CommerceGuard AB

CG-CFR03

December 12, 2006

Report No. SUPR0062 Rev. 1

Report Prepared By

NORTHWEST EMC

www.nwemc.com
1-888-EMI-CERT

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EMC Test Report

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: December 12, 2006
CommerceGuard AB
Model: CG-CFR03

Emissions				
Test Description	**Specification**	**Test Method**	**Pass**	**Fail**
AC Powerline Conducted Emissions	FCC 15.207:2006	ANSI C63.4:2003	☒	☐
Conducted Emissions	FCC 15.107:2006	ANSI C63.4:2003	☒	☐
Radiated Emissions	FCC 15.109:2006	ANSI C63.4:2003	☒	☐
Band Edge Compliance	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	☒	☐
Occupied Bandwidth	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	☒	☐
Output Power	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	☒	☐
Power Spectral Density	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	☒	☐
Spurious Conducted Emissions	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	☒	☐
Spurious Radiated Emissions	FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074	☒	☐

Modifications made to the product
See the Modifications section of this report

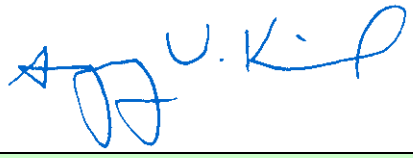
Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124
Phone: (503) 844-4066
Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:



Greg Kiemel, Director of Engineering

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested, the specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision History

Revision Number	Description	Date	Page Number
01	Changed report number on cover page	12/19/06	Cover Page
01	Changed company information from Supra Products, Inc. to CommerceGuard AB.	12/19/06	Cover Page, 2, 7, 8, 9, 12, 16, 17, 20, 24, 28, 31, 35, 39, 43, 44

Accreditations and Authorizations

FCC: Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 89/336/EEC, ANSI C63.4, MIL-STD 461E, DO-160D and SAE J1113. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0

Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.

CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

TÜV Product Service: Included in TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements. Certificate No. USA0401C.

TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.

NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

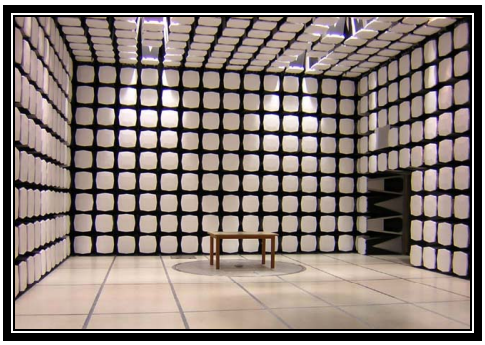
VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: C-2094 and R-1943, Sultan: R-871, C-1784 and R-1761).*

BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.

GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

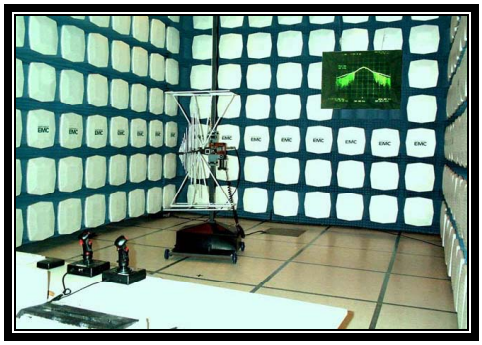
SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/scope.asp



California – Orange County Facility
Labs OC01 – OC13

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



Oregon – Evergreen Facility
Labs EV01 – EV11

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826

Washington – Sultan Facility
Labs SU01 – SU07

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test

Company Name:	CommerceGuard AB
Address:	Gustavslundsvägen 151A
City, State, Zip:	S-167 51 Bromma Sweden
Test Requested By:	Adam Purdue
Model:	CG-CFR03
First Date of Test:	December 4, 2006
Last Date of Test:	December 7, 2006
Receipt Date of Samples:	December 4, 2006
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Proprietary Data spread spectrum (DTS) radio operating at 2.4 GHz.

Testing Objective:
These tests were selected to satisfy the EMC requirements for the FCC.

EUT Photo

CONFIGURATION 1 SUPR0062

Software/Firmware Running during test	
Description	**Version**
TNT Mobile	3.0.10.27560

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	CommerceGuard AB	CG-CFR03	TST0040

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host System	TDS	Recon	None
AC Adapter	CUI, Inc.	41-5-550D	EIA3630534S

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	1.85m	No	AC Adapter	Host System
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 SUPR0062

Software/Firmware Running during test	
Description	**Version**
TNT Mobile	3.0.10.27560

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	CommerceGuard AB	CG-CFR03	TST0036

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host System	TDS	Recon	None
AC Adapter	CUI, Inc.	41-5-550D	EIA3630534S
AC Adapter	Stancor	STA-4130	None
Extender card	Elan	Unknown	Unknown

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	1.85m	No	AC Adapter	Host System
DC Power	No	1.85m	No	AC Adapter	Extender card
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 SUPR0062

Software/Firmware Running during test	
Description	**Version**
TNT Mobile	3.0.10.27560

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	CommerceGuard AB	CG-CFR03	TST0036

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host System	TDS	Recon	None
AC Adapter	CUI, Inc.	41-5-550D	EIA3630534S
AC Adapter	Stancor	STA-4130	None
Extender card	Elan	Unknown	Unknown
Extender card	Unknown	Unknown	Unknown

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	1.85m	No	AC Adapter	Host System
DC Power	No	1.85m	No	AC Adapter	Extender card
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 4 SUPR0062

Software/Firmware Running during test	
Description	**Version**
CF Test Tool	1.0.0.14474

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT	CommerceGuard AB	CG-CFR03	TST0036

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host System	TDS	Recon	None
AC Adapter	CUI, Inc.	41-5-550D	EIA3630534S
AC Adapter	Stancor	STA-4130	None
Extender card	Elan	Unknown	Unknown

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	1.85m	No	AC Adapter	Host System
DC Power	No	1.85m	No	AC Adapter	Extender card
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	12/4/2006	Radiated Emissions from Digital Portion	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	12/4/2006	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	12/5/2006	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	12/5/2006	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	12/5/2006	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	12/5/2006	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	12/5/2006	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	12/7/2006	Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
9	12/7/2006	AC Power Line Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

RADIATED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Normal Operating Mode

MODE USED FOR FINAL DATA

Normal Operating Mode

POWER SETTINGS INVESTIGATED

120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	30MHz	Stop Frequency	1000MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Biconilog	EMCO	3142	AXB	1/6/2005	24
Pre-Amplifier	Miteq	AM-1551	AOY	4/5/2006	13
Spectrum Analyzer	Agilent	E4443A	AAS	1/8/2006	12

MEASUREMENT BANDWIDTHS

	Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

PSA 2006.10.30
EMI 2006.11.29

EUT:	CG-CFR03	Work Order:	SUPR0062
Serial Number:	TST0040	Date:	12/04/06
Customer:	CommerceGuard AB	Temperature:	23
Attendees:	None	Humidity:	25%
Project:	None	Barometric Pres.:	29.95
Tested by:	Travis Rychener	Power: 120VAC/60Hz	Job Site: EV11

TEST SPECIFICATIONS	Test Method
FCC 15.109:2006	ANSI C63.4:2003
EN 55022:1998 (Amended by A1:2000 and A2:2003):	CISPR 22:2006:
CISPR 22:2006:	CISPR 22:2006:

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	10

COMMENTS

Running TNT Mobile App

EUT OPERATING MODES

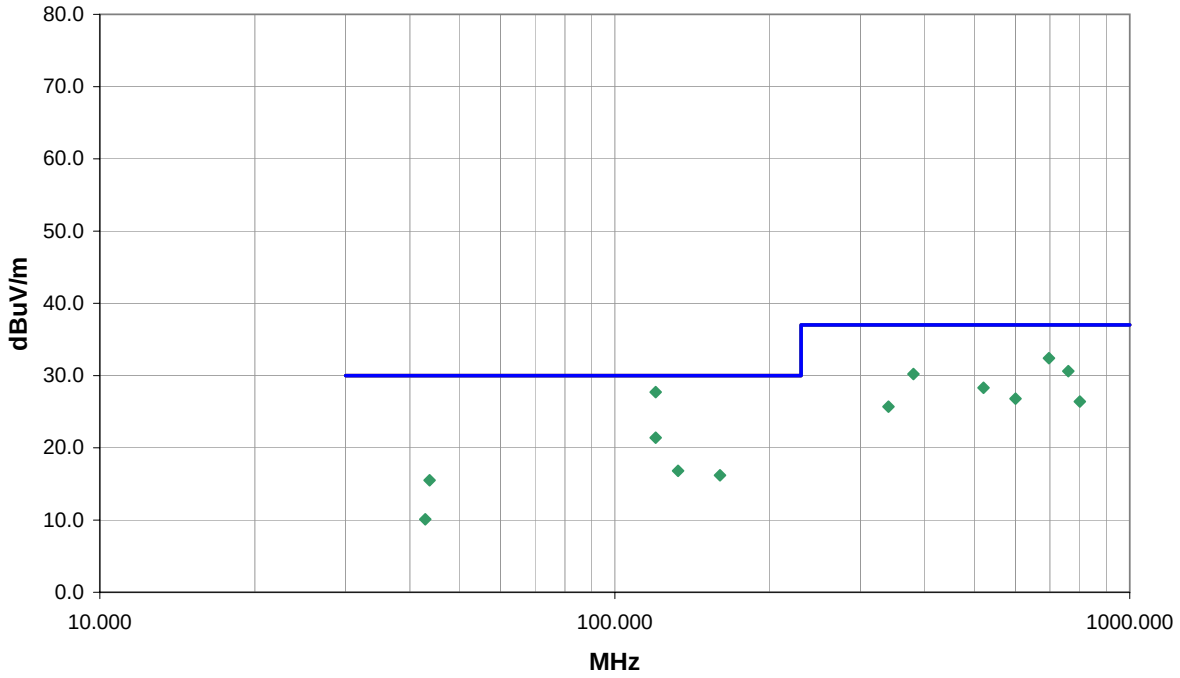
Normal Operating Mode

DEVIATIONS FROM TEST STANDARD

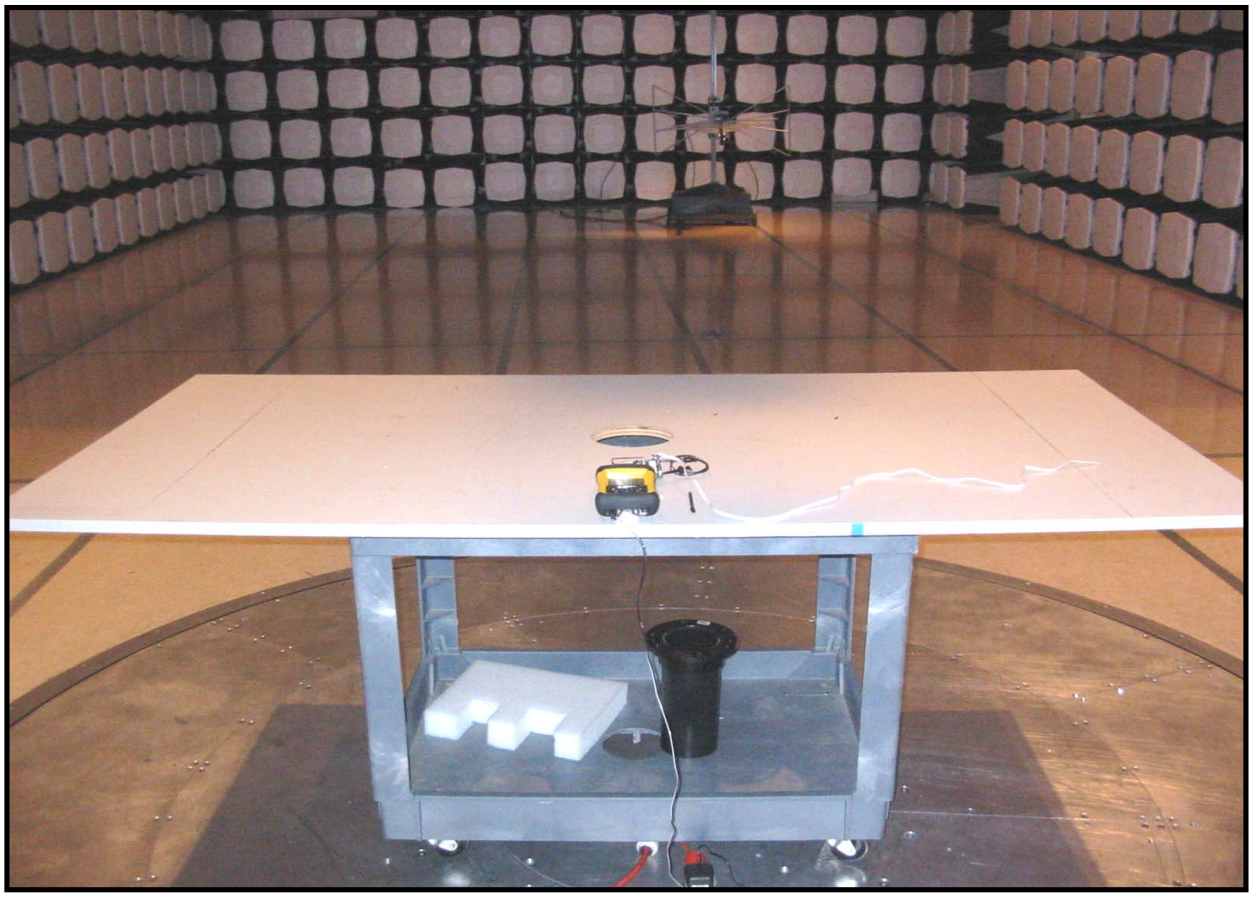
No deviations.

Run #	1
Configuration #	1
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
120.021	54.6	-26.9	197.0	3.9	10.0	0.0	H-Bilog	QP	0.0	27.7	30.0	-2.3
696.720	43.5	-11.1	142.0	3.5	10.0	0.0	H-Bilog	QP	0.0	32.4	37.0	-4.6
760.030	41.3	-10.7	113.0	1.0	10.0	0.0	H-Bilog	QP	0.0	30.6	37.0	-6.4
380.024	47.0	-16.8	54.0	2.5	10.0	0.0	H-Bilog	QP	0.0	30.2	37.0	-6.8
120.018	48.3	-26.9	118.0	1.4	10.0	0.0	V-Bilog	QP	0.0	21.4	30.0	-8.6
520.025	42.3	-14.0	135.0	1.5	10.0	0.0	H-Bilog	QP	0.0	28.3	37.0	-8.7
600.028	39.5	-12.7	333.0	2.0	10.0	0.0	H-Bilog	QP	0.0	26.8	37.0	-10.2
800.033	37.2	-10.8	1.0	1.0	10.0	0.0	H-Bilog	QP	0.0	26.4	37.0	-10.6
340.024	43.8	-18.1	291.0	2.8	10.0	0.0	H-Bilog	QP	0.0	25.7	37.0	-11.3
132.731	43.4	-26.6	221.0	3.6	10.0	0.0	H-Bilog	QP	0.0	16.8	30.0	-13.2
160.020	40.8	-24.6	246.0	1.0	10.0	0.0	H-Bilog	QP	0.0	16.2	30.0	-13.8
43.698	37.2	-21.7	241.0	3.1	10.0	0.0	H-Bilog	QP	0.0	15.5	30.0	-14.5
42.861	31.5	-21.4	241.0	3.1	10.0	0.0	H-Bilog	QP	0.0	10.1	30.0	-19.9



R975
CommerceGuard
S/N: TST0040
RESET
RECON

CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

TNT Mobile Scan

POWER SETTINGS INVESTIGATED

120V/60Hz

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
High Pass Filter	T.T.E.	7766	HFG	12/19/2005	13
Attenuator	Coaxicom	66702 2910-20	AUA	5/2/2006	13
Receiver	Rohde & Schwartz	ESCI	ARG	6/22/2006	13
LISN	Solar	9252-50-R-24-BNC	LIP	12/13/2005	13

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

NORTHWEST

EMC

CONDUCTED EMISSIONS

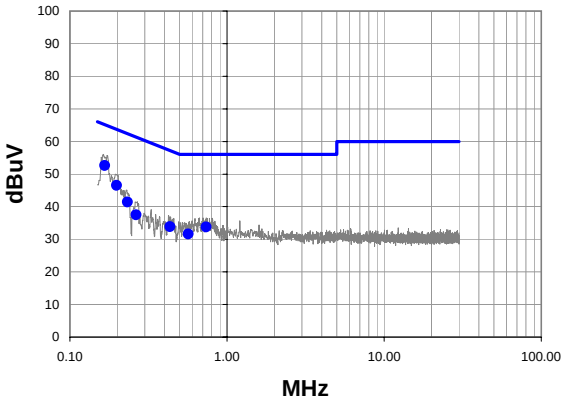
Version 2006.12.4
PSA-ESCI 2006.12.01
NVLAP Lab Code 200630-0

Work Order:	SUPR0062	**Date:**	12/07/06		
Project:	None	**Temperature:**	22		
Job Site:	EV07	**Humidity:**	31		
Serial Number:	TST0040	**Barometric Pres.:**	29.93	**Tested by:**	David DiVergigelis
EUT:	CG-CFR03				
Configuration:	1				
Customer:	CommerceGuard AB				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	TNT Mobile Scan				
Deviations:	No deviations				
Comments:	Host system TDS Recon				

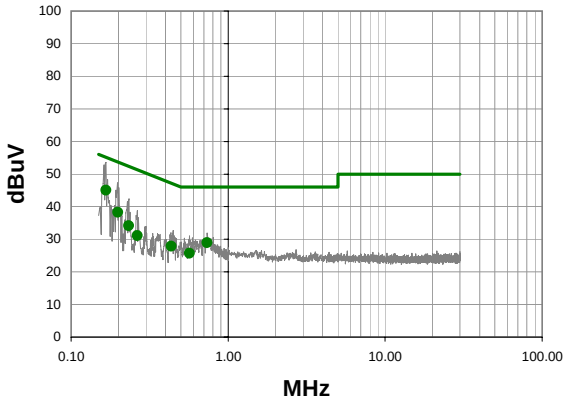
Test Specifications	**Class B**	**Test Method**
FCC 15.107:2006		ANSI C63.4:2003

Run #	1	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.167	30.9	1.7	52.6	65.1	-12.5
0.198	25.5	1.0	46.5	63.7	-17.2
0.233	20.4	1.0	41.4	62.3	-21.0
0.736	13.1	0.7	33.8	56.0	-22.2
0.434	13.0	0.9	33.9	57.2	-23.3
0.264	16.5	1.0	37.5	61.3	-23.8
0.567	10.8	0.8	31.6	56.0	-24.4

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.167	23.4	1.7	45.1	55.1	-10.0
0.198	17.2	1.0	38.2	53.7	-15.5
0.736	8.3	0.7	29.0	46.0	-17.0
0.233	13.2	1.0	34.2	52.3	-18.2
0.434	7.0	0.9	27.9	47.2	-19.3
0.264	10.1	1.0	31.1	51.3	-20.2
0.567	4.9	0.8	25.7	46.0	-20.3

NORTHWEST

EMC

CONDUCTED EMISSIONS

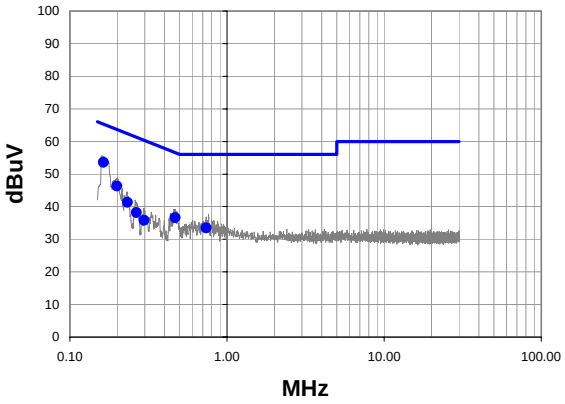
Version 2006.12.4
PSA-ESCI 2006.12.01
NVLAP Lab Code 200630-0

Work Order:	SUPR0062	**Date:**	12/07/06		
Project:	None	**Temperature:**	22		
Job Site:	EV07	**Humidity:**	31		
Serial Number:	TST0040	**Barometric Pres.:**	29.93	**Tested by:**	David DiVergigelis
EUT:	CG-CFR03				
Configuration:	1				
Customer:	CommerceGuard AB				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	TNT Mobile Scan				
Deviations:	No deviations				
Comments:	Host system TDS Recon				

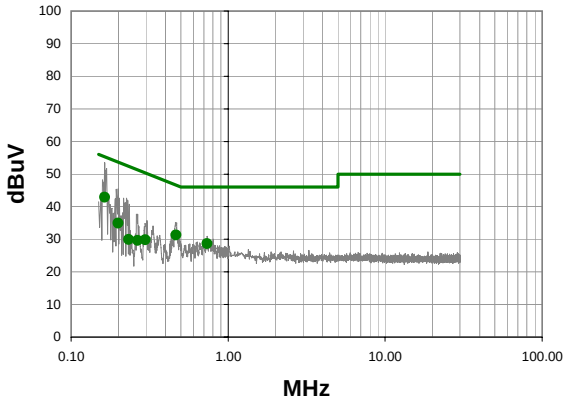
Test Specifications	**Class B**	**Test Method**
FCC 15.107:2006		ANSI C63.4:2003

Run #	2	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit

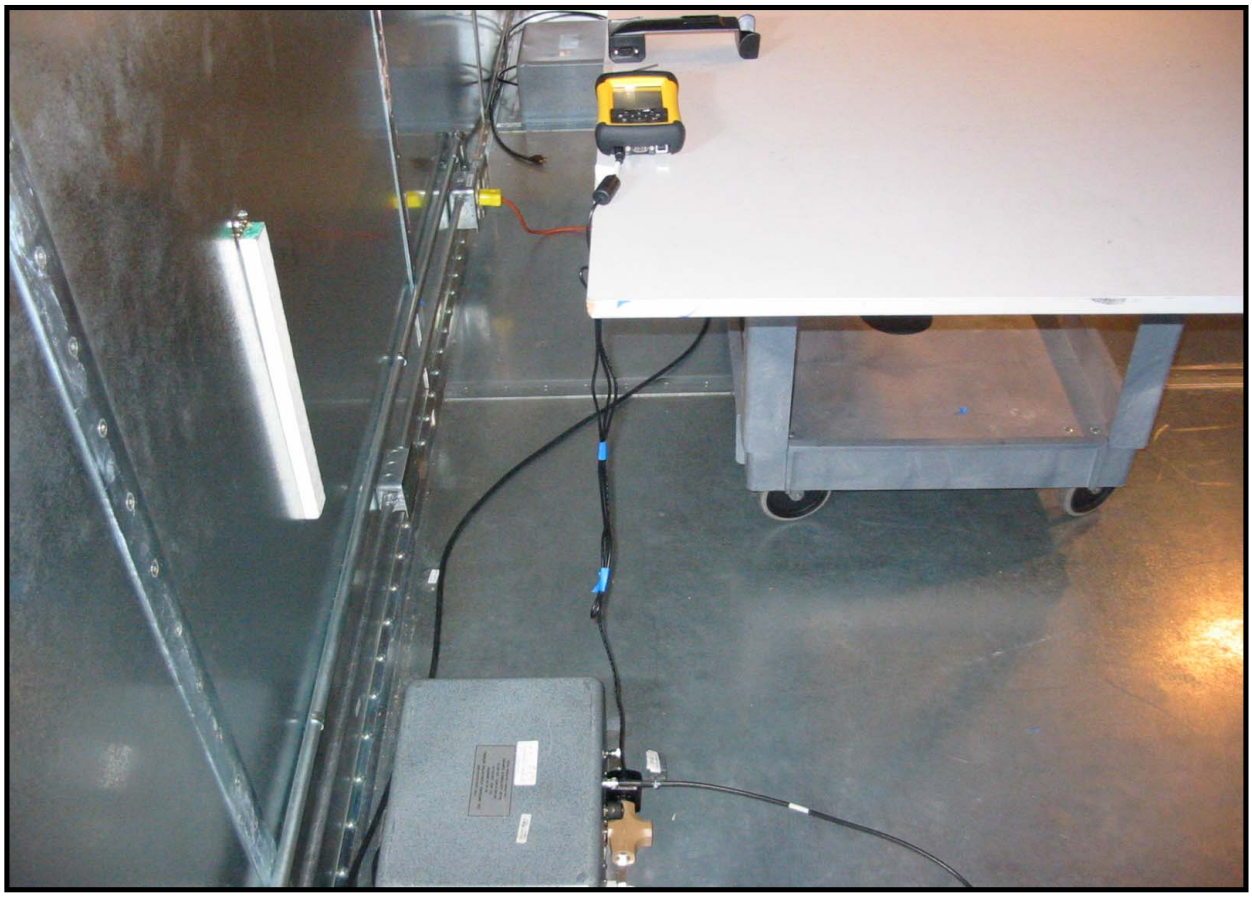


Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.164	31.9	1.7	53.6	65.3	-11.6
0.199	25.3	1.0	46.3	63.7	-17.3
0.467	15.8	0.8	36.6	56.6	-19.9
0.233	20.3	1.0	41.3	62.3	-21.1
0.736	12.8	0.7	33.5	56.0	-22.5
0.265	17.2	1.0	38.2	61.3	-23.1
0.297	14.9	0.9	35.8	60.3	-24.5

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.164	21.2	1.7	42.9	55.3	-12.3
0.467	10.5	0.8	31.3	46.6	-15.2
0.736	8.0	0.7	28.7	46.0	-17.3
0.199	13.9	1.0	34.9	53.7	-18.7
0.297	8.9	0.9	29.8	50.3	-20.5
0.265	8.7	1.0	29.7	51.3	-21.6
0.233	9.0	1.0	30.0	52.3	-22.4



SPURIOUS RADIATED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmit mode

MODE USED FOR FINAL DATA

Transmit mode

POWER SETTINGS INVESTIGATED

120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	30MHz	Stop Frequency	26500MHz

CLOCKS AND OSCILLATORS

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	3/23/2006	13
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	5/12/2006	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Antenna, Horn	EMCO	3115	AHC	8/24/2006	12
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
High Pass Filter 1.2 - 18 GHz	Micro-Tronics	HPM50108	HFV	11/28/2005	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	4/4/2006	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	7/6/2006	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	7/6/2006	13
Spectrum Analyzer	Agilent	E4446A	AAT	4/4/2006	12

MEASUREMENT BANDWIDTHS

	Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2006.10.30
EMI 2006.11.29

EUT:	CG-CFR03	Work Order:	SUPR0062
Serial Number:	TST0036	Date:	12/04/06
Customer:	CommerceGuard AB	Temperature:	22
Attendees:	None	Humidity:	26%
Project:	None	Barometric Pres.:	29.93
Tested by:	David Divergigelis	Job Site:	EV01
Power:	120VAC/60Hz		

TEST SPECIFICATIONS	Test Method
FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Host system TDS recon

EUT OPERATING MODES

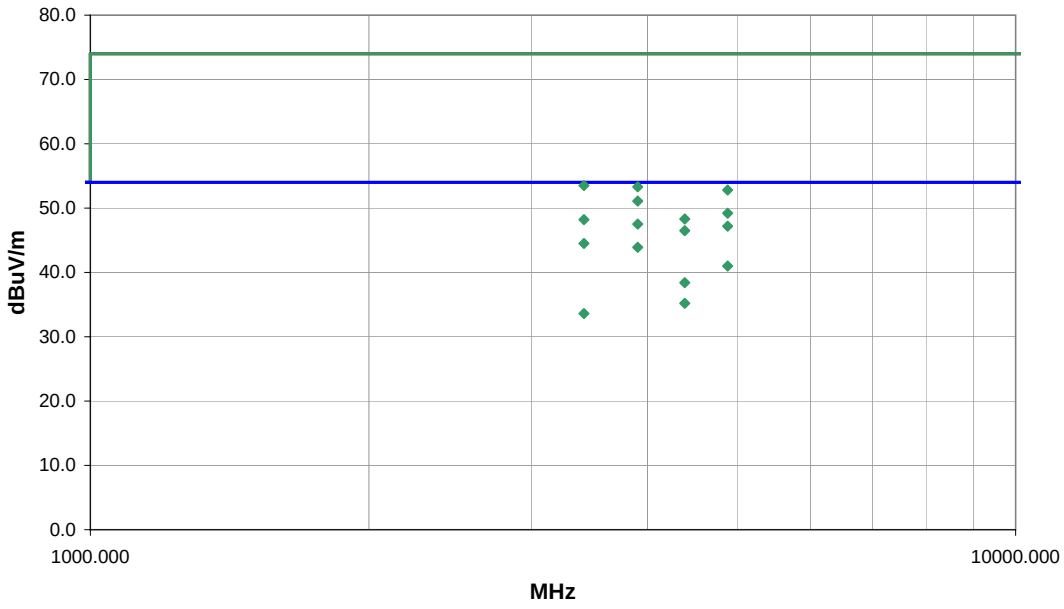
Transmit mode

DEVIATIONS FROM TEST STANDARD

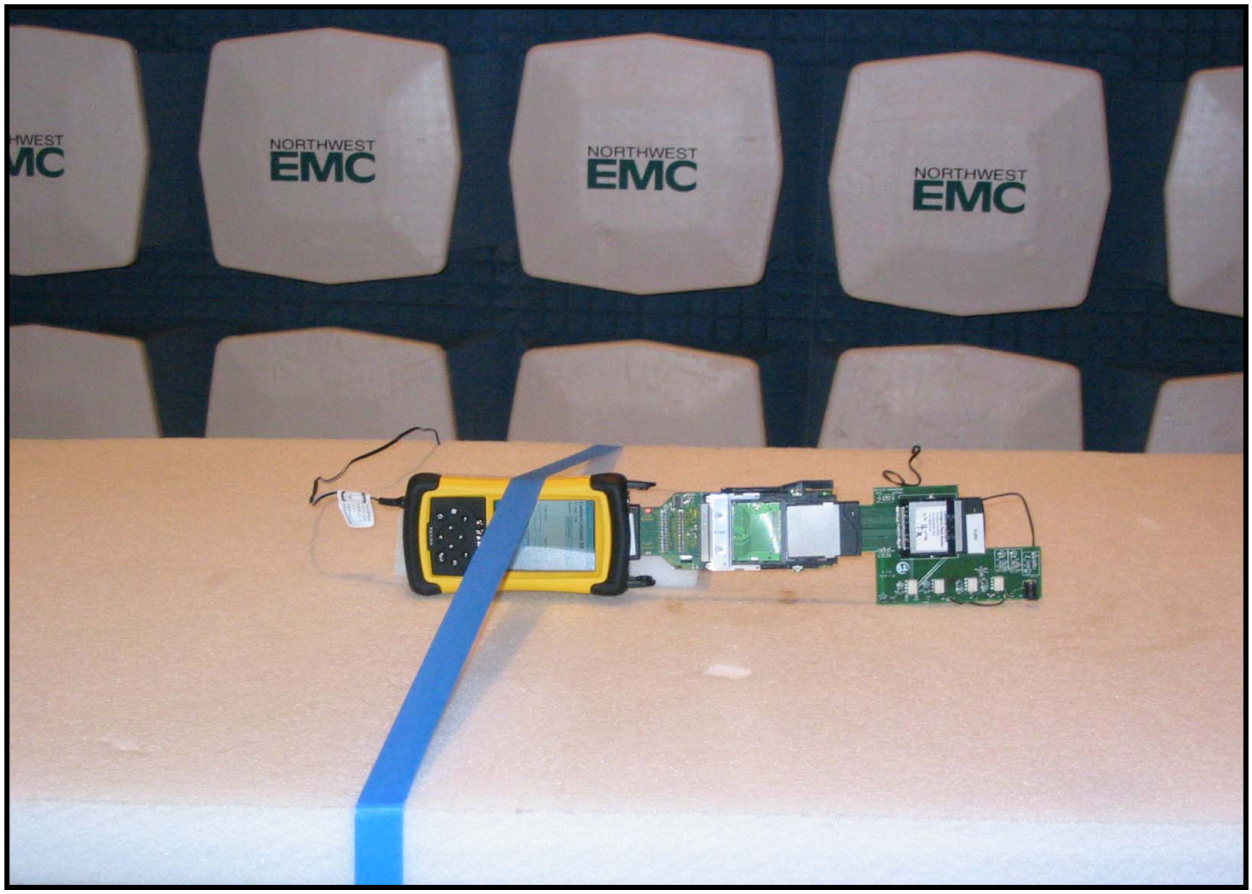
No deviations.

Run #	1	
Configuration #	2	
Results	Pass	NVLAP Lab Code 200630-0

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
3416.143	42.7	5.5	346.0	1.7	3.0	0.0	V-Horn	AV	0.0	48.2	54.0	-5.8	EUT on side
3904.166	40.1	7.4	276.0	1.0	3.0	0.0	H-Horn	AV	0.0	47.5	54.0	-6.5	EUT on side
4883.110	38.6	8.6	228.0	1.3	3.0	0.0	H-Horn	AV	0.0	47.2	54.0	-6.8	EUT horizontal
3904.146	36.5	7.4	262.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.9	54.0	-10.1	EUT on side
4883.118	32.4	8.6	360.0	1.6	3.0	0.0	V-Horn	AV	0.0	41.0	54.0	-13.0	EUT on side
4389.166	31.1	7.3	259.0	1.1	3.0	0.0	H-Horn	AV	0.0	38.4	54.0	-15.6	EUT on side
4389.150	27.9	7.3	239.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.2	54.0	-18.8	EUT on side
3416.183	28.1	5.5	233.0	1.6	3.0	0.0	H-Horn	AV	0.0	33.6	54.0	-20.4	EUT on side
3416.007	48.0	5.5	346.0	1.7	3.0	0.0	V-Horn	PK	0.0	53.5	74.0	-20.5	EUT on side
3904.389	45.9	7.4	276.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.3	74.0	-20.7	EUT on side
4883.542	44.2	8.6	228.0	1.3	3.0	0.0	H-Horn	PK	0.0	52.8	74.0	-21.2	EUT horizontal
3903.982	43.7	7.4	262.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.1	74.0	-22.9	EUT on side
4883.500	40.6	8.6	360.0	1.6	3.0	0.0	V-Horn	PK	0.0	49.2	74.0	-24.8	EUT on side
4389.106	41.0	7.3	259.0	1.1	3.0	0.0	H-Horn	PK	0.0	48.3	74.0	-25.7	EUT on side
4389.283	39.2	7.3	239.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.5	74.0	-27.5	EUT on side
3416.060	39.0	5.5	233.0	1.6	3.0	0.0	H-Horn	PK	0.0	44.5	74.0	-29.5	EUT on side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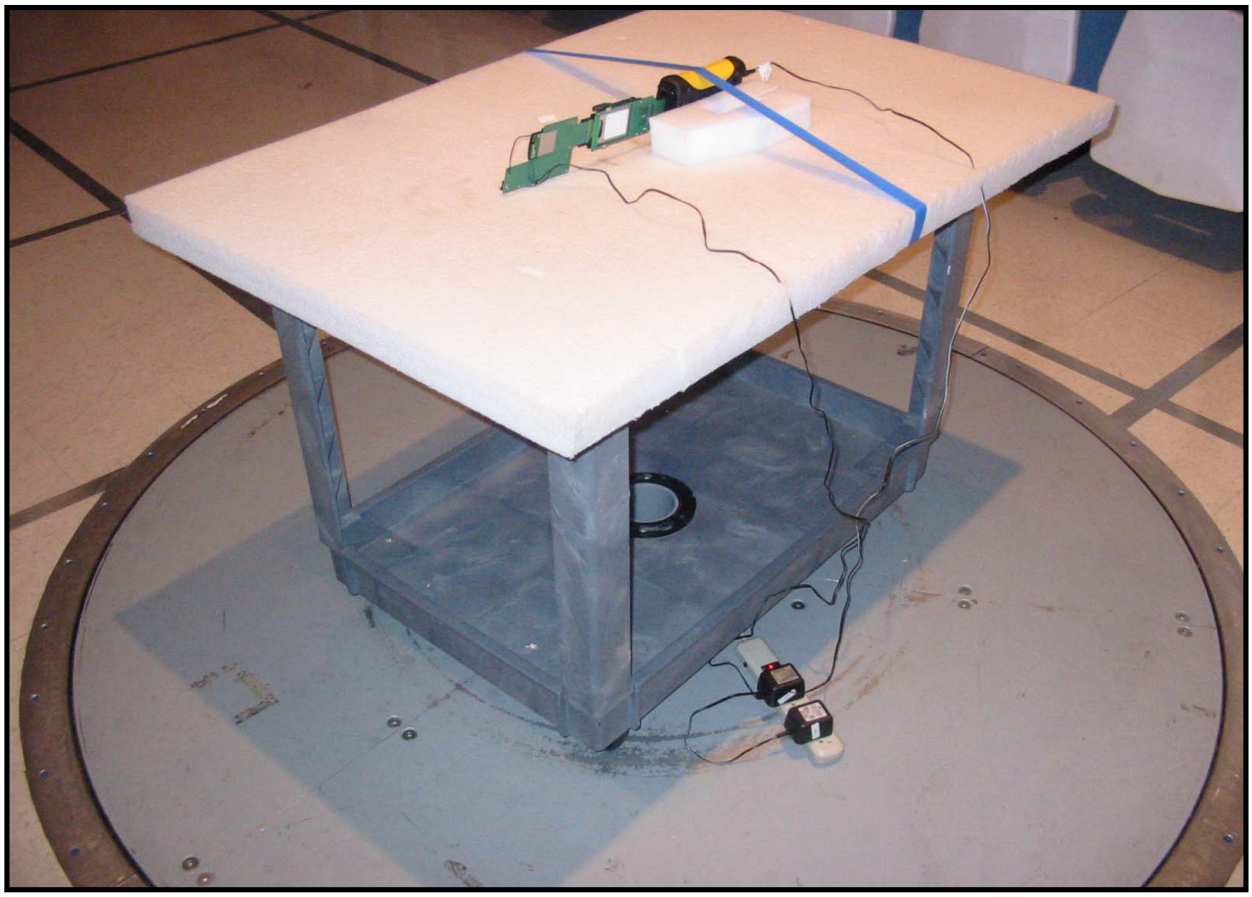

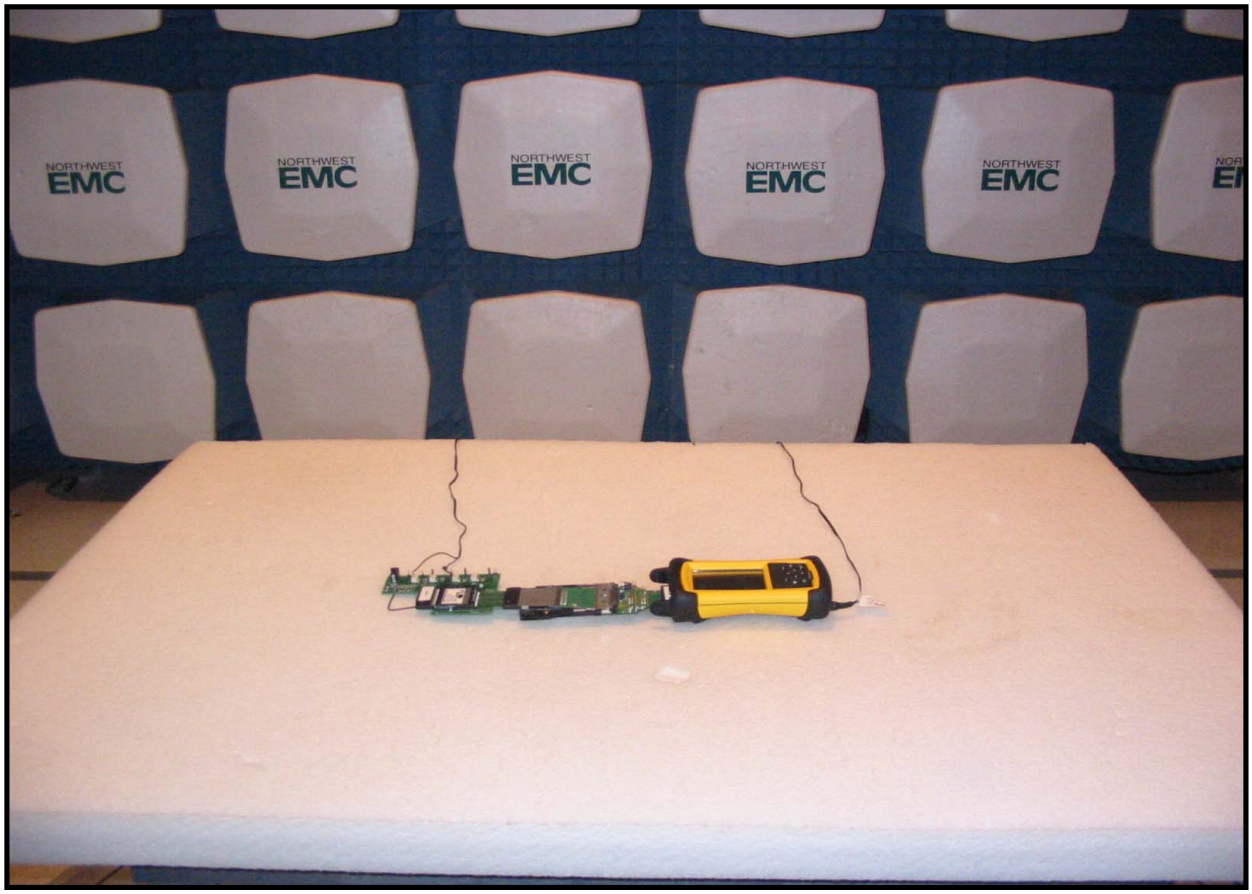
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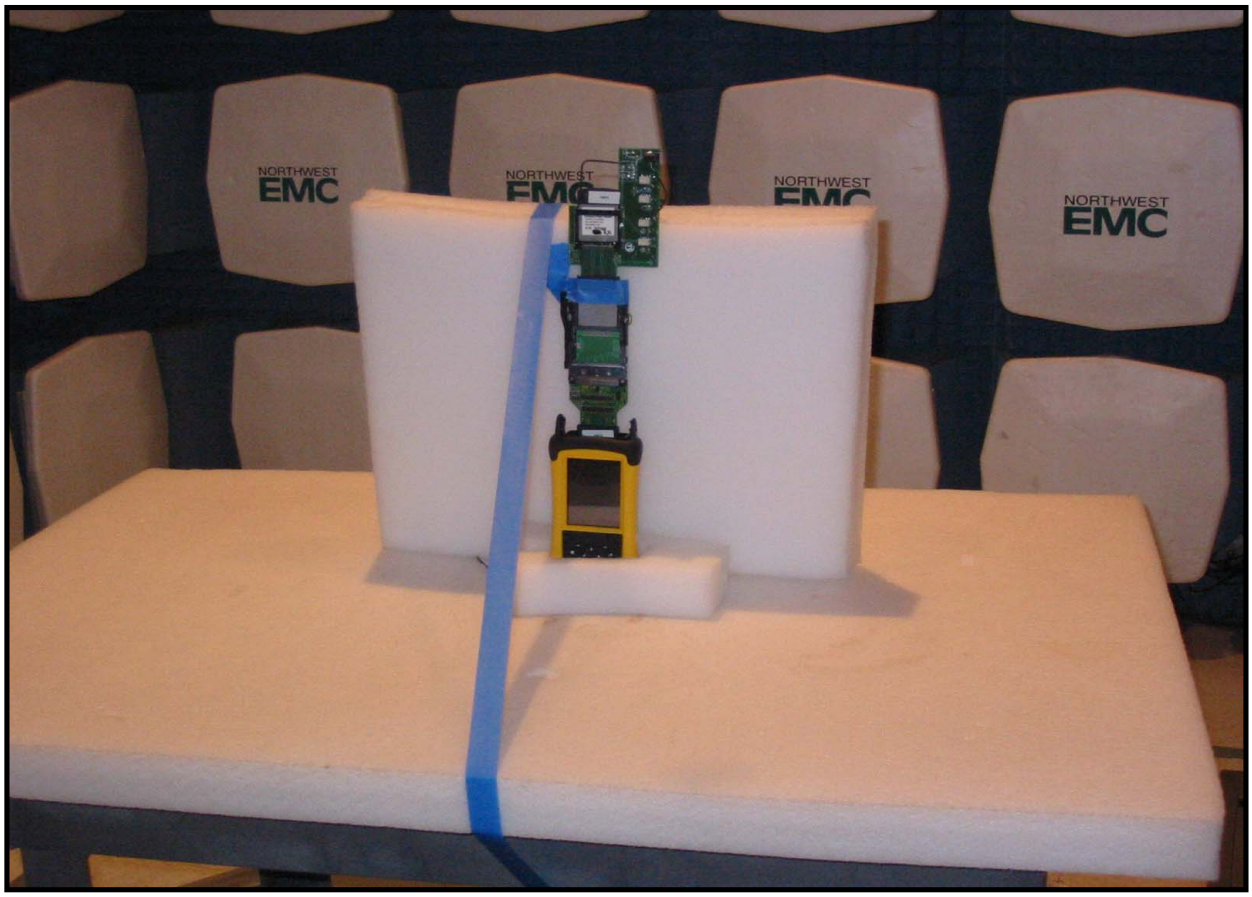

NORTHWEST
EMC

Occupied Bandwidth

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Pasternack	PE7005-20	AUN	2/14/2006	13
Spectrum Analyzer	Agilent	E4407B	AAU	9/20/2006	12

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to the only transmit frequency. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

NORTHWEST EMC

Occupied Bandwidth

XMit 2006.08.24

EUT:	CG-CFR03	Work Order:	SUPR0062
Serial Number:	TST0036	Date:	12/05/06
Customer:	CommerceGuard AB	Temperature:	23°C
Attendees:	None	Humidity:	27%
Project:	None	Barometric Pres.:	30.33
Tested by:	Holly Ashkannejhad	Power: 120V/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074

COMMENTS

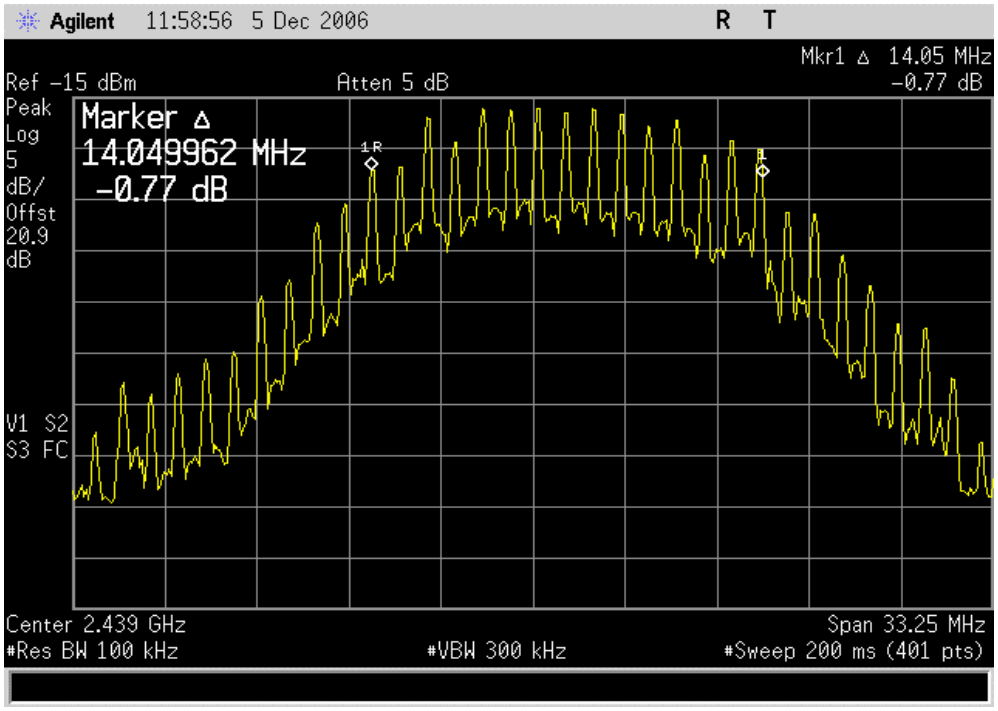
DEVIATIONS FROM TEST STANDARD

Configuration #	4	Signature Holly Ashkannejhad

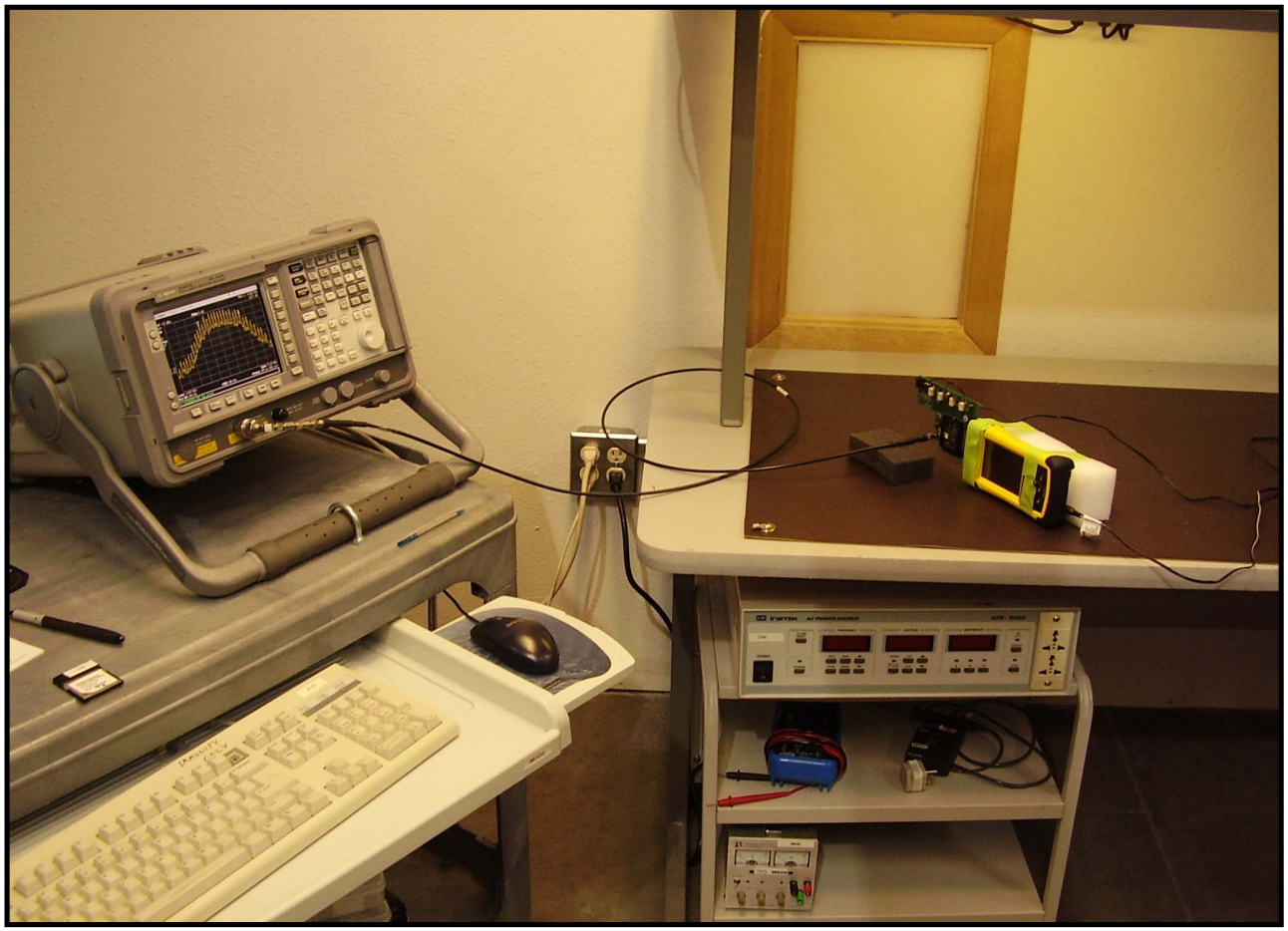
	Value	Limit	Results
Single Channel - 2440MHz	14.05 MHz	≥ 500 kHz	Pass

Occupied Bandwidth

Single Channel - 2440MHz		
Result: Pass	**Value:** 14.05 MHz	**Limit:** ≥ 500 kHz



Occupied Bandwidth



Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
RF Detector	RLC Electronics	CR-133-R	ZZA	NCR	0
Attenuator		93459 3330A-6	AUF	1/3/2006	13
Attenuator	Pasternack	PE7005-20	AUN	2/14/2006	13
Power Meter	Gigatronics	8651A	SPM	9/19/2006	12
Power Sensor	Gigatronics	80701A	SPL	9/19/2006	12
Oscilloscope	Tektronix	TDS 3052	TOF	12/8/2005	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The EUT was transmitting at its maximum output power. The data rate of the radio was varied to determine the level that produced the highest output power.

The measurement was made using a direct connection between the RF output of the EUT and a RF detector diode. The DC output of the diode was measured with the oscilloscope. The signal generator, tuned to the transmit frequency, was then substituted for the EUT. The CW output of the signal generator was adjusted until the DC output of the RF detector diode match the peak level produced when connected to the EUT. To further reduce measurement error, the power meter and sensor were then used to measure the output power level of the signal generator.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

NORTHWEST EMC

Output Power

XMit 2006.08.24

EUT:	CG-CFR03	Work Order:	SUPR0062
Serial Number:	TST0036	Date:	12/05/06
Customer:	CommerceGuard AB	Temperature:	23°C
Attendees:	None	Humidity:	27%
Project:	None	Barometric Pres.:	30.33
Tested by:	Holly Ashkannejhad	Power: 120V/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074

COMMENTS

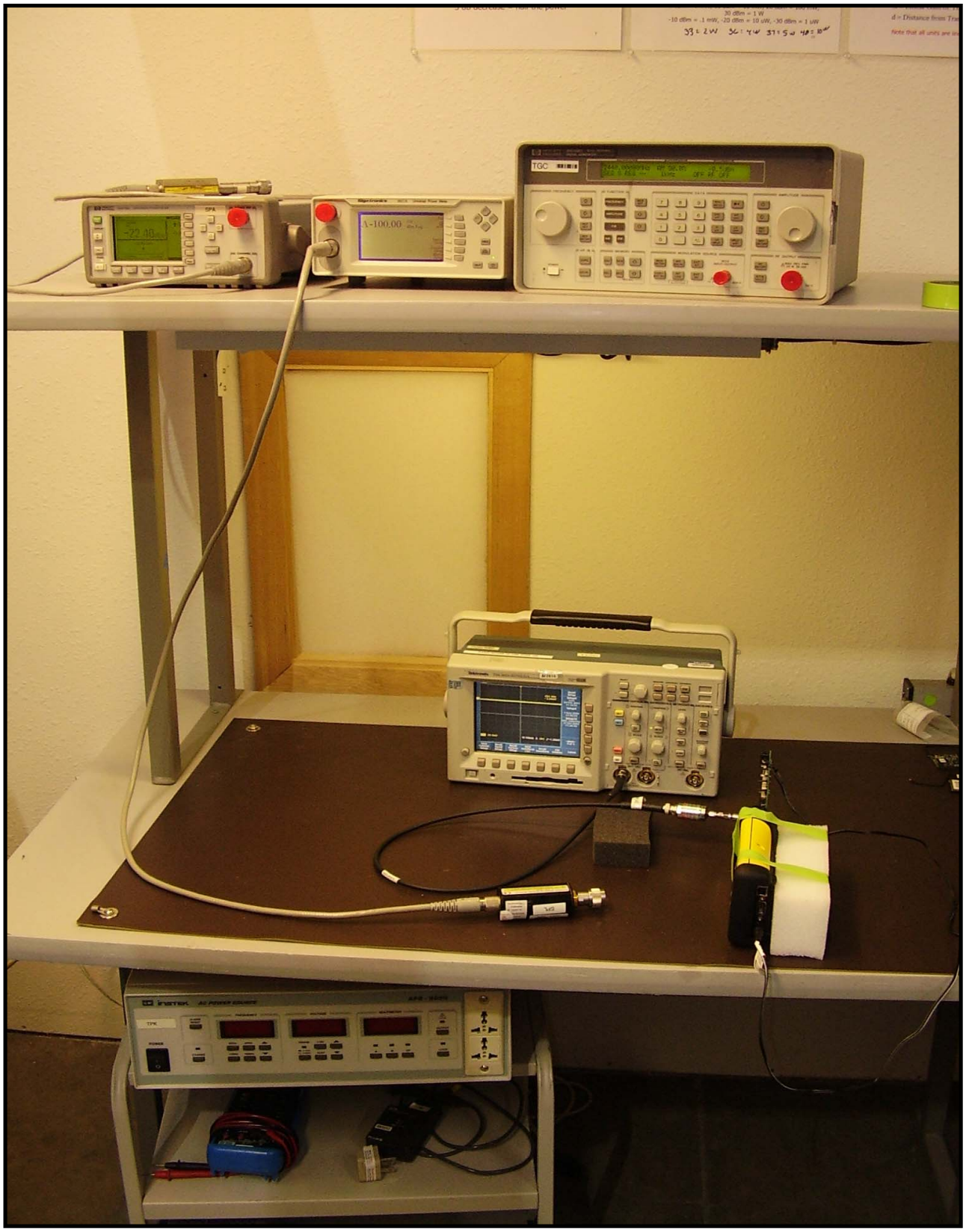
Transmitting

DEVIATIONS FROM TEST STANDARD

Configuration #	4	Signature Holly Ashkannejhad

	Value dBm	Value mW	Limit	Results
Single Channel	-0.5	0.92	1 Watt	Pass

Output Power



Bandedge Compliance

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Pasternack	PE7005-20	AUN	2/14/2006	13
Spectrum Analyzer	Agilent	E4407B	AAU	9/20/2006	12

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The requirements of FCC 15.247(d) for emissions at least 20dB below the carrier in any 100kHz bandwidth outside the allowable band was measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 10 MHz below the band edge to 10 MHz above the band edge.

NORTHWEST EMC

Bandedge Compliance

XMit 2006.08.24

EUT:	CG-CFR03	Work Order:	SUPR0062
Serial Number:	TST0036	Date:	12/05/06
Customer:	CommerceGuard AB	Temperature:	23°C
Attendees:	None	Humidity:	27%
Project:	None	Barometric Pres.:	30.33
Tested by:	Holly Ashkannejhad	Power: 120V/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074

COMMENTS

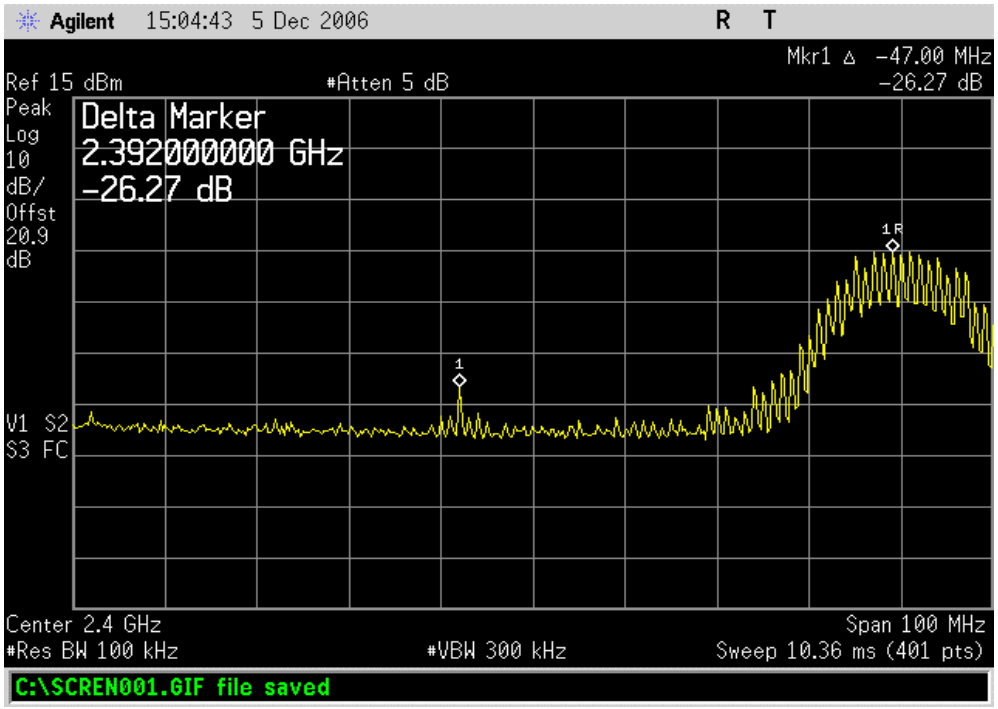
DEVIATIONS FROM TEST STANDARD

Configuration #	4	Signature Holly Ashkannejhad

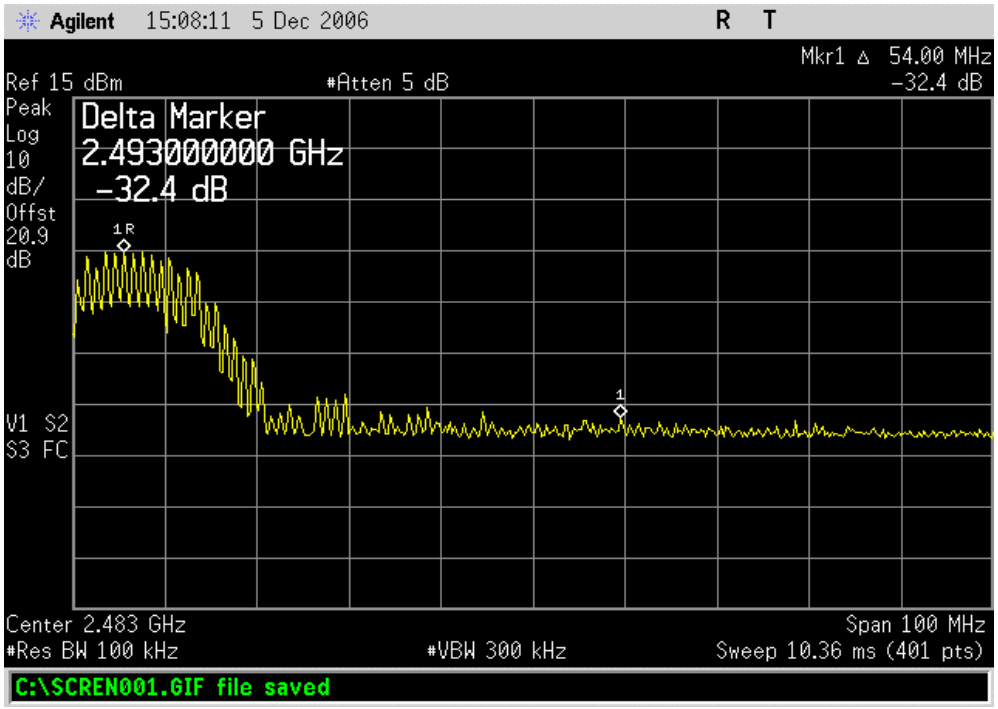
	Value	Limit	Results
Single channel - 2440MHz			
Lower bandedge	≤ -25 dBc	≤ -20 dBc	Pass
Upper bandedge	≤ -30 dBc	≤ -20 dBc	Pass

Bandedge Compliance

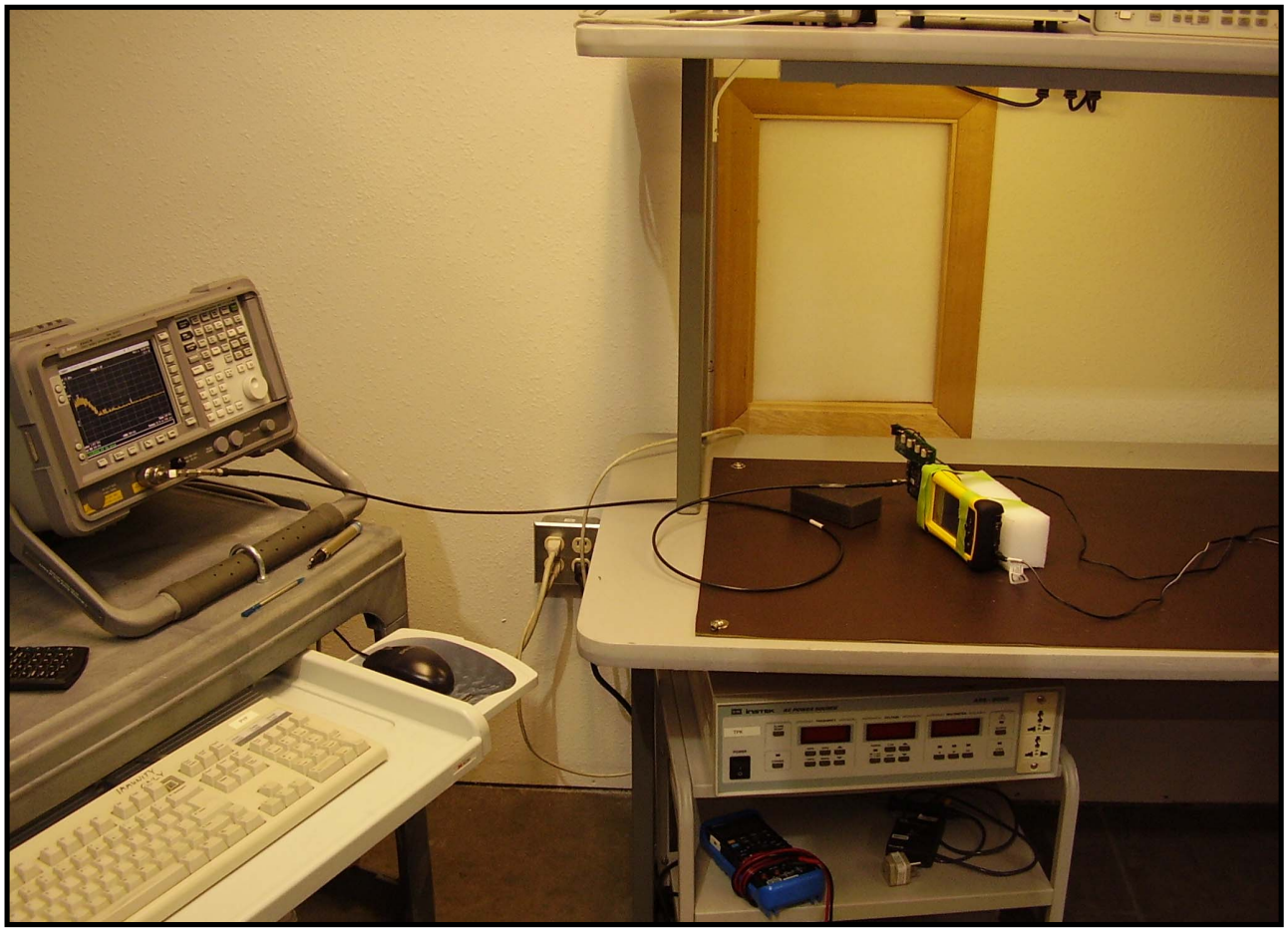
Single channel - 2440MHz, Lower bandedge					
Result:	Pass	**Value:**	≤ -25 dBc	**Limit:**	≤ -20 dBc



Single channel - 2440MHz, Upper bandedge					
Result:	Pass	**Value:**	≤ -30 dBc	**Limit:**	≤ -20 dBc



Bandedge Compliance



Spurious Conducted Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Pasternack	PE7005-20	AUN	2/14/2006	13
Spectrum Analyzer	Agilent	E4407B	AAU	9/20/2006	12

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to transmit mode. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC

Spurious Conducted Emissions

XMit 2006.08.24

EUT:	CG-CFR03			Work Order:	SUPR0062
Serial Number:	TST0036			Date:	12/05/06
Customer:	CommerceGuard AB			Temperature:	23°C
Attendees:	None			Humidity:	27%
Project:	None			Barometric Pres.:	30.33
Tested by:	Holly Ashkannejhad	Power:	120V/60Hz	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074

COMMENTS

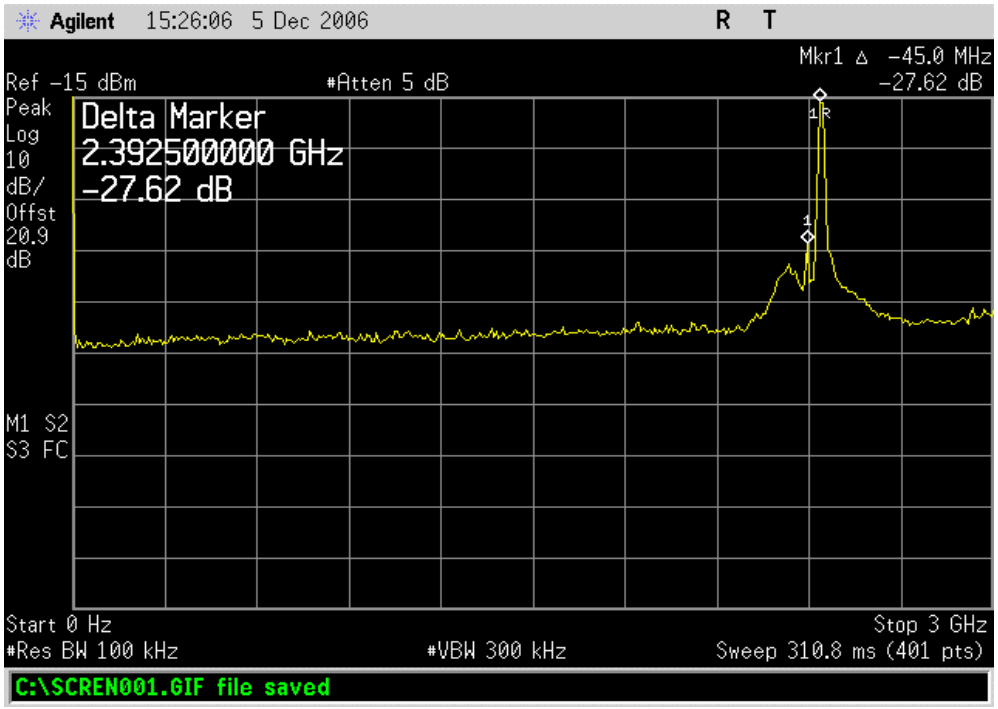
DEVIATIONS FROM TEST STANDARD

Configuration #	4	Signature Holly Ashkannejhad

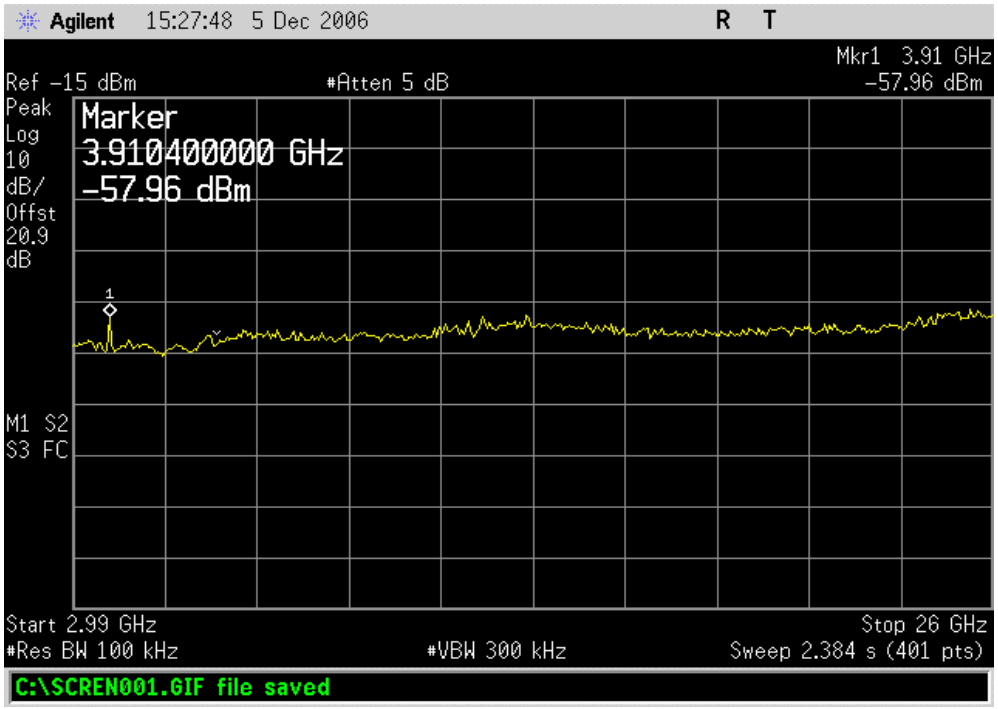
	Value	Limit	Results
Single Channel - 2440MHz			
0 Hz - 3.0GHz	≤ -25 dBc	≤ -20 dBc	Pass
2.99GHz - 26 GHz	≤ -40 dBc	≤ -20 dBc	Pass

Spurious Conducted Emissions

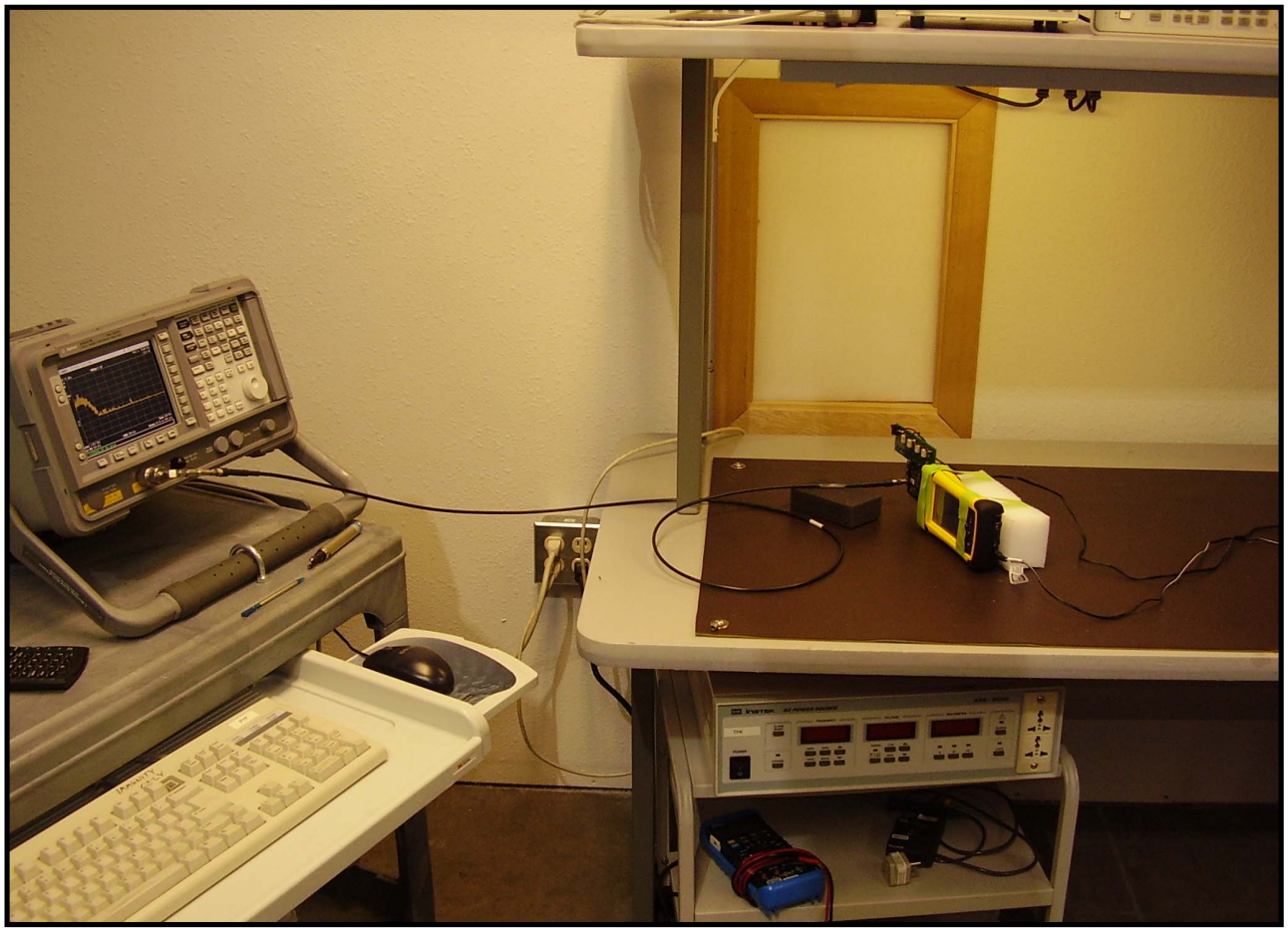
Single Channel - 2440MHz, 0 Hz - 3.1GHz		
Result: Pass	**Value:** ≤ -25 dBc	**Limit:** ≤ -20 dBc



Single Channel - 2440MHz, 3 GHz - 26 GHz		
Result: Pass	**Value:** ≤ -40 dBc	**Limit:** ≤ -20 dBc



Spurious Conducted Emissions



Power Spectral Density

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Pasternack	PE7005-20	AUN	2/14/2006	13
Spectrum Analyzer	Agilent	E4407B	AAU	9/20/2006	12

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The peak power spectral density measurements were measured with the EUT set to transmit mode. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. Per the procedure outlined in FCC 97-114, the spectrum analyzer was used as follows:

> The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure can be used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."

NORTHWEST EMC

Power Spectral Density

XMit 2006.08.24

EUT:	CG-CFR03	Work Order:	SUPR0062
Serial Number:	TST0036	Date:	12/05/06
Customer:	CommerceGuard AB	Temperature:	23°C
Attendees:	None	Humidity:	27%
Project:	None	Barometric Pres.:	30.33
Tested by:	Holly Ashkannejhad	Power: 120V/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2006 DTS	ANSI C63.4:2003, KDB No. 558074

COMMENTS

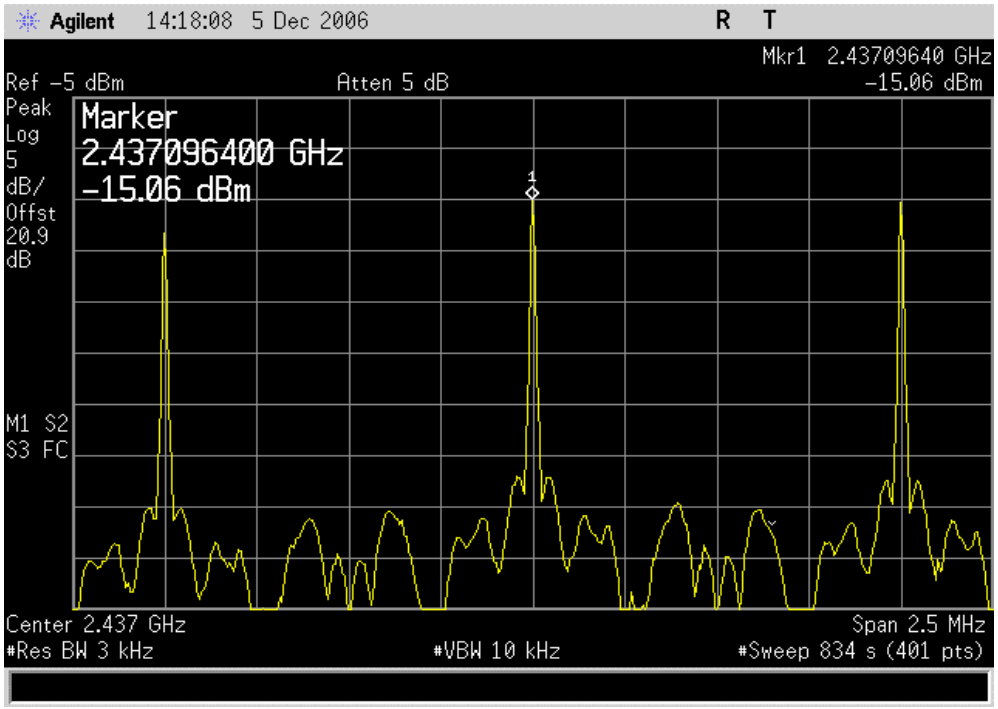
DEVIATIONS FROM TEST STANDARD

Configuration #	4	Signature Holly Ashkannejhad

	Value	Limit	Results
Single Channel - 2440MHz	-15.06 dBm	≤ 8 dBm	Pass

Power Spectral Density

Single Channel - 2440MHz		
Result: Pass	**Value:** -15.06 dBm	**Limit:** ≤ 8 dBm



Power Spectral Density

AC POWERLINE CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmit mode

POWER SETTINGS INVESTIGATED

120V/60Hz

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
High Pass Filter	T.T.E.	7766	HFG	12/19/2005	13
Attenuator	Coaxicom	66702 2910-20	AUA	5/2/2006	13
Receiver	Rohde & Schwartz	ESCI	ARG	6/22/2006	13
LISN	Solar	9252-50-R-24-BNC	LIQ	12/13/2005	13
LISN	Solar	9252-50-R-24-BNC	LIP	12/13/2005	13

MEASUREMENT BANDWIDTHS

	Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

NORTHWEST
EMC

AC POWERLINE CONDUCTED EMISSIONS

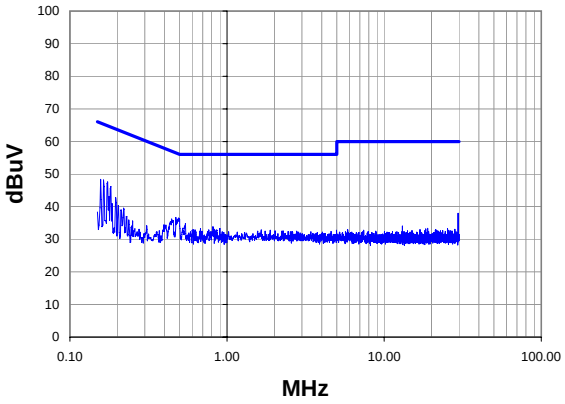
Version 2006.12.4
PSA-ESCI 2006.12.01
NVLAP Lab Code 200630-0

Work Order:	SUPR0062	**Date:**	12/07/06		
Project:	None	**Temperature:**	22		
Job Site:	EV07	**Humidity:**	31		
Serial Number:	TST0036	**Barometric Pres.:**	29.93	**Tested by:**	David DiVergigelis
EUT:	CG-CFR03				
Configuration:	2				
Customer:	CommerceGuard AB				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmit mode				
Deviations:	No deviations				
Comments:	Host system TDS Recon				

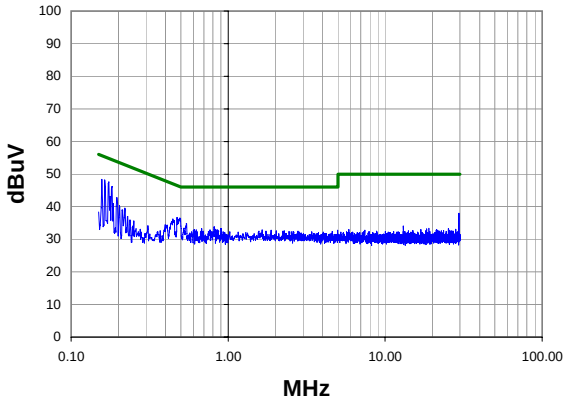
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2006		ANSI C63.4:2003

Run #	3	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.164	26.5	1.7	48.2	65.3	-17.1
0.174	26.1	1.5	47.6	64.8	-17.2
0.157	26.5	1.9	48.4	65.6	-17.3
0.182	24.9	1.4	46.3	64.4	-18.1
0.473	15.9	0.8	36.7	56.5	-19.7
0.444	15.4	0.8	36.2	57.0	-20.7
0.196	21.7	1.1	42.8	63.8	-21.0
0.543	14.1	0.8	34.9	56.0	-21.1
0.177	21.6	1.5	43.1	64.6	-21.6
29.500	17.4	0.6	38.0	60.0	-22.0
0.815	13.2	0.6	33.8	56.0	-22.2
0.677	12.6	0.7	33.3	56.0	-22.7
0.900	12.7	0.6	33.3	56.0	-22.7
0.833	12.5	0.6	33.1	56.0	-22.9
0.609	12.2	0.7	32.9	56.0	-23.1
1.648	12.4	0.5	32.9	56.0	-23.1
0.859	12.3	0.6	32.9	56.0	-23.1
0.767	12.2	0.6	32.8	56.0	-23.2
0.626	12.1	0.7	32.8	56.0	-23.2
0.203	19.3	1.0	40.3	63.5	-23.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.164	26.5	1.7	48.2	55.3	-7.1
0.174	26.1	1.5	47.6	54.8	-7.2
0.157	26.5	1.9	48.4	55.6	-7.3
0.182	24.9	1.4	46.3	54.4	-8.1
0.473	15.9	0.8	36.7	46.5	-9.7
0.444	15.4	0.8	36.2	47.0	-10.7
0.196	21.7	1.1	42.8	53.8	-11.0
0.543	14.1	0.8	34.9	46.0	-11.1
0.177	21.6	1.5	43.1	54.6	-11.6
29.500	17.4	0.6	38.0	50.0	-12.0
0.815	13.2	0.6	33.8	46.0	-12.2
0.677	12.6	0.7	33.3	46.0	-12.7
0.900	12.7	0.6	33.3	46.0	-12.7
0.833	12.5	0.6	33.1	46.0	-12.9
0.609	12.2	0.7	32.9	46.0	-13.1
1.648	12.4	0.5	32.9	46.0	-13.1
0.859	12.3	0.6	32.9	46.0	-13.1
0.767	12.2	0.6	32.8	46.0	-13.2
0.626	12.1	0.7	32.8	46.0	-13.2
0.203	19.3	1.0	40.3	53.5	-13.2

NORTHWEST
EMC

AC POWERLINE CONDUCTED EMISSIONS

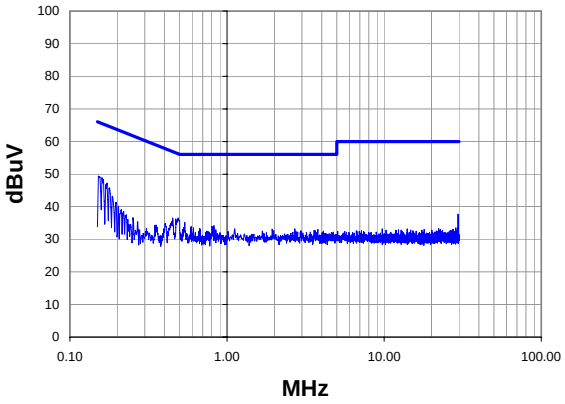
Version 2006.12.4
PSA-ESCI 2006.12.01
NVLAP Lab Code 200630-0

Work Order:	SUPR0062	**Date:**	12/07/06		
Project:	None	**Temperature:**	22		
Job Site:	EV07	**Humidity:**	31		
Serial Number:	TST0036	**Barometric Pres.:**	29.93	**Tested by:**	David DiVergigelis
EUT:	CG-CFR03				
Configuration:	2				
Customer:	CommerceGuard AB				
Attendees:	None				
EUT Power:	120V/60Hz				
Operating Mode:	Transmit mode				
Deviations:	No deviations				
Comments:	Host system TDS Recon				

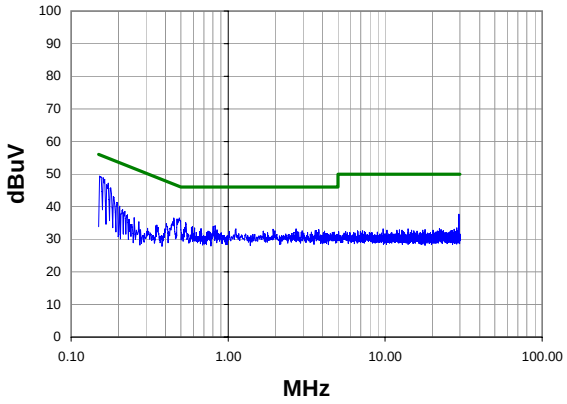
Test Specifications	**Class B**	**Test Method**
FCC 15.207:2006		ANSI C63.4:2003

Run #	4	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit

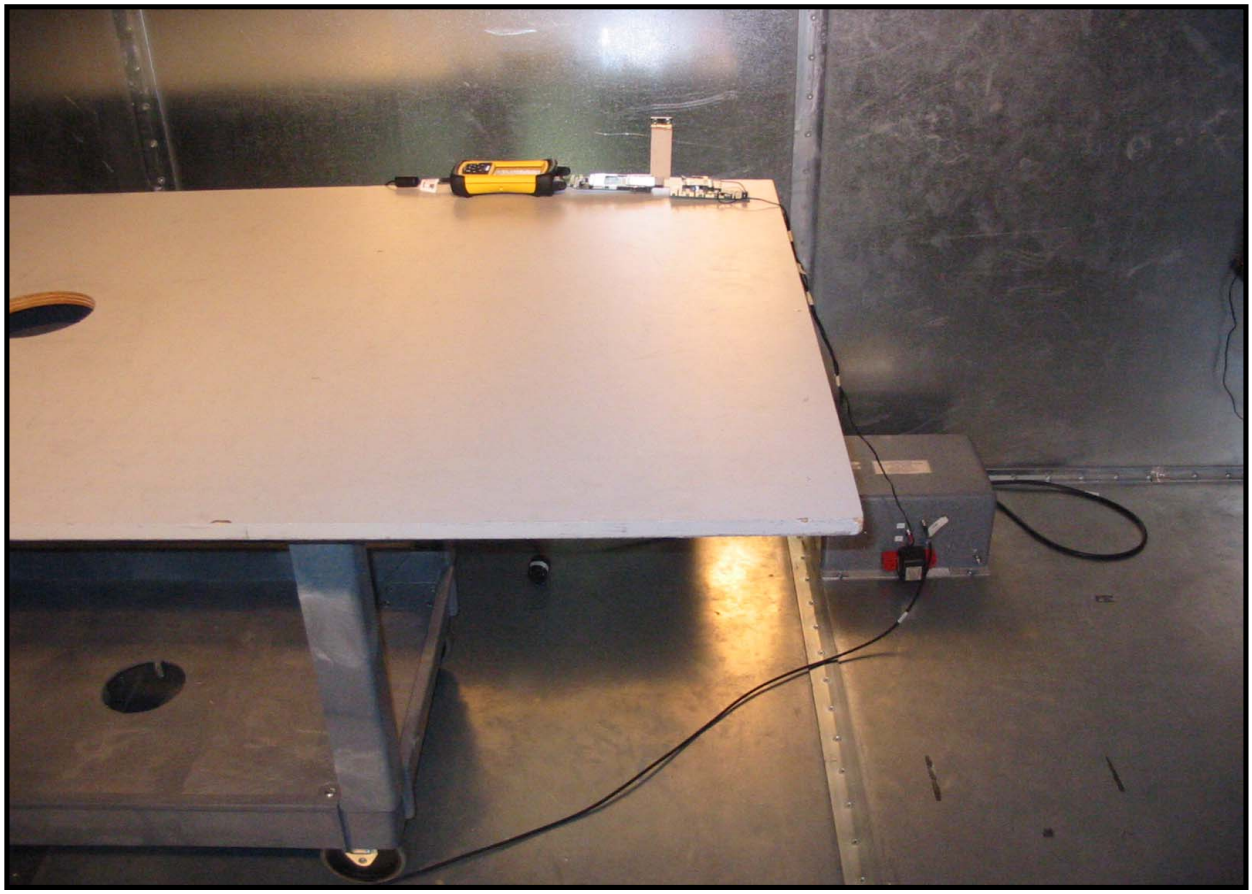
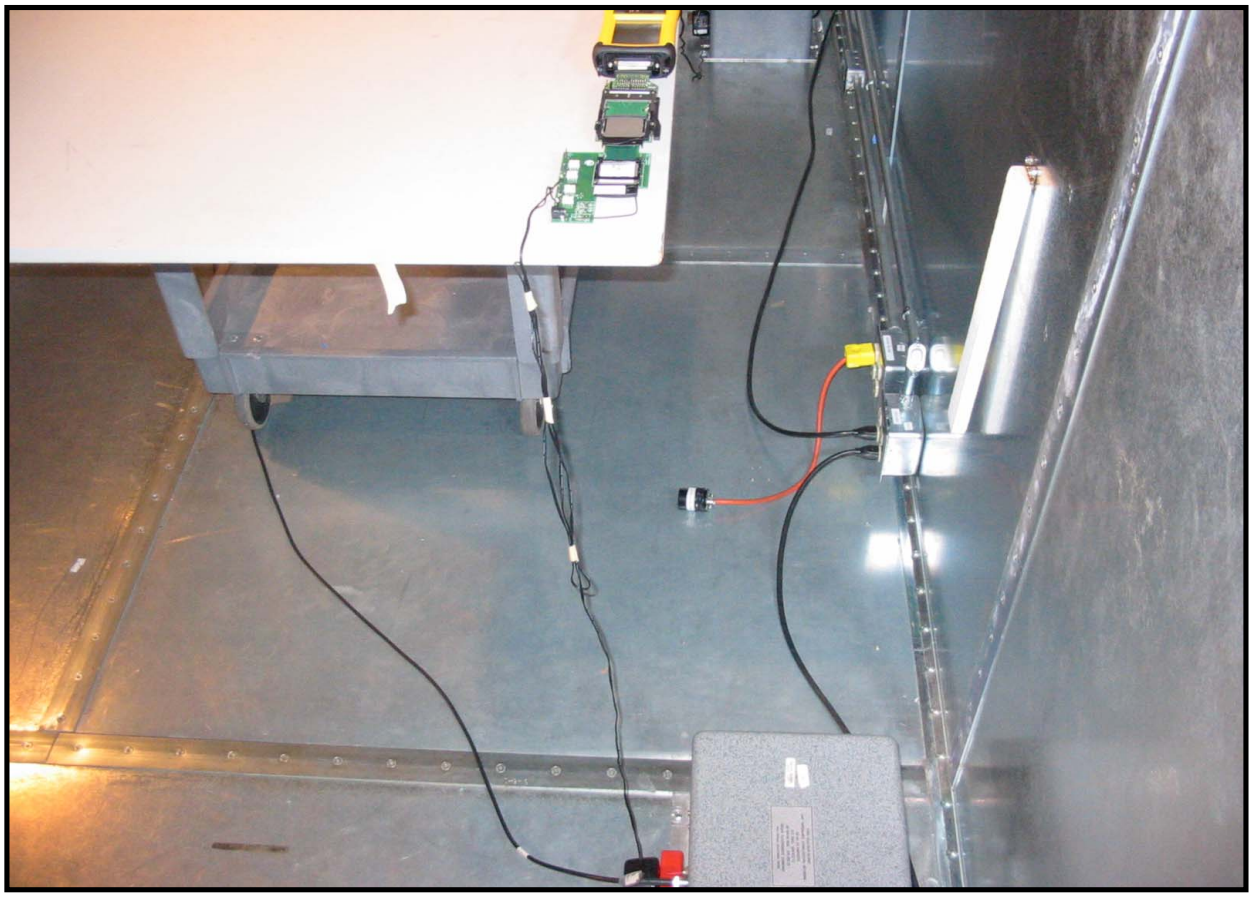


Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.152	27.4	2.0	49.4	65.9	-16.5
0.160	27.1	1.8	48.9	65.5	-16.6
0.172	25.6	1.6	47.2	64.9	-17.7
0.179	24.3	1.4	45.7	64.5	-18.8
0.488	15.7	0.8	36.5	56.2	-19.7
0.451	15.7	0.8	36.5	56.9	-20.3
0.538	14.3	0.8	35.1	56.0	-20.9
0.186	21.8	1.3	43.1	64.2	-21.1
0.827	13.5	0.6	34.1	56.0	-21.9
0.803	13.3	0.6	33.9	56.0	-22.1
0.592	13.1	0.8	33.9	56.0	-22.1
29.500	17.1	0.6	37.7	60.0	-22.3
0.585	12.9	0.8	33.7	56.0	-22.3
0.196	20.2	1.1	41.3	63.8	-22.5
0.611	12.7	0.7	33.4	56.0	-22.6
0.672	12.6	0.7	33.3	56.0	-22.7
1.120	12.7	0.5	33.2	56.0	-22.8
2.704	12.7	0.5	33.2	56.0	-22.8
1.936	12.6	0.5	33.1	56.0	-22.9
3.784	12.5	0.5	33.0	56.0	-23.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.152	27.4	2.0	49.4	55.9	-6.5
0.160	27.1	1.8	48.9	55.5	-6.6
0.172	25.6	1.6	47.2	54.9	-7.7
0.179	24.3	1.4	45.7	54.5	-8.8
0.488	15.7	0.8	36.5	46.2	-9.7
0.451	15.7	0.8	36.5	46.9	-10.3
0.538	14.3	0.8	35.1	46.0	-10.9
0.186	21.8	1.3	43.1	54.2	-11.1
0.827	13.5	0.6	34.1	46.0	-11.9
0.803	13.3	0.6	33.9	46.0	-12.1
0.592	13.1	0.8	33.9	46.0	-12.1
29.500	17.1	0.6	37.7	50.0	-12.3
0.585	12.9	0.8	33.7	46.0	-12.3
0.196	20.2	1.1	41.3	53.8	-12.5
0.611	12.7	0.7	33.4	46.0	-12.6
0.672	12.6	0.7	33.3	46.0	-12.7
1.120	12.7	0.5	33.2	46.0	-12.8
2.704	12.7	0.5	33.2	46.0	-12.8
1.936	12.6	0.5	33.1	46.0	-12.9
3.784	12.5	0.5	33.0	46.0	-13.0