Test Certificate

A sample of the following product received on January 4, 2008 and tested on March 11 and March 14, 2008 complied with the requirements of the following standard(s), given the measurement uncertainties as detailed in Elliott report R71187:

- **EN 301 893 V1.4.1 "Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive"**

Summit Data Communications
Model(s) SDC-CF10AG

Mark Briggs
Principal Engineer

_____
Summit Data Communications

_____
Printed Name

ACCREDITED

Testing Cert #2016-01

Elliott Laboratories Inc.
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684 West Maude Avenue
Sunnyvale, CA 94086-3518
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Electromagnetic Compatibility Test Report

EN 301 893 V1.4.1
ElectroMagnetic Compatibility and Radio spectrum Matters (ERM); Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN

Summit Data Communications
Model: SDC-CF10AG

MANUFACTURER:	Summit Data Communications 526 South Market Suite 407 Akron, OH 44311
TEST SITE:	Elliott Laboratories, Inc. 684 W. Maude Ave Sunnyvale, CA 94086
REPORT DATE:	March 27, 2008
REISSUE DATE:	April 22, 2008
FINAL TEST DATE:	March 11 and March 14, 2008
AUTHORIZED SIGNATORY:	Mark Briggs Principal Engineer

ACCREDITED

Testing Cert #2016-01

REVISION HISTORY

Rev #	Date	Comments	Modified By
1	March 31, 2008	Initial Release	Gary Izard
2	April 22, 2008	Reissued report to correct model name	David Guidotti

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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 SDC-CF10AG in accordance with these standards.

Electromagnetic compatibility test data has been taken 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 V1.4.1 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN"

Tests were performed in accordance with these standards together with the current published versions of the basic standards referenced therein as outlined in Elliott Laboratories test procedures. The test data has been provided as an appendix to this report for reference.

The test results recorded herein are based on a single type test of the Summit Data Communications model SDC-CF10AG and therefore apply only to the tested sample. The sample was selected and prepared by Ron Seide of Summit Data Communications.

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 SDC-CF10AG complied with the relevant requirements of:

EN 301 893 V1.4.1

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 STANDARD

No deviations were made from the test methods and requirements detailed in the standards listed in this report.

PERFORMANCE ASSESSMENT

The Summit Data Communications model SDC-CF10AG primary function is to provide a WLAN interface (2.4GHz and 5150 – 5250 MHz) to the host devices into which it may be installed. All other characteristics of the product tested are detailed in the remainder of this report.

TEST RESULTS

EN 301 893 V1.4.1

Section	Description	Channel	Measured Value	Limit	Result
4.2.2	Carrier Frequencies	5180MHz: 10ppm		+/- 20ppm	Complies
4.3.2.1	RF Output Power - Highest Setting, 5150-5350MHz	5180MHz: 22.1dBm eirp		23dBm eirp	Complies
4.3.2.2	RF Output Power - Lowest Setting, 5150-5350MHz	TPC requirements do not apply for devices that only operate in the 5150 - 5250 MHz band			N/A
4.3.2.1	Power Density, 5150-5350MHz	5180MHz: 9.0 dBm(eirp) 7.9 mW(eirp)		10dBm/MHz eirp	Complies
4.4.1	Transmitter Out-Of Band Conducted Spurious Emissions	5180MHz:	All signal more than 10dB below limit	Table 4	Complies
	Transmitter Out-Of Band Radiated Spurious Emissions	5180MHz:	-60.2 dBm eirp @ 510.607MHz	Table 4	Complies (-6.2dB)
4.4.2	Transmitter In-Band Spurious Emissions	5180MHz:		Figure 2 Spectral mask	Complies
4.5	Receiver Conducted Spurious Emissions	5180MHz:	All signal more than 15dB below limit	Table 5	Complies
	Receiver Radiated Spurious Emissions	5180MHz:	-59.6 dBm eirp @ 416.322MHz	Table 5	Complies (-2.6dB)
4.6	Uniform Loading	The DFS requirements are not applicable as the device is not designed to operate in either the 5250 – 5350 MHz or 5470 – 5725MHz bands.			N/A
	Channel Availability Check Time				
	Channel Move Time Channel Closing Time				
	Channel Non-occupancy Time				
	Threshold Value				
4.5	Receiver Conducted Spurious Emissions	5180MHz::	More than 15dBm margin	Table 5	Complies

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 Guide 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 of transmitter	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission of receiver	dBm	25 to 26500 MHz	± 2.5 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Summit Data Communications 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 January 4, 2008 and tested on March 11 and March 14, 2008. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number
Summit Data Communications	SDC-CF10AG	Compact Flash Module	-

OTHER EN 301 893 V1.4.1 PRODUCT INFORMATION

Refer to Appendix C.

ENCLOSURE

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

MODIFICATIONS

No modifications were made to the EUT during testing.

SUPPORT EQUIPMENT

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

Manufacturer	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	1.5

EUT OPERATION

For test purposes the EUT was installed into a test jog. 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 TEST SITE

GENERAL INFORMATION

Final test measurements were taken on March 11 and March 14, 2008 at the Elliott Laboratories Test Site located at 684 West Maude Avenue, Sunnyvale, California. The test sites contain separate areas for radiated and conducted emissions testing. The sites conform to the requirements of CISPR 16-1:1999. They are registered with the VCCI and are on file with the FCC and Industry Canada. 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 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 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary.

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[1]
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

[1] 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.

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

APPENDIX A: Test Equipment Calibration Data

2 Pages

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

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-08
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	25-Jan-08
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	29-Nov-08
Hewlett Packard	Head (Inc W1-W4, 1143, 1144) Red	84125C	1145	16-Nov-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Red)	3160-09 (84125C)	1150	05-Nov-08
Hewlett Packard	Microwave Preamplifier 0.5-26.5 GHz	83017A	1257	08-Jan-09
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	21-Mar-08
Hewlett Packard	Preamplifier	8447D OPT 010	1826	25-May-08

Radiated Emissions, 30 - 26,500 MHz, 07-Jan-08
Engineer: jcaizzi

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-08
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	25-Jan-08
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	29-Nov-08
Hewlett Packard	Microwave Preamplifier 0.5-26.5 GHz	83017A	1257	29-Nov-08
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	21-Mar-08
Hewlett Packard	Preamplifier	8447D OPT 010	1826	25-May-08

Radio Spurious Emissions, 21-Jan-08
Engineer: SuhailaKhushzad

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Log Periodic Antenna 300-1000 MHz	EL300.1000	55	25-Jan-08
EMCO	Antenna, Horn, 1-18 GHz	3115	487	24-May-08
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	780	09-Oct-08
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
EMCO	Log Periodic Antenna, 0.2-1 GHz	3146	1294	28-Aug-08
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	21-Sep-08
EMCO	Biconical Antenna, 30-300 MHz	3110B	1498	20-Mar-08
EMCO	Antenna, Horn, 1-18 GHz	3117	1662	21-Mar-08

Radiated Emissions, 30 - 26,500 MHz, 24-Jan-08
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	29-May-08
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12-Jul-08
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	11-Jul-08
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	12-Apr-08
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	23-May-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-May-08
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	25-Jan-08
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632	25-May-08
Anritsu	Signal Generator, 100MHz-20GHz	68347C	1785	N/A
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1796	12-Feb-08

Radiated Emissions, 30 - 26,500MHz, 11-Mar-08
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-08
EMCO	Log Periodic Antenna, 0.3-1 GHz	3146A	364	13-Dec-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	08-Nov-08
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	29-Nov-08
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447D OPT 010	1826	25-May-08

Radiated Emissions, 30 - 26,500MHz, 11-Mar-08
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-08
EMCO	Log Periodic Antenna, 0.3-1 GHz	3146A	364	13-Dec-08
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	11-Jun-08

Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	29-Jan-09
EMCO	Log Periodic Antenna, 0.2-2 GHz	3148	1404	30-Mar-08
EMCO	Biconical Antenna, 30-300 MHz	3110B	1497	03-Jul-08
Rohde & Schwarz	Power Sensor, 1 nW-20 mW, 10 MHz-18 GHz, 50ohms	NRV-Z1	1798	21-Aug-08

Environmental Test, 14-Mar-08
Engineer: Mehran Birgani

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Spectrum Analyzer 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Aug-08
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1539	21-Aug-08
Rohde & Schwarz	Power Sensor, 1 uW-100 mW, DC-18 GHz, 50ohms	NRV-Z51	1797	21-Aug-08

APPENDIX B: Test Data Log Sheets

ELECTROMAGNETIC COMPATABILITY

TEST LOGS

T70349 14 Pages

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 Manger:	Dean Eriksen
Contact:	Ron Seide		
Emissions Standard(s):	EN 300 328, EN 301 893	Class:	-
Immunity Standard(s):	-	Environment:	-

EUT INFORMATION

The following information was collected during the test session(s).
The client agreed to provide the following information after the test session(s).

General Description

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

Equipment Under Test

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

EUT Enclosure

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

Modification History

Mod. #	Test	Date	Modification
1	-	-	None made

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

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

Test Configuration #1

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

Remote Support Equipment

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

Cabling and Ports

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

EUT Operation During Emissions Tests

For test purposes the EUT was installed into a test jog. 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.

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	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
4	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%)

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 #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

Highest Average Power under normal and extreme operating conditions

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

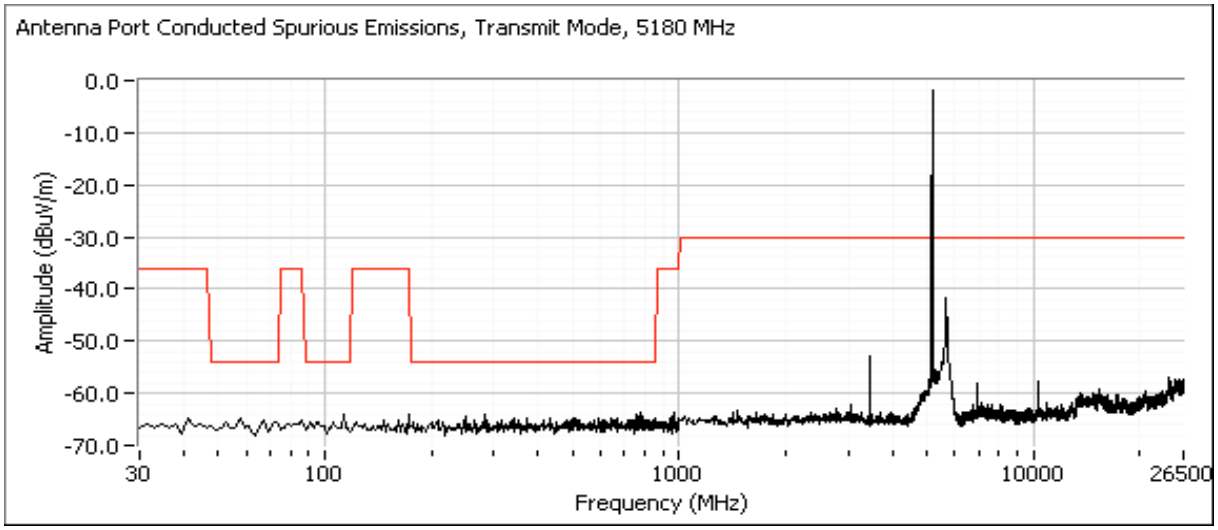
Carrier frequency measured over extreme conditions for top and bottom chanel in each band.

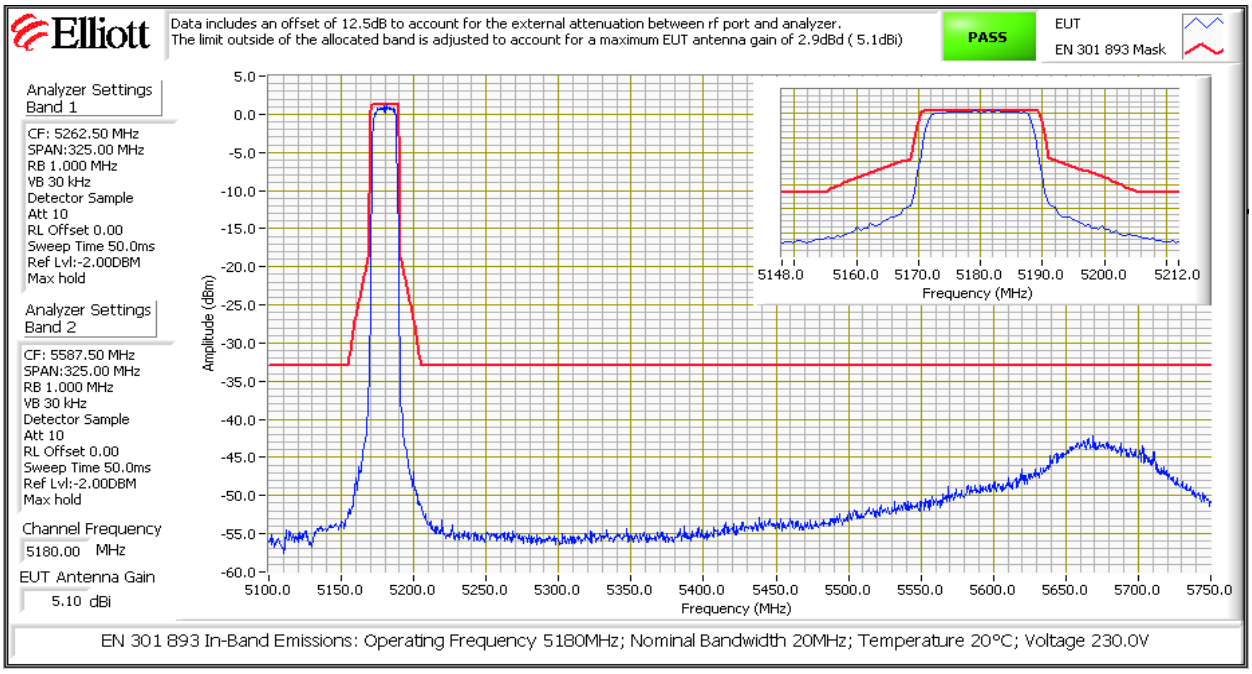
Frequency error was measured on the modulated carrier. The operating frequency was calculated by dividing the sum of the frequencies for the upper and lower -10dBc points on the modulated signal by 2.

Channel Frequency (MHz)	Measured Frequency (MHz) For Operating Condition					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		
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

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: Antenna Port Conducted Spurious Emissions, Transmit Mode, 30 - 26,500 MHz
Run #3a: Transmit Mode, 5180 MHz



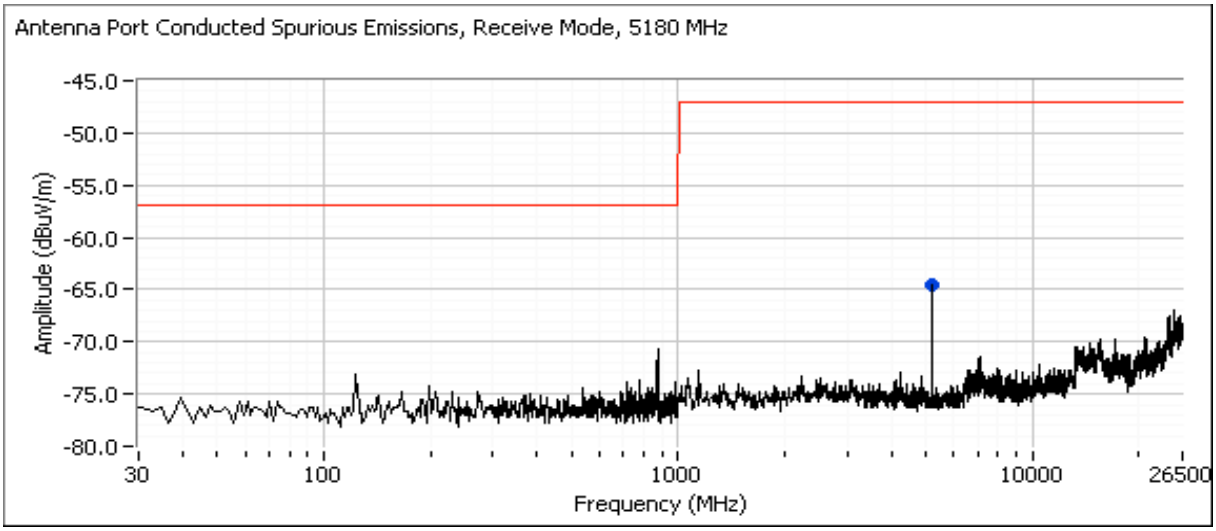


Frequency MHz	Level dBm	Port	EN 301 893 Limit	EN 301 893 Margin	Detector	Channel	Mode	Comments
All signals outside the 5150 - 5350 Mhz and 5460 - 5725 MHz bands were more than 20dB below the limit								

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

Run #4a: 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

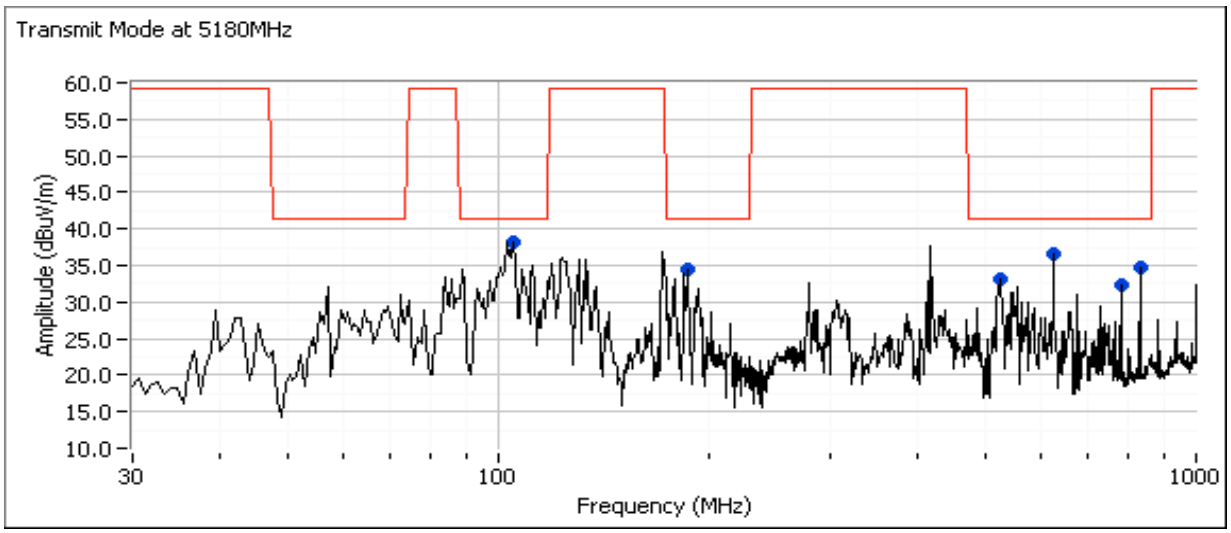
Deviations From The Standard

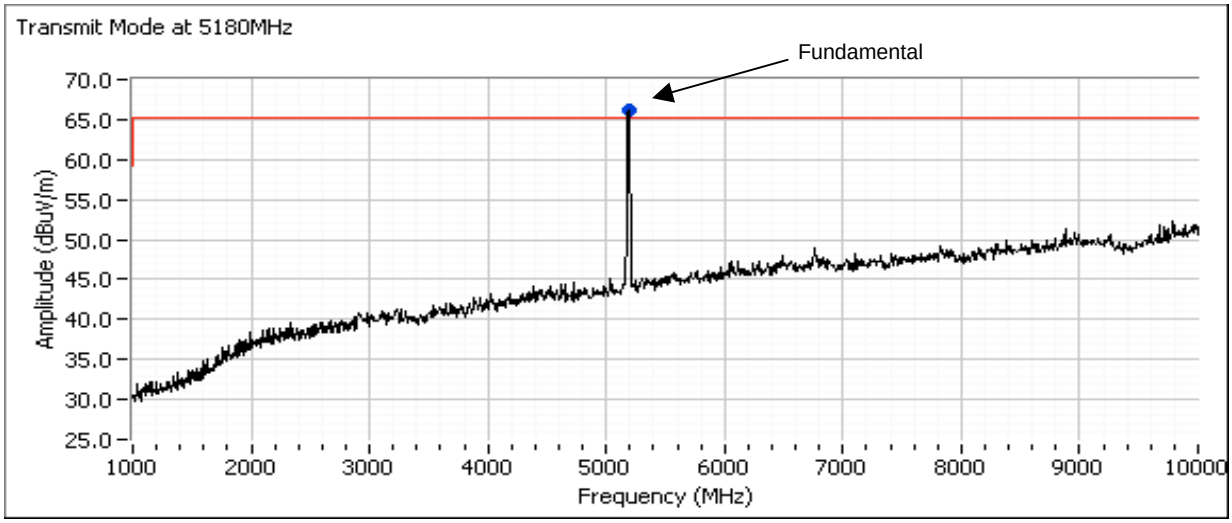
No deviations were made from the requirements of the standard.

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: $E=\sqrt{(30PG)}/d$. 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.

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

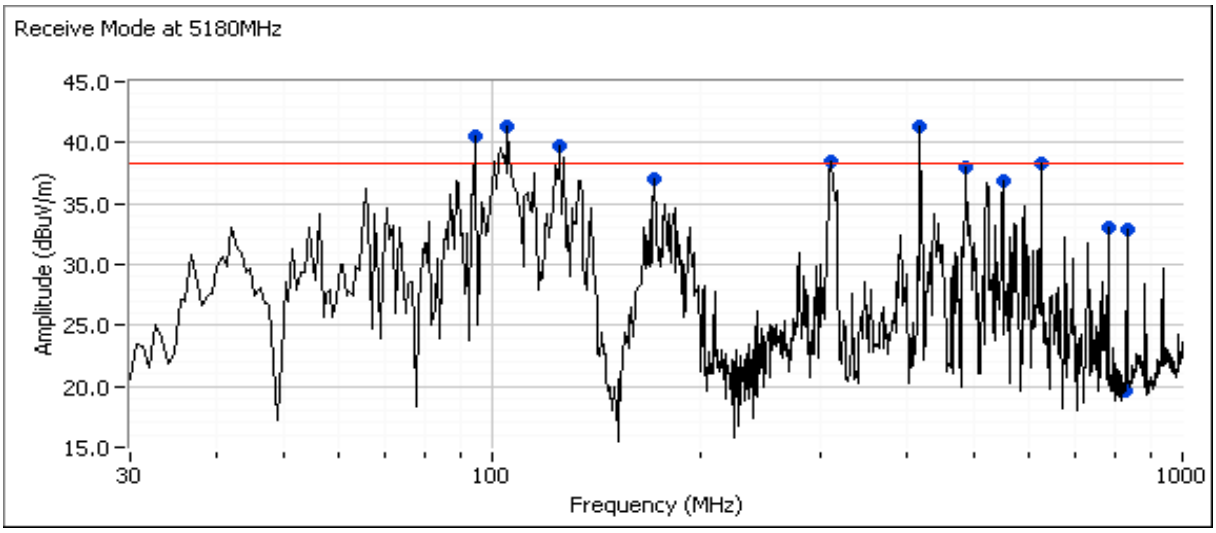
Vertical

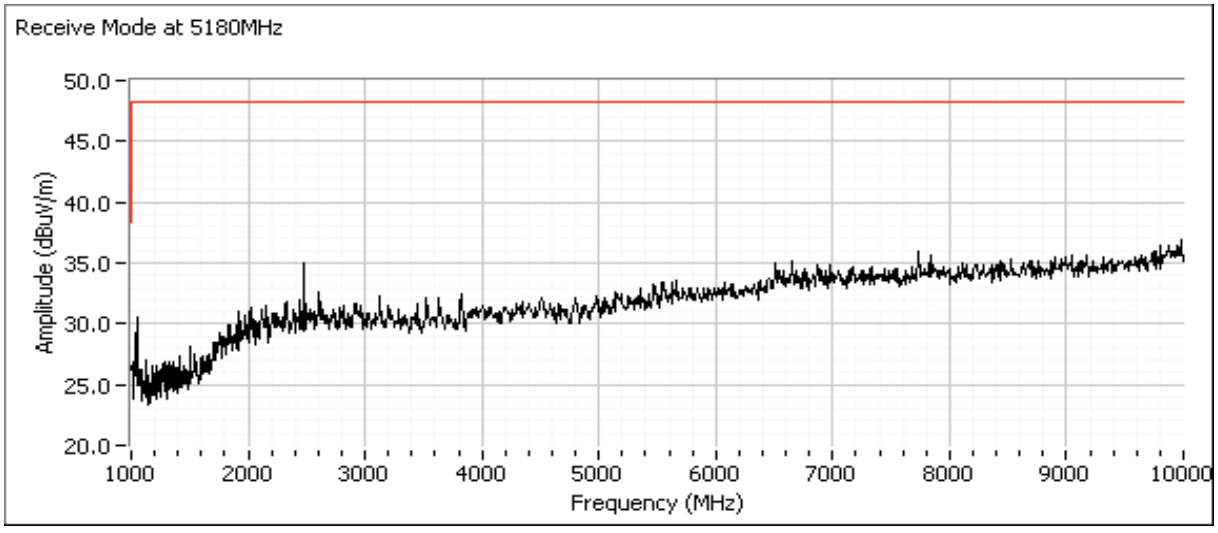
Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
108.425	-55.0	-1.1	40.0	96.1	36.2	-59.9	-62.1	-47.0		-12.9

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)





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.

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.

APPENDIX C: PRODUCT INFORMATION SPECIFIC TO EN 301 893

Information required by EN 301 893

In accordance with clause 5.3.1, the following information was provided by the submitter:

a) The occupied channel bandwidth(s):

Channel Bandwidth 1: 20 MHz

b) The DFS related operating mode(s) of the equipment:

☐ Master

☐ Slave with radar detection

☐ Slave without radar detection

Not applicable – the device is not designed to operate in bands that require DFS/TPC.

c) The equipment can operate in the following ad-hoc modes:

☐ no ad-hoc operation

☒ ad-hoc operation in the frequency range 5 150 MHz to 5 250 MHz without DFS

☐ ad-hoc operation with DFS

NOTE: If more than 1 is applicable, tick all that apply.

d) Operating Frequency Range(s):

☐ Range 1: 5 150 MHz to 5 350 MHz and 5 470 MHz to 5 725 MHz

☐ Range 2: 5 470 MHz to 5 725 MHz only

☒ Range 3: 5 150 MHz to 5 250 MHz (ad-hoc without DFS)

☐ Range 4: other,……..

NOTE: If the equipment has more than 1 Operating Frequency Range, tick all that apply.

e) TPC feature available:

☐ Yes – complete section (f)

☒ No – complete section (g)

NOTE 1: You may decide to declare that the equipment can operate with and without a TPC feature in which case complete both (f) and (g)

f) If the equipment has a TPC range, the lowest and highest power level (or lowest and highest EIRP level in case of integrated antenna equipment), intended antenna assemblies and corresponding operating frequency range for the TPC range (or for each of the TPC ranges if more than one is implemented).

NOTE: Add more sections similar to the ones below if the equipment has more than 2 TPC ranges.

TPC range 1:

Not applicable – the device is not designed to operate in bands that require DFS/TPC.

g) If the equipment has **no TPC feature**, the maximum transmitter output power level (or maximum EIRP level in case of integrated antenna equipment), the intended antenna assemblies, the corresponding operating frequency range and the corresponding DFS threshold level. If the equipment has multiple power levels and corresponding antenna assemblies, than this information should be provided for each of the stated power levels.

NOTE 2: Add more sections similar to the ones below if the equipment has more power levels.

Power Level 1

Applicable Frequency Range:

☐ 5 150 MHz to 5 250 MHz only

Applicable power levels (see note): Tx out / EIRP

Power level 17.0dBm ☒ TX Output Power or ☐ EIRP

NOTE: Indicated whether the power level specified is Transmitter Output Power level or EIRP level in case of integrated antenna equipment

Intended Antenna Assemblies[1]:

Antenna Assembly name	Antenna Gain (dBi)	EIRP (dBm)
Maximum antenna gain	5.1	22.1 dBm

DFS Threshold level[2]: Not applicable – the device is not designed to operate in bands that require DFS/TPC.

[1] NOTE: Add more rows into the table If more antenna assemblies are intended for this TPC range
[2] NOTE: For equipment with a maximum EIRP below 200 mW, the DFS threshold level shall be -62 dBm or less, for equipment with an EIRP of 200 mW or above, the DFS threshold level shall be -64 dBm or less. These levels assume a 0 dBi antenna gain. To define the applicable threshold level at the (temporary) antenna connector, the gain of the antenna (in dBi) shall be added to the threshold level. If more than one antenna is intended for this TPC range or power setting, the antenna gain of the antenna with the lowest gain shall be used.

h) The extreme operating temperature range that apply to the equipment:

☐ -20°C to +55°C (Outdoor and Indoor usage)

☐ 0°C to +35°C (Indoor usage only)

☒ Other: ... -10°C to +55°C.....

The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices.

Details provided are for the:

☐ stand-alone equipment ☐ combined (or host) equipment ☒ test jig

Supply Voltage

☒ AC mains State AC voltage ……..230V/50Hz

☐ DC State DC voltage …….. State DC current ……..

In case of DC, indicate the type of power source:

☐ Internal Power Supply

☐ External Power Supply or AC/DC adapter

☐ Battery Nickel Cadmium

☐ Alkaline

☐ Nickel-Metal Hydride

☐ Lithium-Ion

☐ Lead acid (Vehicle regulated)

☐ Other .....

i) The test sequences used (see also EN 301 893 [2], clause 5.1.2)

Continuous transmit mode (duty cycle varied with data rate)

Continuous receive mode

.....

j) Type of Equipment

☐ Stand-alone

☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☒ Plug-in radio device (Equipment intended for a variety of host systems)

☐ Other .....

Additional Information

a) Modulation:

ITU Class of emission: G1D

☐ Transmitter can operate un-modulated

☒ Transmitter cannot operate un-modulated

b) Duty Cycle

☐ The transmitter is intended for: Continuous duty

☒ Intermittent duty

☐ Continuous operation possible for testing purposes

c) About the UUT

The equipment submitted are representative production models.

☐ The equipment submitted is CE marked:

☐ The CE marking does include the Class-II identifier (Alert Sign).

☐ The CE marking does include a 4 digit number referring to the Notified Body involved.

List of ancillary and/or support equipment

Where possible, the information below should include a description, brand name, model number etc. for each of the equipment provided:
Refer to EUT section of the test report for details.

List Of Technical Requirements To Be Tested

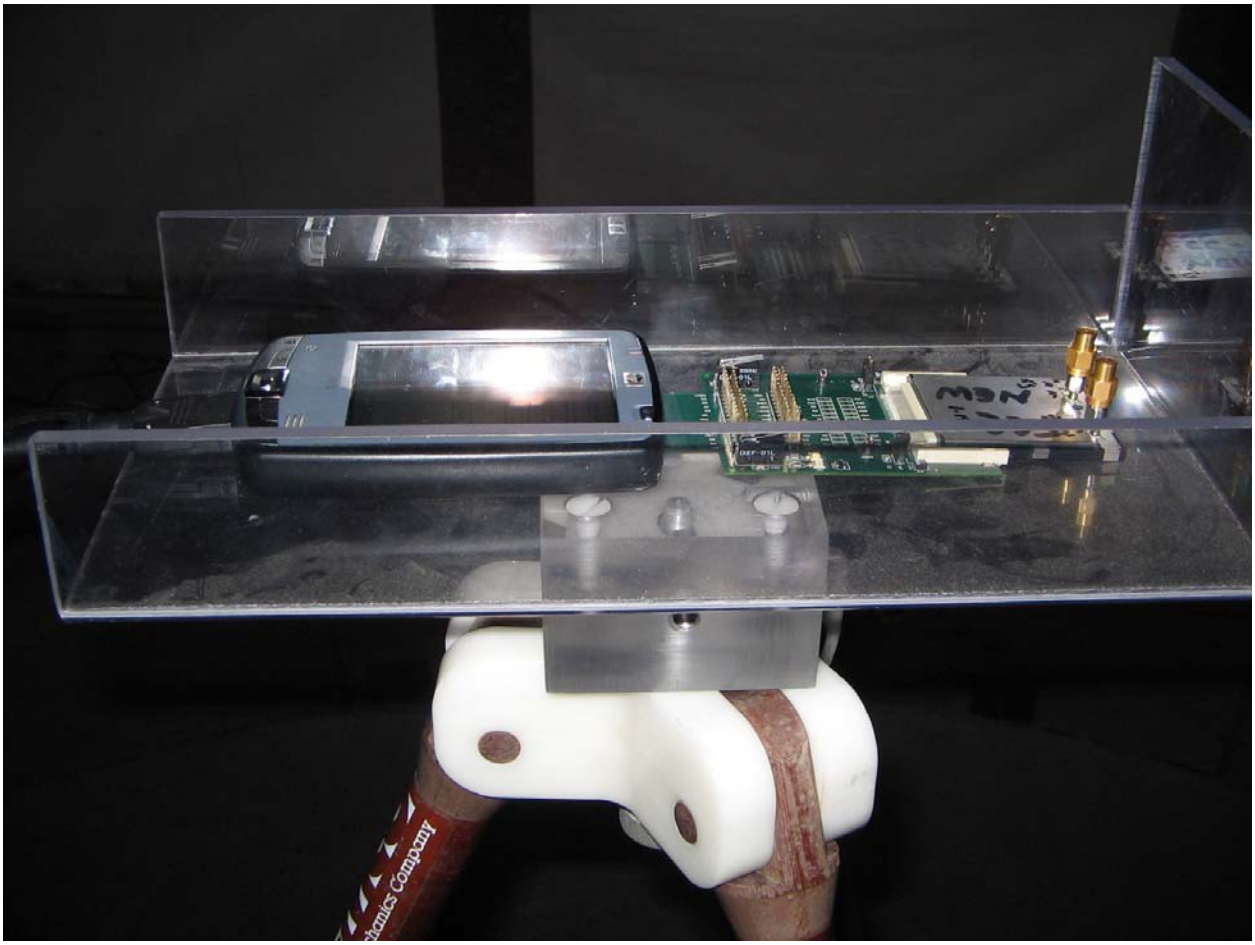
The list of technical requirements called for in EN 301 893 [2] is given below. The grayed out line items are not applicable to this device as it does not operate in either the 5250 – 5350Mhz or 5460 – 5725 MHz bands that require DFS and TPC.

Transmitter parameters	
EN Clause	**Transmitter parameters**
4.2	Carrier Frequencies
4.3	RF Output power, Transmit Power Control (TPC) and power Density
4.4	Transmitter unwanted emissions
4.4.1	Transmitter unwanted emissions outside the 5 GHz RLAN bands
4.4.2	Transmitter unwanted emissions within the 5 GHz RLAN bands
4.6	Dynamic Frequency Selection (DFS)
4.6.2.1	Channel Availability Check
4.6.2.2	In-Service Monitoring
4.6.2.3	Channel Shutdown
4.6.2.4	Non-Occupancy Period
4.6.2.5	Uniform Spreading

Receiver parameters	
EN Clause	**Receiver parameters**
4.5	Receiver spurious emissions

APPENDIX D: 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.