

GE Security Inc.

Fixed Reader

February 08, 2006

Report No. SUPR0055

Report Prepared By



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: February 08, 2006
GE Security Inc.
Model: Fixed Reader

Emissions				
Test Description	Specification	Test Method	Pass	Fail
Radiated Emissions	FCC 15.109(g) (CISPR 22:1997) Class A:2005-10	ANSI C63.4:2003	☒	☐
Conducted Emissions	FCC 15.107 Class A:2005-10	ANSI C63.4:2003	☒	☐
AC Powerline Conducted Emissions	FCC 15.207 AC Powerline Conducted Emissions:2005-9	ANSI C63.4:2003	☒	☐
Occupied Bandwidth	FCC 15.247(a)(2) Occupied Bandwidth:2005-9	ANSI C63.4:2003	☒	☐
Output Power	FCC 15.247(b)(3) Output Power:2005-9	ANSI C63.4:2003	☒	☐
Band Edge Compliance	FCC 15.247(d) Band Edge Compliance:2005-9	ANSI C63.4:2003	☒	☐
Spurious Conducted Emissions	FCC 15.247(d) Spurious Conducted Emissions:2005-9	ANSI C63.4:2003	☒	☐
Spurious Radiated Emissions	FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003	☒	☐
Power Spectral Density	FCC 15.247(e) Power Spectral Density:2005-9	ANSI C63.4:2003	☒	☐

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 Number	Description	Date	Page Number
00	None		

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 recognized 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 TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV'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).



Technology International: Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment, Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.



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 and R-1025, 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>

How important is it to understand performance criteria?

It is the responsibility of the test laboratory to observe the results of the tests that are performed and to accurately report those results. As the responsible party (manufacturer, importer, etc) it is your responsibility to take those results, compare them against the specifications and standards, then, if appropriate make a declaration of conformity. As the responsible party it makes sense that you are fully aware of the requirements, how your device performs when tested to those requirements, and what information is being used to declare conformity.

To better assist you in making those conformity decisions, Northwest EMC has adopted a very simple, yet very clear performance assessment procedure. The following criteria is used when performing immunity or susceptibility tests:

Performance Criteria 1:

- ❑ The EUT exhibited no change in performance when operating as specified by the manufacturer. In this case no changes were observed during the test.
- ❑ In most cases this would be equivalent to Performance Criteria A. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, no changes were observed. Basically nothing happened.

Performance Criteria 2:

- ❑ The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment recovered without any operator intervention, once the test signal was removed. The data sheets will detail the exact phenomena observed.
- ❑ In most cases this would be equivalent to Performance Criteria B. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT was able to recover from those changes without any operator intervention, once the test signal was removed.

Performance Criteria 3:

- ❑ The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment required some operator intervention in order to recover. This intervention may be in the form of changing EUT settings, or even resetting the system. The data sheets will detail the exact phenomena observed.
- ❑ In most cases this would be equivalent to Performance Criteria C. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT required some sort of operator intervention to recover. There was no permanent damage and the EUT appeared to function normally after completion of test.

Performance Criteria 4:

- ❑ The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment was damaged and would not recover. The data sheets will detail the exact phenomena observed.
- ❑ In most cases there is no specific criterion to compare this to; it typically ends the test. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. There was no recovery; the equipment would no longer function as intended.

What is measurement uncertainty?

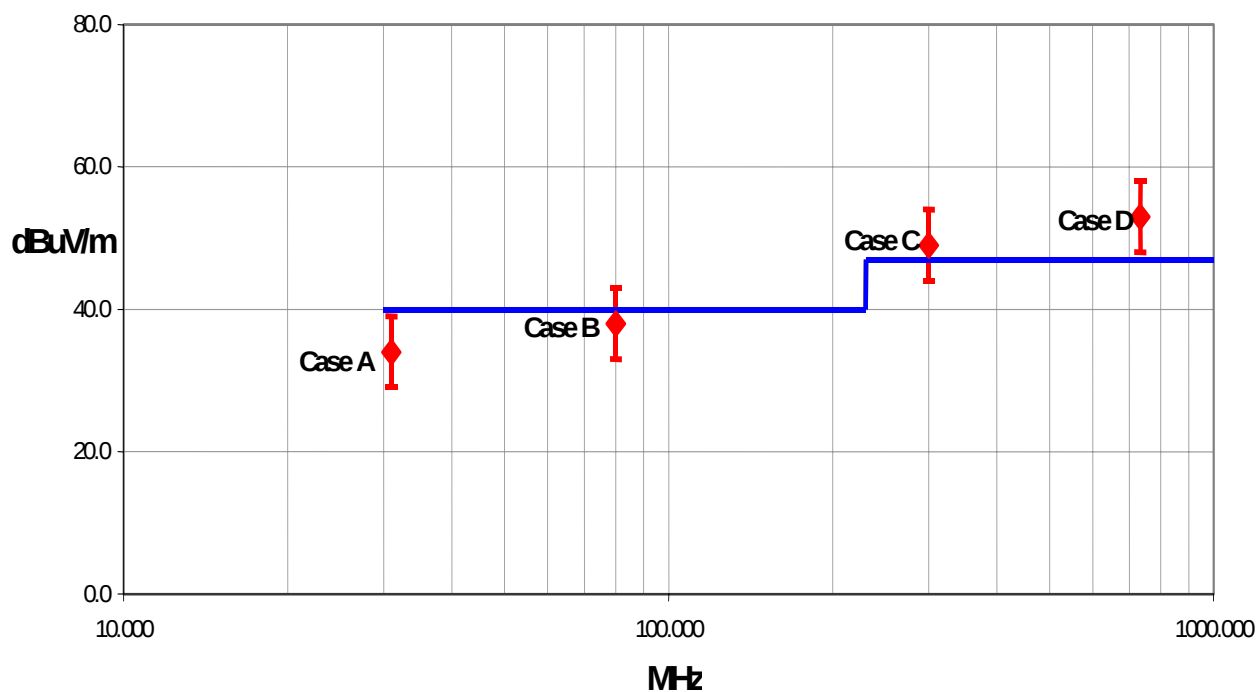
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- "ISO Guide to the Expression of Uncertainty in Measurements", October 1993
- "NIS81: The Treatment of Uncertainty in EMC Measurements", May 1994
- "IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques", December 2000

How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and – measurement uncertainty, then test results can be interpreted from the diagram below. (See NIS81)



Test Result Scenarios:

Case A: Product complies.

Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.

Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.

Case D: Product does not comply.

Radiated Emissions ≤ 1 GHz

Value (dB)

Test Distance	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
		3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.86 - 1.88	+ 1.82 - 1.87	+ 2.23 - 1.41	+ 1.29 - 1.26	+ 1.31 - 1.27	+ 1.25 - 1.25
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 3.72 - 3.77	+ 3.64 - 3.73	+ 4.46 - 2.81	+ 2.59 - 2.52	+ 2.61 - 2.55	+ 2.49 - 2.49

Radiated Emissions > 1 GHz

Value (dB)

Test Distance	Probability Distribution	Without High Pass Filter		With High Pass Filter	
		3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.29 - 1.25	+ 1.38 - 1.35	+ 1.38 - 1.35
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 2.57 - 2.51	+ 2.57 - 2.51	+ 2.76 - 2.70	+ 2.76 - 2.70

Conducted Emissions

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.48	1.48
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.97	2.97

Radiated Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.11	2.11

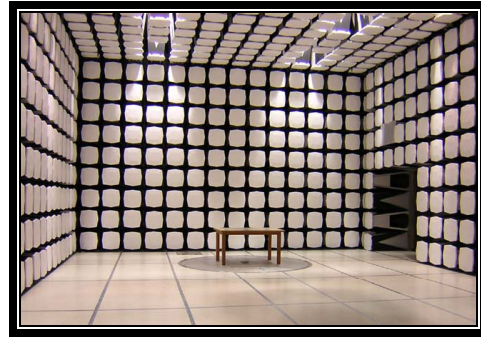
Conducted Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.10	2.10

Legend

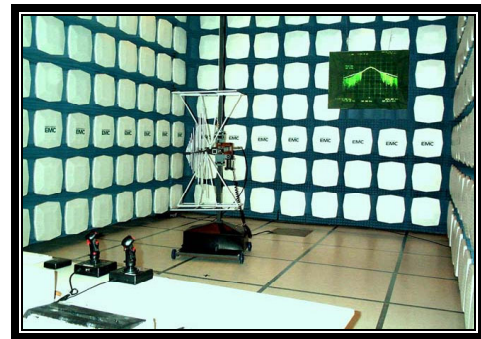
$u_c(y)$ = square root of the sum of squares of the individual standard uncertainties

U = combined standard uncertainty multiplied by the coverage factor: k . This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then $k=3$ (CL of 99.7%) can be used. Please note that with a coverage factor of one, $u_c(y)$ yields a confidence level of only 68%.



**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 – EV10**

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:	GE Security Inc.
Address:	4001 Fairview Industrial Drive SE
City, State, Zip:	Salem, OR 97302-0167
Test Requested By:	Adam Purdue
Model:	Fixed Reader
First Date of Test:	February 1, 2006
Last Date of Test:	February 6, 2006
Receipt Date of Samples:	February 1, 2006
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	Power over ethernet, Antenna port

Functional Description of the EUT (Equipment Under Test):

The Fixed Reader is a set frequency, DTS, 2.4388GHz transmitter. The Fixed Reader will be mounted on a pole with a high gain antenna.

Client Justification for EUT Selection:

The product is a representative production sample.

Client Justification for Test Selection:

These tests satisfy the requirements for TCB Certification under FCC Part 15.

EUT Photo

CONFIGURATION 1 SUPR0055

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Fixed Reader - Transmitter	GE Security Inc.	Fixed Reader	647

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
14 dBi Antenna	Hyperlink Technologies	WGEI900-0002	Unknown
Power Over Ethernet Adapter Kit	Linksys	WAPPOE	213W0049001002
POE AC Adapter - 120V	CUI Stack	DV-9500	Unknown
POE AC Adapter - 230V	CUI Stack	KA23D120080016G	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	0.2m	No	Power Over Ethernet Adapter Kit	Unterminated
Ethernet	No	1.8m	No	Power Over Ethernet Adapter	Fixed Reader
DC	No	2.0m	No	Power Over Ethernet Adapter Kit	POE AC Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 SUPR0055

Software/Firmware Running during test	
Description	Version
Installation Test	P1J

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Fixed Reader - Normal Operation	GE Security Inc.	Fixed Reader	Unknown

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
14 dBi Antenna	Hyperlink Technologies	WGEI900-0002	Unknown
Power Over Ethernet Adapter Kit	Linksys	WAPPOE	213W0049001002
POE AC Adapter - 120V	CUI Stack	DV-9500	Unknown
Container Security Device	GE Security	CommerceGuard	Prototype
Notebook PC	Panasonic	CF-18	CF-18DHAZXKM
AC Adapter	Panasonic	CF-AA1623A M3	04X01153B
POE AC Adapter - 230V	CUI Stack	KA23D120080016G	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	1.8m	No	Power Over Ethernet Adapter	Fixed Reader
DC	No	2.0m	No	Power Over Ethernet Adapter Kit	POE AC Adapter
DC	No	1.8m	No	Notebook PC	AC Adapter
AC	No	2.0m	No	AC Adapter	AC Mains
Ethernet	No	0.2m	No	Power Over Ethernet Adapter Kit	Notebook PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 SUPR0055

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Fixed Reader - Receive	GE Security Inc.	Fixed Reader	639

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
14 dBi Antenna	Hyperlink Technologies	WGEI900-0002	Unknown
Power Over Ethernet Adapter Kit	Linksys	WAPPOE	213W0049001002
POE AC Adapter - 120V	CUI Stack	DV-9500	Unknown
POE AC Adapter - 230V	CUI Stack	KA23D120080016G	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	0.2m	No	Power Over Ethernet Adapter Kit	Unterminated
Ethernet	No	1.8m	No	Power Over Ethernet Adapter	Fixed Reader
DC	No	2.0m	No	Power Over Ethernet Adapter Kit	POE AC Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 4 SUPR0055

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Fixed Reader - Transmitter	GE Security Inc.	Fixed Reader	647

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
8 dBi Antenna	Hyperlink Technologies	WGEI900-0001	Unknown
Power Over Ethernet Adapter Kit	Linksys	WAPPOE	213W0049001002
POE AC Adapter - 120V	CUI Stack	DV-9500	Unknown
POE AC Adapter - 230V	CUI Stack	KA23D120080016G	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	0.2m	No	Power Over Ethernet Adapter Kit	Unterminated
Ethernet	No	1.8m	No	Power Over Ethernet Adapter	Fixed Reader
DC	No	2.0m	No	Power Over Ethernet Adapter Kit	POE AC Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 5 SUPR0055

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Fixed Reader - Receive	GE Security Inc.	Fixed Reader	639

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
8 dBi Antenna	Hyperlink Technologies	WGEI900-0001	Unknown
Power Over Ethernet Adapter Kit	Linksys	WAPPOE	213W0049001002
POE AC Adapter - 120V	CUI Stack	DV-9500	Unknown
POE AC Adapter - 230V	CUI Stack	KA23D120080016G	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	No	0.2m	No	Power Over Ethernet Adapter Kit	Unterminated
Ethernet	No	1.8m	No	Power Over Ethernet Adapter	Fixed Reader
DC	No	2.0m	No	Power Over Ethernet Adapter Kit	POE AC Adapter
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	2/1/2006	Spurious Radiated Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	2/2/2006	Occupied Bandwidth	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	2/2/2006	Band Edge Compliance	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	2/2/2006	Power Spectral Density	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	2/2/2006	Output Power	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	2/2/2006	Spurious Conducted Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	2/6/2006	Radiated Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	2/6/2006	AC Power Line Conducted Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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. Running Installation Test software.

POWER SETTINGS INVESTIGATED

Power over e-net (POE Adapter powered by 120VAC, 60Hz AC Adapter)

Power over e-net (POE Adapter powered by 230VAC, 50Hz AC Adapter)

POWER SETTINGS USED FOR FINAL DATA

Power over e-net (POE Adapter powered by 120VAC, 60Hz AC Adapter)

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	1 GHz
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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	AM-1551	AOY	11/28/2005	13
Antenna, Biconilog	EMCO	3142	AXB	1/6/2005	24
Spectrum Analyzer	Agilent	E4443A	AAS	12/8/2005	12

MEASUREMENT BANDWIDTHS

	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(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 2006.02.03 EMI 2006.1.20								
EUT: Fixed Reader			Work Order: SUPR0055									
Serial Number: Unknown			Date: 02/06/06									
Customer: GE Security Inc.			Temperature: 21									
Attendees: None			Humidity: 37%									
Project: None			Barometric Pres.: 29.98									
Tested by: Holly Ashkannejhad		Power: Power over e-net		Job Site: EV01								
TEST SPECIFICATIONS			Test Method									
FCC 15.109(g) (CISPR 22:1997) Class A:2005-10			ANSI C63.4:2003									
TEST PARAMETERS												
Antenna Height(s) (m)		1 - 4		Test Distance (m) 10								
COMMENTS												
Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120VAC, 60Hz. Container Security Device on table.												
EUT OPERATING MODES												
Normal operating mode. Running Installation Test software.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #		1										
Configuration #		2										
Results		Pass										
Signature <i>Holly Ashkannejhad</i>												
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)
220.038	59.6	-22.6	231.0	1.1	10.0	0.0	V-Bilog	QP	0.0	37.0	40.0	-3.0
140.037	60.9	-26.5	303.0	1.5	10.0	0.0	V-Bilog	QP	0.0	34.4	40.0	-5.6
180.037	53.9	-24.2	323.0	1.5	10.0	0.0	V-Bilog	QP	0.0	29.7	40.0	-10.3
200.033	52.8	-23.6	23.0	1.0	10.0	0.0	V-Bilog	QP	0.0	29.2	40.0	-10.8
200.033	52.8	-23.6	217.0	3.4	10.0	0.0	H-Bilog	QP	0.0	29.2	40.0	-10.8
100.023	56.4	-27.3	218.0	1.0	10.0	0.0	V-Bilog	QP	0.0	29.1	40.0	-10.9
240.034	57.0	-21.8	252.0	1.0	10.0	0.0	V-Bilog	QP	0.0	35.2	47.0	-11.8
500.063	49.5	-15.0	54.0	3.7	10.0	0.0	V-Bilog	QP	0.0	34.5	47.0	-12.5
240.041	56.2	-21.8	198.0	3.5	10.0	0.0	H-Bilog	QP	0.0	34.4	47.0	-12.6
340.044	52.8	-18.5	295.0	2.8	10.0	0.0	H-Bilog	QP	0.0	34.3	47.0	-12.7
500.062	49.1	-15.0	211.0	2.0	10.0	0.0	H-Bilog	QP	0.0	34.1	47.0	-12.9
140.035	52.0	-26.5	230.0	3.9	10.0	0.0	H-Bilog	QP	0.0	25.5	40.0	-14.5
57.712	39.2	-26.1	118.0	1.5	10.0	0.0	V-Bilog	QP	0.0	13.1	40.0	-26.9



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

Transmitting fixed frequency.

POWER SETTINGS INVESTIGATED

Power over e-net (POE Adapter powered via 120VAC Adapter)

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Tektronix	011-0059-02	ATC	12/19/2005	13
High Pass Filter	T.T.E.	7766	HFG	1/17/2005	13
Spectrum Analyzer	Agilent	E4443A	AAS	12/8/2005	12
LISN	Solar	9252-50-R-24-BNC	LIQ	12/13/2005	13
LISN	Solar	9252-50-R-24-BNC	LIR	12/13/2005	13

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(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.

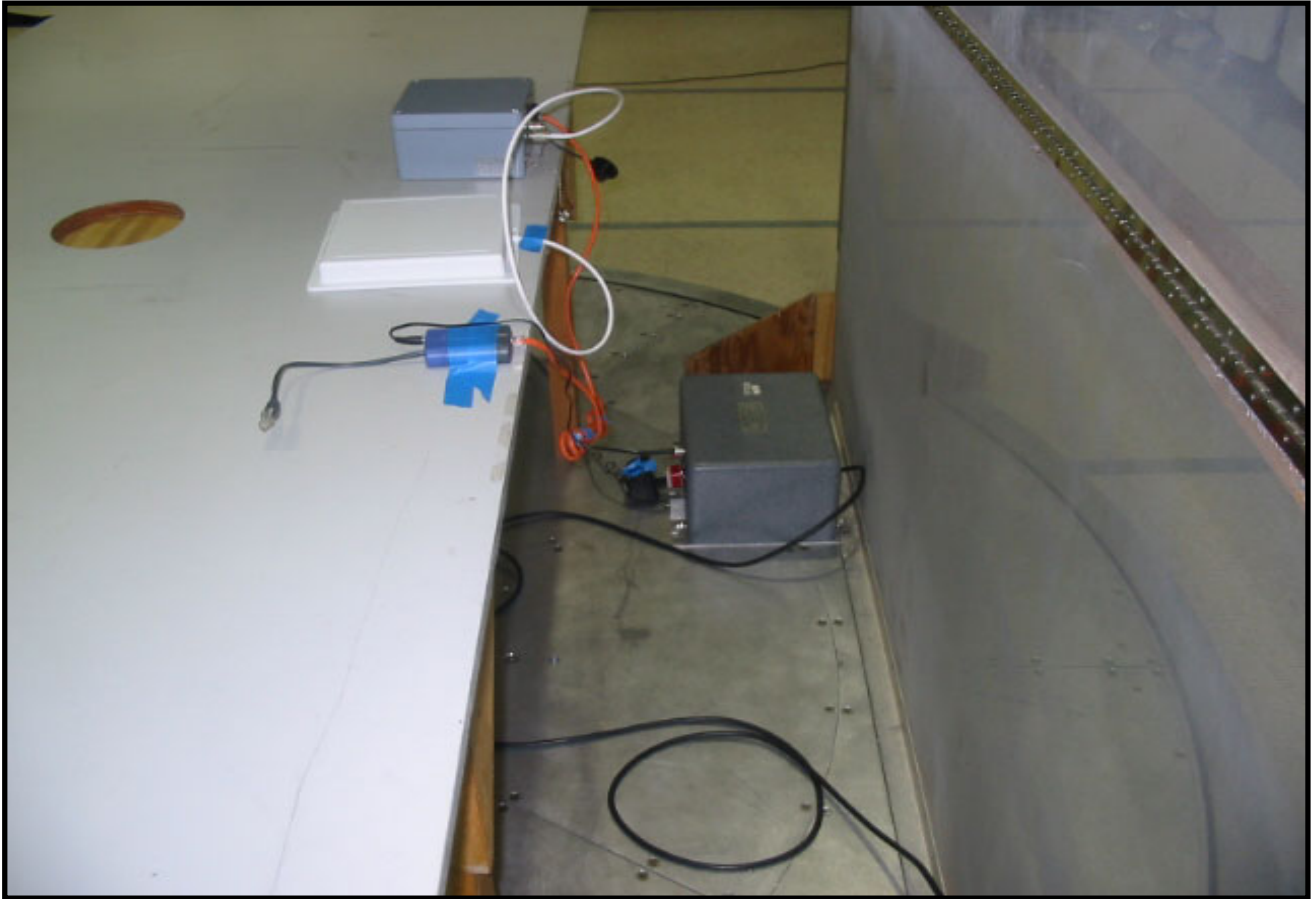
TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the set channel in the operational band. The EUT was transmitting at its maximum data rate. The AC power line conducted emissions were also measured with the EUT in normal operating mode. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

NORTHWEST EMC		CONDUCTED EMISSIONS DATA SHEET				PSA 2006.02.03 EMI 2006.1.20						
EUT: Fixed Reader - Transmit					Work Order: SUPR0055							
Serial Number: 647					Date: 02/06/06							
Customer: Supra Products, Inc.					Temperature: 21							
Attendees: none					Humidity: 37%							
Project:					Barometric Pres.: 29.98							
Tested by: Holly Ashkannejhad				Power: Power over e-net	Job Site: EV11							
TEST SPECIFICATIONS					Test Method							
FCC 15.107 Class A:2005-10					ANSI C63.4:2003							
TEST PARAMETERS												
Cable or Line Tested					N							
COMMENTS												
Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120VAC, 60Hz AC Adapter.												
EUT OPERATING MODES												
Transmitting fixed frequency.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #	7		Signature <i>Holly Ashkannejhad</i>									
Configuration #	1											
Results	Pass											
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.514	22.9			0.0	0.3	20.0				43.2	60.0	-16.8
0.653	21.3			0.0	0.3	20.0				41.6	60.0	-18.4
0.183	25.2			0.0	0.2	20.0				45.4	66.0	-20.6
0.190	24.4			0.0	0.2	20.0				44.6	66.0	-21.4
0.784	17.1			0.0	0.3	20.0				37.4	60.0	-22.6
0.584	17.0			0.0	0.3	20.0				37.3	60.0	-22.7
0.489	23.0			0.0	0.3	20.0				43.3	66.0	-22.7
0.955	16.9			0.0	0.4	20.0				37.3	60.0	-22.7
0.853	16.8			0.0	0.4	20.0				37.2	60.0	-22.8
0.288	21.7			0.0	0.2	20.0				41.9	66.0	-24.1
0.835	15.5			0.0	0.4	20.0				35.9	60.0	-24.1
0.241	21.6			0.0	0.2	20.0				41.8	66.0	-24.2
0.675	14.8			0.0	0.3	20.0				35.1	60.0	-24.9
0.995	14.2			0.0	0.4	20.0				34.6	60.0	-25.4
0.431	20.3			0.0	0.3	20.0				40.6	66.0	-25.4
0.401	20.1			0.0	0.3	20.0				40.4	66.0	-25.6
0.314	20.0			0.0	0.2	20.0				40.2	66.0	-25.8
0.263	20.0			0.0	0.2	20.0				40.2	66.0	-25.8
1.025	13.4			0.0	0.4	20.0				33.8	60.0	-26.2

NORTHWEST EMC		CONDUCTED EMISSIONS DATA SHEET		PSA 2006.02.03 EMI 2006.1.20							
EUT: Fixed Reader - Transmit			Work Order: SUPR0055								
Serial Number: 647			Date: 02/06/06								
Customer: Supra Products, Inc.			Temperature: 21								
Attendees: none			Humidity: 37%								
Project:			Barometric Pres.: 29.98								
Tested by: Holly Ashkannejhad		Power: Power over e-net		Job Site: EV11							
TEST SPECIFICATIONS			Test Method								
FCC 15.107 Class A:2005-10			ANSI C63.4:2003								
TEST PARAMETERS											
Cable or Line Tested			L1								
COMMENTS											
Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120VAC, 60Hz AC Adapter.											
EUT OPERATING MODES											
Transmitting fixed frequency.											
DEVIATIONS FROM TEST STANDARD											
No deviations.											
Run #	8	Signature <i>Holly Ashkannejhad</i>									
Configuration #	1										
Results	Pass										
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.609	22.5			0.0	0.3	20.0			42.8	60.0	-17.2
0.591	22.4			0.0	0.3	20.0			42.7	60.0	-17.3
0.653	20.7			0.0	0.3	20.0			41.0	60.0	-19.0
0.194	24.9			0.0	0.2	20.0			45.1	66.0	-20.9
0.704	18.3			0.0	0.3	20.0			38.6	60.0	-21.4
0.216	24.0			0.0	0.2	20.0			44.2	66.0	-21.8
0.831	17.6			0.0	0.4	20.0			38.0	60.0	-22.0
0.864	17.2			0.0	0.4	20.0			37.6	60.0	-22.4
0.478	23.1			0.0	0.3	20.0			43.4	66.0	-22.6
0.926	16.9			0.0	0.4	20.0			37.3	60.0	-22.7
0.821	16.8			0.0	0.4	20.0			37.2	60.0	-22.8
0.842	16.2			0.0	0.4	20.0			36.6	60.0	-23.4
0.237	21.7			0.0	0.2	20.0			41.9	66.0	-24.1
0.270	21.0			0.0	0.2	20.0			41.2	66.0	-24.8
0.248	20.7			0.0	0.2	20.0			40.9	66.0	-25.1
0.463	20.2			0.0	0.3	20.0			40.5	66.0	-25.5
0.496	19.1			0.0	0.3	20.0			39.4	66.0	-26.6
0.332	18.3			0.0	0.2	20.0			38.5	66.0	-27.5
20.004	10.1			0.0	2.0	20.0			32.1	60.0	-27.9





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

Power over e-net (Power over Ethernet Adapter was powered via a 120 VAC, 60 Hz AC Adapter)

Software\Firmware Applied During Test

Exercise software	Special Test Software	Version	N/A
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	GE Security Inc.	Fixed Reader	647
AC Adapter	CUI Stack	DPD090050-P5	0900
Power Over Ethernet Adapter	LinkSys	WAPPOE	BW0049001002

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.9	PA	AC Adapter	EUT
Ethernet	No	2.1	No	EUT	Power Over Ethernet Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

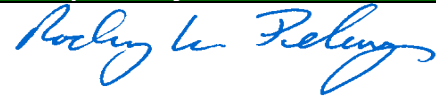
Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	1/25/2005	13 mo

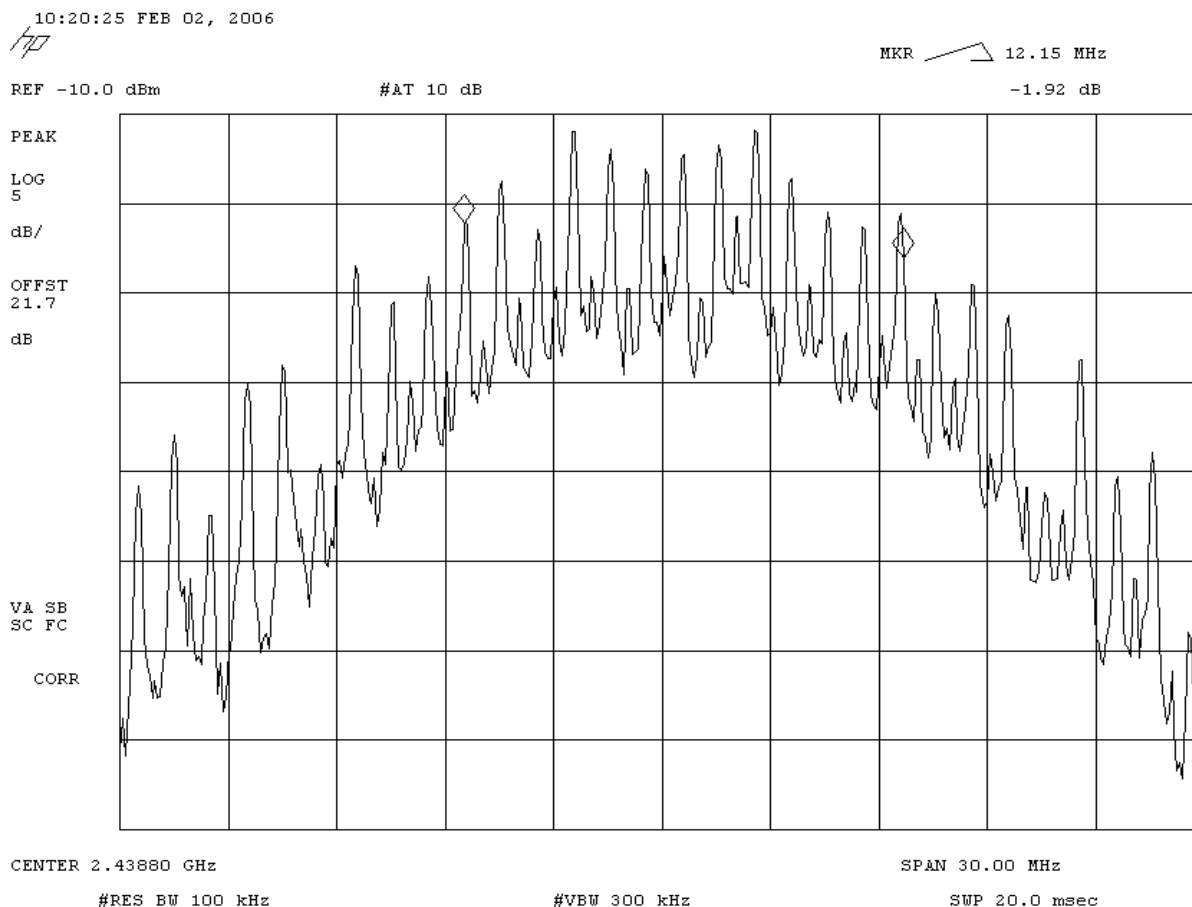
Test Description

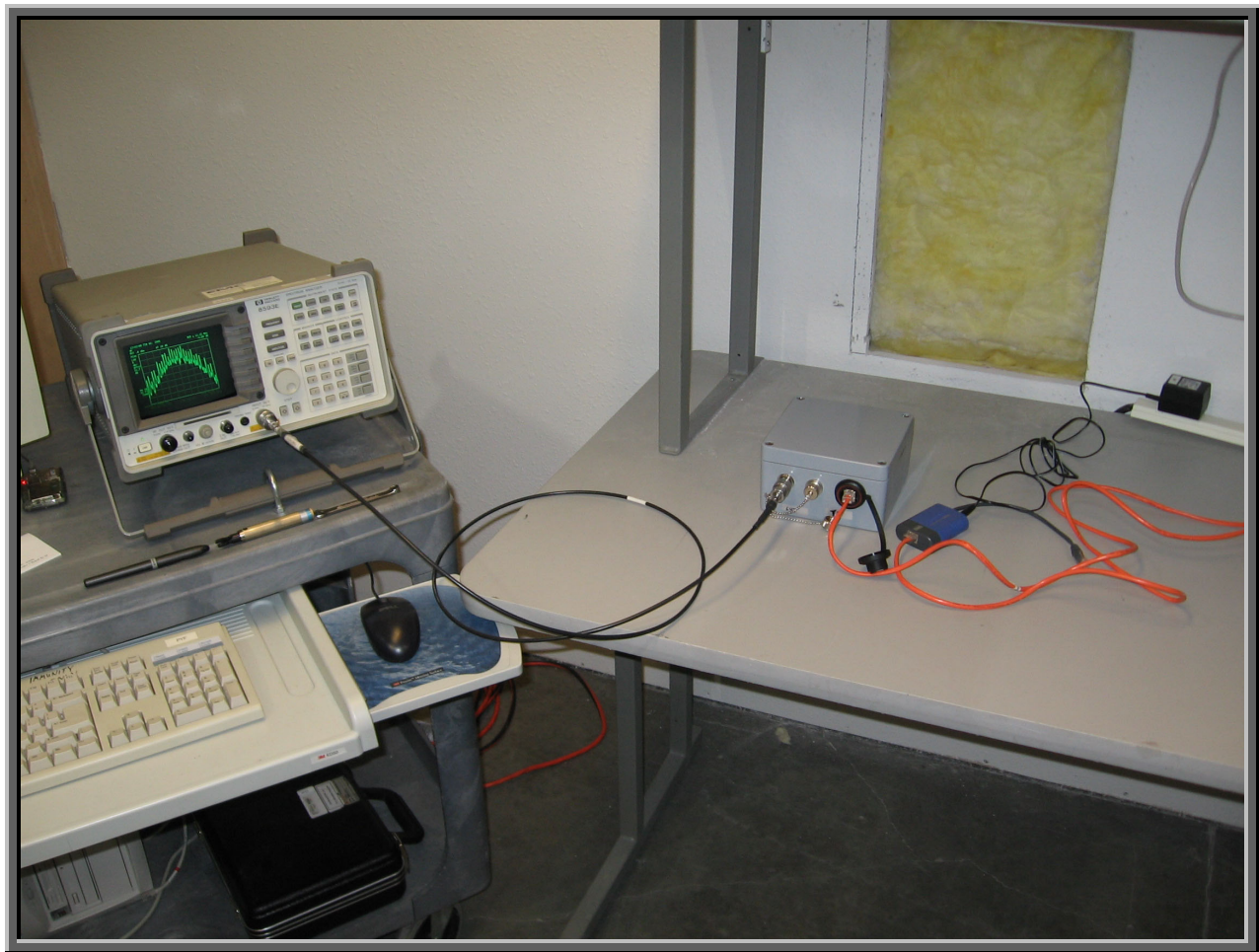
Requirement: Per 47 CFR 15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The occupied bandwidth was measured with the EUT set to a single mid band 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.

Completed by:

NORTHWEST EMC		OCCUPIED BANDWIDTH		Rev BETA 01/30/01	
EUT: Fixed reader			Work Order: SUPR0055		
Serial Number: 647			Date: 02/02/06		
Customer: GE Security Inc.			Temperature: 21°C		
Attendees: None		Tested by: Rod Peloquin		Humidity: 42% RH	
Customer Ref. No.: None		Power: Power over e-net		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(a)(2)		Year: 2005		Method: FCC DA 00-705, ANSI C63.4	
				Year: 2000, 2004	
SAMPLE CALCULATIONS					
COMMENTS					
The Power Over Ethernet Adapter was powered via a 120V AC Adapter.					
EUT OPERATING MODES					
Modulated at maximum data rate, at maximum output power					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
The minimum 6 dB bandwidth shall be at least 500kHz					
RESULTS			BANDWIDTH		
Pass			12.15 MHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Occupied Bandwidth					





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

Power over e-net (Power over Ethernet Adapter was powered via a 120 VAC, 60 Hz AC Adapter)

Software\Firmware Applied During Test

Exercise software	Special Test Software	Version	N/A
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	GE Security Inc.	Fixed Reader	647
AC Adapter	CUI Stack	DPD090050-P5	0900
Power Over Ethernet Adapter	LinkSys	WAPPOE	BW0049001002

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.9	PA	AC Adapter	EUT
Ethernet	No	2.1	No	EUT	Power Over Ethernet Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Oscilloscope	Tektronix	TDS 3052	TOF	12/08/2005	13 mo
Power Meter	Hewlett Packard	E4418A	SPA	07/23/2004	24 mo
Power Sensor	Hewlett-Packard	8481H	SPB	07/23/2004	24 mo
Signal Generator	Hewlett Packard	8341B	TGN	01/26/2006	13 mo
RF Detector	RLC Electronics	CR-133-R	ZZA	NCR	NA

Test Description

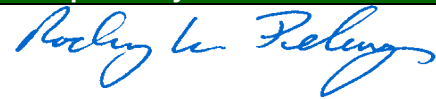
Requirement: Per 47 CFR 15.247(b)(3), the maximum peak output power must not exceed 1 Watt.

Configuration: 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.

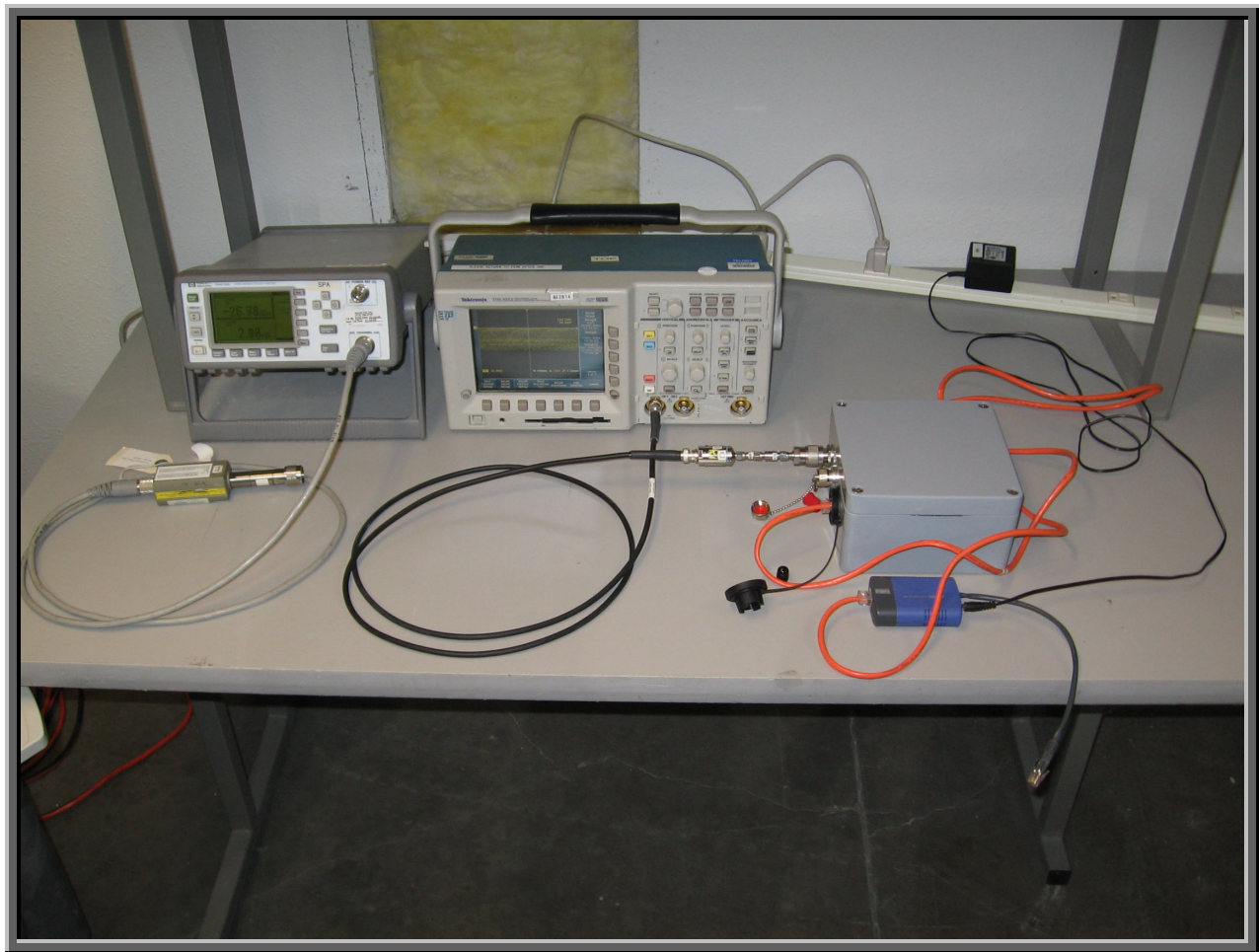
De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

Completed by:



NORTHWEST		OUTPUT POWER		Rev BETA 01/30/01	
EUT: Fixed reader		Work Order: SUPR0055			
Serial Number: 647		Date: 02/02/06			
Customer: GE Security Inc.		Temperature: 21°C			
Attendees: None		Tested by: Rod Peloquin		Humidity: 42% RH	
Customer Ref. No.: None		Power: Power over e-net		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(b)(3)		Year: 2005		Method: FCC 97-114, ANSI C63.4	
				Year: 2003	
SAMPLE CALCULATIONS					
COMMENTS					
Power over Ethernet Adapter is powered via a 120V AC Adapter.					
EUT OPERATING MODES					
Modulated by PRBS at indicated data rate, at maximum output power					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Maximum peak conducted output power does not exceed 1 Watt					
RESULTS		AMPLITUDE			
Pass		1.28 mW			
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Output Power					

Frequency (MHz)	Power (mW)
2438.8	1.28



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz to Power Over Ethernet Adapter

Software\Firmware Applied During Test

Exercise software	Special Test Software	Version	N/A
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	GE Security Inc.	Fixed Reader	647
AC Adapter	CUI Stack	DPD090050-P5	0900
Power Over Ethernet Adapter	LinkSys	WAPPOE	BW0049001002

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.9	PA	AC Adapter	EUT
Ethernet	No	2.1	No	EUT	Power Over Ethernet Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

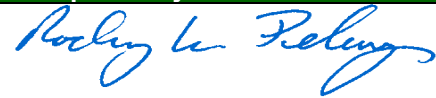
Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	1/25/2005	13 mo

Test Description

Requirement: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its 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 using direct sequence modulation. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 50 MHz below the band edge to 50 MHz above the band edge.

Completed by:

NORTHWEST EMC		Band Edge Compliance		Rev BETA 01/30/01	
EUT: Fixed reader			Work Order: SUPR0055		
Serial Number: 647			Date: 02/02/06		
Customer: GE Security Inc.			Temperature: 21°C		
Attendees: None		Tested by: Rod Peloquin		Humidity: 42% RH	
Customer Ref. No.: None		Power: Power over e-net		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(d)		Year: 2005		Method: FCC DA 00-705, ANSI C63.4	
				Year: 2000, 2004	
SAMPLE CALCULATIONS					
COMMENTS					
Power over Ethernet Adapter powered via 120V AC Adapter.					
EUT OPERATING MODES					
Modulated at maximum data rate, at maximum output power					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
In any 100 kHz band outside the allowable band the maximum spurious emission shall be at least 20 dB below the fundamental.					
RESULTS					
Pass					
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Band Edge Compliance - Low					

11:36:13 FEB 02, 2006

HP

REF 10.0 dBm

#AT 10 dB

PEAK

LOG

10

dB/

OFFST

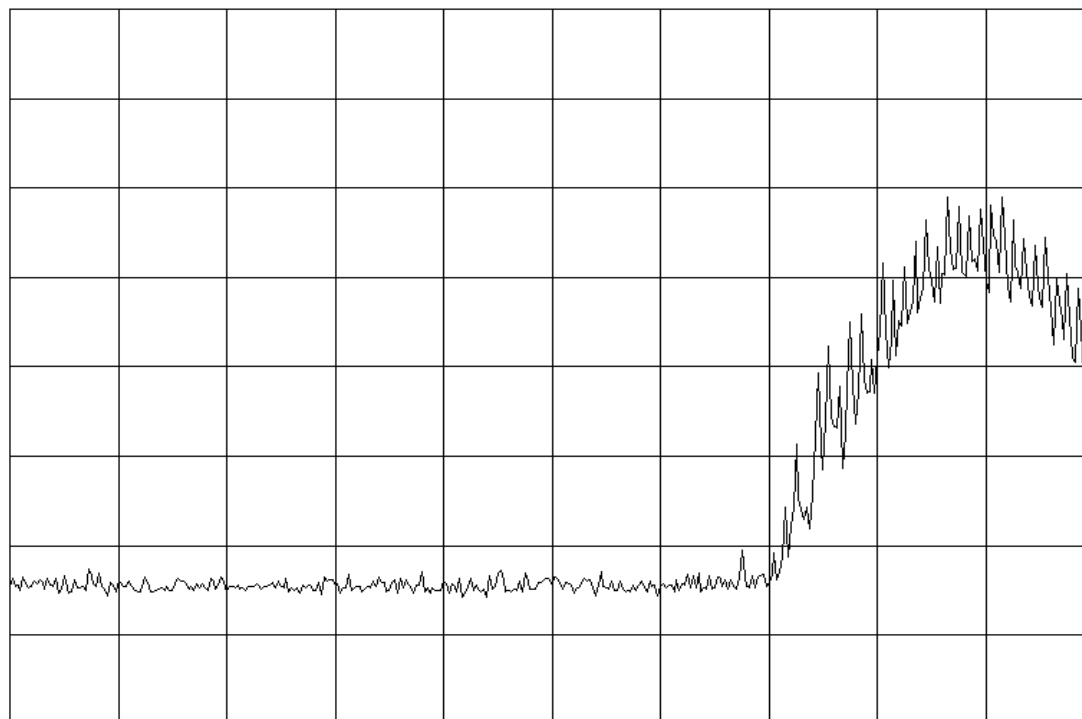
21.7

dB

V& SB

SC FC

CORR



CENTER 2.4000 GHz

SPAN 100.0 MHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 30.0 msec

NORTHWEST EMC		Band Edge Compliance		Rev BETA 01/30/01	
EUT: Fixed reader				Work Order: SUPR0055	
Serial Number: 647				Date: 02/02/06	
Customer: GE Security Inc.				Temperature: 21°C	
Attendees: None		Tested by: Rod Peloquin		Humidity: 42% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(d)		Year: 2005		Method: FCC DA 00-705, ANSI C63.4	
				Year: 2000, 2004	
SAMPLE CALCULATIONS					
COMMENTS					
Power over Ethernet Adapter powered via 120V AC Adapter.					
EUT OPERATING MODES					
Modulated at maximum data rate, at maximum output power					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
In any 100 kHz band outside the allowable band the maximum spurious emission shall be at least 20 dB below the fundamental.					
RESULTS					
Pass					
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Band Edge Compliance - High					

11:37:18 FEB 02, 2006

HP

REF 10.0 dBm

#AT 10 dB

PEAK

LOG

10

dB/

OFFST

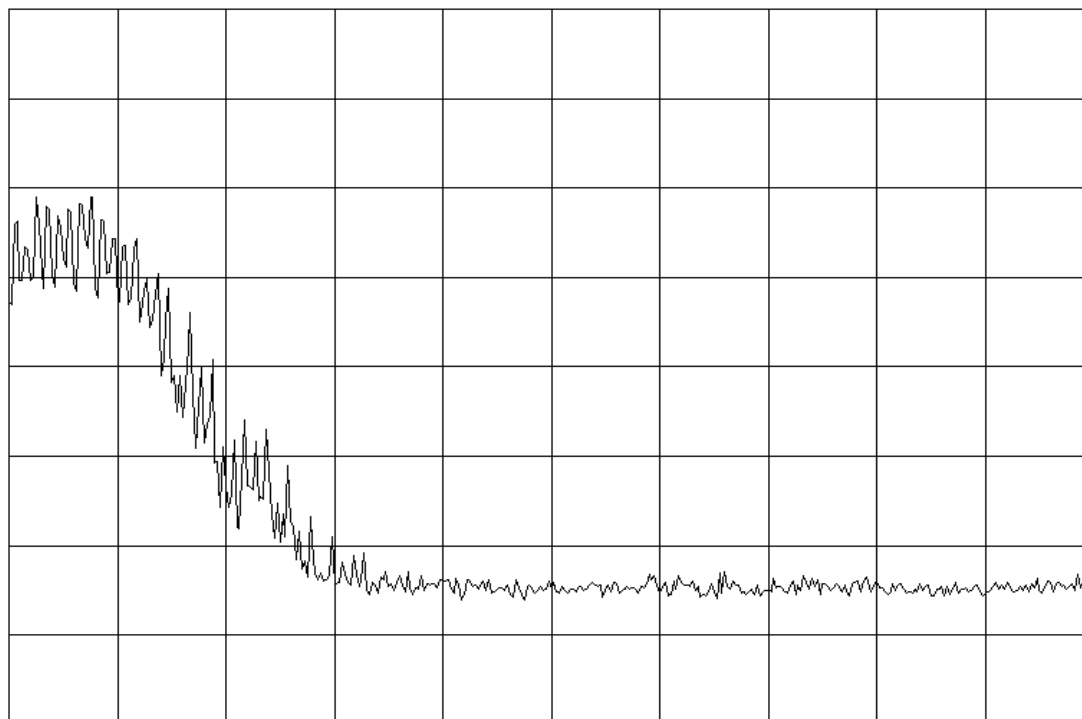
21.7

dB

V A S B

S C F C

CORR



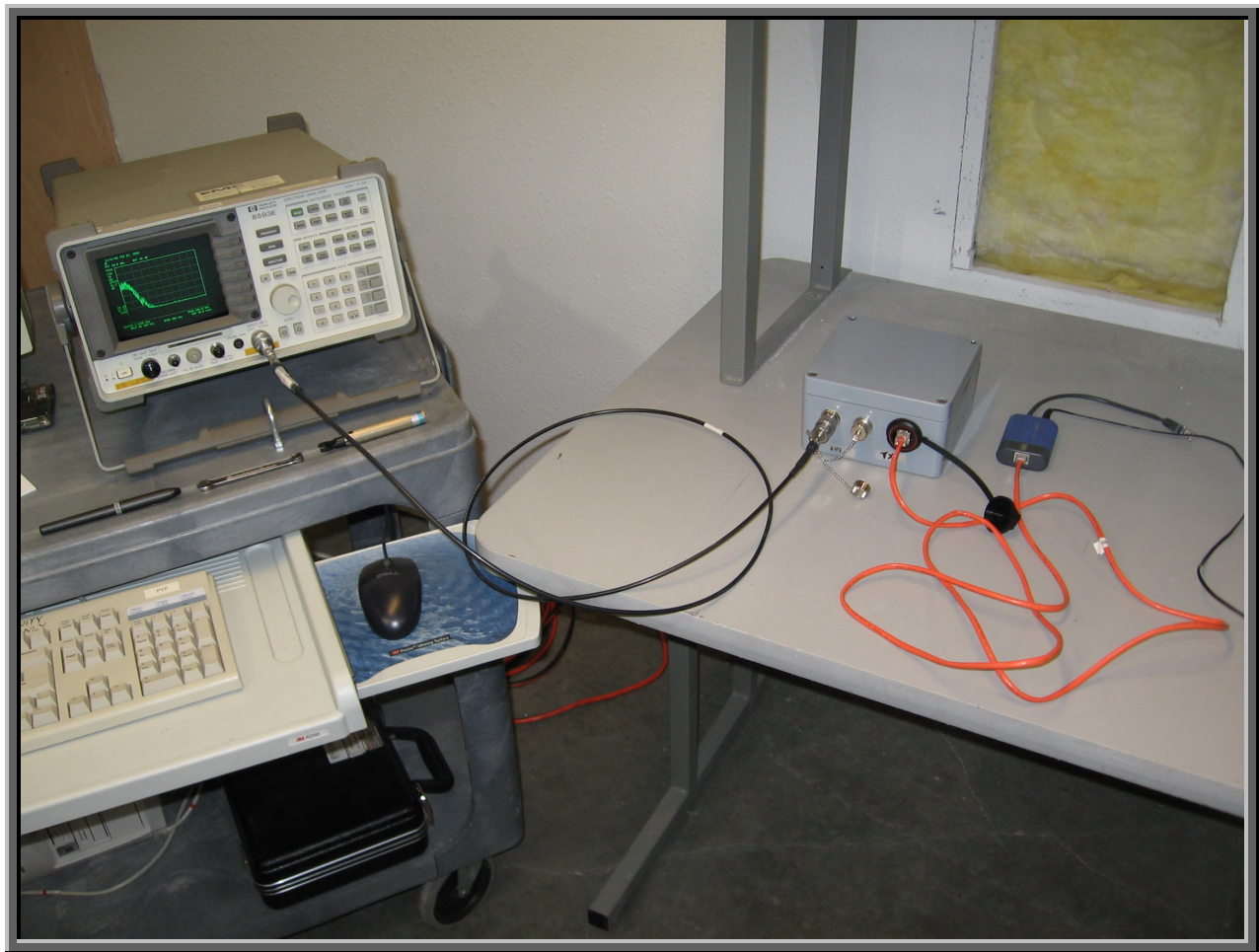
CENTER 2.4835 GHz

SPAN 100.0 MHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 30.0 msec



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

Power over e-net (Power over Ethernet Adapter was powered via a 120 VAC, 60 Hz AC Adapter)

Software\Firmware Applied During Test

Exercise software	Special Test Software	Version	N/A
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	GE Security Inc.	Fixed Reader	647
AC Adapter	CUI Stack	DPD090050-P5	0900
Power Over Ethernet Adapter	LinkSys	WAPPOE	BW0049001002

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.9	PA	AC Adapter	EUT
Ethernet	No	2.1	No	EUT	Power Over Ethernet Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

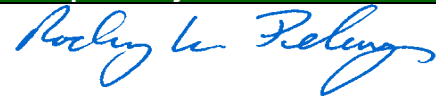
Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	07/15/2005	12 mo

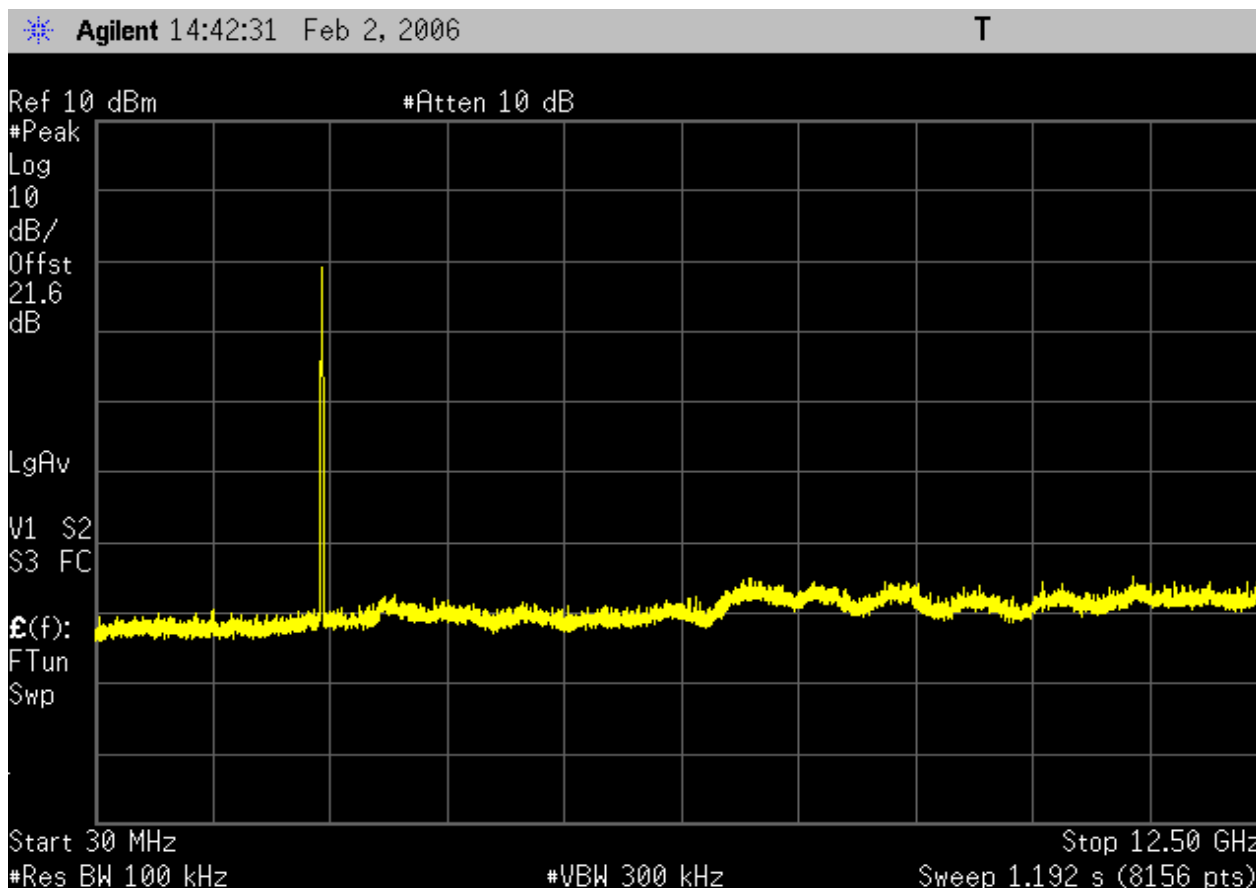
Test Description

Requirement: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

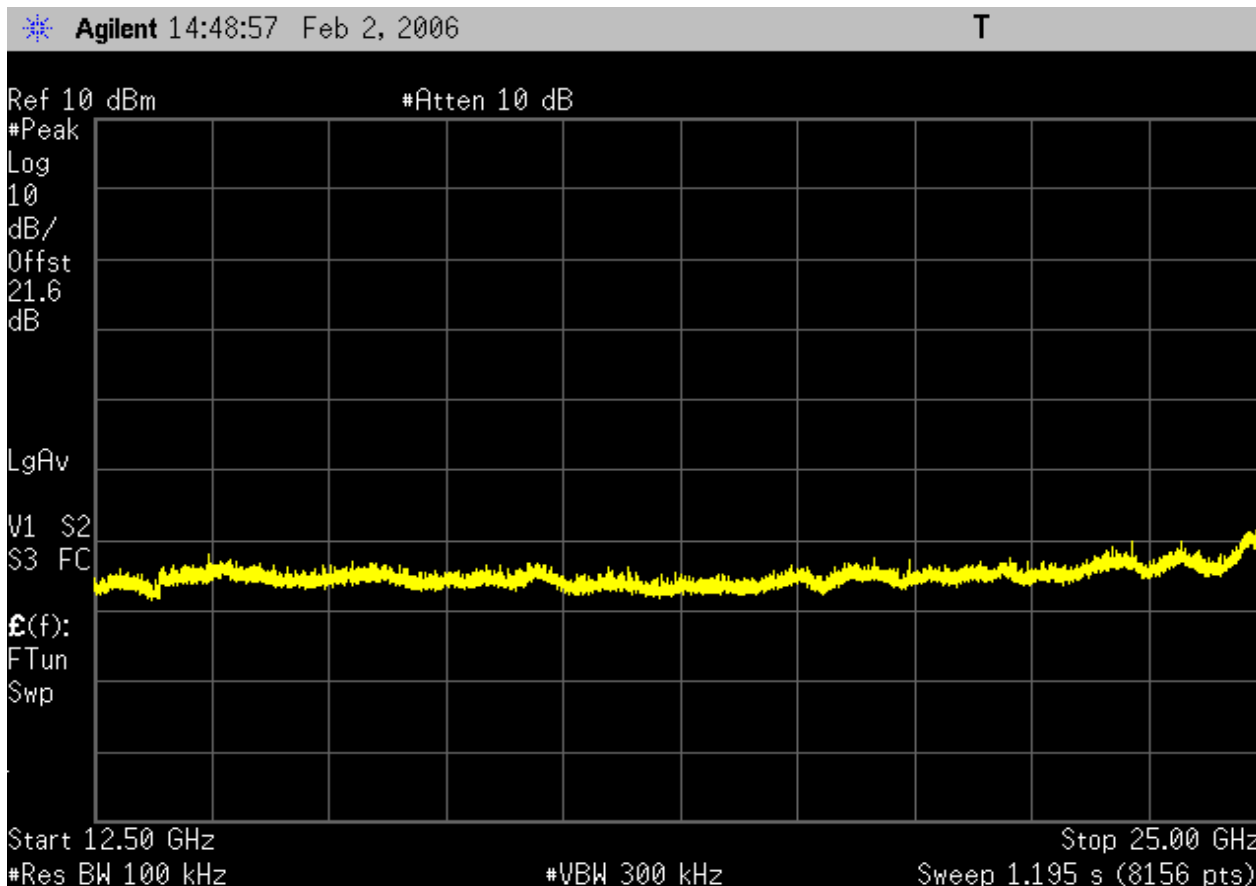
Configuration: The spurious RF conducted emissions were measured with the EUT set to the transmit frequency. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation.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

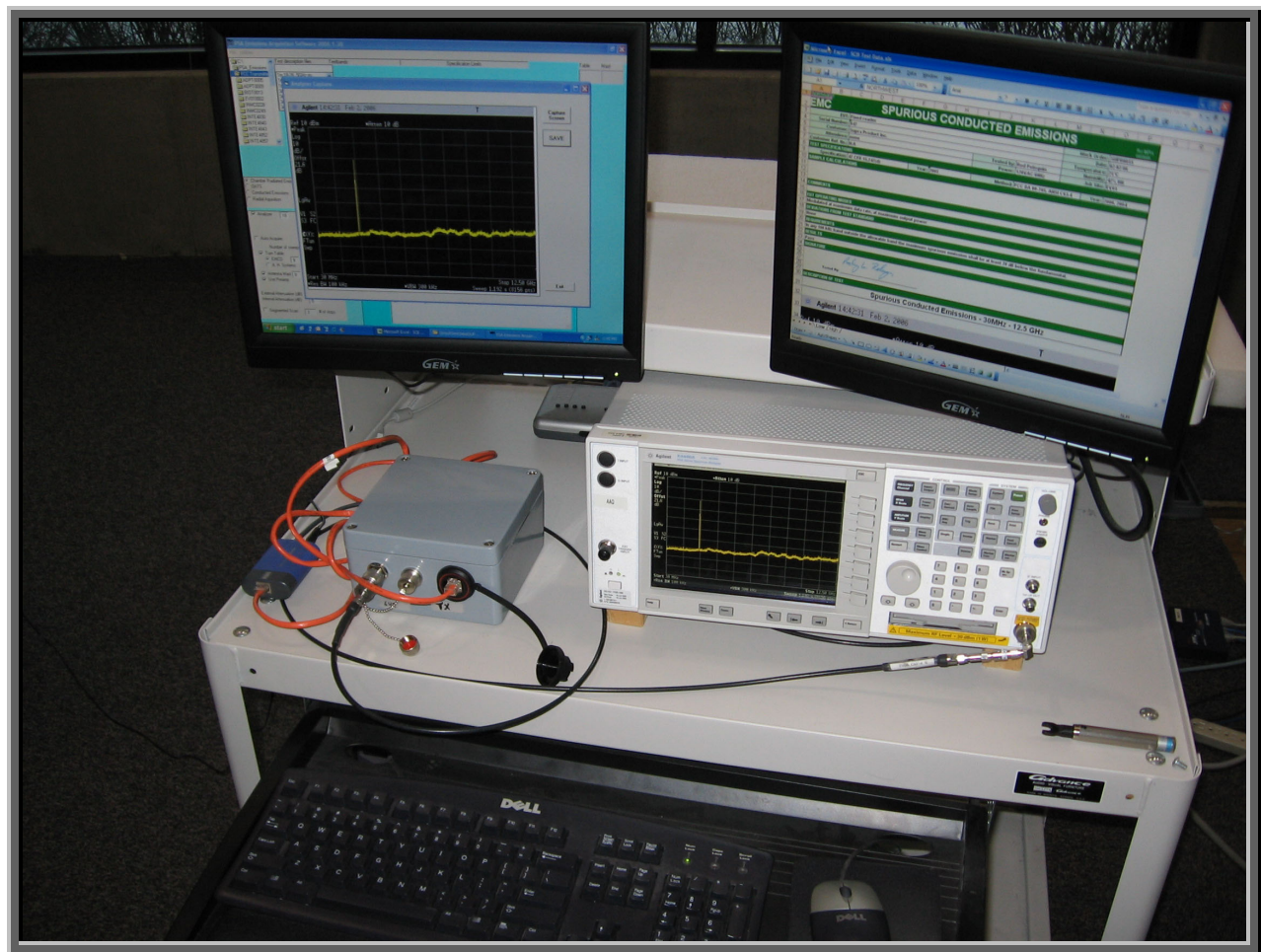
Completed by:

NORTHWEST EMC		SPURIOUS CONDUCTED EMISSIONS		Rev BETA 01/30/01	
EUT: Fixed reader			Work Order: SUPR0055		
Serial Number: 647			Date: 02/02/06		
Customer: GE Security Inc.			Temperature: 21°C		
Attendees: None		Tested by: Rod Peloquin		Humidity: 42% RH	
Customer Ref. No.: None		Power: Power over e-net		Job Site: EV01	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(d)		Year: 2005		Method: FCC DA 00-705, ANSI C63.4	
				Year: 2000, 2004	
SAMPLE CALCULATIONS					
COMMENTS					
Power over Ethernet Adapter powered via a 120V AC Adapter.					
EUT OPERATING MODES					
Modulated at maximum data rate, at maximum output power					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
In any 100 kHz band outside the allowable band the maximum spurious emission shall be at least 20 dB below the fundamental.					
RESULTS					
Pass					
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Spurious Conducted Emissions - 30MHz - 12.5 GHz					



NORTHWEST EMC		SPURIOUS CONDUCTED EMISSIONS		Rev BETA 01/30/01	
EUT: Fixed reader			Work Order: SUPR0055		
Serial Number: 647			Date: 02/02/06		
Customer: GE Security Inc.			Temperature: 21°C		
Attendees: None		Tested by: Rod Peloquin		Humidity: 42% RH	
Customer Ref. No.: None		Power: Power over e-net		Job Site: EV01	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(d)		Year: 2005		Method: FCC DA 00-705, ANSI C63.4	
				Year: 2000, 2004	
SAMPLE CALCULATIONS					
COMMENTS					
Power over Ethernet Adapter powered via a 120V AC Adapter.					
EUT OPERATING MODES					
Modulated at maximum data rate, at maximum output power					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
In any 100 kHz band outside the allowable band the maximum spurious emission shall be at least 20 dB below the fundamental.					
RESULTS					
Pass					
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Spurious Conducted Emissions - 12.5 GHz-25GHz					





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Single

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Power Input Settings Investigated:

Power over e-net (Power over Ethernet Adapter was powered via a 120 VAC, 60 Hz AC Adapter)

Software\Firmware Applied During Test

Exercise software	Special Test Software	Version	N/A
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT	GE Security Inc.	Fixed Reader	647
AC Adapter	CUI Stack	DPD090050-P5	0900
Power Over Ethernet Adapter	LinkSys	WAPPOE	BW0049001002

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	1.9	PA	AC Adapter	EUT
Ethernet	No	2.1	No	EUT	Power Over Ethernet Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	1/25/2005	13 mo

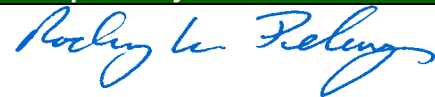
Test Description

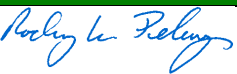
Requirement: Per 47 CFR 15.247(e), the peak power spectral density conducted from the antenna port of a direct sequence transmitter must not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission.

Configuration: The peak power spectral density measurements were measured with the EUT set to its 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 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 pass band. 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 was 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."

Completed by:

NORTHWEST EMC		POWER SPECTRAL DENSITY		Rev BETA 01/30/01	
EUT: Fixed reader			Work Order: SUPR0055		
Serial Number: 647			Date: 02/02/06		
Customer: GE Security Inc.			Temperature: 22 ° C		
Attendees: None		Tested by: Rod Peloquin		Humidity: 45% RH	
Customer Ref. No.: None		Power: Power over e-net		Job Site: EV06	
TEST SPECIFICATIONS					
Specification: 47 CFR 15.247(e)		Year: 2005		Method: FCC 97-114, ANSI C63.4	
				Year: 2003	
SAMPLE CALCULATIONS					
Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation					
Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.					
Bandwidth Correction Factor = $10 \cdot \log(3\text{kHz}/1\text{Hz}) = 34.8 \text{ dB}$					
COMMENTS					
Power Over Ethernet Adapter powered via a 120V AC Adapter.					
EUT OPERATING MODES					
Modulated by PRBS at maximum data rate					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Maximum peak power spectral density conducted from a DTS transmitter does not exceed 8 dBm in any 3 kHz band					
RESULTS					
Pass			AMPLITUDE		
			Power Spectral Density = -21.01 dBm / 3kHz		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Power Spectral Density					

12:20:18 FEB 02, 2006

HP

MKR 2.4412813 GHz

REF -10.0 dBm

#AT 10 dB

-55.81 dBm(1 Hz)

SMPL

LOG
S

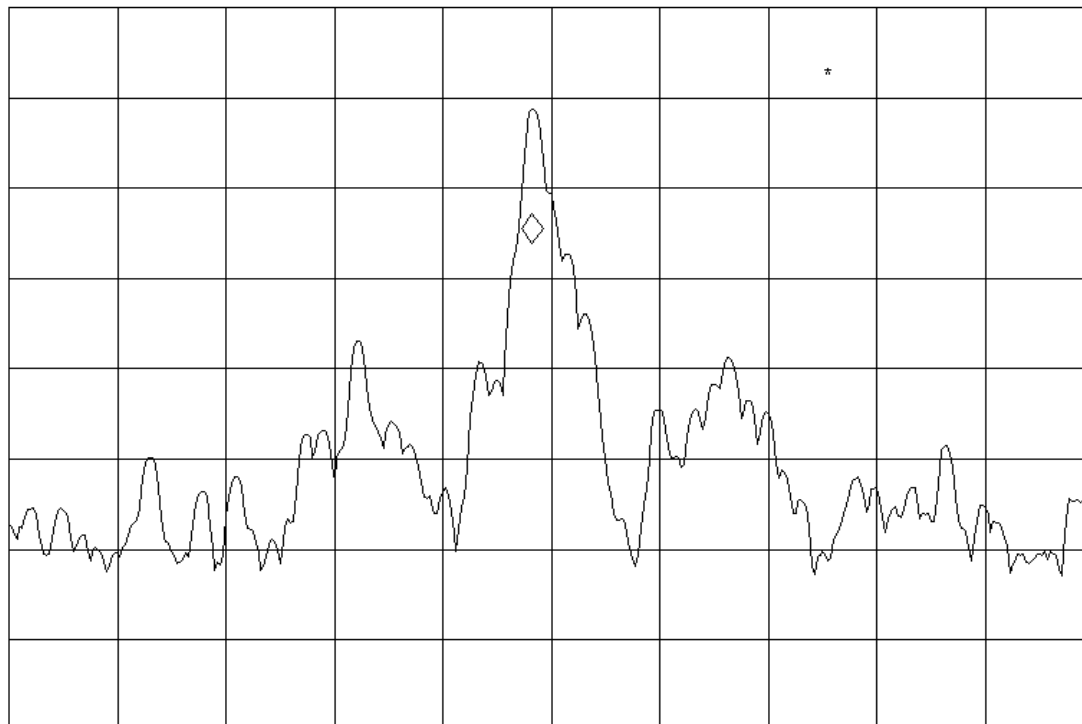
dB/

OFFST
21.7

dB

VA SB
SC FC

CORR



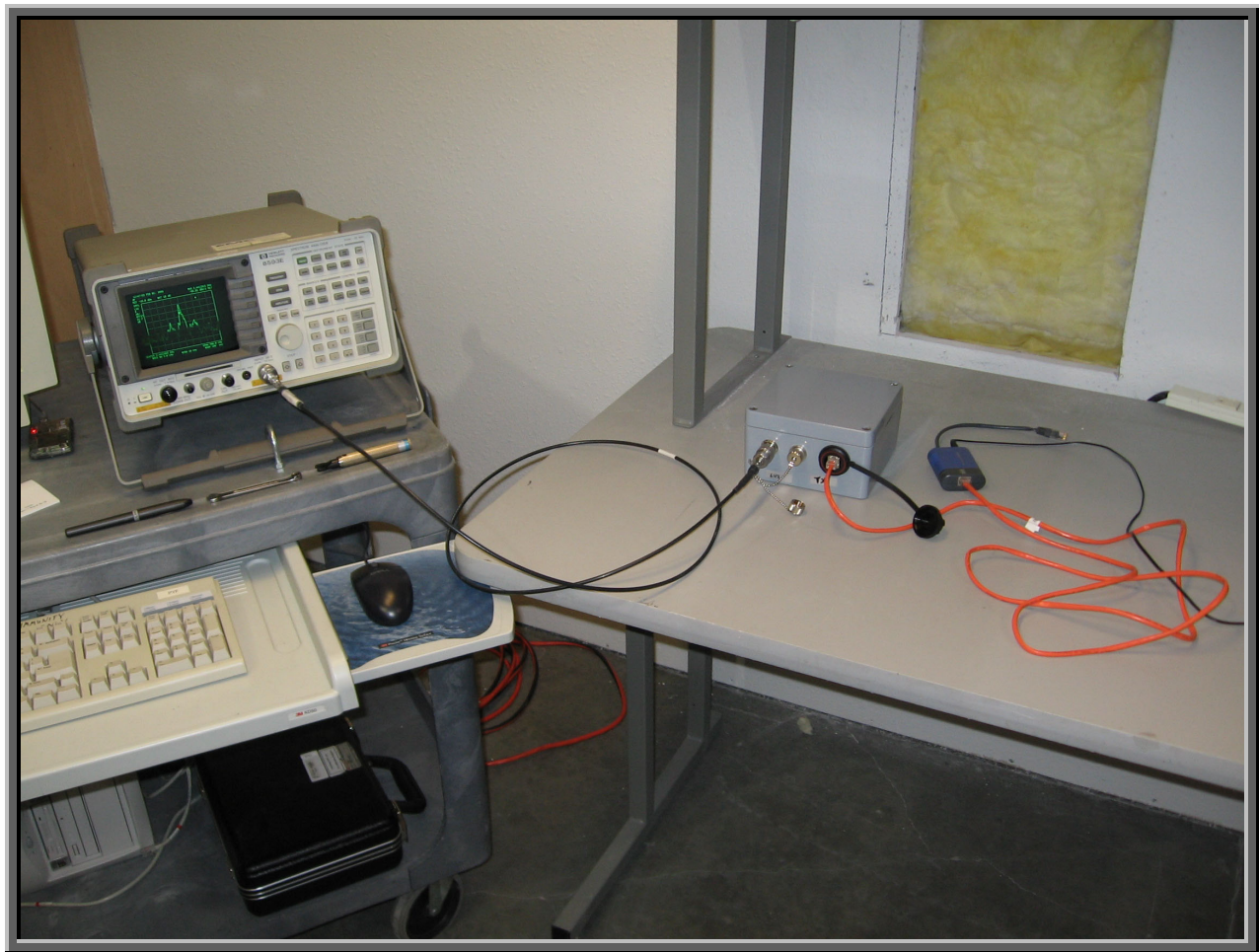
CENTER 2.4412865 GHz

SPAN 300.0 kHz

#RES BW 3.0 kHz

#VBW 10 kHz

#SWP 100 sec



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

Transmitting at set channel.

POWER SETTINGS INVESTIGATED

Power over e-net (POE Adapter powered via 120V AC Adapter)

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26 MHz
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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	2/15/2005	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	2/17/2005	13
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	9/28/2005	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	3/9/2005	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/4/2006	13
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
Spectrum Analyzer	Agilent	E4446A	AAQ	7/15/2005	12

MEASUREMENT BANDWIDTHS

	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(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

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

RADIATED EMISSIONS DATA SHEET

EUT:	Fixed Reader	Work Order:	SUPR0055
Serial Number:	647	Date:	02/01/06
Customer:	GE Security Inc.	Temperature:	21
Attendees:	None	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power:	Power over e-net
		Job Site:	EV01

TEST SPECIFICATIONS

Test Method

FCC 15.247(d) Spurious Radiated Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	0
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COMMENTS

Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120V AC Adapter.

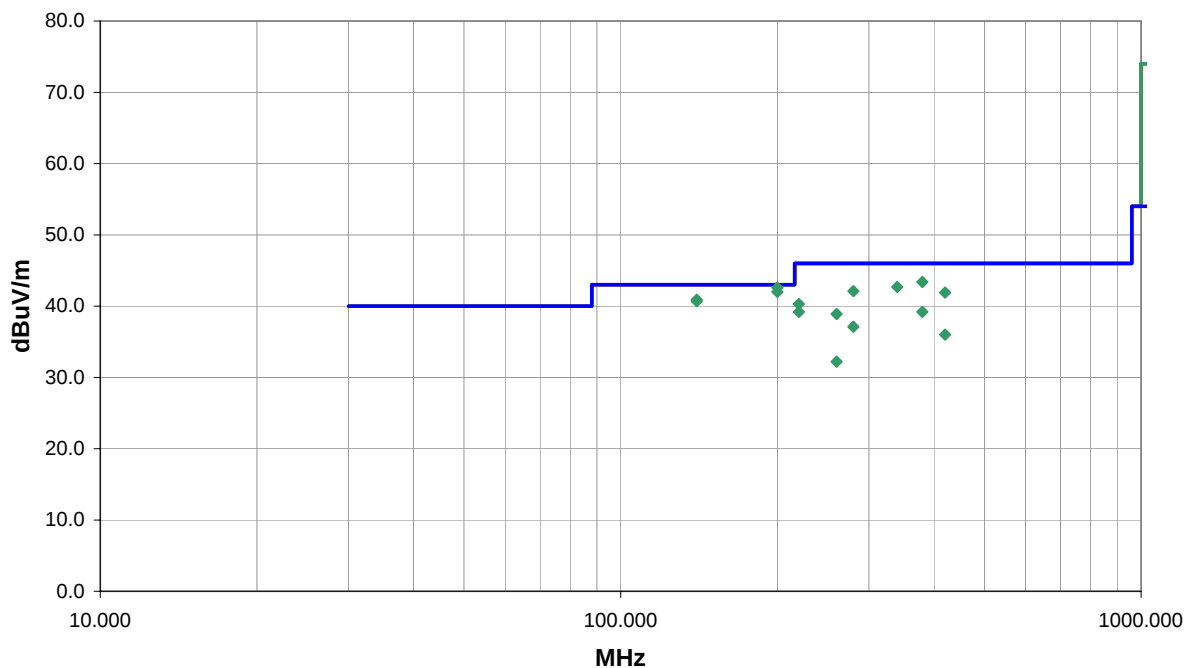
EUT OPERATING MODES

Transmitting at set channel.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1	Signature <i>Holly Ashkannejhad</i>
Configuration #	1	
Results	Pass	



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)
200.027	45.3	-2.7	114.0	1.4	0.0	0.0	H-Bilog	QP	0.0	42.6	43.0	-0.4
200.028	44.7	-2.7	187.0	1.0	0.0	0.0	V-Bilog	QP	0.0	42.0	43.0	-1.0
140.027	47.5	-6.6	12.0	1.0	0.0	0.0	V-Bilog	QP	0.0	40.9	43.0	-2.1
140.027	47.3	-6.6	289.0	2.5	0.0	0.0	H-Bilog	QP	0.0	40.7	43.0	-2.3
380.042	40.8	2.6	135.0	1.0	0.0	0.0	H-Bilog	QP	0.0	43.4	46.0	-2.6
340.037	41.1	1.6	238.0	1.0	0.0	0.0	H-Bilog	QP	0.0	42.7	46.0	-3.3
280.035	42.9	-0.8	292.0	1.5	0.0	0.0	H-Bilog	QP	0.0	42.1	46.0	-3.9
420.044	38.6	3.3	231.0	1.0	0.0	0.0	H-Bilog	QP	0.0	41.9	46.0	-4.1
220.031	42.7	-2.4	239.0	1.5	0.0	0.0	H-Bilog	QP	0.0	40.3	46.0	-5.7
380.041	36.6	2.6	182.0	1.4	0.0	0.0	V-Bilog	QP	0.0	39.2	46.0	-6.8
220.030	41.6	-2.4	312.0	1.0	0.0	0.0	V-Bilog	QP	0.0	39.2	46.0	-6.8
260.031	40.1	-1.2	236.0	1.2	0.0	0.0	H-Bilog	QP	0.0	38.9	46.0	-7.1
280.034	37.9	-0.8	159.0	1.7	0.0	0.0	V-Bilog	QP	0.0	37.1	46.0	-8.9
420.043	32.7	3.3	224.0	1.0	0.0	0.0	V-Bilog	QP	0.0	36.0	46.0	-10.0
260.033	33.4	-1.2	87.0	1.0	0.0	0.0	V-Bilog	QP	0.0	32.2	46.0	-13.8

RADIATED EMISSIONS DATA SHEET

EUT:	Fixed Reader	Work Order:	SUPR0055
Serial Number:	647	Date:	02/01/06
Customer:	GE Security Inc.	Temperature:	21
Attendees:	None	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power:	Power over e-net
		Job Site:	EV01

TEST SPECIFICATIONS

Test Method

FCC 15.247(d) Spurious Radiated Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

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

Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120V AC Adapter.

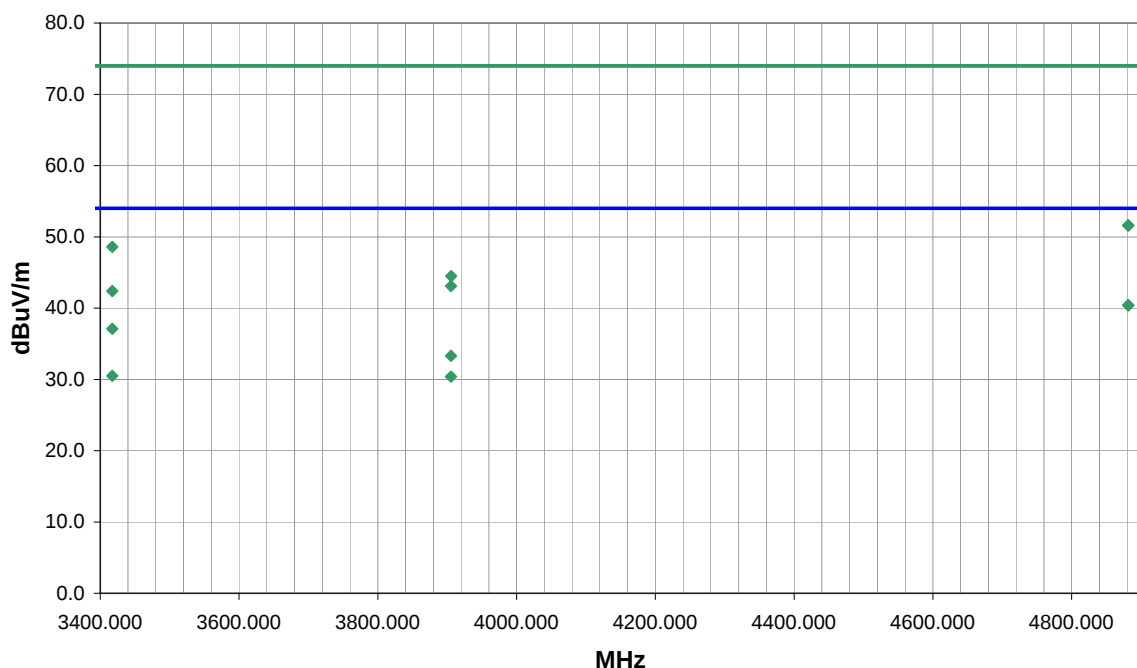
EUT OPERATING MODES

Transmitting at set channel.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2	Signature <i>Holly Ashkannejhad</i>
Configuration #	1	
Results	Pass	



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)
4881.627	33.5	6.9	41.0	1.2	3.0	0.0	V-Horn	AV	0.0	40.4	54.0	-13.6
4881.630	33.5	6.9	65.0	1.6	3.0	0.0	H-Horn	AV	0.0	40.4	54.0	-13.6
3417.354	33.0	4.1	29.0	1.3	3.0	0.0	H-Horn	AV	0.0	37.1	54.0	-16.9
3905.514	27.6	5.7	29.0	1.3	3.0	0.0	H-Horn	AV	0.0	33.3	54.0	-20.7
4881.429	44.7	6.9	41.0	1.2	3.0	0.0	V-Horn	PK	0.0	51.6	74.0	-22.4
4881.793	44.7	6.9	65.0	1.6	3.0	0.0	H-Horn	PK	0.0	51.6	74.0	-22.4
3417.360	26.4	4.1	184.0	1.2	3.0	0.0	V-Horn	AV	0.0	30.5	54.0	-23.5
3905.425	24.7	5.7	7.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.4	54.0	-23.6
3417.296	44.5	4.1	29.0	1.3	3.0	0.0	H-Horn	PK	0.0	48.6	74.0	-25.4
3905.636	38.8	5.7	29.0	1.3	3.0	0.0	H-Horn	PK	0.0	44.5	74.0	-29.5
3905.561	37.4	5.7	7.0	1.0	3.0	0.0	V-Horn	PK	0.0	43.1	74.0	-30.9
3417.366	38.3	4.1	184.0	1.2	3.0	0.0	V-Horn	PK	0.0	42.4	74.0	-31.6

RADIATED EMISSIONS DATA SHEET

EUT:	Fixed Reader	Work Order:	SUPR0055
Serial Number:	647	Date:	02/01/06
Customer:	GE Security Inc.	Temperature:	21
Attendees:	None	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power:	Power over e-net
		Job Site:	EV01

TEST SPECIFICATIONS

Test Method

FCC 15.247(d) Spurious Radiated Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

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

Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120V AC Adapter.

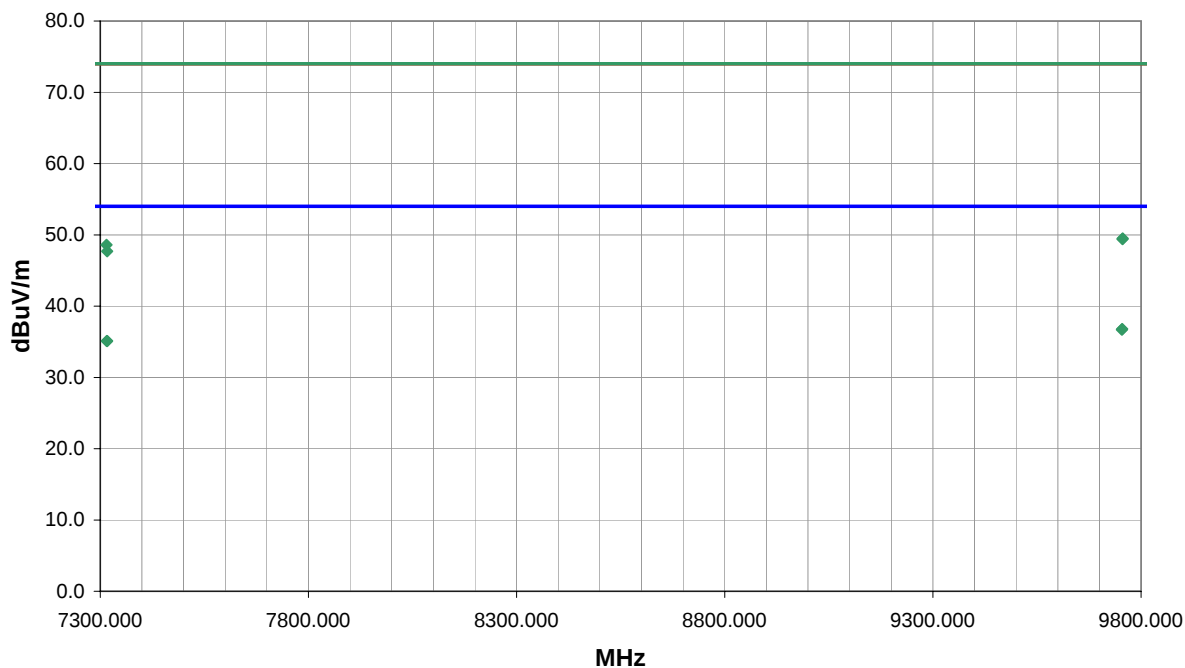
EUT OPERATING MODES

Transmitting at set channel.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3	Signature <i>Holly Ashkannejhad</i>
Configuration #	1	
Results	Pass	



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)
9754.546	21.0	15.8	95.0	1.3	3.0	0.0	H-Horn	AV	0.0	36.8	54.0	-17.2
9753.708	20.9	15.8	106.0	2.5	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3
7315.584	21.3	13.8	26.0	3.8	3.0	0.0	V-Horn	AV	0.0	35.1	54.0	-18.9
7316.660	21.3	13.8	82.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.1	54.0	-18.9
9755.618	33.7	15.8	106.0	2.5	3.0	0.0	V-Horn	PK	0.0	49.5	74.0	-24.5
9755.521	33.6	15.8	95.0	1.3	3.0	0.0	H-Horn	PK	0.0	49.4	74.0	-24.6
7314.811	34.8	13.8	82.0	1.0	3.0	0.0	H-Horn	PK	0.0	48.6	74.0	-25.4
7316.548	33.9	13.8	26.0	3.8	3.0	0.0	V-Horn	PK	0.0	47.7	74.0	-26.3

RADIATED EMISSIONS DATA SHEET

EUT:	Fixed Reader	Work Order:	SUPR0055
Serial Number:	647	Date:	02/02/06
Customer:	GE Security Inc.	Temperature:	21
Attendees:	None	Humidity:	39%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power:	Power over e-net
		Job Site:	EV01

TEST SPECIFICATIONS

Test Method

FCC 15.247(d) Spurious Radiated Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	0
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COMMENTS

Hyperlink Technologies M/N: WGEI900-0001, 8dBi antenna. POE Adapter powered via 120V AC Adapter.

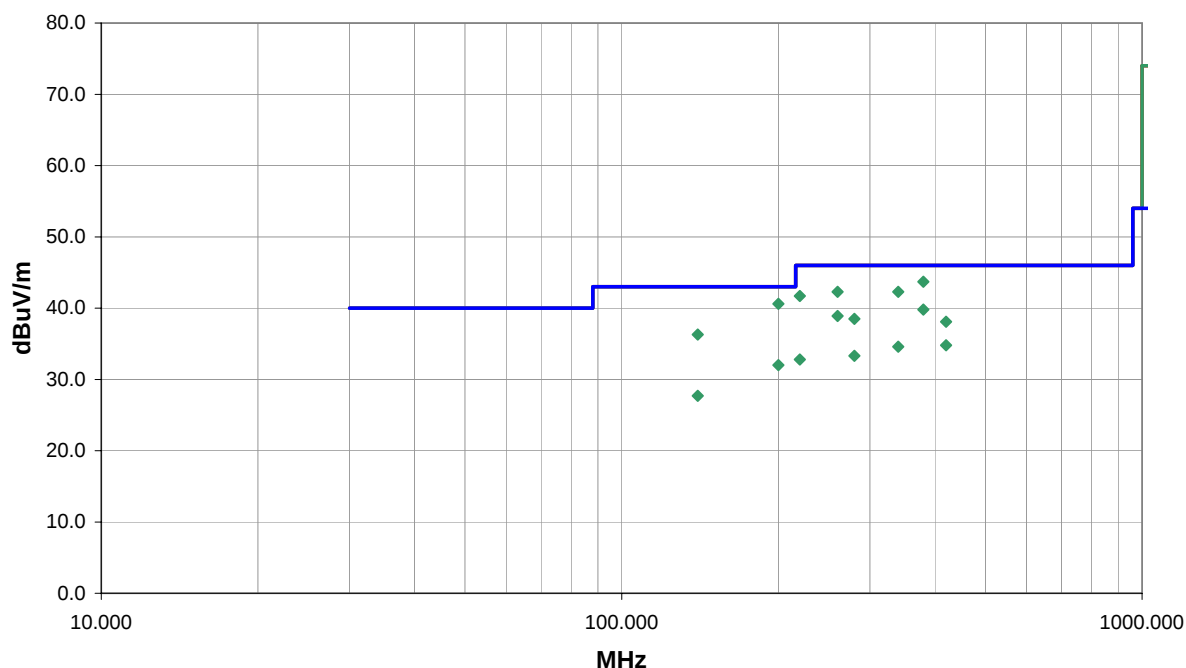
EUT OPERATING MODES

Transmitting at set channel.

DEVIATIONS FROM TEST STANDARD

No deviations.

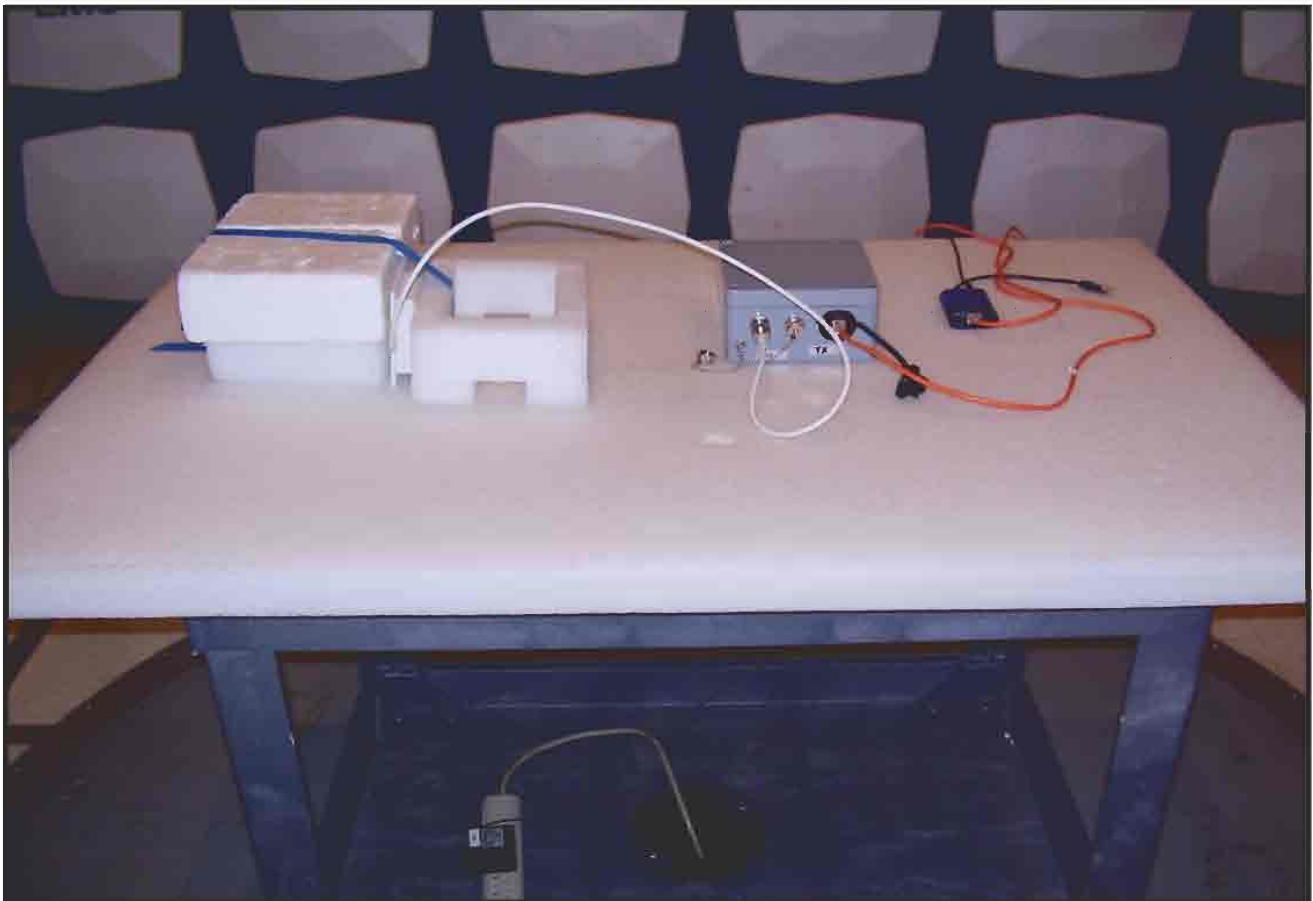
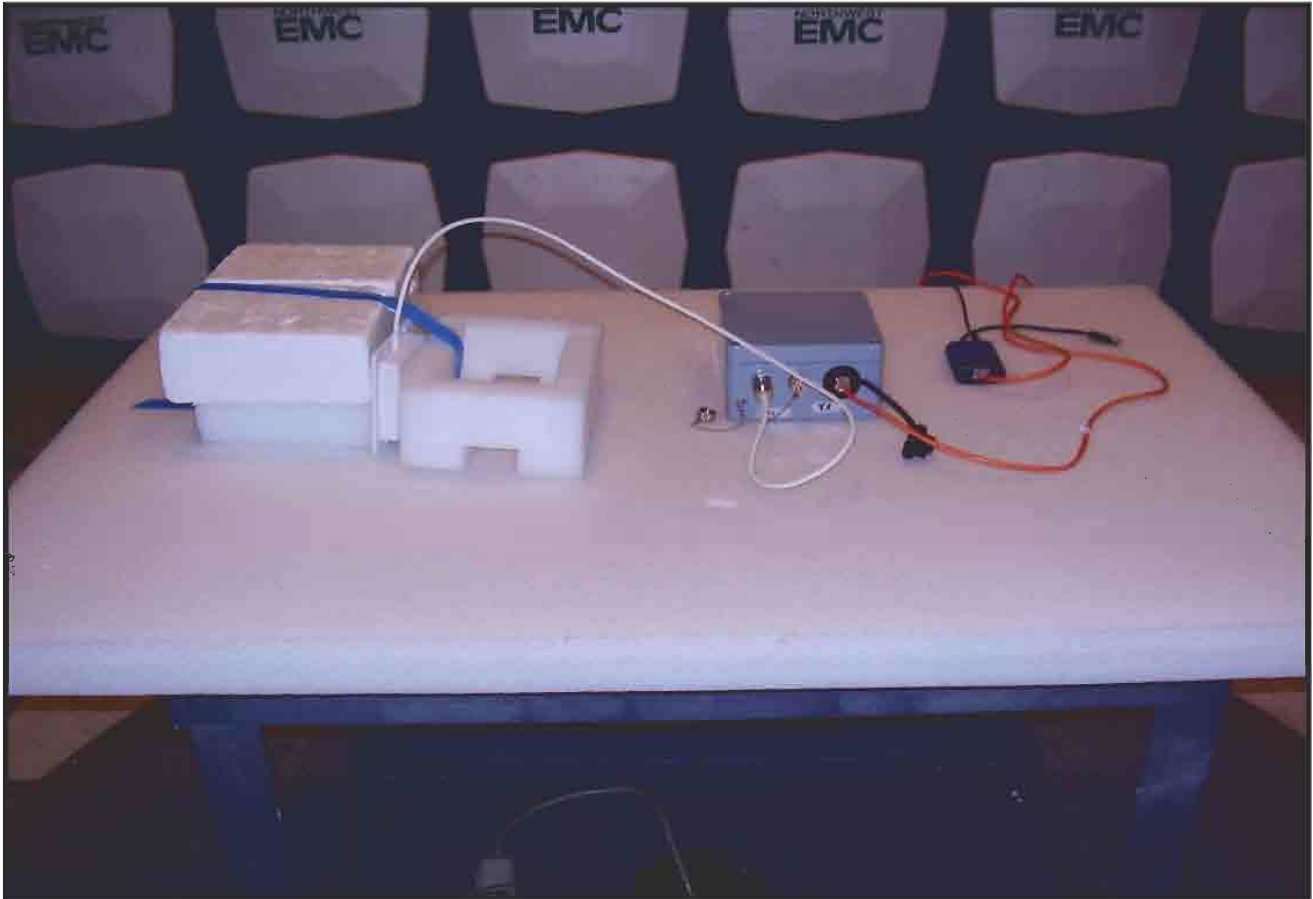
Run #	4	Signature <i>Holly Ashkannejhad</i>
Configuration #	4	
Results	Pass	

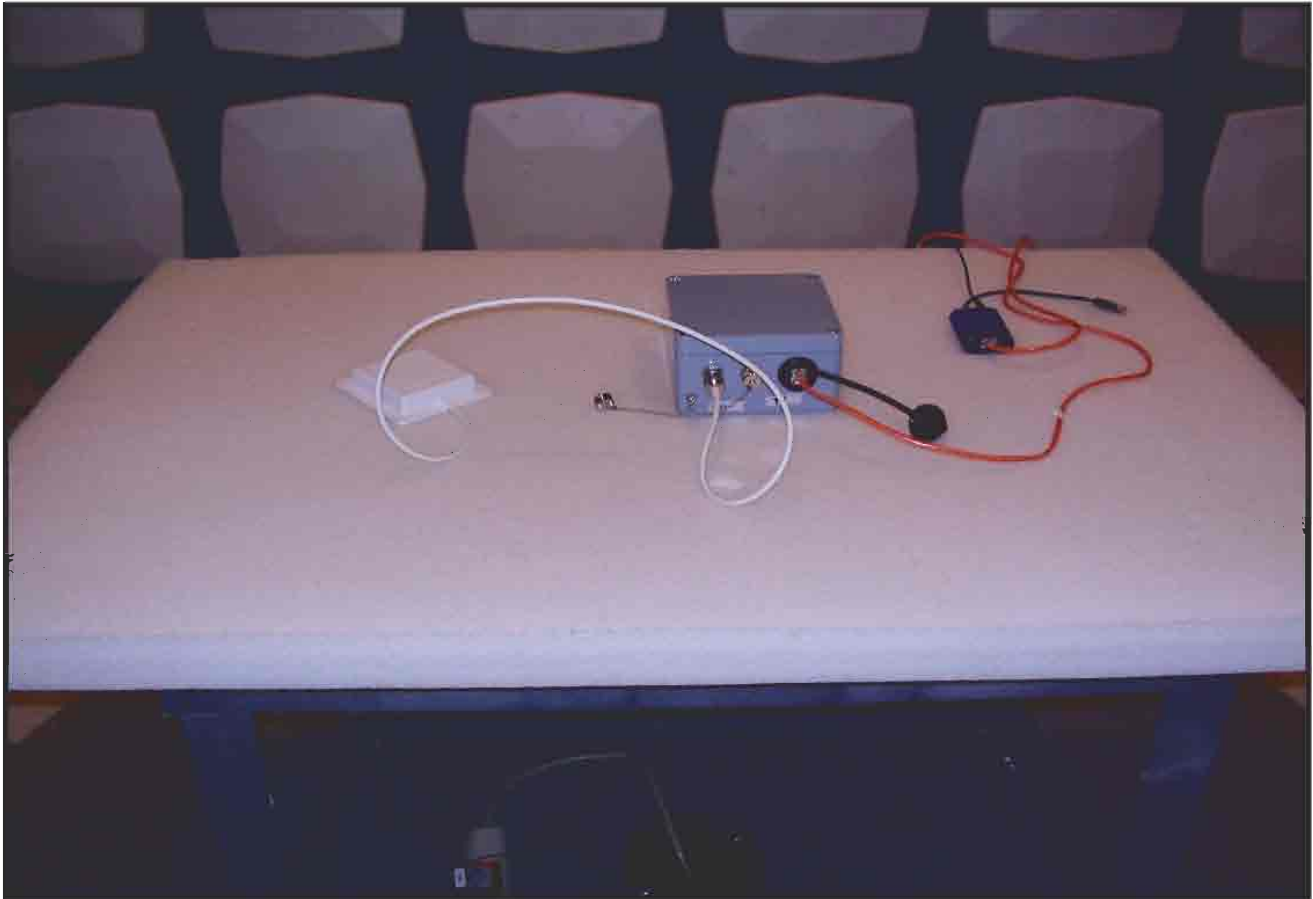


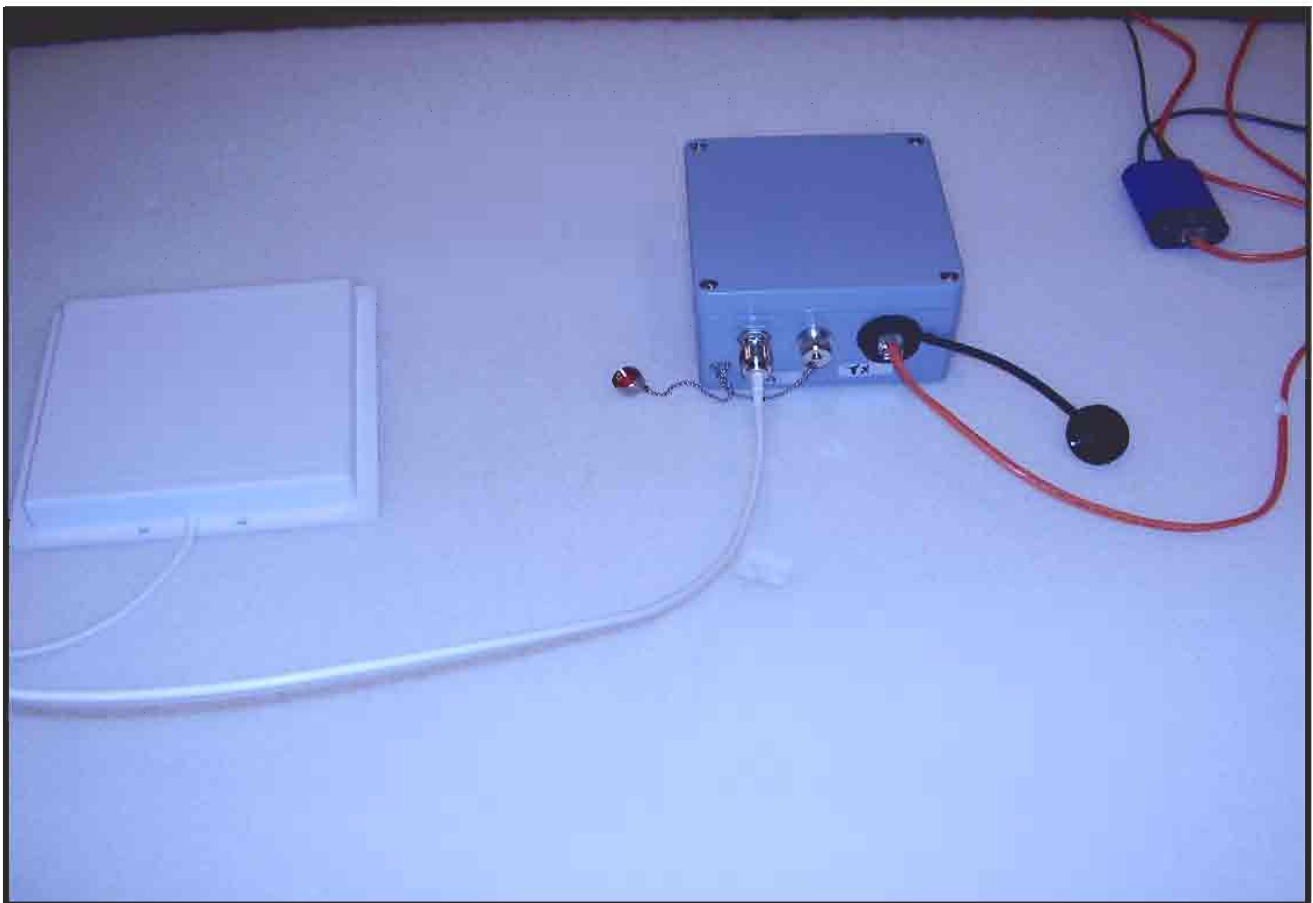
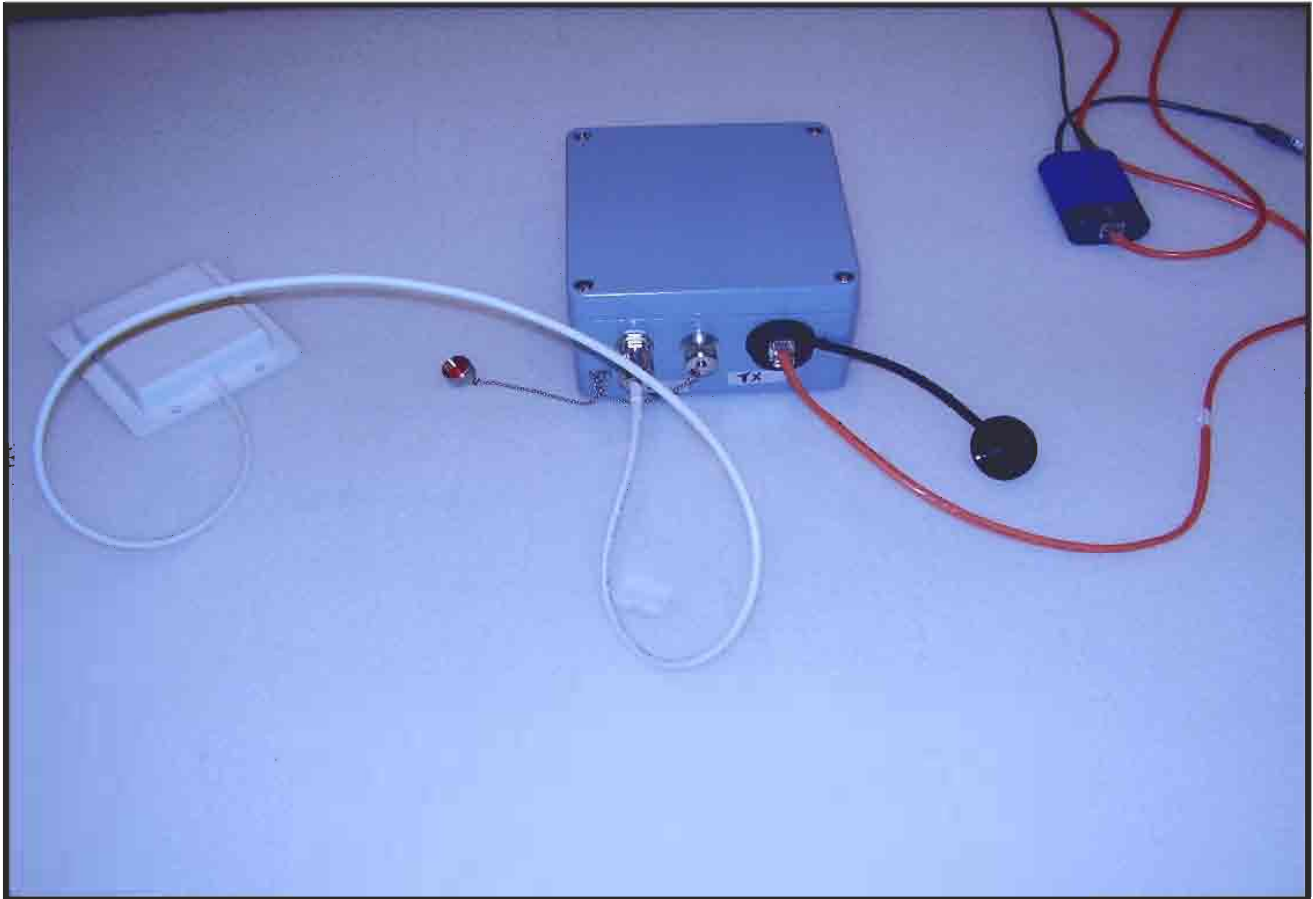
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
380.039	41.1	2.6	9.0	1.0	0.0	0.0	H-Bilog	QP	0.0	43.7	46.0	-2.3
200.026	43.3	-2.7	101.0	2.0	0.0	0.0	H-Bilog	QP	0.0	40.6	43.0	-2.4
260.030	43.5	-1.2	182.0	1.2	0.0	0.0	H-Bilog	QP	0.0	42.3	46.0	-3.7
340.036	40.7	1.6	0.0	1.0	0.0	0.0	H-Bilog	QP	0.0	42.3	46.0	-3.7
220.029	44.1	-2.4	87.0	1.5	0.0	0.0	H-Bilog	QP	0.0	41.7	46.0	-4.3
380.039	37.2	2.6	221.0	1.4	0.0	0.0	V-Bilog	QP	0.0	39.8	46.0	-6.2
140.024	42.9	-6.6	99.0	2.2	0.0	0.0	H-Bilog	QP	0.0	36.3	43.0	-6.7
260.029	40.1	-1.2	143.0	1.5	0.0	0.0	V-Bilog	QP	0.0	38.9	46.0	-7.1
280.035	39.3	-0.8	110.0	1.4	0.0	0.0	H-Bilog	QP	0.0	38.5	46.0	-7.5
420.042	34.8	3.3	71.0	1.0	0.0	0.0	H-Bilog	QP	0.0	38.1	46.0	-7.9
200.027	34.7	-2.7	247.0	1.0	0.0	0.0	V-Bilog	QP	0.0	32.0	43.0	-11.0
420.042	31.5	3.3	199.0	3.2	0.0	0.0	V-Bilog	QP	0.0	34.8	46.0	-11.2
340.036	33.0	1.6	233.0	1.4	0.0	0.0	V-Bilog	QP	0.0	34.6	46.0	-11.4
280.035	34.1	-0.8	137.0	1.0	0.0	0.0	V-Bilog	QP	0.0	33.3	46.0	-12.7
220.031	35.2	-2.4	245.0	1.0	0.0	0.0	V-Bilog	QP	0.0	32.8	46.0	-13.2
140.026	34.3	-6.6	256.0	1.0	0.0	0.0	V-Bilog	QP	0.0	27.7	43.0	-15.3

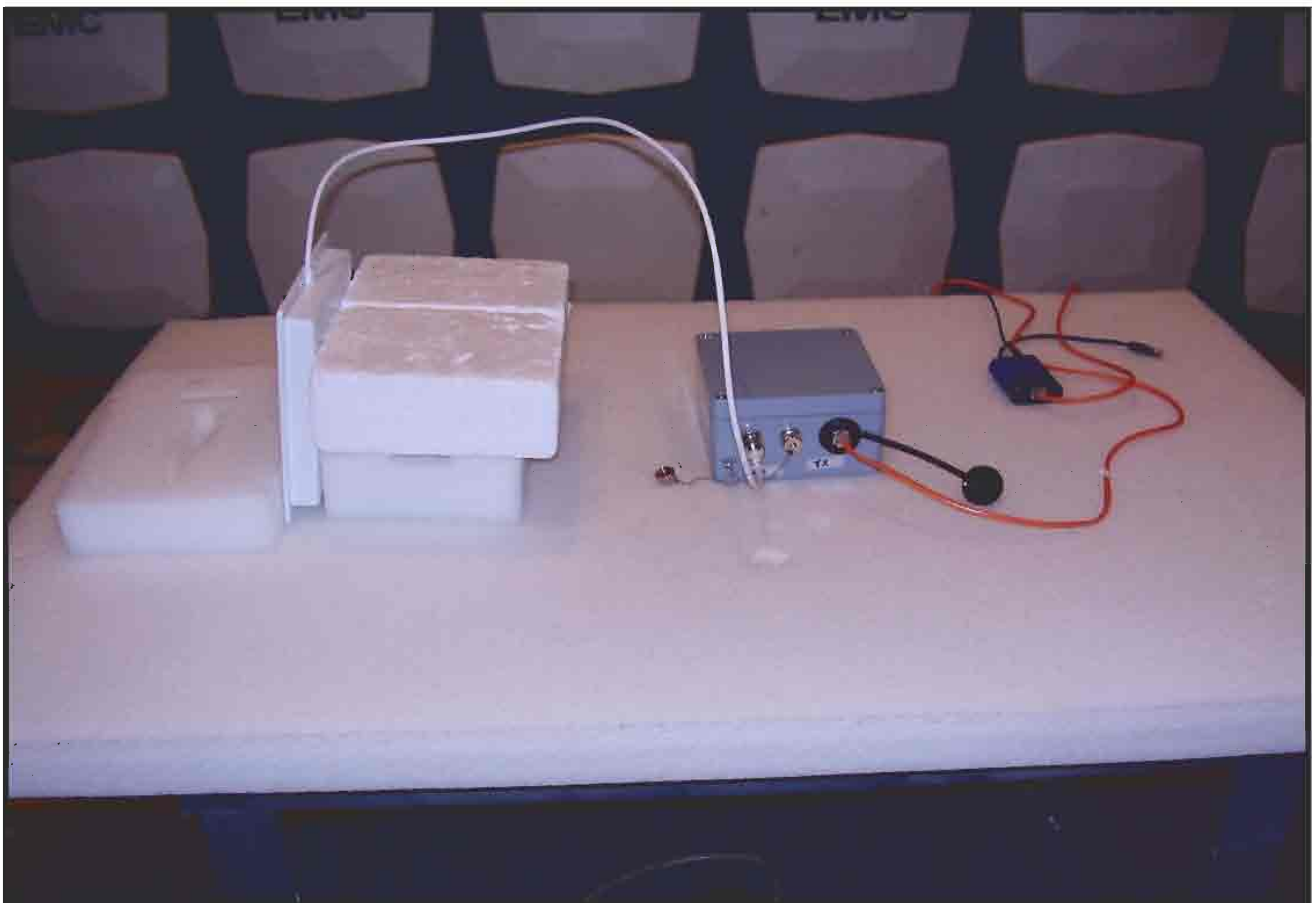
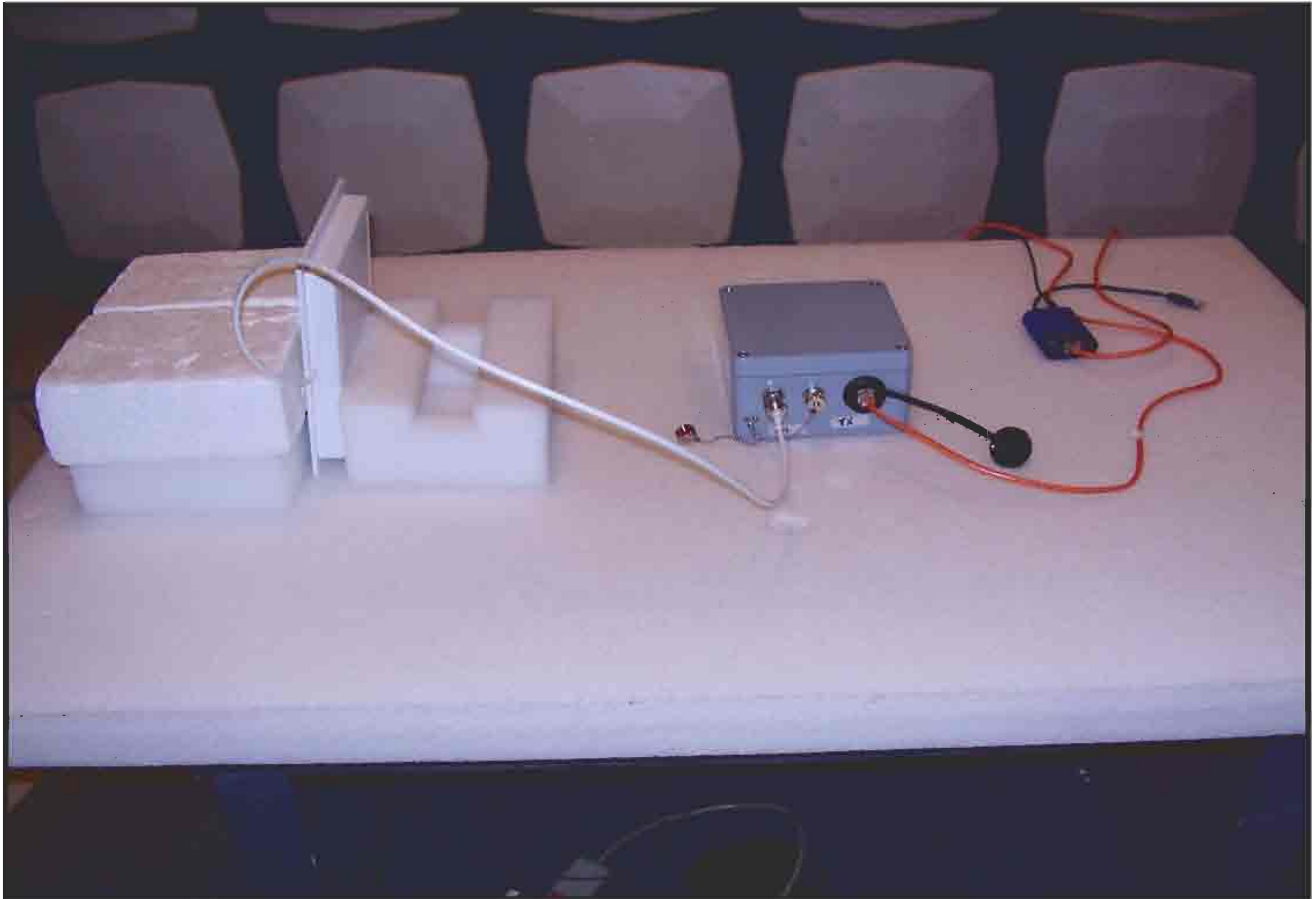
NORTHWEST EMC		RADIATED EMISSIONS DATA SHEET		PSA 2006.01.20 EMI 2006.1.20								
EUT: Fixed Reader			Work Order: SUPR0055									
Serial Number: 647			Date: 02/02/06									
Customer: GE Security Inc.			Temperature: 21									
Attendees: None			Humidity: 37%									
Project: None			Barometric Pres.: 29.98									
Tested by: Holly Ashkannejhad		Power: Power over e-net		Job Site: EV01								
TEST SPECIFICATIONS			Test Method									
FCC 15.247(d) Spurious Radiated Emissions:2005-9			ANSI C63.4:2003									
TEST PARAMETERS												
Antenna Height(s) (m)		1 - 4		Test Distance (m) 3								
COMMENTS												
Hyperlink Technologies M/N: WGEI900-0001, 8dBi antenna. POE Adapter powered via 120V AC Adapter.												
EUT OPERATING MODES												
Transmitting at set channel.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #		6										
Configuration #		4										
Results		Pass										
Signature <i>Holly Ashkannejhad</i>												
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)
4881.630	34.7	6.9	21.0	1.1	3.0	0.0	V-Horn	AV	0.0	41.6	54.0	-12.4
4881.576	31.9	6.9	11.0	1.2	3.0	0.0	H-Horn	AV	0.0	38.8	54.0	-15.2
3417.433	32.1	4.1	21.0	1.4	3.0	0.0	H-Horn	AV	0.0	36.2	54.0	-17.8
3905.514	27.3	5.7	356.0	1.8	3.0	0.0	H-Horn	AV	0.0	33.0	54.0	-21.0
4881.717	46.1	6.9	21.0	1.1	3.0	0.0	V-Horn	PK	0.0	53.0	74.0	-21.0
3417.412	27.9	4.1	336.0	1.1	3.0	0.0	V-Horn	AV	0.0	32.0	54.0	-22.0
3905.343	23.5	5.7	343.0	1.1	3.0	0.0	V-Horn	AV	0.0	29.2	54.0	-24.8
4881.876	42.2	6.9	11.0	1.2	3.0	0.0	H-Horn	PK	0.0	49.1	74.0	-24.9
3417.412	43.4	4.1	21.0	1.4	3.0	0.0	H-Horn	PK	0.0	47.5	74.0	-26.5
3905.381	38.9	5.7	356.0	1.8	3.0	0.0	H-Horn	PK	0.0	44.6	74.0	-29.4
3417.318	38.3	4.1	336.0	1.1	3.0	0.0	V-Horn	PK	0.0	42.4	74.0	-31.6
3905.946	35.8	5.7	343.0	1.1	3.0	0.0	V-Horn	PK	0.0	41.5	74.0	-32.5

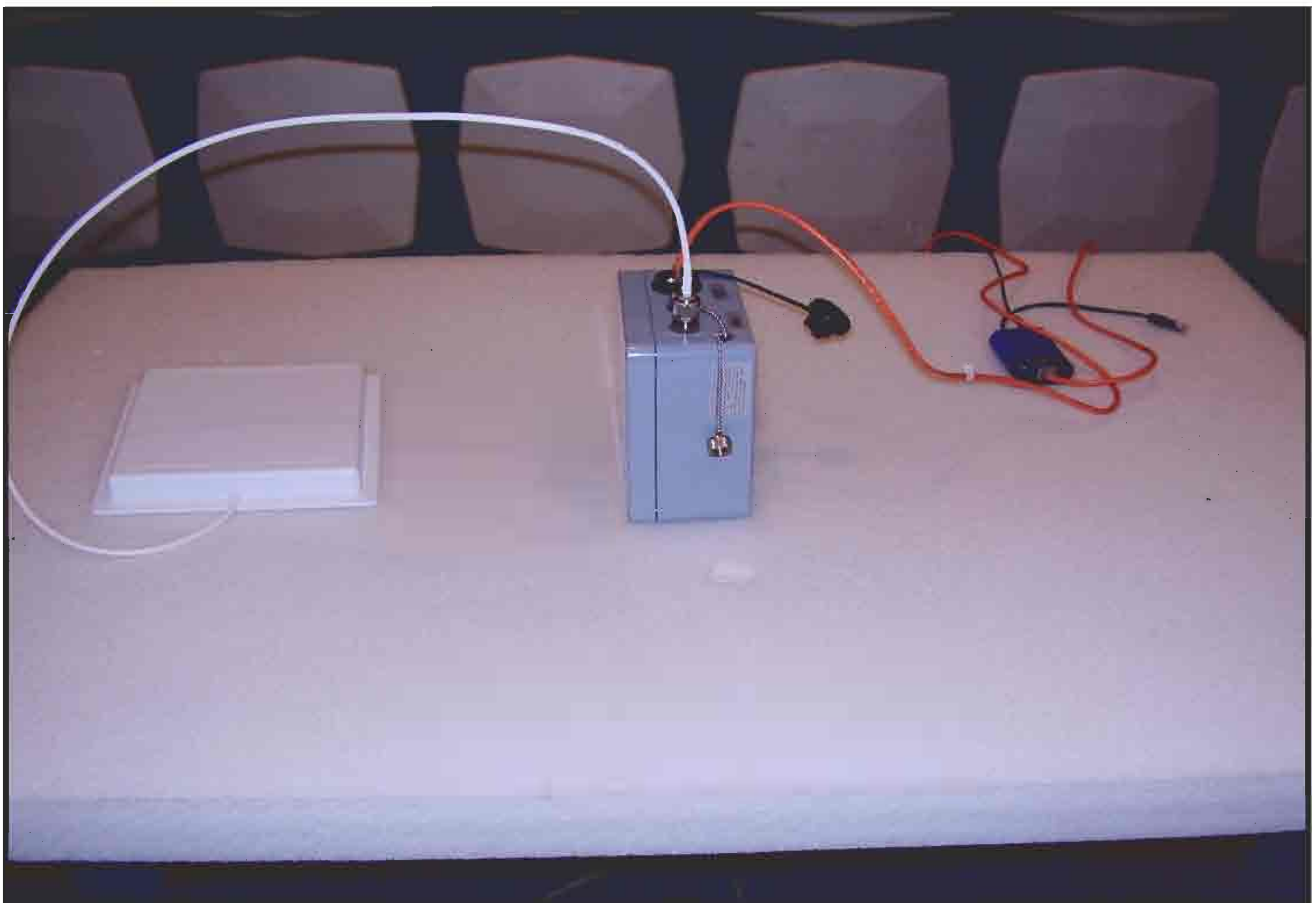
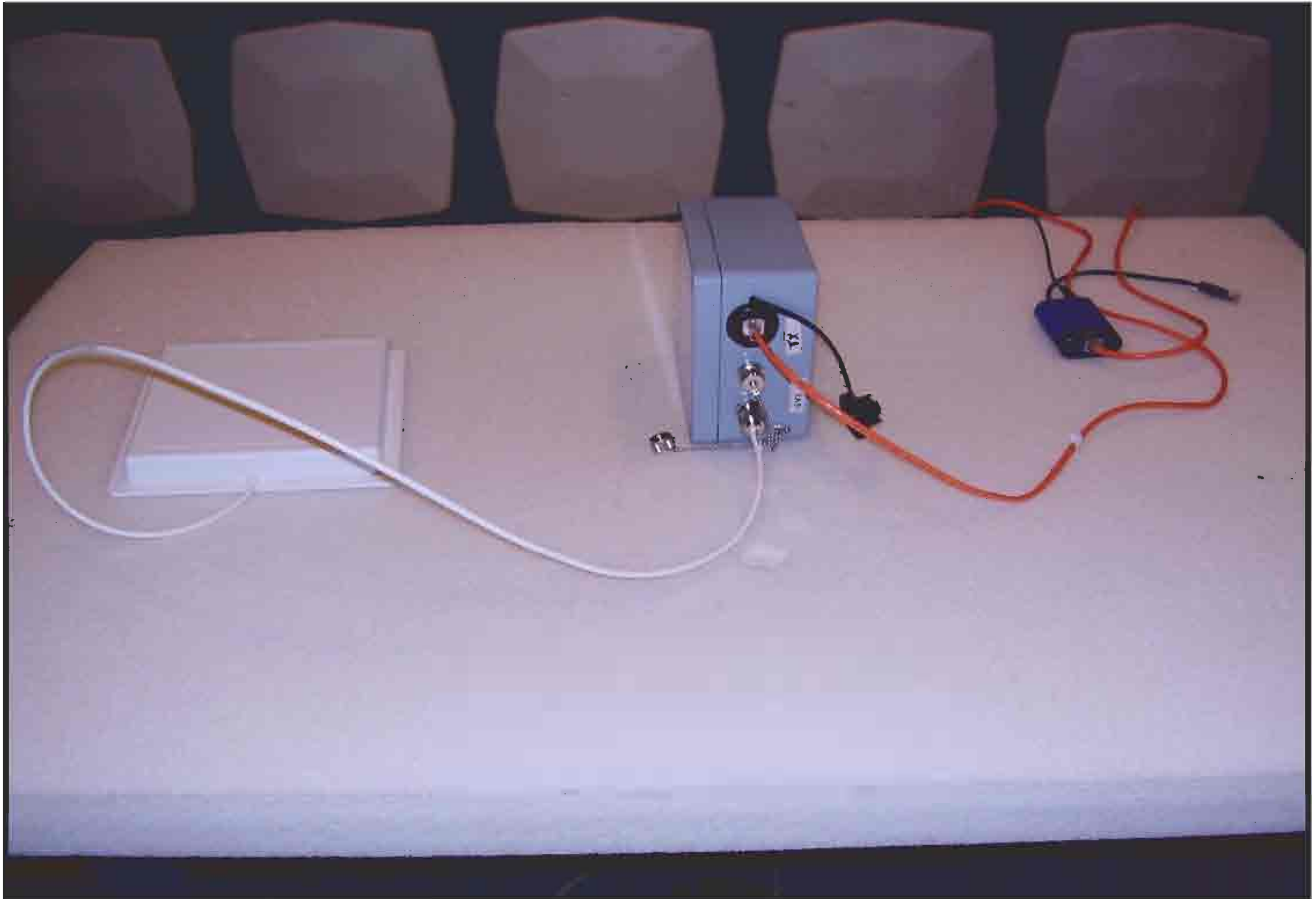
NORTHWEST EMC		RADIATED EMISSIONS DATA SHEET										PSA 2006.01.20 EMI 2006.1.20	
EUT: Fixed Reader						Work Order: SUPR0055							
Serial Number: 647						Date: 02/02/06							
Customer: GE Security Inc.						Temperature: 21							
Attendees: None						Humidity: 37%							
Project: None						Barometric Pres.: 29.98							
Tested by: Holly Ashkannejhad				Power: Power over e-net		Job Site: EV01							
TEST SPECIFICATIONS										Test Method			
FCC 15.247(d) Spurious Radiated Emissions:2005-9										ANSI C63.4:2003			
TEST PARAMETERS													
Antenna Height(s) (m)				1 - 4		Test Distance (m)				3			
COMMENTS													
Hyperlink Technologies M/N: WGEI900-0001, 8dBi antenna. POE Adapter powered via 120V AC Adapter.													
EUT OPERATING MODES													
Transmitting at set channel.													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		7		Signature <i>Holly Ashkannejhad</i>									
Configuration #		4											
Results		Pass											
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)	
9756.144	21.1	15.8	16.0	1.3	3.0	0.0	H-Horn	AV	0.0	36.9	54.0	-17.1	
9755.898	21.0	15.8	38.0	2.4	3.0	0.0	V-Horn	AV	0.0	36.8	54.0	-17.2	
7316.467	21.3	13.8	128.0	1.3	3.0	0.0	V-Horn	AV	0.0	35.1	54.0	-18.9	
7316.641	21.3	13.8	348.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.1	54.0	-18.9	
9754.204	34.4	15.8	16.0	1.3	3.0	0.0	H-Horn	PK	0.0	50.2	74.0	-23.8	
9754.608	33.6	15.8	38.0	2.4	3.0	0.0	V-Horn	PK	0.0	49.4	74.0	-24.6	
7315.933	34.4	13.8	128.0	1.3	3.0	0.0	V-Horn	PK	0.0	48.2	74.0	-25.8	
7317.039	33.8	13.8	348.0	1.0	3.0	0.0	H-Horn	PK	0.0	47.6	74.0	-26.4	











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

Transmitting fixed frequency.

POWER SETTINGS INVESTIGATED

Power over e-net (POE Adapter powered via 120VAC Adapter)

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Tektronix	011-0059-02	ATC	12/19/2005	13
High Pass Filter	T.T.E.	7766	HFG	1/17/2005	13
Spectrum Analyzer	Agilent	E4443A	AAS	12/8/2005	12
LISN	Solar	9252-50-R-24-BNC	LIQ	12/13/2005	13
LISN	Solar	9252-50-R-24-BNC	LIR	12/13/2005	13

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(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

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the set channel in the operational band. The EUT was transmitting at its maximum data rate. The AC power line conducted emissions were also measured with the EUT in normal operating mode. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

NORTHWEST		PSA 2006.02.03						
EMI		EMI 2006.1.20						
EUT: Fixed Reader		Work Order: SUPR0055						
Serial Number: 647		Date: 02/06/06						
Customer: GE Security Inc.		Temperature: 21						
Attendees: None		Humidity: 37%						
Project: None		Barometric Pres.: 29.98						
Tested by: Holly Ashkannejhad		Power: Power over e-net						
Job Site: EV11								
TEST SPECIFICATIONS		Test Method						
FCC 15.207 AC Powerline Conducted Emissions:2005-9		ANSI C63.4:2003						
TEST PARAMETERS								
Cable or Line Tested		N						
COMMENTS								
Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120VAC, 60Hz AC Adapter.								
EUT OPERATING MODES								
Transmitting fixed frequency.								
DEVIATIONS FROM TEST STANDARD								
No deviations.								
Run #	7	Signature <i>Holly Ashkannejhad</i>						
Configuration #	1							
Results	Pass							
Freq (MHz)	Amplitude (dBuV)	Transducer (dB)	Cable (dB)	External Attenuation (dB)	Detector (blank equal peaks [PK] from scan)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.514	22.9	0.0	0.3	20.0		43.2	46.0	-2.8
0.489	23.0	0.0	0.3	20.0		43.3	46.2	-2.9
0.653	21.3	0.0	0.3	20.0		41.6	46.0	-4.4
0.431	20.3	0.0	0.3	20.0		40.6	47.2	-6.7
0.401	20.1	0.0	0.3	20.0		40.4	47.8	-7.5
0.784	17.1	0.0	0.3	20.0		37.4	46.0	-8.6
0.288	21.7	0.0	0.2	20.0		41.9	50.6	-8.6
0.584	17.0	0.0	0.3	20.0		37.3	46.0	-8.7
0.955	16.9	0.0	0.4	20.0		37.3	46.0	-8.7
0.853	16.8	0.0	0.4	20.0		37.2	46.0	-8.8
0.183	25.2	0.0	0.2	20.0		45.4	54.4	-8.9
0.190	24.4	0.0	0.2	20.0		44.6	54.0	-9.4
0.314	20.0	0.0	0.2	20.0		40.2	49.9	-9.6
0.358	18.9	0.0	0.3	20.0		39.2	48.8	-9.6
0.835	15.5	0.0	0.4	20.0		35.9	46.0	-10.1
0.241	21.6	0.0	0.2	20.0		41.8	52.1	-10.2
0.675	14.8	0.0	0.3	20.0		35.1	46.0	-10.9
0.263	20.0	0.0	0.2	20.0		40.2	51.3	-11.1
0.995	14.2	0.0	0.4	20.0		34.6	46.0	-11.4

NORTHWEST		AC Powerline Conducted Emissions		PSA 2006.02.03								
EMC				EMI 2006.1.20								
EUT: Fixed Reader			Work Order: SUPR0055									
Serial Number: 647			Date: 02/06/06									
Customer: GE Security Inc.			Temperature: 21									
Attendees: None			Humidity: 37%									
Project: None			Barometric Pres.: 29.98									
Tested by: Holly Ashkannejhad		Power: Power over e-net		Job Site: EV11								
TEST SPECIFICATIONS			Test Method									
FCC 15.207 AC Powerline Conducted Emissions:2005-9			ANSI C63.4:2003									
TEST PARAMETERS												
Cable or Line Tested			L1									
COMMENTS												
Hyperlink Technologies M/N: WGEI900-0002, 14dBi antenna. POE Adapter powered via 120VAC, 60Hz AC Adapter.												
EUT OPERATING MODES												
Transmitting fixed frequency.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #	8		Signature <i>Holly Ashkannejhad</i>									
Configuration #	1											
Results	Pass											
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.478	23.1			0.0	0.3	20.0				43.4	46.4	-3.0
0.609	22.5			0.0	0.3	20.0				42.8	46.0	-3.2
0.591	22.4			0.0	0.3	20.0				42.7	46.0	-3.3
0.653	20.7			0.0	0.3	20.0				41.0	46.0	-5.0
0.463	20.2			0.0	0.3	20.0				40.5	46.6	-6.2
0.496	19.1			0.0	0.3	20.0				39.4	46.1	-6.7
0.704	18.3			0.0	0.3	20.0				38.6	46.0	-7.4
0.831	17.6			0.0	0.4	20.0				38.0	46.0	-8.0
0.864	17.2			0.0	0.4	20.0				37.6	46.0	-8.4
0.926	16.9			0.0	0.4	20.0				37.3	46.0	-8.7
0.194	24.9			0.0	0.2	20.0				45.1	53.9	-8.8
0.216	24.0			0.0	0.2	20.0				44.2	53.0	-8.8
0.821	16.8			0.0	0.4	20.0				37.2	46.0	-8.8
0.842	16.2			0.0	0.4	20.0				36.6	46.0	-9.4
0.270	21.0			0.0	0.2	20.0				41.2	51.1	-9.9
0.237	21.7			0.0	0.2	20.0				41.9	52.2	-10.3
0.332	18.3			0.0	0.2	20.0				38.5	49.4	-10.8
0.248	20.7			0.0	0.2	20.0				40.9	51.8	-10.9
0.729	11.5			0.0	0.3	20.0				31.8	46.0	-14.2



