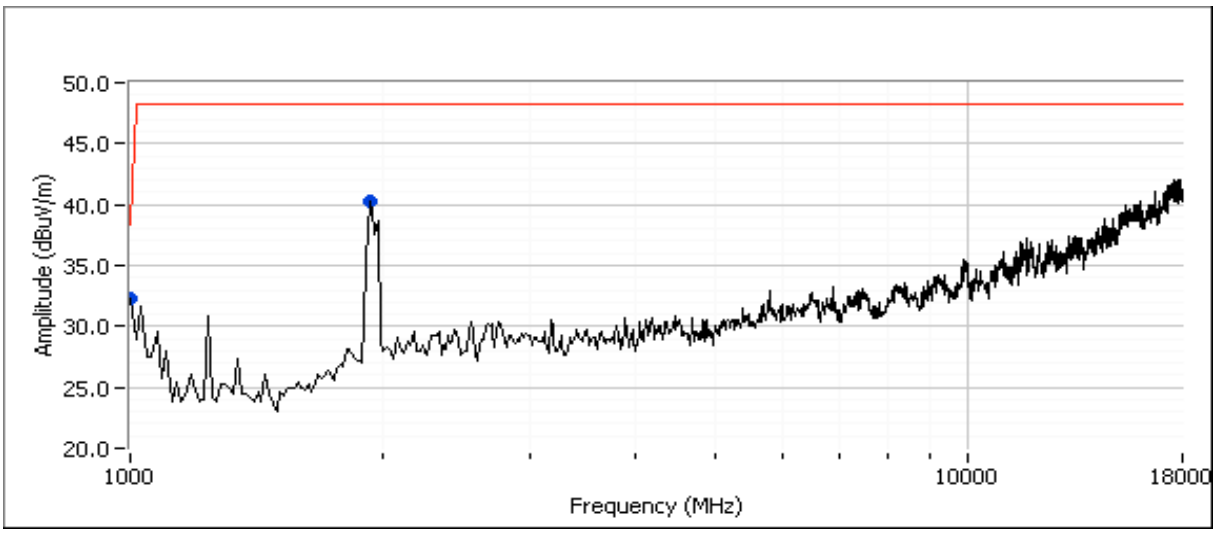
Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Run #3d: EUT @ 5700 MHz



EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A



Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
67.784	34.0	H	38.3	-4.3	Peak	332	1.7	
138.569	46.0	H	38.3	7.7	Peak	91	1.7	
238.288	42.4	H	38.3	4.1	Peak	122	1.7	
341.000	40.7	H	38.3	2.4	Peak	136	1.7	
416.546	42.8	H	38.3	4.5	Peak	74	1.7	
513.492	41.2	H	38.3	2.9	Peak	253	1.7	
571.967	41.6	H	38.3	3.3	Peak	106	1.7	
900.063	38.9	H	38.3	0.6	Peak	66	1.7	
1010.745	32.3	H	38.3	-6.0	Peak	356	1.7	
1951.490	40.2	H	48.3	-8.1	Peak	356	1.7	

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

EMC Test Data

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Run #4: Radiated Spurious Emissions, Receive Mode: Final Field Strength and Substitution Measurements
Measurements made at 3m

Frequency	Level	Pol	EN 301 893 Note 1		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
71.500	44.6	V	38.3	6.3	PK	52	1.0	
155.640	44.6	H	38.3	6.3	PK	190	1.0	
373.050	43.8	V	38.3	5.5	PK	101	1.0	
883.944	43.7	H	38.3	5.4	PK	0	1.0	Partial ambient
83.250	42.8	V	38.3	4.5	PK	303	1.0	
74.995	41.6	V	38.3	3.3	PK	218	1.0	
831.973	41.4	H	38.3	3.1	PK	9	1.0	
488.034	41.0	V	38.3	2.7	PK	208	1.0	
900.063	40.4	H	38.3	2.1	PK	0	2.0	
67.784	39.7	H	38.3	1.4	PK	237	2.5	
238.288	39.7	H	38.3	1.4	PK	90	1.0	
760.464	39.5	H	38.3	1.2	PK	88	1.0	
38.989	37.7	V	38.3	-0.6	PK	0	1.0	
416.546	37.7	H	38.3	-0.6	PK	206	2.1	
138.569	36.9	H	38.3	-1.4	PK	68	1.0	
276.011	35.7	H	38.3	-2.6	PK	234	1.0	
341.000	33.6	H	38.3	-4.7	PK	186	1.0	
523.955	33.2	H	38.3	-5.1	PK	59	1.0	
565.468	32.8	H	38.3	-5.5	PK	0	1.0	Partial ambient
309.019	31.2	H	38.3	-7.1	PK	67	1.0	
513.967	28.7	H	38.3	-9.6	PK	253	2.7	
65.776	26.7	V	38.3	-11.6	PK	162	1.0	EUT installed directly on Host system

Client:	Summit Data Communications	Job Number:	J71524
Model:	SDC-CF00AG(DFS Bands)	T-Log Number:	T71588
		Account Manager:	Dean Eriksen
Contact:	Ron Seide		
Standard:	EN 301 893	Class:	N/A

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
831.973	-14.1	6.9	91.5	98.7	41.4	-57.3	-59.5		-57.0	-2.5
67.784	-11.0	-2.9	85.2	99.1	39.7	-59.4	-61.6		-57.0	-4.6
155.640	-12.7	1.4	88.2	99.5	39.5	-60.0	-62.2		-57.0	-5.2
760.464	-13.9	7.6	91.0	97.3	39.5	-57.8	-60.0		-57.0	-3.0
523.955	-12.9	6.4	91.7	98.2	33.2	-65.0	-67.2		-57.0	-10.2
565.468	-13.0	6.0	92.7	99.7	32.8	-66.9	-69.1		-57.0	-12.1

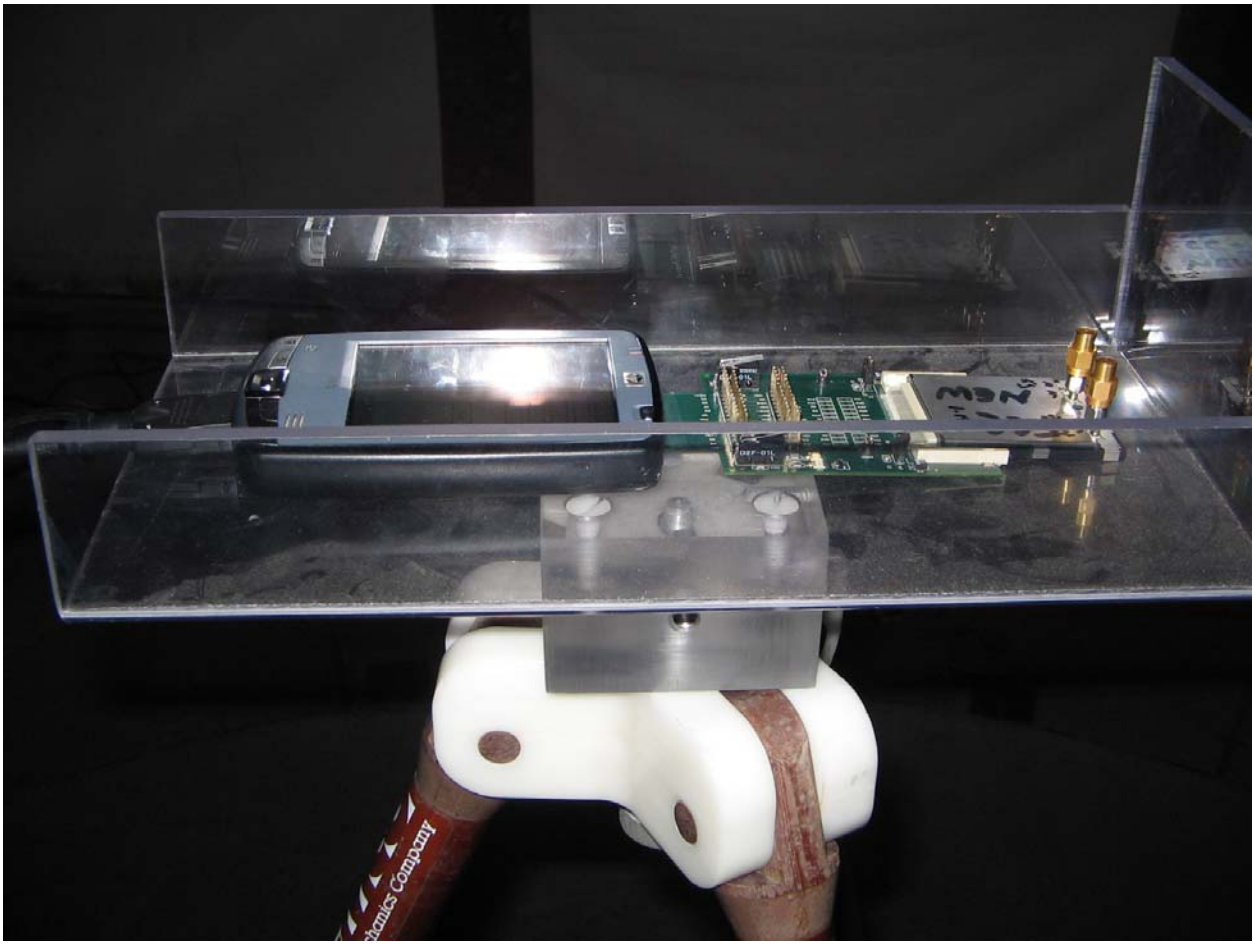
Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
71.500	-11.0	-2.4	87.3	100.7	44.6	-56.1	-58.3		-57.0	-1.3
373.500	-15.0	6.7	92.0	100.3	43.8	-56.5	-58.7		-57.0	-1.7
488.034	-12.9	5.5	91.0	98.4	41.0	-57.4	-59.6		-57.0	-2.6

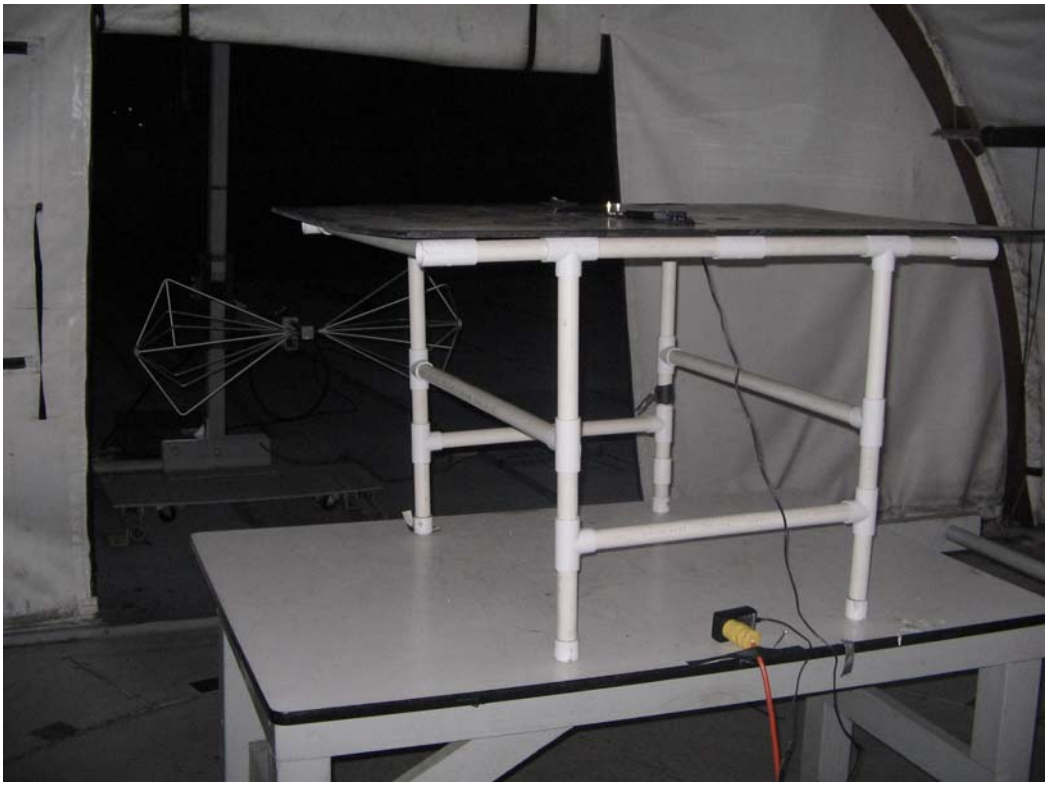
Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a nominal gain of 2.2dBi, however the dipole balun loss may reduce the gain of the substituion dipole used.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna, maximized for receive antenna height and transmit antenna azimuth.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Appendix C Photographs

EUT on extender board plugged into HP iPAQ hand-held PC.



Photograph shows device in non-conductive support with rf ports terminated for radiated spurious emissions tests.



FCC
NEW

End of Report

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