TEST REPORT

FROM

SIEMIC

For

Container Security Device (CSD)

To

47 CFR 15.247

Test Report Serial No.:
SL05051108A

This report supersedes None

Remarks:

Equipment complied with the specification	[X]
Equipment did not comply with the specification	[ ]

This Test Report is Issued Under the Authority of:

.....
Tested by: Alvin Ilarina, Test Enginner

.....
Reviewed by: Leslie Bai, Lab Manager

Issue date: 24 May 2005

Equipment Details:
Manufacturer: GE Security

Industry Canada
Industrie Canada

Registration No. 783147 Registration No. 4842 Registration No. 2195

This page has been left blank intentionally.

CONTENTS

This page has been left blank intentionally.

Executive Summary

The purpose of this test programme was to demonstrate compliance of the GE Security, Container Security Device (CSD) against the current 47 CFR 15.247. The Container Security Device (CSD) demonstrated compliance with the 47 CFR 15.247.

GE Security is the applicant and claimed manufacturer of this tested product. For the detailed description of this product, please refer to the Container Security Device (CSD) User Manual.

Below is the photograph of the system that was tested.

The test has demonstrated that this unit complies with stipulated standards.

1 Technical Details

Purpose	Compliance testing of Container Security Device (CSD) with 47 CFR 15.247
Applicant / Client	GE Security 4001 Fairview Industrial Dr SE Salem, OR 97302
Manufacturer	GE Security
Laboratory performing the tests	SIEMIC Labs 2206 Ringwood Avenue San Jose, CA 95131
Test location(s)	SIEMIC Labs 2206 Ringwood Avenue San Jose, CA 95131
Test report reference number	SL05051108A
Date EUT received	17 May 2005
Standard applied	47 CFR 15.247
Dates of test (from – to)	17 May 2005 to 18 May 2005
No of Units:	1
Equipment Category:	DTS
Trade/Product Name:	Container Security Device (CSD)
Type/Model Name/No:	ATT10102/4 R1E
FCC ID No.	TCZ-ATT10102-1

2 Tests Required

The product was tested in accordance with the following specifications.
The test results recorded in this Test Report are exclusively referred to the tested sample(s).

Test Standard	Description	Pass / Fail
47CFR Part 15, General Conditions		
15.203	Antenna Requirements	Pass
15.207	Power Line Conducted Emissions	N/A
15.209, 15.205	Radiated Spurious Emissions (Restricted Bands)	Pass
47CFR Part 15, §15.247		
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)(1)	Power Output	Pass
15.247(b)(5)	RF Safety	Pass
15.247(c)	Conducted Spurious Emissions	Pass
15.247(c)	Radiated Spurious Emissions	Pass
15.247(d)	Peak Power Spectral Density	Pass
ANSI C63.4: 2001		

Notes: Deviations to above standards are outlined in specific test sections if applicable.
Cable loss, external attenuation, and filtering are compensated for in the measurement system when applicable.

3 Measurements, Examinations and Derived Results

3.1 General observations

Equipment serial number(s)		
Module:	Part number:	Serial number:
Container Security Device (CSD)	ATT10102/4 R1E	None

3.2 Test Results

3.2.1 Antenna Requirements

Requirements(s): 47 CFR §15.203

Results: The EUT has an internal integral antenna.

3.2.2 Conducted Emissions Requirements

Requirements(s): 47 CFR §15.207

Results: This requirement is not applicable since the EUT is battery operated.

3.2.3 Radiated Emissions Requirements - Below 1GHz

Requirements(s): 47 CFR §15.209/ ANSI C63.4:2001

Procedures: The EUT was placed on a non-conductive table in a semi-anechoic chamber. The EUT was rotated 360 degrees and the antenna scanned from 1 to 4 meters in the vertical and horizontal polarities. The EUT was scanned in three orthogonal orientations and the worse case used for final measurements.

Results:

Frequency	Azimuth	Measure	Antenna Polarity	Antenna Height	Raw Amplitude @ 3m	ACF	CBL loss	Corrected Amplitude @ 3m	FCC @ 3m	Delta
(MHz)	(degrees)	(Avg/QP)	(H/V)	(m)	(dBuV/m)	(dBm)	(dBm)	(dBuV/m)	(dBuV/m)	(dBuV/m)
400.2	170	QP	H	2.2	18.3	16.26	1.65	36.21	46.00	-9.79
440.2	170	QP	H	2.1	17.6	16.70	1.71	36.01	46.00	-9.99
480.2	180	QP	H	2.1	14.8	17.62	1.77	34.19	46.00	-11.81
420.2	170	QP	H	2.1	12.6	16.70	1.68	30.98	46.00	-15.02
460.2	170	QP	H	2.1	10.5	17.06	1.74	29.30	46.00	-16.70
520.3	170	QP	H	2.1	5.1	18.36	1.82	25.28	46.00	-20.72

Table 1: Radiated Emissions Requirements - Below 1GHz

Tested By: Alvin Ilarina

Date Tested: 17 May 2005

3.2.4 Radiated Emissions Requirements – Above 1 GHz

Requirements(s): 47 CFR §15.205, §15.209/ ANSI C63.4:2001, §15.247(c)

Procedures: The EUT was placed on a non-conductive table in a semi-anechoic chamber. The EUT was rotated 360 degrees and the antenna scanned from 1 to 4 meters in the vertical and horizontal polarities. The EUT was scanned in three orthogonal orientations and the worse case used for final measurements.

Results:

Freq. (GHz)	Azimuth (Degrees)	Antenna Polarity (H/V)	Height (m)	Meas (pk/avg)	Raw Amp. @ 3m	P.Amp (dB)	Ant.Cor. Factor (dB)	Cable Loss (dB)	EUT Field Strength (dBuV/m)	Limit (dBuV/m)	Delta (dBuV/m)
2.2	175	**V**	1.2	pk	61	34.6	28	2.7	57.1	74	-16.9
2.2	175	**V**	1.2	avg	42.3	34.6	28	2.7	38.4	54	-15.6
2.2	175	**H**	1.2	pk	59	34.6	28	2.7	55.1	74	-18.9
2.2	175	**H**	1.2	avg	40.3	34.6	28	2.7	36.4	54	-17.6
2.67	90	**V**	1.2	avg	38	34.6	28.4	2.9	34.7	54	-19.3
2.68	170	**H**	1.2	pk	51	34.6	28.4	2.9	47.7	74	-26.3
2.67	90	**V**	1.2	pk	51.7	34.6	28.4	2.9	48.4	74	-25.6
4.88	185	**V**	1.2	pk	55.67	34.5	33	4	58.17	74	-15.83
4.88	180	**H**	1.4	pk	51.3	34.5	33	4	53.8	74	-20.2
4.88	185	**V**	1.2	avg	44	34.5	33	4	46.5	54	-7.5
4.88	180	**H**	1.4	avg	40.83	34.5	33	4	43.33	54	-10.67
7.32	noise floor										

Table 2: Radiated Emissions Requirements – Above 1GHz

Tested By: Alvin Ilarina

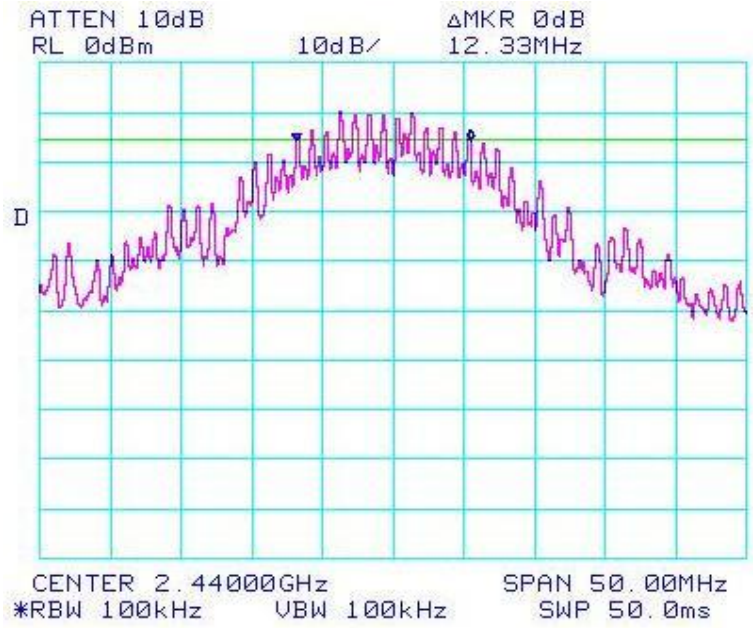
Date Tested: 17 May 2005

3.2.5 6dB Bandwidth

Requirement(s): 47 CFR §15.247(a)(2)

Procedures: The 6dB bandwidth was measured at the antenna terminal using a spectrum analyzer.

Results: 6dB bandwidth = 12.33MHz > 500kHz



Plot 1: 6dB Bandwidth

Tested By: Alvin Ilarina

Date Tested: 17 May 2005

3.2.6 Peak Output Power

Requirement(s): 47 CFR §15.247(b)

Procedures: The peak output power was measured at the antenna terminal using a peak power meter.

Results:

Frequency (MHz)	Peak Power (dBm)	Peak Limit (dBm)	Average Power(dBm)
2440	4.7	30	-2.73

Table 3: Peak Output Power

Tested By: Alvin Ilarina

Date Tested: 17 May 2005

3.2.7 RF Safety

Requirement(s): 47 CFR §15.247(b)(5)

Results: Not Applicable

3.2.8 Power Spectral Density

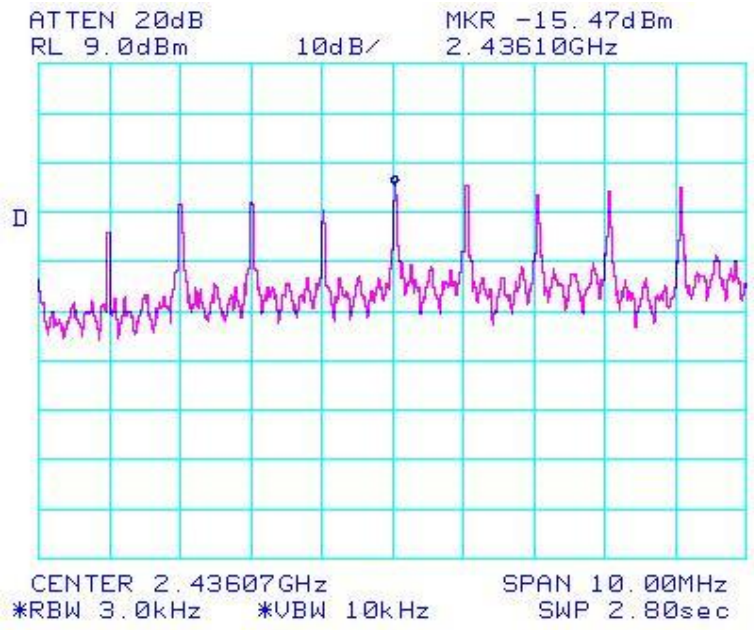
Requirement(s): 47 CFR §15.247(d)

Procedures: The peak power spectral density measured at the antenna terminal using a spectrum analyzer.

Results:

Plot #	Frequency (MHz)	PSD (dBm)	Limit (dBm)
2	2440	-15.47	8

Table 4: Power Spectral Density



Plot 2: Power Spectral Density

Tested By: Alvin Ilarina

Date Tested: 17 May 2005

3.2.9 Conducted Spurious Emissions at Antenna Terminals

Requirement(s): 47 CFR §15.247(c)

Procedures: The spurious emissions at the antenna terminal were measured at the antenna terminal using a spectrum analyzer.

The spurious limit was determined by:

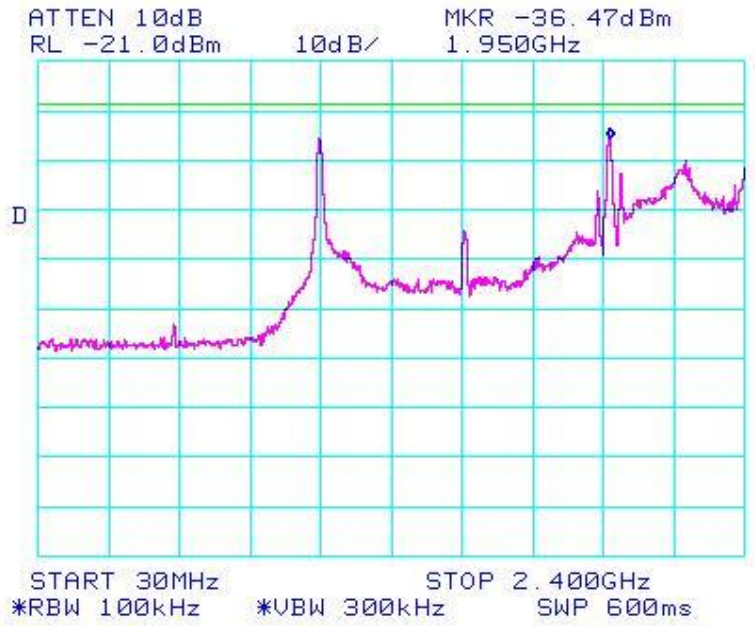
(Highest emission level with the authorized band as measured with a 100kHz RBW) -20db

Limit = -9.8 dBm – 20dBm = -29.8dBm

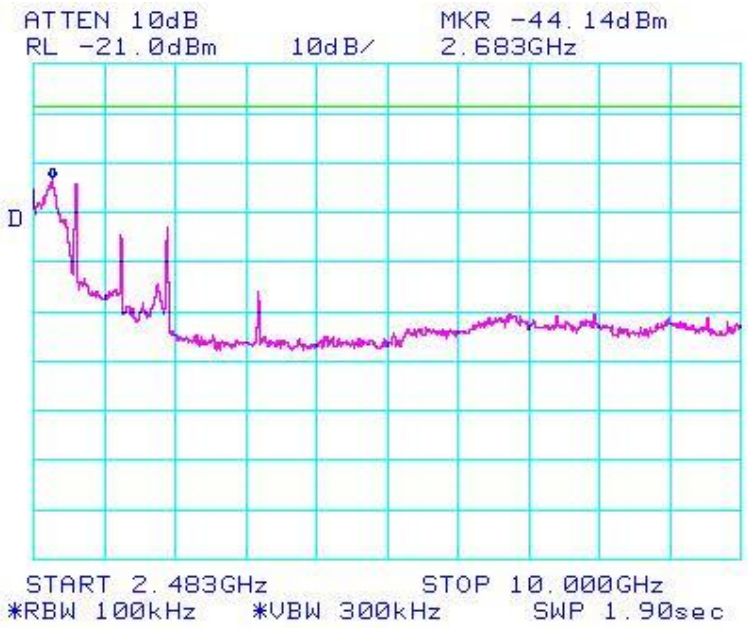
Results:

Plots #	Frequency (MHz)	Pass/Fail
3 to 5	2440	Pass

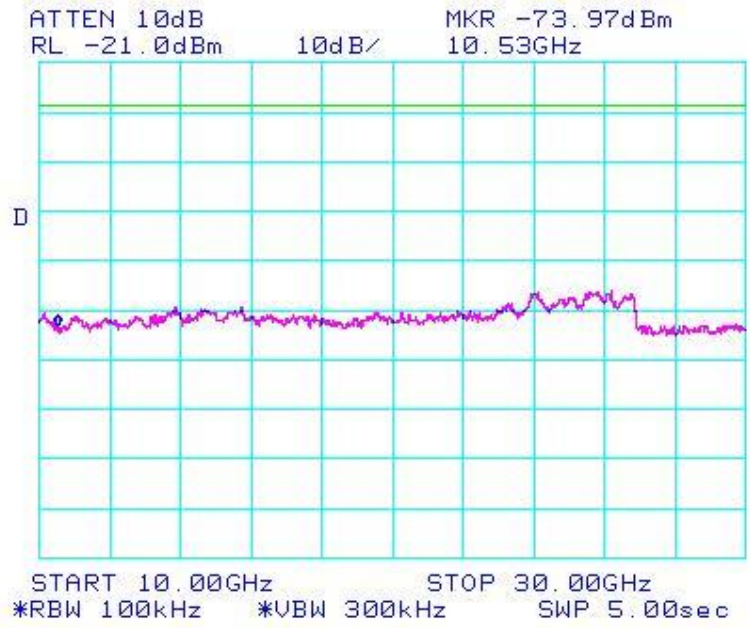
Table 4: Conducted Spurious Emissions



Plot 3: Conducted Spurious 1 of 3



Plot 4: Conducted Spurious 2 of 3



Plot 5: Conducted Spurious 3 of 3

Tested By: Alvin Ilarina

Date Tested: 17 May 2005

4 TEST INSTRUMENTATION

4.1 TEST INSTRUMENTATION

Instrument	Manufacturer	Model
Spectrum Analyzer	HP	8564E
Power Meter	HP	437B
Power Sensor	HP	8485A
Antenna	Emco	3115
Antenna	Emco	3115
Signal Generator	Wiltron	68169B
Chamber	Lingren	3m
Pre-Amplifier	HP	8449

APPENDIX A: EUT TEST CONDITIONS

The following is the description of supporting equipment and details of cables used with the EUT.

Equipment Description (Including Brand Name)	Cable Description
CSD Test Box (Custom build)	None

EUT Description	:	Container Security Device (CSD)
Model No	:	ATT10102/4 R1E
Serial No	:	None

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
	The EUT was set to continuous transmit using the CSD Test Box.

APPENDIX B: External Photos

See Attachment

APPENDIX C: CIRCUIT/BLOCK DIAGRAMS

See Attachment

APPENDIX D: Internal Photos

See Attachment

APPENDIX F: PRODUCT DESCRIPTION

Detail description of this product is shown in the User's Guide.

APPENDIX H: FCC LABEL LOCATION

See Attachment

APPENDIX I: USER MANUAL

See Attachment