ADDENDUM TO INTERNATIONAL ELECTRONICS INC.
TEST REPORT FC05-056

FOR THE

ACCESS CONTROL SYSTEM, NETLOCK

FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 & RSS-210

COMPLIANCE

DATE OF ISSUE: SEPTEMBER 22, 2005

PREPARED FOR:

International Electronics Inc.
427 Turnpike Street
Canton, MA 02021

P.O. No.: 31016
W.O. No.: 84019

PREPARED BY:

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

Date of test: August 8 & 9, 2005

Report No.: FC05-056A

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ADMINISTRATIVE INFORMATION

DATE OF TEST:	August 8 & 9, 2005
DATE OF RECEIPT:	August 8, 2005
MANUFACTURER:	International Electronics Inc. 427 Turnpike Street Canton, MA 02021
REPRESENTATIVE:	Chris Hentschel
TEST LOCATION:	CKC Laboratories, Inc. 5046 Sierra Pines Drive Mariposa, CA 95338
TEST METHOD:	ANSI C63.4 (2003) and RSS-210
PURPOSE OF TEST:	To demonstrate the compliance of the Access Control System, NetLock with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 and RSS-210 devices. **Addendum A** is to correct the calibration dates for the radiated emissions test equipment.

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS 210	5.5	47CFR	15.203	Antenna Connector Requirements
RSS 210	6.2.1	47CFR	15.209	General Radiated Emissions Requirement
RSS 210	6.3	47CFR	15.205	Restricted Bands of Operation
RSS 210	6.4	47CFR	15.215(c)	Frequency Stability Recommendation
RSS 210	6.5	47CFR	15.35(c)	Pulsed Operation
RSS 210	6.6	47CFR	15.207	AC Mains Conducted Emissions Requirement
	Emission bandwidth (99% Bandwidth) -20dBc			SP100 Appendix II (Test report Cover Sheet) requires Occupied bandwidth (99%) measurement IAW RSS 133. Section 5.6
	IC 3082-D		784962	Site File No.

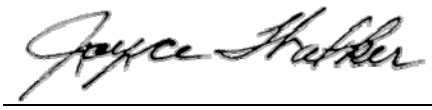
CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:



Joyce Walker, Quality Assurance Administrative Manager

TEST PERSONNEL:

Randy Clark, EMC Engineer

FCC 15.31(e) Voltage Variations
Voltage variations performed in accordance with 15.31, no change detected for ±15% mains input.

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

FCC 15.33(a) Frequency Ranges Tested
15.207 Conducted Emissions: 150 kHz – 30 MHz
15.209 Radiated Emissions: 100 kHz – 1000 MHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
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.

FCC 15.205 Restricted Bands
The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

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 models have been tested by CKC Laboratories:

EQUIPMENT UNDER TEST

Proximity Reader
Manuf: International Electronic Inc.
Model: 029-5106
Serial: PHUNL
FCC ID: Pending

Four Door Interface PCB Assembly
Manuf: International Electronic Inc.
Model: 029-5105
Serial: NA
FCC ID: DoC

Auxiliary Control PCB Assembly
Manuf: International Electronic Inc.
Model: 029-5107
Serial: NA
FCC ID: DoC

12VDC Power Supply
Manuf: International Electronic Inc.
Model: PIP1312
Serial: 0517
FCC ID: DoC

The manufacturer states that the above products will also be sold under different company part numbers and these models are identical electrically to the ones which were tested, or any differences between them do not affect their EMC characteristics, and therefore comply to the level of testing equivalent to the tested models. The following is a matrix of all the names:

Description	Sargent Part #	Corbin Part #	IEI	Product Label
Product Family	v.N1 Series	Access 800 TCNE Series		
Auxiliary Control PCB Assembly[1]	52-3169	711F799	029-5107	FCC Part 15 class B - note in manual
Interface PCB Assembly - 4 droor[1]	52-3170	711F789	029-5105	FCC Part 15 class B - note in manual
Interface PCB Assembly - 2 droor[1]	52-3171	711F779	029-5108	FCC Part 15 class B - note in manual
Lock Reader[2]	52-3168	708F739	029-5106	FCC-ID: PHUNL IC: 4517A-NL

[1]These assemblies contain mocroprocessor with clock frequencies over 10kHz
[2] This unit contains the RFID reader and is an intentional radiator

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the EUT. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: Six Highest Conducted Emission Levels: FCC 15.207

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Cable dB	Lisn dB	HPF dB	dB	CORRECTED READING dBµV	SPEC LIMIT dBµV	MARGIN dB	NOTES
0.200022	24.7	0.1	0.4	0.0		25.2	53.6	-28.4	BA
0.242355	24.3	0.1	0.3	0.3		25.0	52.0	-27.0	WA
0.284533	23.4	0.1	0.2	0.2		23.9	50.7	-26.8	WA
0.291080	23.3	0.1	0.3	0.2		23.9	50.5	-26.6	BA
0.296860	23.3	0.1	0.3	0.2		23.9	50.3	-26.4	BA
0.500000	18.1	0.1	0.3	0.2		18.7	46.0	-27.3	BA

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Section 15.207

NOTES: A = Average Reading
B = Black Lead
W = White Lead

COMMENTS: Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 150kHz - 30MHz. Temperature: 27ºC, Rel Humidity: 36%.

Table 2: Fundamental Emission Levels

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Ant dB	Corr dB	Cable dB	Dist dB	CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
0.126	65.5	10.2	-80.0	0.1		-4.2	25.6	-29.8	V
0.126	60.5	10.2	-80.0	0.1		-9.2	25.6	-34.8	H

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: Carrier. Temperature: 27ºC, Rel Humidity: 36%. Test distance correction factor used in accordance with FCC 15.31 to correct data for comparison to the limit at 300 meters.

Table 3: Six Highest Radiated Emission Levels: FCC 15.209 (100 kHz - 30 MHz)

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Ant dB	Corr dB	Cable dB	Dist dB	CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
0.505	35.1	10.1	-40.0	0.2		5.4	33.5	-28.1	V
0.505	34.4	10.1	-40.0	0.2		4.7	33.5	-28.8	H
0.631	33.7	10.1	-40.0	0.2		4.0	31.6	-27.6	H
0.631	33.2	10.1	-40.0	0.2		3.5	31.6	-28.1	V
0.884	28.7	10.1	-40.0	0.2		-0.8	28.6	-29.4	H
0.884	28.5	10.1	-40.0	0.2		-1.0	28.6	-29.6	V

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 100kHz - 30MHz. Temperature: 27ºC, Rel Humidity: 36%. Test distance correction factor used in accordance with FCC 15.31 to correct data for comparison to the limit at 30 and 300 meters. **Emissions detected are ambient noise level readings; no EUT Emissions detected within 20dB of the limit.**

Table 4: Six Highest Radiated Emission Levels: FCC 15.209 (30-1000 MHz)

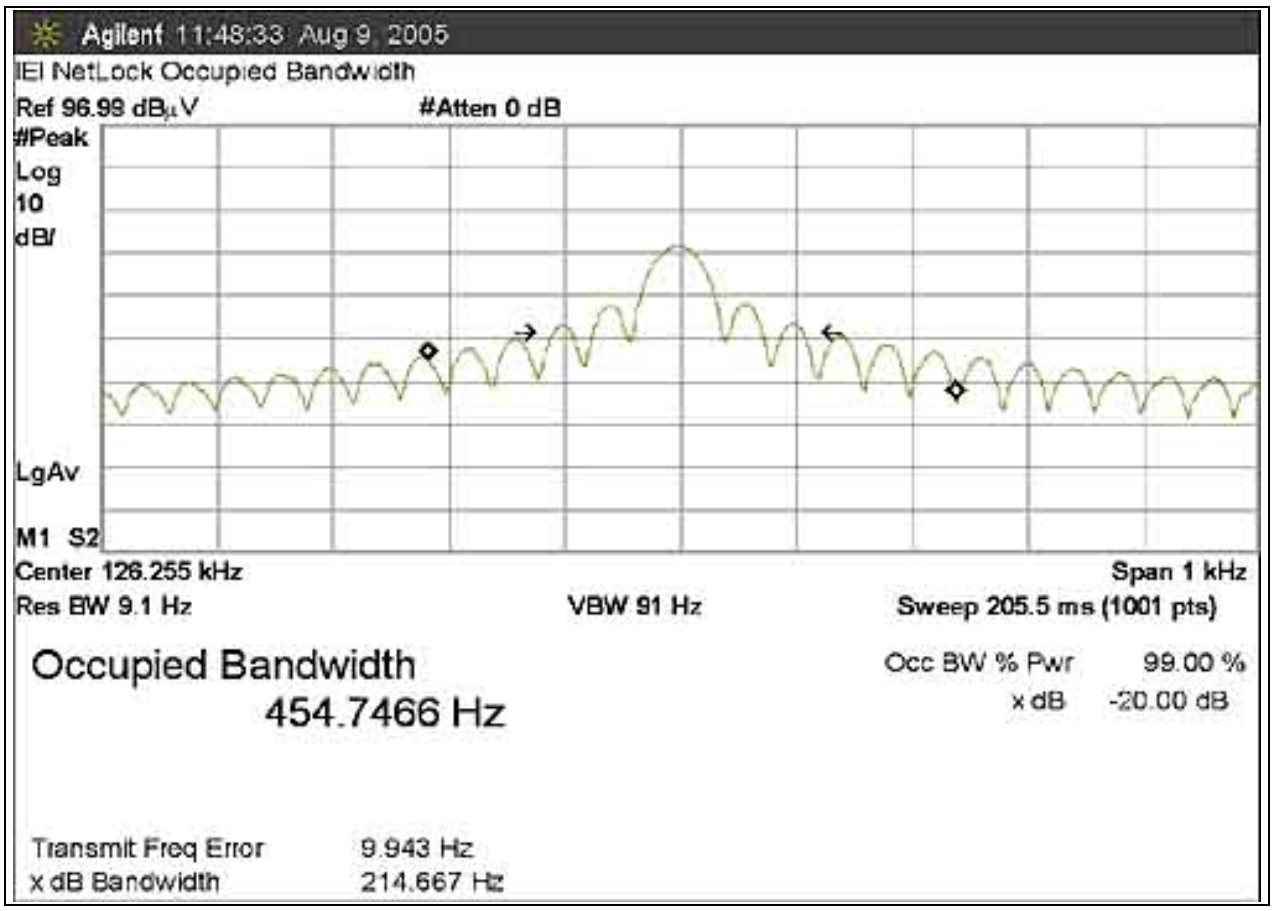
FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Ant dB	Amp dB	Cable dB	Dist dB	CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
71.880	46.2	5.9	-26.8	1.9		27.2	40.0	-12.8	V
76.112	47.7	6.3	-26.9	2.0		29.1	40.0	-10.9	V
76.380	45.7	6.4	-26.9	2.0		27.2	40.0	-12.8	V
81.080	45.8	6.9	-27.0	2.0		27.7	40.0	-12.3	V
83.700	44.7	7.2	-26.9	2.1		27.1	40.0	-12.9	V
86.626	45.5	7.6	-26.9	2.1		28.3	40.0	-11.7	V

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 100kHz - 30MHz. Temperature: 27ºC, Rel Humidity: 36%. Test distance correction factor used in accordance with FCC 15.31 to correct data for comparison to the limit at 30 and 300 meters. **Emissions detected are ambient noise level readings; no EUT Emissions detected within 20dB of the limit.**

OCCUPIED/99% BANDWIDTH PLOT



EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

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

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

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 in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: 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 in Appendix B were used to collect both the radiated and conducted emissions data. For radiated measurements from 100 kHz to 30 MHz, the magnetic loop antenna was used. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dBµV, and a vertical scale of 10 dB per division.

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the 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 six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. 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 or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer 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 HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

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

EUT TESTING

Mains Conducted Emissions

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 0.5 meter deep, and 0.5 meter in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50 µH-/+50 ohms. Above 150 kHz, a 0.15 µF series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 0.5 meter by 0.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 100 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable and raising and lowering the antenna from one to four meters as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A

TEST SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS

Mains Conducted Emissions - Front View

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS

Mains Conducted Emissions - Side View

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Back View

APPENDIX B

TEST EQUIPMENT LIST

***Conducted Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
150kHz HP Filter	G7754	04/20/2004	04/20/2006	02608
TTE				
LISN, 8028-50-TS-24-BNC	8379276, 280	06/03/2005	06/03/2007	1248 & 1249

***Fundamental Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
EMCO Loop Antenna	1074	05/13/2005	05/13/2007	00226
Transformer	None	05/05/2005	05/05/2007	2037
Powerstat 126				

***100 kHz – 30 MHz Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
EMCO Loop Antenna	1074	05/13/2005	05/13/2007	00226

***30 – 1000 MHz Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
HP 8447D Preamp	1937A02604	03/11/2005	03/11/2007	00099
Chase CBL6111C	2456	06/7/2005	06/7/2007	01991
Bilog				

APPENDIX C:

MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IEI**
Specification: **FCC 15.207 - AVE**
Work Order #: **84019** Date: 8/9/2005
Test Type: **Conducted Emissions** Time: 11:28:47
Equipment: **Access Control System** Sequence#: 4
Manufacturer: IEI Tested By: Randal Clark
Model: NetLock 120V 60Hz
S/N:

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

Function	Manufacturer	Model #	S/N
Proximity Reader	IEI	029-5106	PHUNL
Four Door Interface PCB Assembly	IEI	029-5105	
Auxiliary Control PCB Assembly	IEI	029-5107	
12VDC Power Supply	IEI	PIP1312	0517

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 150kHz - 30MHz. Temperature: 27ºC, Rel Humidity: 36%.

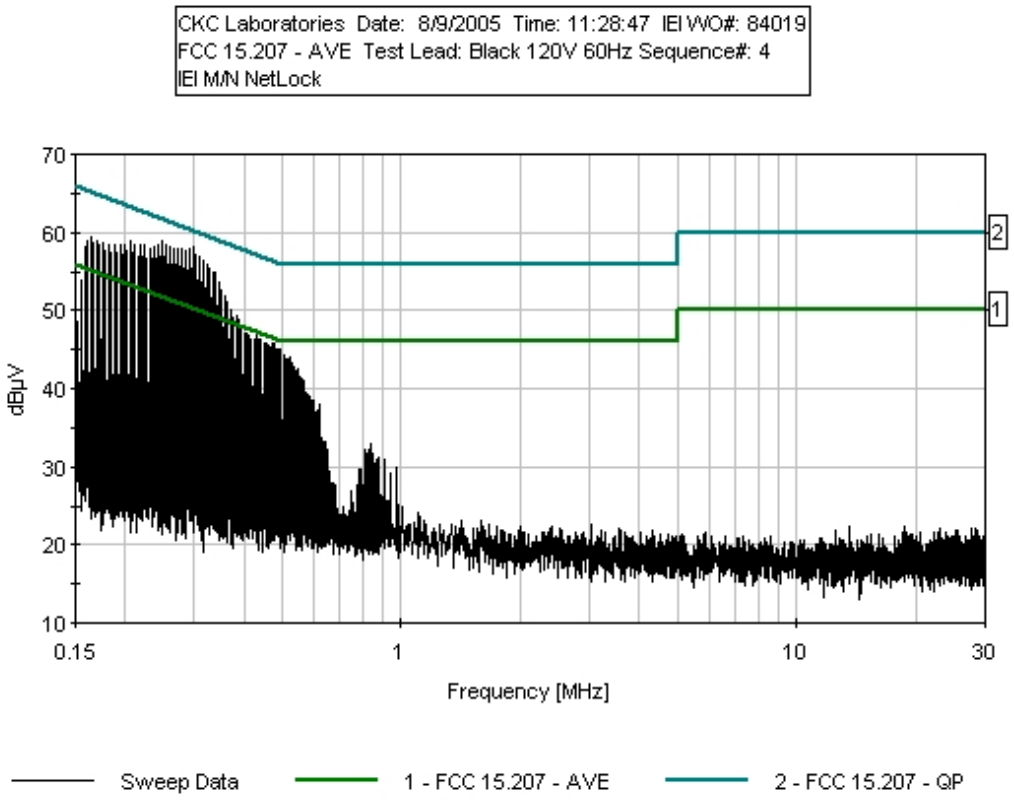
Transducer Legend:

T1=Cable - Internal + cab T2=LISN Insertion Loss s/n276
T3=HP Filter AN02608

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1 Ave	296.860k	23.3	+0.1	+0.3	+0.2		+0.0	23.9	50.3	-26.4	Black
^	296.896k	57.5	+0.1	+0.3	+0.2		+0.0	58.1	50.3	+7.8	Black
3 Ave	291.080k	23.3	+0.1	+0.3	+0.2		+0.0	23.9	50.5	-26.6	Black
^	291.078k	57.4	+0.1	+0.3	+0.2		+0.0	58.0	50.5	+7.5	Black
5 Ave	500.000k	18.1	+0.1	+0.3	+0.2		+0.0	18.7	46.0	-27.3	Black
^	500.000k	44.2	+0.1	+0.3	+0.2		+0.0	44.8	46.0	-1.2	Black

7 Ave	200.022k	24.7	+0.1	+0.4	+0.0	+0.0	25.2	53.6	-28.4	Black
^	200.000k	58.0	+0.1	+0.4	+0.0	+0.0	58.5	53.6	+4.9	Black
9 Ave	178.600k	24.7	+0.1	+0.4	+0.4	+0.0	25.6	54.6	-29.0	Black
^	178.600k	58.4	+0.1	+0.4	+0.4	+0.0	59.3	54.6	+4.7	Black
11 Ave	400.000k	18.2	+0.1	+0.4	+0.1	+0.0	18.8	47.9	-29.1	Black
^	400.000k	45.5	+0.1	+0.4	+0.1	+0.0	46.1	47.9	-1.8	Black



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IEI**
Specification: **FCC 15.207 - AVE**
Work Order #: **84019** Date: 8/9/2005
Test Type: **Conducted Emissions** Time: 11:39:27
Equipment: **Access Control System** Sequence#: 5
Manufacturer: IEI Tested By: Randal Clark
Model: NetLock 120V 60Hz
S/N:

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

Function	Manufacturer	Model #	S/N
Proximity Reader	IEI	029-5106	PHUNL
Four Door Interface PCB Assembly	IEI	029-5105	
Auxiliary Control PCB Assembly	IEI	029-5107	
12VDC Power Supply	IEI	PIP1312	0517

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 150kHz - 30MHz. Temperature: 27ºC, Rel Humidity: 36%.

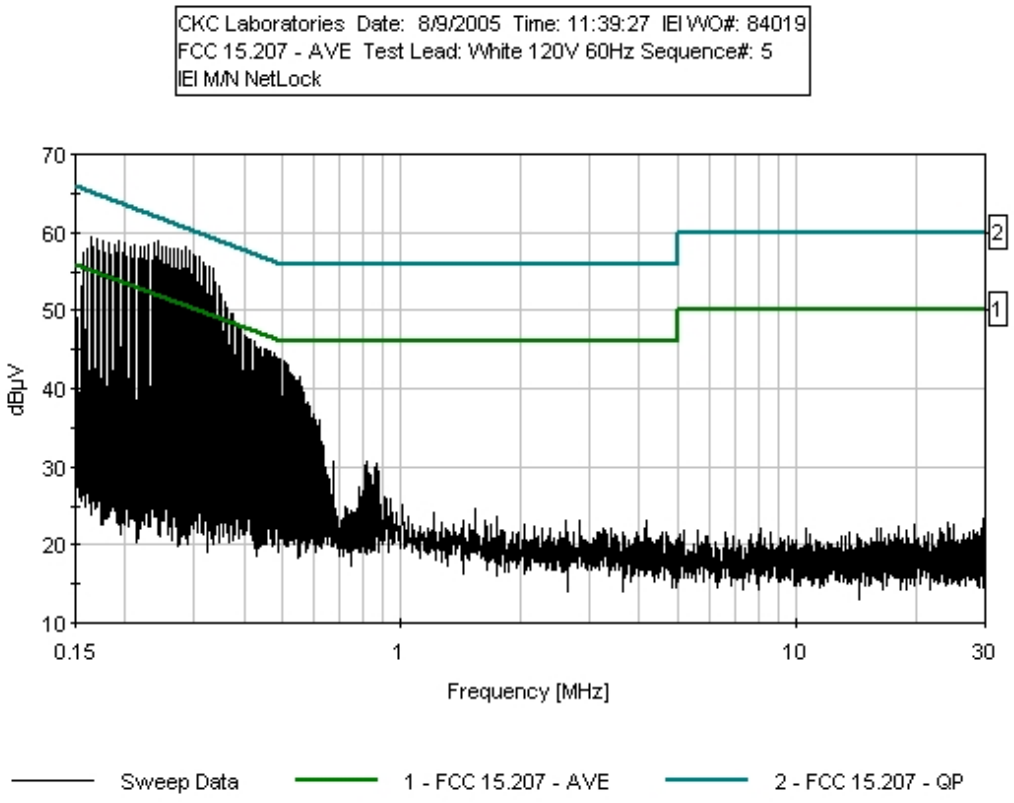
Transducer Legend:

T1=Cable - Internal + cab T2=LISN Insertion Loss s/n280
T3=HP Filter AN02608

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1 Ave	284.533k	23.4	+0.1	+0.2	+0.2		+0.0	23.9	50.7	-26.8	White
^	284.533k	57.7	+0.1	+0.2	+0.2		+0.0	58.2	50.7	+7.5	White
3 Ave	242.355k	24.3	+0.1	+0.3	+0.3		+0.0	25.0	52.0	-27.0	White
^	242.355k	58.1	+0.1	+0.3	+0.3		+0.0	58.8	52.0	+6.8	White
5 Ave	171.272k	25.0	+0.1	+0.3	+0.8		+0.0	26.2	54.9	-28.7	White
^	171.300k	58.5	+0.1	+0.3	+0.8		+0.0	59.7	54.9	+4.8	White

7 Ave	200.000k	24.5	+0.1	+0.3	+0.0	+0.0	24.9	53.6	-28.7	White
^	200.000k	56.2	+0.1	+0.3	+0.0	+0.0	56.6	53.6	+3.0	White
9 Ave	400.000k	18.3	+0.1	+0.3	+0.1	+0.0	18.8	47.9	-29.1	White
^	400.000k	46.4	+0.1	+0.3	+0.1	+0.0	46.9	47.9	-1.0	White
11 Ave	500.000k	10.3	+0.1	+0.3	+0.2	+0.0	10.9	46.0	-35.1	White
^	500.000k	41.7	+0.1	+0.3	+0.2	+0.0	42.3	46.0	-3.7	White



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IEI**
Specification: **FCC 15.209**
Work Order #: **84019** Date: 8/9/2005
Test Type: **Maximized Emissions** Time: 10:48:25
Equipment: **Access Control System** Sequence#: 3
Manufacturer: IEI Tested By: Randal Clark
Model: NetLock
S/N:

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

Function	Manufacturer	Model #	S/N
Proximity Reader	IEI	029-5106	PHUNL
Four Door Interface PCB Assembly	IEI	029-5105	
Auxiliary Control PCB Assembly	IEI	029-5107	
12VDC Power Supply	IEI	PIP1312	0517

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: Carrier. Temperature: 27ºC, Rel Humidity: 36%. Test distance correction factor used in accordance with 15.31 to correct data for comparison to the limit at 300 meters. Voltage variations performed in accordance with 15.31, no change detected for ±15% mains input.

Transducer Legend:

T1=Cable - 10 Meter	T2=Mag Loop - AN 00226 - 9kHz-30M
T3=15.31 3m 40dB/Dec Correction	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	126.235k	65.5	+0.1	+10.2	-80.0		+0.0	-4.2	25.6	-29.8	Verti 100
2	126.255k	60.5	+0.1	+10.2	-80.0		+0.0	-9.2	25.6	-34.8	Horiz 100

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IEI**
Specification: **FCC 15.209**
Work Order #: **84019** Date: 8/9/2005
Test Type: **Maximized Emissions** Time: 10:50:54
Equipment: **Access Control System** Sequence#: 2
Manufacturer: IEI Tested By: Randal Clark
Model: NetLock
S/N:

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

Function	Manufacturer	Model #	S/N
Proximity Reader	IEI	029-5106	PHUNL
Four Door Interface PCB Assembly	IEI	029-5105	
Auxiliary Control PCB Assembly	IEI	029-5107	
12VDC Power Supply	IEI	PIP1312	0517

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 100kHz - 30MHz. Temperature: 27ºC, Rel Humidity: 36%. Test distance correction factor used in accordance with 15.31 to correct data for comparison to the limit at 30 and 300 meters. **Emissions detected are ambient noise level readings, no EUT Emissions detected within 20dB of the limit.**

Transducer Legend:

T1=Cable - 10 Meter	T2=Mag Loop - AN 00226 - 9kHz-30M
T3=15.31 3m 40dB/Dec Correction	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	631.284k	33.7	+0.2	+10.1	-40.0		+0.0	4.0	31.6	-27.6	Horiz 100
2	631.175k	33.2	+0.2	+10.1	-40.0		+0.0	3.5	31.6	-28.1	Verti 100
3	504.940k	35.1	+0.2	+10.1	-40.0		+0.0	5.4	33.5	-28.1	Verti 100
4	505.029k	34.4	+0.2	+10.1	-40.0		+0.0	4.7	33.5	-28.8	Horiz 100
5	883.794k	28.7	+0.2	+10.3	-40.0		+0.0	-0.8	28.6	-29.4	Horiz 100

6	883.645k	28.5	+0.2	+10.3	-40.0	+0.0	-1.0	28.6	-29.6	Verti 100
7	757.539k	29.3	+0.2	+10.2	-40.0	+0.0	-0.3	30.0	-30.3	Horiz 100
8	757.410k	27.6	+0.2	+10.2	-40.0	+0.0	-2.0	30.0	-32.0	Verti 100
9	252.519k	41.5	+0.1	+10.2	-80.0	+0.0	-28.2	19.6	-47.8	Horiz 100
10	378.705k	37.8	+0.2	+10.2	-80.0	+0.0	-31.8	16.0	-47.8	Verti 100
11	252.519k	40.6	+0.1	+10.2	-80.0	+0.0	-29.1	19.6	-48.7	Verti 100
12	378.774k	36.1	+0.2	+10.2	-80.0	+0.0	-33.5	16.0	-49.5	Horiz 100

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **IEI**
Specification: **FCC 15.209**
Work Order #: **84019** Date: 8/9/2005
Test Type: **Maximized Emissions** Time: 09:36:23
Equipment: **Access Control System** Sequence#: 1
Manufacturer: IEI Tested By: Randal Clark
Model: NetLock
S/N:

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

Function	Manufacturer	Model #	S/N
Proximity Reader	IEI	029-5106	PHUNL
Four Door Interface PCB Assembly	IEI	029-5105	
Auxiliary Control PCB Assembly	IEI	029-5107	
12VDC Power Supply	IEI	PIP1312	0517

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Equipment is a wireless access entry system using a wired interface to an access controller. The door lock has a 125kHz proximity reader installed, which communicates to the controller PCB via 4-wire cable. The controller PCB includes inputs for up to 4 doors at a time. The remaining three door inputs are cabled and terminated with characteristic impedance. The relay PCB is cabled and terminated with characteristic impedance to simulate normal installation. The controller PCB is connected to the relay PCB by a standard interconnecting cable. Both the controller PCB and the relay PCB are mounted vertically on a wooden support to simulate normal installation (traditionally, these components would be installed in a metal enclosure - this configuration is tested to determine worst case emissions). All cables are bundled non-inductively according to ANSI C63.4 (2003). Frequency Range Investigated: 30-1000MHz. Temperature: 27ºC, Rel Humidity: 36%.

Transducer Legend:

T1=Amp - S/N 604	T2=Bilog Site D
T3=Cable - 10 Meter	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	76.112M	47.7	-26.9	+6.3	+2.0		+0.0	29.1	40.0	-10.9	Verti 105
2	86.626M	45.5	-26.9	+7.6	+2.1		+0.0	28.3	40.0	-11.7	Verti 107
3	81.080M	45.8	-27.0	+6.9	+2.0		+0.0	27.7	40.0	-12.3	Verti 114
4	76.380M	45.7	-26.9	+6.4	+2.0		+0.0	27.2	40.0	-12.8	Verti 114
5	71.880M	46.2	-26.8	+5.9	+1.9		+0.0	27.2	40.0	-12.8	Verti 107
6	83.700M	44.7	-26.9	+7.2	+2.1		+0.0	27.1	40.0	-12.9	Verti 114

7	84.207M	44.6	-26.9	+7.3	+2.1	+0.0	27.1	40.0	-12.9	Verti 105
8	79.253M	45.4	-27.0	+6.6	+2.0	+0.0	27.0	40.0	-13.0	Verti 107
9	75.220M	45.2	-26.9	+6.2	+2.0	+0.0	26.5	40.0	-13.5	Verti 114
10	80.196M	44.8	-27.0	+6.7	+2.0	+0.0	26.5	40.0	-13.5	Verti 105
11	73.240M	43.6	-26.9	+6.0	+1.9	+0.0	24.6	40.0	-15.4	Verti 114
12	86.270M	41.3	-26.9	+7.6	+2.1	+0.0	24.1	40.0	-15.9	Horiz 261
13	66.790M	42.9	-26.8	+5.8	+1.8	+0.0	23.7	40.0	-16.3	Horiz 261
14	85.820M	40.4	-26.9	+7.5	+2.1	+0.0	23.1	40.0	-16.9	Horiz 261
15	84.360M	39.8	-26.9	+7.3	+2.1	+0.0	22.3	40.0	-17.7	Horiz 261
16	82.820M	39.2	-26.9	+7.1	+2.1	+0.0	21.5	40.0	-18.5	Horiz 261
17	74.530M	38.2	-26.9	+6.2	+1.9	+0.0	19.4	40.0	-20.6	Horiz 261
18	72.830M	37.2	-26.9	+6.0	+1.9	+0.0	18.2	40.0	-21.8	Horiz 261
19	222.350M	34.0	-26.2	+10.1	+3.4	+0.0	21.3	46.0	-24.7	Horiz 136
20	130.861M	31.8	-26.7	+11.1	+2.6	+0.0	18.8	43.5	-24.7	Verti 105
21	208.400M	32.7	-26.4	+9.0	+3.3	+0.0	18.6	43.5	-24.9	Horiz 136
22	213.750M	31.8	-26.3	+9.4	+3.4	+0.0	18.3	43.5	-25.2	Horiz 136
23	228.550M	32.8	-26.2	+10.5	+3.4	+0.0	20.5	46.0	-25.5	Horiz 136
24	140.083M	31.1	-26.7	+10.9	+2.7	+0.0	18.0	43.5	-25.5	Verti 114
25	225.050M	32.5	-26.2	+10.3	+3.4	+0.0	20.0	46.0	-26.0	Horiz 136
26	70.410M	33.0	-26.8	+5.7	+1.9	+0.0	13.8	40.0	-26.2	Horiz 261
27	138.234M	30.3	-26.7	+10.9	+2.7	+0.0	17.2	43.5	-26.3	Verti 105
28	220.050M	32.6	-26.3	+9.9	+3.4	+0.0	19.6	46.0	-26.4	Horiz 136
29	123.488M	29.7	-26.7	+11.1	+2.5	+0.0	16.6	43.5	-26.9	Verti 105
30	116.116M	29.7	-26.7	+10.6	+2.4	+0.0	16.0	43.5	-27.5	Verti 100
31	221.100M	31.0	-26.2	+10.0	+3.4	+0.0	18.2	46.0	-27.8	Verti 165
32	222.850M	30.8	-26.2	+10.1	+3.4	+0.0	18.1	46.0	-27.9	Verti 165

33	226.572M	30.4	-26.2	+10.4	+3.4	+0.0	18.0	46.0	-28.0	Verti 105
34	224.350M	30.2	-26.2	+10.2	+3.4	+0.0	17.6	46.0	-28.4	Verti 165
35	144.033M	28.2	-26.7	+10.7	+2.7	+0.0	14.9	43.5	-28.6	Verti 114
36	145.550M	28.1	-26.7	+10.6	+2.8	+0.0	14.8	43.5	-28.7	Verti 105