



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650)965-4000 Fax: (650)965-3000

*FCC PART 15, SUBPART C
IC RSS 210, ISSUE 8
TEST REPORT*

for

the

SELF-CONTAINED RFID LATCH

MODEL: SC-20-1000-10

Prepared for

SECURITY PEOPLE, INC. DBA DIGILOCK
9 WILLOWBROOK COURT
PETALUMA, CALIFORNIA 94954

Prepared by: George Hsu
GEORGE HSU

Approved by: Kevin Bothmann
KEVIN BOTHMANN

ELECTRO MAGNETIC TEST, INC.
1547 PLYMOUTH STREET
MOUNTAIN VIEW, CALIFORNIA 94043
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DATE: MARCH 28, 2014

	REPORT BODY	APPENDICES					TOTAL
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REVISION HISTORY

REVISION	DATE	COMMENTS	MODIFIED BY
-	March 20, 2014	Original Document	GH
1	March 28, 2014	Correct a typographical error in test data	GH



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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Electro Magnetic Test, Inc., which is an independent testing and consulting firm. The test report is based on testing performed Electro Magnetic Test, Inc. personnel according to the measurement procedure described in the test specification given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government.

Electro Magnetic Test, Inc. is recognized by the following agencies for performing EMI/EMC testing:

COUNTRY	AGENCY	IDENTIFYING #
USA	Federal Communications Commission (FCC) (EMT's test site is recognized by the FCC)	Registration Number: 90576
USA, Canada, Taiwan, Australia/New Zealand, European Community	National Voluntary Lab Accreditation Program (NVLAP) (EMT is accredited by NVLAP. A copy of the NVLAP Scope Of Accreditation is available upon request.)	Lab Code: 200147-0
Canada	Industry Canada	File No.: IC 2804
Japan	Voluntary Control Council For Interference (VCCI)	A-0018
	Open Field Test Site "A"	-
	Mains Conducted Emissions Test Site "A"	-
	Telecom Conducted Emissions Test Site "A"	-
	3 Meter Semi-Anechoic Chamber Site "E"	-
	3 Meter Semi-Anechoic Chamber Site "E" (1GHz – 6GHz)	-
	Mains Conducted Emissions Test Site "E"	-
	Telecom Conducted Emissions Test Site "E"	-
Korea	Ministry of Information and Communication's Radio Research Laboratory (RRL) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (A copy of the Scope Of Accreditation is available upon request)	US0036
Taiwan	Bureau Of Standards, Metrology and Inspection (BSMI)	Reference Number: SL2-IN-E-1024
Australia / New Zealand	Australian Communications Authority (AUSTEL)	*

*These agencies do not issue an identifying number to test labs.



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GENERAL REPORT SUMMARY (CONTINUED)

Device Tested: Self-Contained RFID Latch
 Model: SC-20-1000-10
 S/N: N/A

Product Description: The EUT is a battery-powered electromechanical lock. Interaction with the EUT occurs via RFID access card or electronic key. The EUT contains an RFID reader controlled by a microprocessor and uses an enclosed antenna for scanning. The EUT is designed for doors (without egress) for either shared or assigned us functionality.

Modifications: The EUT was not modified during the testing.

Manufacturer: Security People, Inc. DBA Digilock
 9 Willowbrook Court
 Petaluma, California 94954

Test Date(s): January 10, 14, 15, 16, 21, 22, 2014

Test Specifications: EMI requirements
 Limits: FCC Title 47, Part 15 Subpart C
 IC RSS 210, Issue 8
 IC RSS-GEN Issue 3
 Test Procedure: ANSI C63.4: 2009

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	FCC STANDARD	IC STANDARD	REMARKS	RESULTS
7.1	Radiated Emissions	FCC, 15.209, 15.225	RSS-GEN Issue 3, [6.1] RSS 210 Issue 8, [A2.6]	Radiated	PASS
7.2	Conducted Emissions	N/A	N/A	Conducted	N/A, EUT is Battery Powered
7.3	Frequency Tolerance	FCC 15.225e	RSS 210 Issue 8, [A2.6]	Conducted	PASS
7.4	Occupied Bandwidth	N/A	RSS-GEN Issue 3, [4.6.1]	Conducted	PASS
7.5	Antenna Requirement	FCC 15.203	N/A	Conducted	PASS


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TECHNICAL DESCRIPTION OF THE EUT

EUT Name:	Self-Contained RFID Latch		
Model No:	SC-20-1000-10		
Operation frequency:	13.56 MHz		
Channel Number:	1		
Serial No:	N/A		
Power Supply:	4.5V DC from 3 AA Batteries		
Description of Channel:			
RFID			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	13.56		

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1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Equip. Under Test Model: REV. E4. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2009. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined in FCC Title 47 Part 15 Subpart C, IC RSS 210 Issue 8, and IC RSS-GEN Issue 3.

2. ADMINISTRATIVE DATA**2.1 Location of Testing**

The EMI tests described herein were performed at the test facility of Electro Magnetic Test, Inc., 1547 Plymouth Street, Mountain View, California, 94043.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The measurement results in this report and the calibration of the test equipment are traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant PersonnelSecurity People, Inc. DBA Digilock

Ben Valdovinos Electronics Engineer

Electro Magnetic Test, Inc.

David Vivanco Test Technician
George Hsu Test Technician
Kevin Bothmann Lab Manager

2.4 Date Test Sample was Received

The test sample was received on January 10, 2014.

2.5 Disposition of the Test Sample

The test sample has not returned to Security People, Inc. DBA Digilock at this time.

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2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
CISPR	International Special Committee On Radio Interference
FCC	Federal Communications Commission

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3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Part 15, Subpart C	FCC Rules - Radio frequency devices (including digital devices).
RSS 210, Issue 8, December 2010	Licence-exempt Radio Apparatus (All Frequency Bands): Category 1 Equipment
RSS-Gen Issue 3, December 2010	General Requirements and Information for the Certification of Radio Apparatus
ANSI C63.4 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.

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4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – EMI

The EUT was connected to a battery pack (three double “A” batteries), via its power input. During testing the EUT is constantly scanning for RFID tags (cards). The scanning antenna constantly radiates a 13.56 MHz radio-frequency (RF) signal that provides a means of communicating with the RFID tag. This RF signal supplies energy to the tag so it can modulate the signal and communicate with the reader. The EUT was tested with ISO 14443A, ISO14443B, ISO 15693, and iClass cards.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The cables were moved to maximize the emissions. The final conducted as well as radiated data was taken in this mode of operation. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix B.



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4.1.1 Cable Construction and Termination

Cables #1

This is a 2 inch unshielded power cable connecting the Self-Contained RFID Latch to the battery pack. It has 0.25 inch metallic barrel Connector on both ends.

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5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID
SELF-CONTAINED RFID LATCH (EUT)	SECURITY PEOPLE, INC. DBA DIGILOCK	SC-20-1000-10	N/A	2ABVZ-LO6I02NAO01
DOUBLE "A" BATTERY PACK	N/A	N/A	N/A	N/A



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5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	3013A07296	July 29, 2013	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	July 30, 2013	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	July 30, 2013	1 Year
Radiated EMI Software	Sector Design	N/A	Ver.1.4.6	N/A	N/A
Conducted EMI Software	Hewlett Packard	85869PC	Ver. A.02.03	N/A	N/A
Preamplifier	Com Power	PA-102	1482	March 4, 2013	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	December 19, 2013	1 Year
LISN	Com Power	LI-200	12012	October 1, 2013	1 Year
LISN	Com Power	LI-200	12214	October 1, 2013	1 Year
LISN	Com Power	LI-200	1767	October 1, 2013	1 Year
LISN	Com Power	LI-200	1768	October 1, 2013	1 Year
Biconical Antenna	Com Power	AB-100	01557	June 8, 2013	1 Year
Log Periodic Antenna	Com Power	AL-100	16001	June 27, 2013	1 Year
Horn Antenna	Com Power	AHA-118	711054	N/A	N/A
Antenna Mast	Com Power	AM-400	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Dell, Inc.	DHS	DNSV641	N/A	N/A
Printer	Hewlett Packard	C8124A	CN39B2234T	N/A	N/A
Plotter	Hewlett Packard	7470A	2308A96499	N/A	N/A


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5.2 EMI Test Equipment (Continued)

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
EMI Receiver	Rohde & Schwarz	ESU40	100127	January 3, 2014	1 Year
EMI Test Software	Rohde & Schwarz	EMC32	V8.40.0	N/A	N/A
Passive Loop Antenna (9 KHz – 30 MHz)	ETS-Lindgren	6512	00128210	October 28, 2013	3 Years
BiConiLog Antenna (30 MHz – 1 GHz)	ETS-Lindgren	3142D	00102183	July 1, 2013	1 Year
Horn Antenna (1 GHz – 18 GHz)	ETS-Lindgren	3117	00109294	July 24, 2013	1 Year
Preamplifier (1 GHz – 18 GHz)	Rohde & Schwarz	TS-PR18	100056	December 20, 2013	1 Year
Horn Antenna (18 GHz – 26.5 GHz)	ETS-Lindgren	3160-09	102646	April 22, 2013	1 Year
Preamplifier (18 GHz – 26.5 GHz)	Rohde & Schwarz	TS-PR26	100034	April 23, 2013	1 Year
Horn Antenna (26.5 GHz – 40 GHz)	ETS-Lindgren	3160-10	109153	April 22, 2013	1 Year
Preamplifier (26.5 GHz – 40 GHz)	Rohde & Schwarz	TS-PR40	100030	April 23, 2013	1 Year
Antenna Mast	ETS-Lindgren	2175	00095727	N/A	N/A
Turntable	ETS-Lindgren	2187-3.0	00118231	N/A	N/A
Computer	Acer	Aspire 8930	85100050123	N/A	N/A
Multi-Function Controller	ETS-Lindgren	2090	00102270	N/A	N/A



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6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to the table below and section 7 of this report for the details of which sites were used for testing. All sites are located at 1547 Plymouth Street, Mountain View, California 94043.

Site Used For Test	Site Description
	Open Field Test Site "A"
X	Mains Conducted Emissions Test Site "A"
	Telecom Conducted Emissions Test Site "A"
X	3 Meter Semi-Anechoic Chamber Site "E"
	Mains Conducted Emissions Test Site "E"
	Telecom Conducted Emissions Test Site "E"

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

6.3 Facility Environmental Characteristics

All tests were performed in a climate controlled building. The temperature was 23° C, humidity 55%, and barometric pressure 102.9 kPa.



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7. TEST PROCEDURES

7.1 Radiated Emissions Test – Semi-Anechoic Chamber

7.1.1 Limit (FCC PART 15 Section 15.225(a,b,c,d), IC RSS 210 Issue 8 [A2.6])

Frequency of Emission (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (Meters)
13.553-13.567	15,484	30
13.410-13.533	334	30
13.567-13.710	334	30
13.110-13.410	106	30
13.710-14.010	106	30

The following chart is the 3 meter measurement in $\text{dB}\mu\text{V/m}$

Frequency of Emission (MHz)	Field Strength ($\text{dB}\mu\text{V/m}$)	Measurement Distance (Meters)
13.553-13.567	104.0	3
13.410-13.533	70.47	3
13.567-13.710	70.47	3
13.110-13.410	60.51	3
13.710-14.010	60.51	3

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

7.1.2 Limit (FCC PART 15 Section 15.209(a)(1), IC RSS-GEN Issue 3 [7.2.5])

Frequency of Emission (MHz)	Field Strength		Measurement Distance (Meters)
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009-0.49	2400/F(kHz)		300
0.49-1.705	24000/F(kHz)		30
1.705-30	30		30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

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7.1.3 Test Procedure

The Rohde & Schwarz ESU40 EMI receiver was used as a measuring meter while under software control by the Rohde & Schwarz EMC32 software. To increase the sensitivity of the instrument, the built in preamplifier was used from 9 KHz to 1 GHz. The EMI receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI receiver records the highest measured reading over all the sweeps. The built in quasi-peak or average detector was used only for those readings which are marked accordingly on the data sheets. The effective measurement bandwidth used for the radiated emissions test was 100 kHz from 9 kHz to 1 GHz.

The Loop Antenna and Broadband BiConiLog were used as transducers during the measurement. The Loop antenna was used from 9 KHz to 30 MHz, the BiConiLog antenna was used from 30 MHz to 1000 MHz. The frequency spans were wide (9 kHz to 150 kHz, 150 kHz to 30 MHz, 30 MHz to 88 MHz, 88 MHz to 216 MHz, 216 to 300 MHz, 300 MHz to 1 GHz) during preliminary investigations. The final data was taken with a frequency span of 1 M Hz. Furthermore, the frequency span was reduced during the preliminary investigations as deemed necessary.

The 5 meter semi-anechoic chamber of Electro Magnetic Test, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2009. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. The EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength).

The presence of non EUT signals was verified by turning the EUT off. In case a non EUT signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the other signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance from 9 kHz to 1 GHz. to obtain final test data..

Calculation Of Radiated Emission Test Data:

Amplitude - Gain + Antenna Factor + Cable Loss = Corrected Amplitude

Corrected Amplitude - Limit = Margin



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7.2 Conducted Emissions Test – Mains Ports

7.2.1 Limit (FCC PART 15 Section 15.207(a), IC RSS-GEN Issue 3 [7.2.4])

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*Note: Decreases with the logarithm of the frequency

7.2.2 Test Procedure

The HP 8566B spectrum analyzer was used as a measuring meter along with the HP 85650A quasi-peak adapter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak detector was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the spectrum analyzer offset was adjusted accordingly to read the actual data measured. The LISN output was read by the HP 8566B spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for the conducted emissions test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2009. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The initial test data was taken in manual mode while scanning the frequency ranges of 0.15 MHz to 1.6 MHz, 1.6 MHz to 5 MHz and 5 MHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable and peripheral placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the HP 85869PC software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave.

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7.3 Frequency Tolerance

7.3.1 Limit (FCC PART 15 Section 15.225(e), IC RSS 210 Issue 8 [A2.6])

(e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

7.3.2 Test Procedure

The EUT was placed in the temperature chamber and set to transmit an unmodulated carrier. The transmitter was powered from a new set of batteries. The frequency counter was connected to the transmitter output. For each temperature, the carrier frequency was recorded.

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7.4 Occupied Bandwidth

7.4.1 Requirement (IC RSS-GEN Issue 3, [4.6.1])

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

7.4.2 Test Procedure

Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator and set the Spectrum Analyzer as below

RBW: As close as possible to 1% of the 99% bandwidth, without being below 1% of the 99% bandwidth

VBW: 3 x RBW

Detector: Sampling

Trace Mode: Max Hold



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7.5 Antenna Requirement

7.5.1 Requirement (FCC PART 15 SECTION 15.203,15.247(b)(4))

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

7.5.2 Result

The antenna is integrated on the main PCB with no consideration for replacement on the PCB



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8. CONCLUSIONS / COMPLIANCE STATEMENT

Based upon the results contained in this report, Electro Magnetic Test, Inc. has determined that the Self-Contained RFID Latch, Model: SC-20-1000-10 meets all of the specification limits defined in FCC Title 47 Part 15 Subpart C, IC RSS 210 Issue 8, and IC RSS-GEN Issue 3.



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APPENDIX A

RADIATED AND CONDUCTION DATA SHEETS

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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 14443A, ISO14443B, ISO 15693, iClass cards	Test Date:	1/15/2014, 1/16/2014, 1/22/2014
Test Engineer:	George Hsu	Measurement:	9 KHz to 30 MHz

The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators were attenuated more than 20 dB below the permissible value

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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 14443A	Test Date:	1/14/ 2014
Test Engineer:	George Hsu	Measurement:	13.56 Carrier Frequency

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
13.560000	54.6	43.4	200.0	34.0	60.60	104.00

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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 14443B	Test Date:	1/22/ 2014
Test Engineer:	George Hsu	Measurement:	13.56 Carrier Frequency

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
13.560000	55.9	44.6	180.0	34.0	59.40	104.00

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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 15693	Test Date:	1/22/ 2014
Test Engineer:	George Hsu	Measurement:	13.56 Carrier Frequency

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
13.560000	54.6	43.3	166.0	34.0	60.70	104.00

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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	iClass	Test Date:	1/15/ 2014
Test Engineer:	George Hsu	Measurement:	13.56 Carrier Frequency

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
13.560000	57.4	47.3	174.0	34.0	56.70	104.00


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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 14443A	Test Date:	1/10/2014
Test Engineer:	George Hsu	Measurement:	30-1000 Mhz

Frequency (MHz)	MaxPeak (dB μ V/m)	QuasiPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
40.680000	37.1	35.5	188.0	V	93.0	12.4	4.50	40.00
203.400000	45.3	42.1	141.0	H	257.0	11.7	1.40	43.50
203.400000	37.7	34.3	189.0	V	181.0	11.7	9.20	43.50
677.940000	50.3	38.5	100.0	V	338.0	24.0	7.50	46.00
691.500000	40.8	31.2	182.0	V	256.0	24.5	14.80	46.00
759.300000	38.4	30.6	100.0	H	180.0	26.0	15.40	46.00
881.340000	41.7	33.8	100.0	H	288.0	27.5	12.20	46.00


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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 14443B	Test Date:	1/21/ 2014
Test Engineer:	George Hsu	Measurement:	30-1000 Mhz

Frequency (MHz)	MaxPeak (dB μ V/m)	QuasiPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
40.680000	39.3	37.6	100.0	V	96.0	12.4	2.40	40.00
203.370000	41.6	37.0	155.0	H	248.0	11.7	6.50	43.50
216.930000	40.5	37.5	150.0	H	79.0	12.3	8.50	46.00
650.820000	41.8	31.5	114.0	V	227.0	24.2	14.50	46.00
664.380000	43.9	32.6	100.0	V	214.0	24.2	13.40	46.00
691.500000	43.7	34.1	100.0	V	22.0	24.5	11.90	46.00
894.900000	41.8	35.9	100.0	H	93.0	28.2	10.10	46.00



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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	ISO 15693	Test Date:	1/14/2014
Test Engineer:	George Hsu	Measurement:	30-1000 Mhz

Frequency (MHz)	MaxPeak (dB μ V/m)	QuasiPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
40.680000	35.3	31.8	111.0	V	101.0	12.4	8.20	40.00
203.370000	44.0	38.2	155.0	H	243.0	11.7	5.30	43.50
216.930000	39.4	36.2	145.0	H	101.0	12.3	9.80	46.00
637.260000	41.8	30.7	193.0	V	187.0	23.9	15.30	46.00
677.940000	52.2	39.3	191.0	V	0.0	24.0	6.70	46.00
786.420000	39.7	35.6	114.0	H	320.0	26.1	10.40	46.00


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Radiated Emissions

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Mode:	iClass	Test Date:	1/14/ 2014
Test Engineer:	George Hsu	Measurement:	30-1000 Mhz

Frequency (MHz)	MaxPeak (dB μ V/m)	QuasiPeak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
40.680000	38.3	35.1	100.0	V	257.0	12.4	4.90	40.00
203.370000	43.7	35.7	150.0	H	241.0	11.7	7.80	43.50
216.960000	45.2	44.1	150.0	H	263.0	12.3	1.90	46.00
677.940000	44.8	32.5	210.0	V	16.0	24.0	13.50	46.00
799.980000	43.0	31.8	122.0	H	9.0	26.4	14.20	46.00
949.140000	40.4	35.5	100.0	H	330.0	28.4	10.50	46.00


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Frequency Stability

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Engineer:	George Hsu	Test Date:	1/24/14

Nominal Frequency: 13.560000 MHz

Temperature(°C)	Measured Frequency (MHz)	% Difference	Limit	Result
50	13.55897436	-0.008%	± 0.01%	Pass
40	13.55899039	-0.007%	± 0.01%	Pass
30	13.55903846	-0.007%	± 0.01%	Pass
20	13.55910256	-0.007%	± 0.01%	Pass
10	13.55913462	-0.006%	± 0.01%	Pass
0	13.55916667	-0.006%	± 0.01%	Pass
-10	13.55916667	-0.006%	± 0.01%	Pass
-20	13.55915064	-0.006%	± 0.01%	Pass

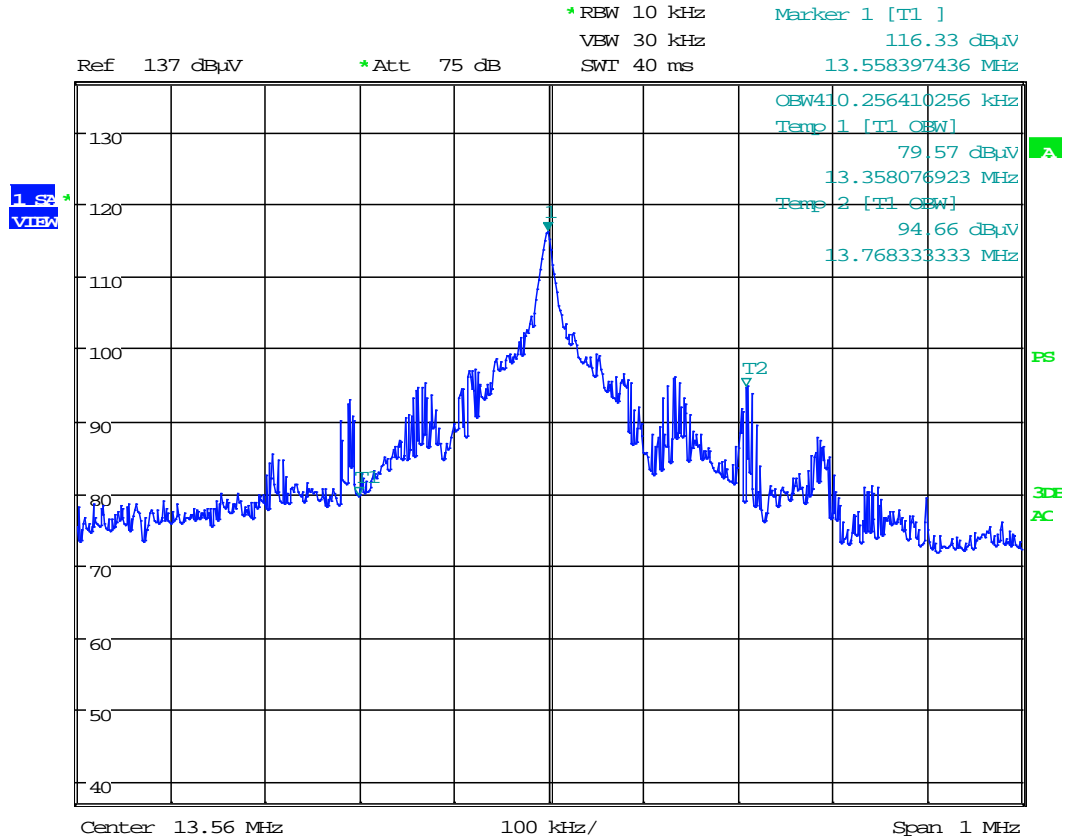


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Occupied Bandwidth

EUT:	Self-Contained RFID Latch	Model Name:	SC-20-1000-10
Test Engineer:	George Hsu	Test Date:	1/24/14



Frequency (Mhz)	Occupied Bandwidth (KHz)
13.56	410.256



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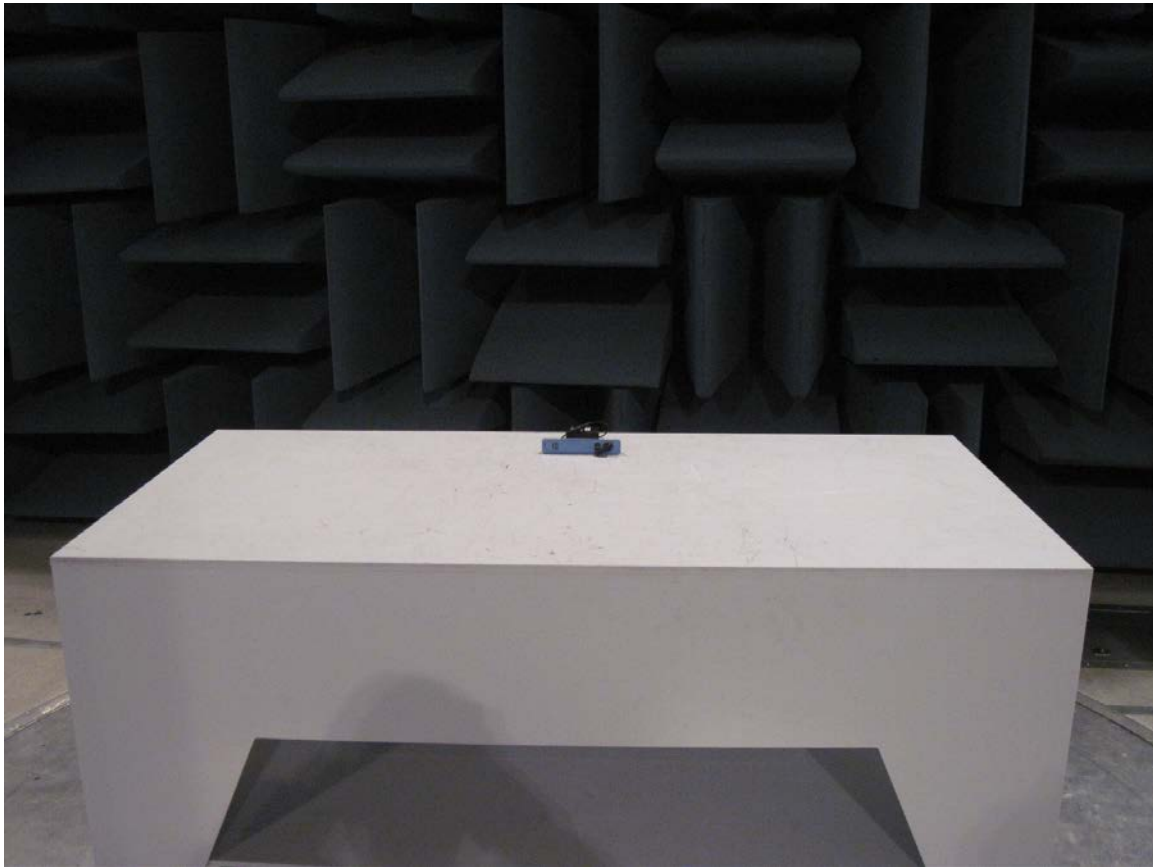
APPENDIX B

PHOTOGRAPHS



ELECTRO MAGNETIC TEST, INC.

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FRONT VIEW

SECURITY PEOPLE, INC. DBA DIGILOCK
SELF-CONTAINED RFID LATCH
MODEL: SC-20-1000-10
RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



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REAR VIEW

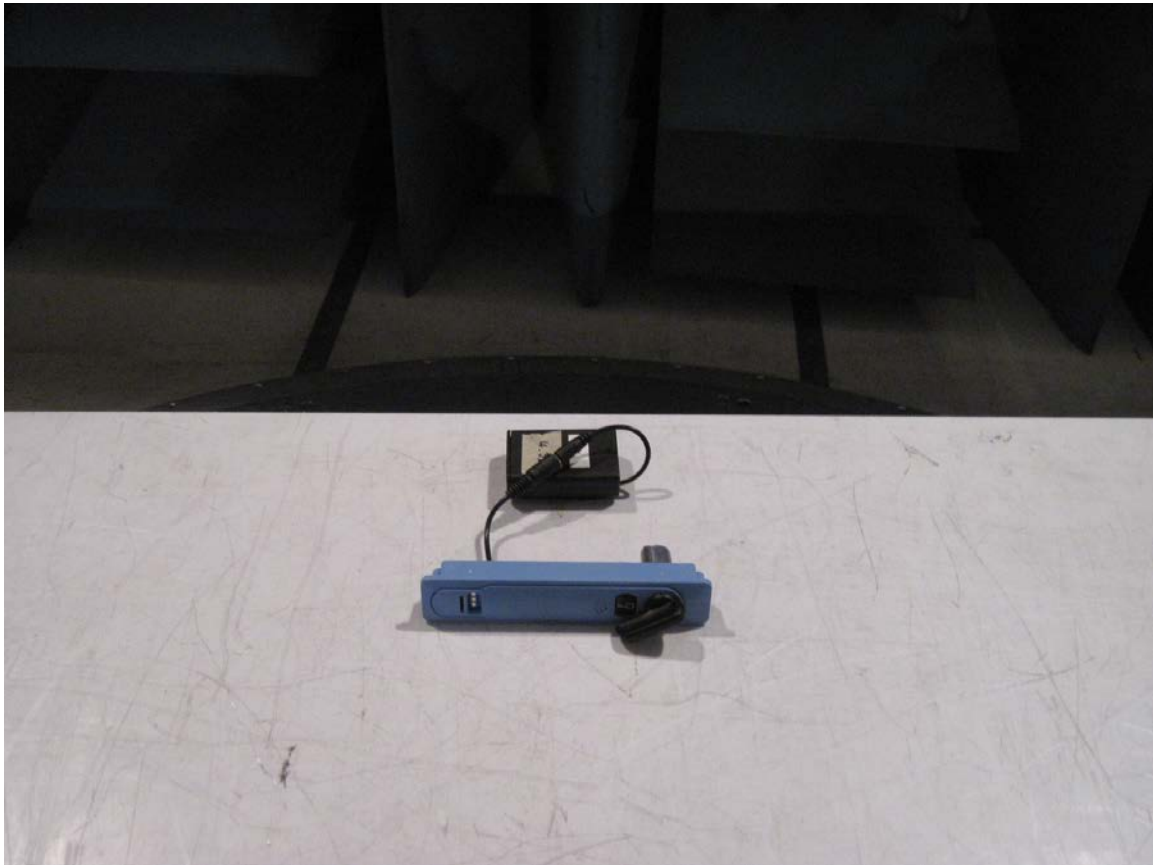
SECURITY PEOPLE, INC. DBA DIGILOCK
SELF-CONTAINED RFID LATCH
MODEL: SC-20-1000-10
RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

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FRONT VIEW (CLOSEUP)

SECURITY PEOPLE, INC. DBA DIGILOCK
SELF-CONTAINED RFID LATCH
MODEL: SC-20-1000-10
RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

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REAR VIEW (CLOSEUP)

SECURITY PEOPLE, INC. DBA DIGILOCK
SELF-CONTAINED RFID LATCH
MODEL: SC-20-1000-10
RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

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APPENDIX C

TEST SETUP DIAGRAMS



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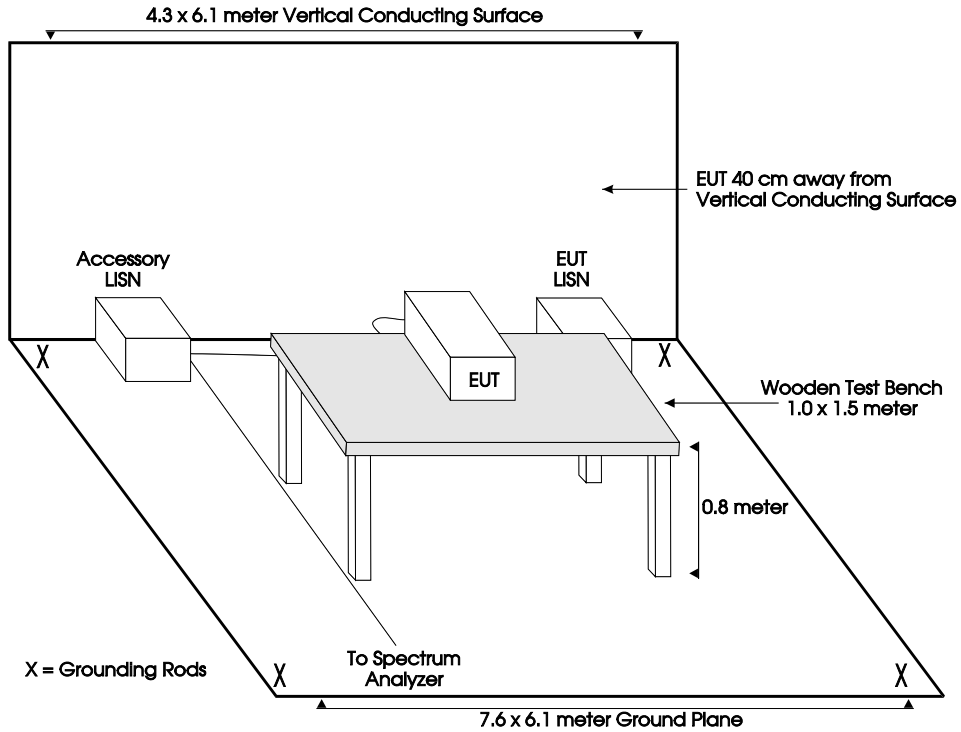


FIGURE 1 – TABLETOP CONDUCTED EMISSIONS TEST SETUP – SITE “A”

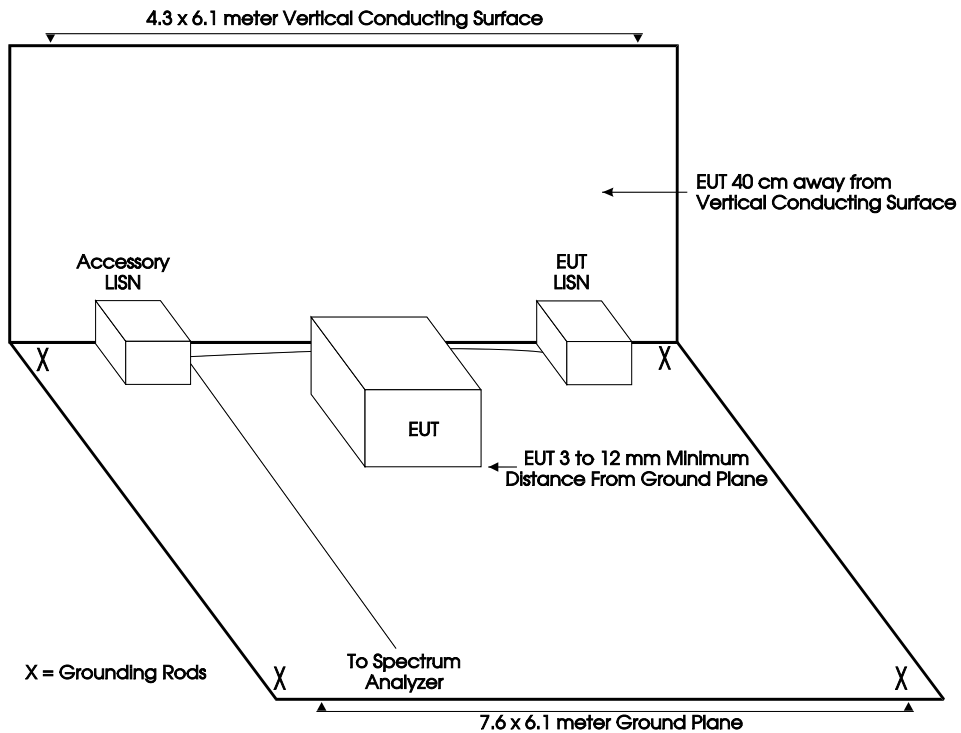


FIGURE 1a – FLOORSTANDING CONDUCTED EMISSIONS TEST SETUP – SITE “A”



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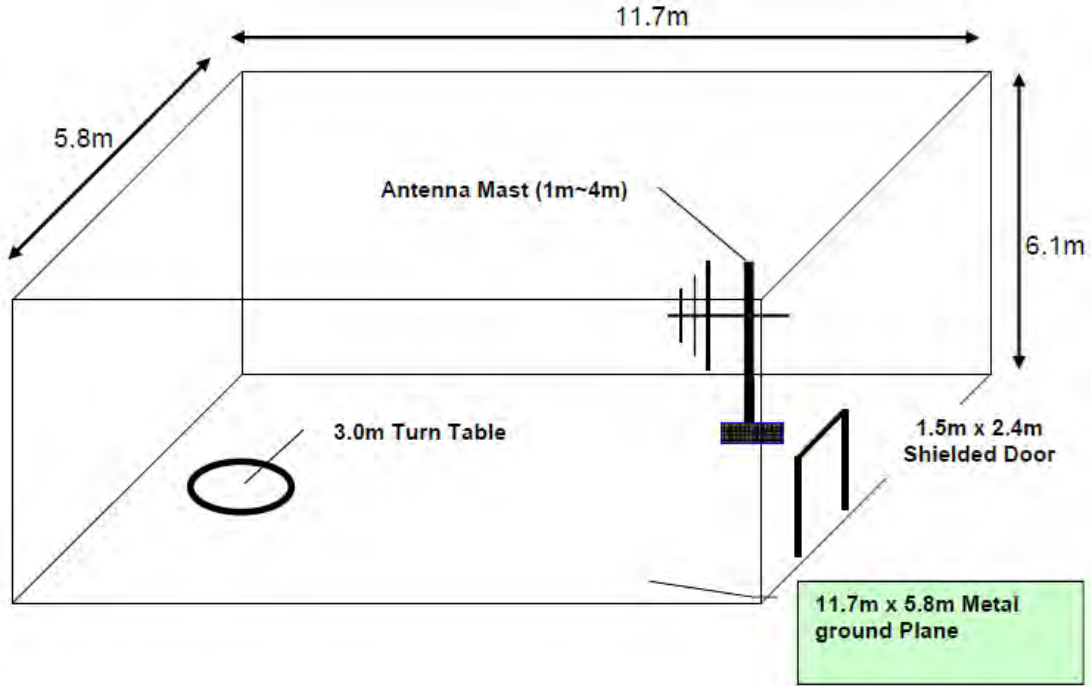


FIGURE 3 - LAYOUT OF 5 METER SEMI-ANECHOIC CHAMBER



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APPENDIX D

MODIFICATIONS TO THE EUT



ELECTRO MAGNETIC TEST, INC.

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MODIFICATIONS TO THE EUT

No modifications were made to the EUT by Electro Magnetic Test, Inc. personnel during the testing.



ELECTRO MAGNETIC TEST, INC.

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APPENDIX E

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650)965-4000 Fax: (650)965-3000

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

SELF-CONTAINED RFID LATCH
MODEL: SC-20-1000-10
S/N: N/A

ALSO APPROVED UNDER THIS REPORT:

SELF-CONTAINED RFID LATCH
MODEL: SC-20-1001-10

The difference in the SC-20-1001-10 is that it is oriented vertically with short mounting cup.