CKC LABORATORIES, INC. Testing the Future

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803.01, 803.02, 803.05, 803.06
EMC

ADDENDUM TO MEDECO SECURITY LOCKS, INC.
TEST REPORT FC07-090

FOR THE

EA-100103 HYBRID MORTISE

FCC PART 15 SUBPART C SECTION 15.209 AND RSS-210 ISSUE 7

TESTING

DATE OF ISSUE: JANUARY 15, 2008

PREPARED FOR:

Medeco Security Locks, Inc.
3625 Allegheny Drive
Salem, VA 24153-0330

W.O. No.: 87184

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: October 17, 2007

Report No.: FC07-090A

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ADMINISTRATIVE INFORMATION

DATE OF TEST: October 17, 2007 **DATE OF RECEIPT:** October 17, 2007

REPRESENTATIVE: Frank de Vall

MANUFACTURER:
Medeco Security Locks, Inc.
3625 Allegheny Drive
Salem, VA 24153-0330

TEST LOCATION:
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

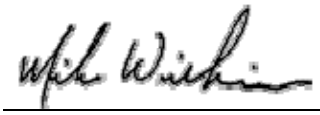
TEST METHOD: ANSI C63.4 (2003), RSS-210 Issue 7 and RSS GEN Issue 2

PURPOSE OF TEST:
Original Report: To perform the testing of the EA-100103 Hybrid Mortise with the requirements for FCC Part 15 Subpart C Section 15.209 and RSS-210 devices.
Addendum A: To correct the model name on pages 10 and 11 with no new testing.

APPROVALS

Steve Behm, Director of Engineering Services

TEST PERSONNEL:



Mike Wilkinson, EMC Engineer/Lab Manager

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS GEN	7.1.4	47CFR	15.203	Antenna Connector Requirements
RSS GEN	7.2.1	47CFR	15.35(c)	Pulsed Operation
RSS GEN	7.2.2	47CFR	15.207	AC Mains Conducted Emissions Requirement
RSS 210	2.1	47CFR	15.215(c)	Frequency Stability Recommendation
RSS 210	2.2	47CFR	15.205	Restricted Bands of Operation
RSS 210	2.6	47CFR	15.209	General Radiated Emissions Requirement
RSS 210	A2.6	47CFR	15.209	Fundamental
RSS 210	A2.6	NA	NA	±150kHz to ±450kHz Emissions Requirement
RSS 210	A2.6	47CFR	15.225(d)	Out of band emissions
RSS 210	A2.6	47CFR	15.225(e)	Carrier Stability
	IC 3082A-1		784962	Site File No.

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing.

FCC 15.31(e) Voltage Variations
Not applicable to this device because it is battery powered and a fresh battery was used.

FCC 15.31(m) Number Of Channels
This device operates on a single channel.

FCC 15.33(a) Frequency Ranges Tested
15.209 Radiated Emissions: 9 kHz – 1000 MHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

FCC 15.203 Antenna Requirements
The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency
The EUT was operating at 125 kHz.

Temperature And Humidity During Testing
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.
The following model was tested by CKC Laboratories: **Medeco Proximity Reader Door Lock**

Since the time of testing the manufacturer has chosen to use the following model name in its place. Any differences between the names does not affect their EMC characteristics and therefore meets the level of testing equivalent to the tested model name shown on the data sheets: **EA-100103 Hybrid Mortise**

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they meet the level of testing equivalent to the tested models: **EA-100102 Hybrid RIM**

EQUIPMENT UNDER TEST

Medeco Proximity Reader Door Lock

Manuf:	Medeco Security Locks, Inc.
Model:	EA-100103 Hybrid Mortise
Serial:	101707
FCC ID:	VR3EA100103

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings were recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

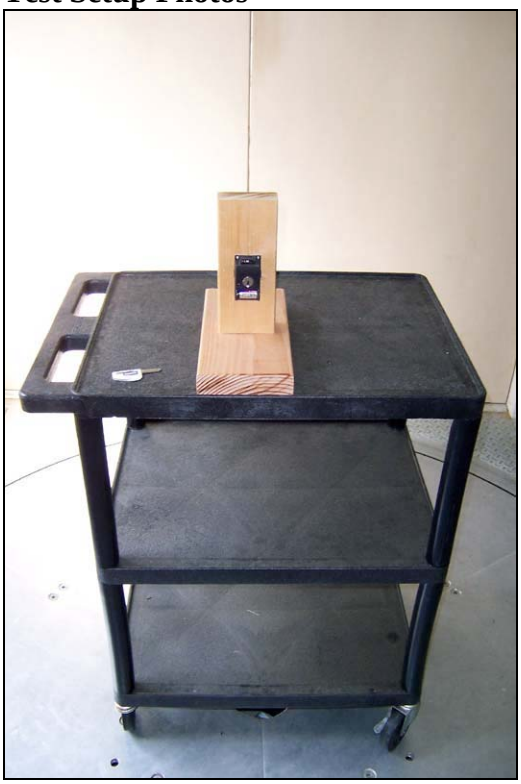
When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

FCC 15.209 RADIATED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Medeco Security Locks, Inc.**
Specification: **FCC 15.209**
Work Order #: **87184** Date: 10/17/2007
Test Type: **Maximized Emissions** Time: 13:34:16
Equipment: **Medeco Proximity Reader Door Lock** Sequence#: 1
Manufacturer: Medeco Security Locks, Inc. Tested By: Mike Wilkinson
Model: EA-100103 HYBRID MORTISE
S/N: 101707

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
10M SITE CBL MAST CBL	N/A	03/23/2007	03/23/2009	CAB-SITED10M
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Medeco Proximity Reader Door Lock*	Medeco Security Locks, Inc.	EA-100103 HYBRID MORTISE	101707

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The unit is mounted on a vertical wood stand simulating a typical configuration. The EUT is powered by internal battery only. The EUT is transmitting continuously at 125 kHz. EUT has an integral antenna. Operation was verified by placing a credential/key in the lock and verifying the EUT reads it. The frequency range investigated was Carrier. The temperature was 22.5°C. and the humidity was 45%. Measurement RBW = 200 Hz. Measurement VBW = 200 Hz. Reading taken using a fresh battery. EUT does not transmit in a 15.205 restricted band.

Transducer Legend:

T1=Cable - Site D 10m 9k-1G	T2=Mag Loop - AN 00226 - 9kHz-30M

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	125.098k	42.9	+0.2	+9.9			-59.0	-6.0	25.7	-31.7	Vert
2	125.116k	35.8	+0.2	+9.9			-59.0	-13.1	25.7	-38.8	Horiz

Test Location: CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Medeco Security Locks, Inc.**
Specification: **FCC 15.209**
Work Order #: **87184** Date: 10/17/2007
Test Type: **Maximized Emissions** Time: 13:42:49
Equipment: **Medeco Proximity Reader Door Lock** Sequence#: 2
Manufacturer: Medeco Security Locks, Inc. Tested By: Mike Wilkinson
Model: EA-100103 HYBRID MORTISE
S/N: 101707

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
10M SITE CBL MAST CBL	N/A	03/23/2007	03/23/2009	CAB-SITED10M
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Medeco Proximity Reader Door Lock*	Medeco Security Locks, Inc.	EA-100103 HYBRID MORTISE	101707

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The unit is mounted on a vertical wood stand simulating a typical configuration. The EUT is powered by internal battery only. The EUT is transmitting continuously at 125 kHz. EUT has an integral antenna. Operation was verified by placing a credential/key in the lock and verifying the EUT reads it. The frequency range investigated was 9 kHz to 1000 MHz. The temperature was 22.5°C and the humidity was 45%. Measurement RBW &VBW: 200 Hz BW 9-150 kHz, 9 kHz BW 150 kHz to 30 MHz, 120 kHz 30-1000MHz. Reading taken using a fresh battery. No signal associated with the EUT was observed 30-1000 MHz.

Transducer Legend:

T1=Cable - Site D 10m 9k-1G	T2=Mag Loop - AN 00226 - 9kHz-30M

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1.251M	33.3	+0.4	+10.1			-19.0	24.8	25.6	-0.8	Horiz
2	750.616k	31.3	+0.3	+10.0			-19.0	22.6	30.1	-7.5	Horiz
3	1.501M	23.6	+0.4	+10.0			-19.0	15.0	24.0	-9.0	Horiz
4	499.400k	27.3	+0.3	+10.0			-19.0	18.6	33.6	-15.0	Vert
5	374.300k	34.0	+0.3	+9.8			-59.0	-14.9	16.1	-31.0	Vert
6	375.316k	33.6	+0.3	+9.8			-59.0	-15.3	16.1	-31.4	Horiz

RSS-210 99% BANDWIDTH

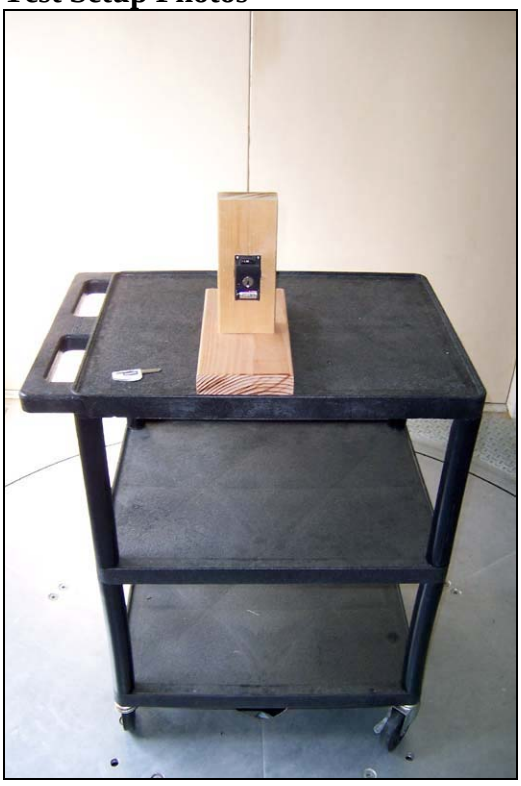
Test Equipment

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
10M SITE CBL MAST CBL	N/A	03/23/2007	03/23/2009	CAB-SITED10M
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226

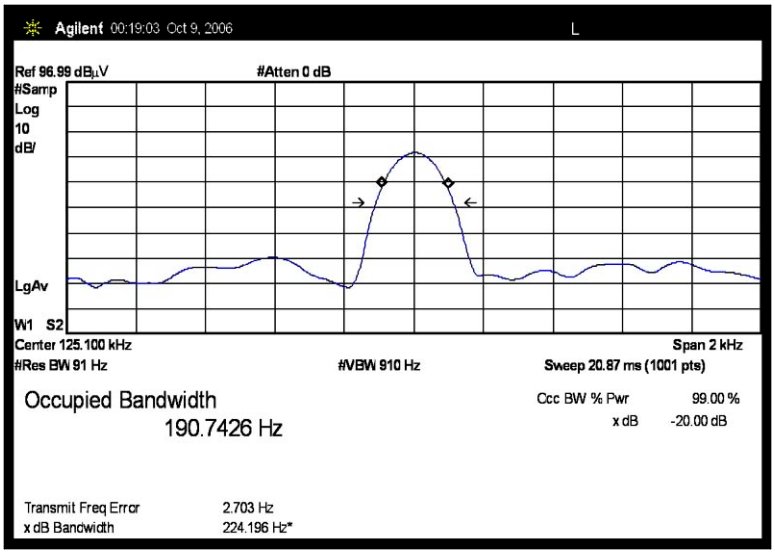
Test Conditions

The unit is mounted on a vertical wood stand simulating a typical configuration. The EUT is powered by internal battery only. The EUT is transmitting continuously at 125 kHz. EUT has an integral antenna. Operation was verified by placing a credential/key in the lock and verifying the EUT reads it.

Test Setup Photos



Plots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Ref 96.99 dBµV
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#Samp
Log
10
dB/
LgAv
W1 S2
Center 125.100 kHz
Span 2 kHz
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Occupied Bandwidth
190.7426 Hz
Ccc BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 2.703 Hz
x dB Bandwidth 224.196 Hz*