



**ADDENDUM TO HID GLOBAL CORPORATION TEST REPORT FC06-054**

**FOR THE**

**6090A, 6091A\* & 6092A\* FLEXSMART EU READER SERIES**

**FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 & 15.225**

**AND RSS-210**

**COMPLIANCE**

**DATE OF ISSUE: FEBRUARY 9, 2007**

**PREPARED FOR:**

HID Global Corporation  
9292 Jeronimo Road  
Irvine, CA 92618-1905

W.O. No.: 85544

**PREPARED BY:**

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

Date of test: September 22 - October 2, 2006

**Report No.: FC06-054A**

\* This model was not tested by CKC Laboratories but is part of the family that was tested. See "EUT Description" in the test report for more details.

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## ADMINISTRATIVE INFORMATION

**DATE OF TEST:** September 22 - October 2, 2006

**DATE OF RECEIPT:** September 22, 2006

**MANUFACTURER:** HID Global Corporation  
9292 Jeronimo Road  
Irvine, CA 92618-1905

**REPRESENTATIVE:** Steve Rose

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

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

**PURPOSE OF TEST:** **Original Report:** To demonstrate the compliance of the 6090B FlexSmart EU Reader with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 & 15.225 and RSS-210 devices. **Addendum A** is to revise the model number to 6090A with no new testing.

### 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	6.2.2(e)	47CFR	15.225(a)*	Fundamental Requirements
RSS 210	6.2.2(e)	NA	NA	±150kHz to ±450kHz Emissions Requirement
RSS 210	6.2.2(e)	47CFR	15.225(b)*	Out of band emissions
RSS 210	6.2.2(e)	47CFR	15.225(c)*	Carrier Stability
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
	IC 3082A-1		784962	Site File No.

\* Indicates that FCC Requirements are more stringent than the Canadian Equivalent.

#### CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

#### APPROVALS

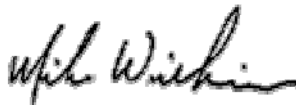
Steve Behm, Director of Engineering Services

#### QUALITY ASSURANCE:

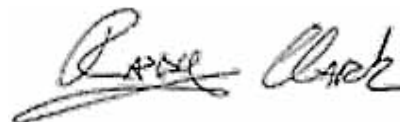


Joyce Walker  
Quality Assurance Administrative Manager

#### TEST PERSONNEL:



Mike Wilkinson  
EMC Engineer/Lab Manager



Randy Clark  
EMC Engineer

**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

15.209/15.225 Radiated Emissions: 9 kHz – 1000 MHz

<b>FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE</b>			
<b>TEST</b>	<b>BEGINNING FREQUENCY</b>	<b>ENDING FREQUENCY</b>	<b>BANDWIDTH SETTING</b>
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 13.56 GHz.

**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 has been tested by CKC Laboratories: **609x EU Reader**

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 complies to the level of testing equivalent to the tested model name shown on the data sheets: **6090A FlexSmart EU Reader Series**

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 comply to the level of testing equivalent to the tested models.

6091A FlexSmart EU Reader  
6092A FlexSmart EU Reader

## **EQUIPMENT UNDER TEST**

### **FlexSmart EU Reader**

Manuf: HID Global Corporation  
Model: 6090A  
Serial: 092206  
FCC ID: pending

## **PERIPHERAL DEVICES**

The EUT was tested with the following peripheral device(s):

### **DC Power Supply**

Manuf: Topward Electric Instruments Co., Ltd.  
Model: TPS-2000  
Serial: 920035

## 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: FCC 15.207 Six Highest Conducted Emission Levels**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS			CORRECTED READING dB $\mu$ V	SPEC LIMIT dB $\mu$ V	MARGIN dB	NOTES
		Lisn dB	HPF dB	Cable dB				
13.559950	21.6	0.5	0.1	10.9	33.1	50.0	-16.9	WA
13.560350	42.6	0.4	0.1	10.9	54.0	60.0	-6.0	BQ
13.560910	18.9	0.4	0.1	10.9	30.3	50.0	-19.7	BA
13.561150	45.8	0.5	0.1	10.9	57.3	60.0	-2.7	WQ
15.436220	13.7	0.4	0.1	10.8	25.0	50.0	-25.0	B
15.444000	13.9	0.4	0.1	10.8	25.2	50.0	-24.8	W

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

NOTES: B = Black Lead  
W = White Lead

COMMENTS: Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. QP measurements are compared with the QP limit - all other measurements are compared with the average limit. Frequency Range Investigated: 150 kHz to 30 MHz. Temperature: 31°C, Relative Humidity: 36%.

**Table 2: FCC 15.209 Radiated Emission Levels: 9 kHz - 30 MHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS			CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Cable dB	Corr dB				
4.000	14.5	10.0	0.6	-20.0	5.1	29.5	-24.4	V
8.000	15.1	9.8	0.8	-20.0	5.7	29.5	-23.8	V
27.121	7.5	6.6	1.4	-20.0	-4.5	29.5	-34.0	V
27.122	12.3	6.6	1.4	-20.0	0.3	29.5	-29.2	H

Test Method: ANSI C63.4 (2003)  
 Spec Limit: FCC Part 15 Subpart C Section 15.209  
 Test Distance: 10 Meters

NOTES: H = Horizontal Polarization  
 V = Vertical Polarization

COMMENTS: Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Test data is corrected for test distance using 40 dB per decade falloff in accordance with 15.31 for comparison to the limit at 30 and 300 meters. Frequency Range Investigated: 9 kHz to 30 MHz. Temperature: 31°C, Relative Humidity: 36%.



**Table 3: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
40.702	38.9	12.0	-27.0	1.7	10.0	35.6	40.0	-4.4	V
189.857	43.7	8.3	-26.6	4.0	10.0	39.4	43.5	-4.1	VQ
203.418	43.4	8.6	-26.5	4.2	10.0	39.7	43.5	-3.8	VQ
257.644	40.0	12.1	-26.0	5.1	10.0	41.2	46.0	-4.8	V
271.221	39.5	12.4	-26.0	5.3	10.0	41.2	46.0	-4.8	VQ
339.020	37.5	13.9	-26.4	5.6	10.0	40.6	46.0	-5.4	VQ

Test Method: ANSI C63.4 (2003)  
 Spec Limit: FCC Part 15 Subpart C Section 15.209  
 Test Distance: 10 Meters

NOTES: H = Horizontal Polarization  
 V = Vertical Polarization  
 Q = Quasi Peak Reading

COMMENTS: Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Test data is corrected for test distance using 20 dB per decade falloff in accordance with 15.31 for comparison to the limit at 3 meters. Frequency Range Investigated: 30-1000 MHz. Temperature: 28°C, Relative Humidity: 37%.

**Table 4: FCC 15.225 Carrier Emission Levels**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS			CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Cable dB	Corr dB				
13.561	46.3	9.6	1.0	-20.0	36.9	84.0	-47.1	V
13.561	46.1	9.6	1.0	-20.0	36.7	84.0	-47.3	H

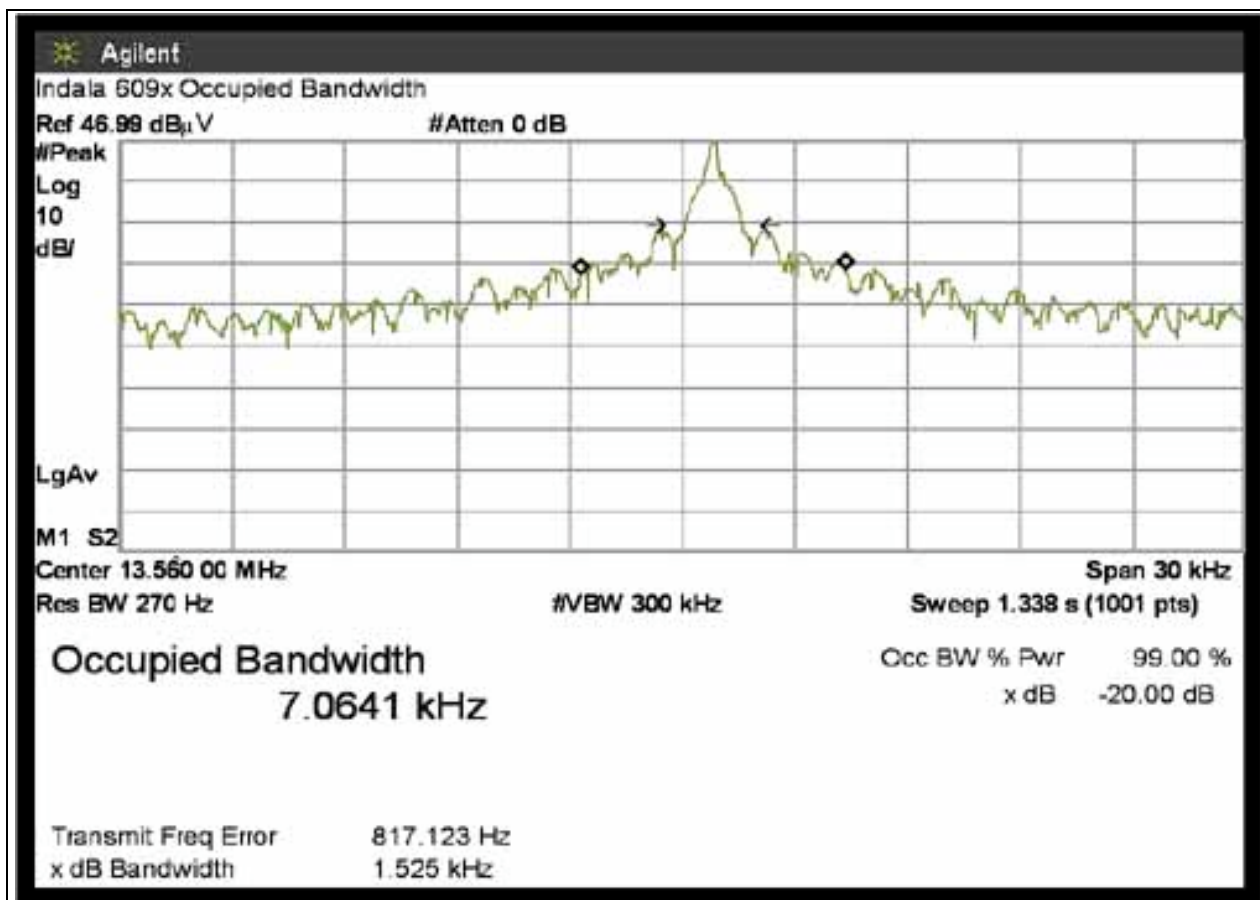
Test Method: ANSI C63.4 (2003)  
 Spec Limit: FCC Part 15 Subpart C Section 15.225  
 Test Distance: 10 Meters

NOTES: H = Horizontal Polarization  
 V = Vertical Polarization

COMMENTS: Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Test data is corrected for test distance using 40 dB per decade falloff in accordance with 15.31 for comparison to the limit at 30 meters. Frequency Range Investigated: Carrier. Temperature: 31°C, Relative Humidity: 36%.

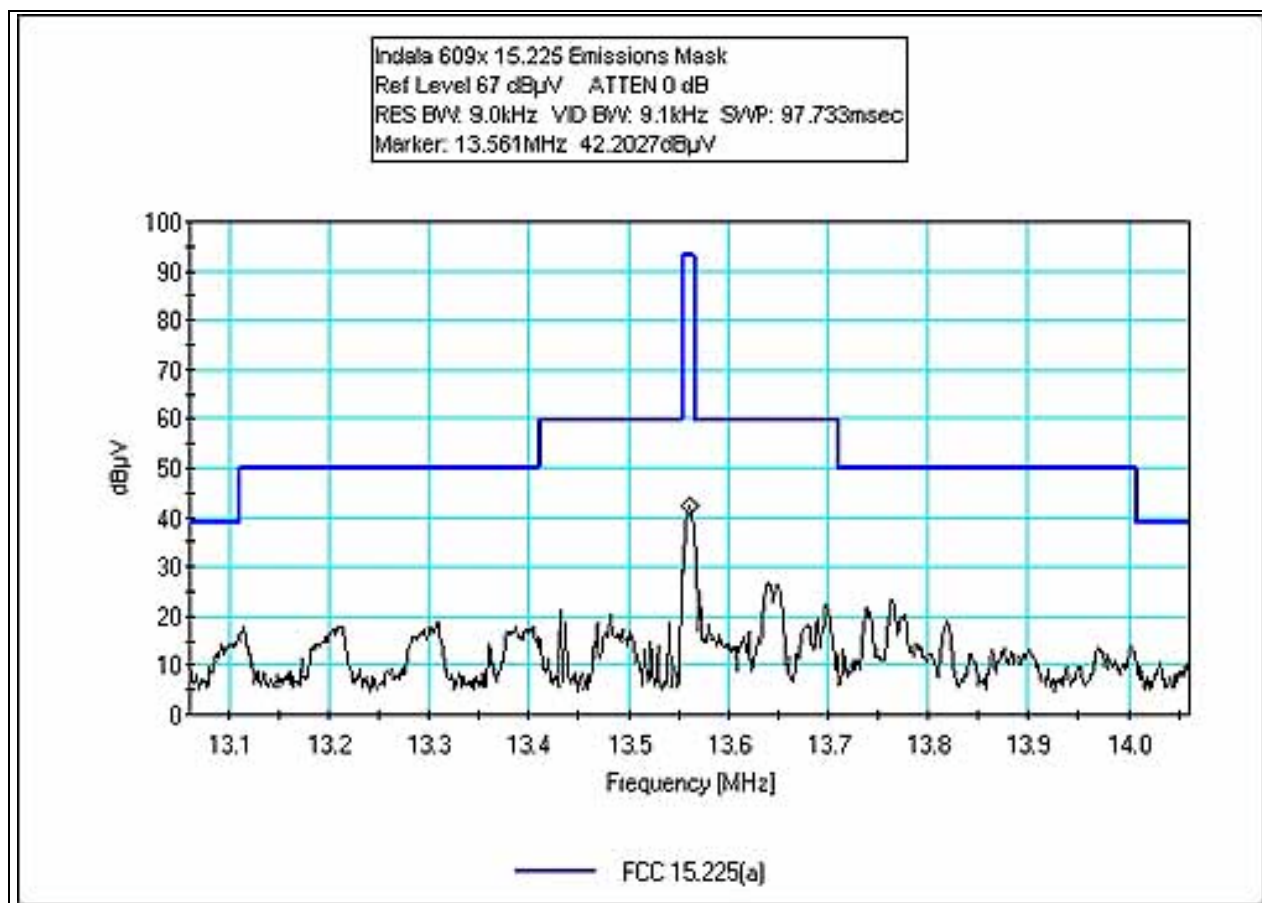
### OCCUPIED BANDWIDTH

**Test Conditions:** Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Temperature: 31°C, Relative Humidity: 36%.



### FCC 15.225 EMISSIONS MASK

**Test Conditions:** Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Temperature: 31°C, Relative Humidity: 36%.



## FREQUENCY STABILITY

**Test Conditions:** EUT was placed inside the temperature chamber and was transmitting continuously. SA RBW = 10 kHz, VBW = 10 kHz, Span = 100 kHz.

**Customer:** HID Global/Indala  
**WO#:** 85544  
**Test Engineer:** Mike Wilkinson

**Device Model #:** 609x  
**Operating Voltage:** 12 VDC  
**Frequency Limit:** 0.01 %

### Temperature Variations

Channel Frequency:		Channel 1 (MHz)	Dev. (MHz)
		13.560890	
Temp (C)	Voltage		
-20	12	13.560835	0.00005
-10	12	13.560850	0.00004
0	12	13.560880	0.00001
10	12	13.560870	0.00002
20	12	13.560890	0.00000
30	12	13.560880	0.00001
40	12	13.560870	0.00002
50	12	13.560870	0.00002

### Voltage Variations ( $\pm 15\%$ )

20	10.2	13.560895	0.00000
20	12	13.560890	0.00000
20	13.8	13.560870	0.00002

<b>Max Deviation (MHz)</b>	<b>0.00005</b>
<b>PASS</b>	

**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.

<b>TABLE A: SAMPLE CALCULATIONS</b>		
	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 9 kHz to 30 MHz, the magnetic loop antenna was used. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. The horn antenna was used for frequencies above 1000 MHz. 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 dB $\mu$ V, 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, 1 meter deep, and 1.5 meters 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  $\mu$ H/+50 ohms. 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 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 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 RADIATED EMISSIONS**



Radiated Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Back View

**PHOTOGRAPH SHOWING TEMPERATURE TESTING**



**APPENDIX B**  
**TEST EQUIPMENT LIST**

***FCC 15.207***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
150kHz HP Filter TTE	G7754	03/09/2006	03/09/2008	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	06/03/2005	06/03/2007	1248 & 1249
10 dB Attenuator 10W	None	08/18/2005	08/18/2007	P04255

***FCC 15.209 9 kHz – 30 MHz, 15.225(a), Occupied Bandwidth and Emissions Mask***

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

***FCC 15.209 30-1000 MHz***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Chase CBL6111C Bilog	2456	06/07/2005	06/07/2007	01991
HP 8447D Preamp	1937A02604	03/11/2005	03/11/2007	00099

***Frequency Stability***

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer HP E4446A	US44300407	1/12/2005	1/12/2007	2660
Temp Chamber Thermotron S-1.2 MiniMzx	11899	1/24/2005	1/24/2007	01879
Thermometer Omega HH-26K	T-202884	1/18/2005	1/18/2007	02242
Multimeter Fluke 8520A		4/25/2005	4/25/2007	02369

**APPENDIX C:**  
**MEASUREMENT DATA SHEETS**

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

Customer: **HID Global Corp.**

Specification: **FCC 15.207 - AVE**

Work Order #: **85544**

Date: 9/27/2006

Test Type: **Conducted Emissions**

Time: 16:13:12

Equipment: **EU Reader**

Sequence#: 12

Manufacturer: **HID Global Corp.**

Tested By: **Randal Clark**

Model: 609x

120V 60Hz

S/N: 092206

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

Function	Manufacturer	Model #	S/N
EU Reader*	HID Global Corp.	609x	092206

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035

**Test Conditions / Notes:**

Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. QP measurements are compared with the QP limit - all other measurements are compared with the average limit. Frequency Range Investigated: 150 kHz to 30 MHz. Temperature: 31°C, Relative Humidity: 36%.

**Transducer Legend:**

T1=LISN Insertion Loss s/n280	T2=Filter 150kHz HP AN02608
T3=Cable - Site D LISN 100k-30M	

**Measurement Data:**

Reading listed by margin.

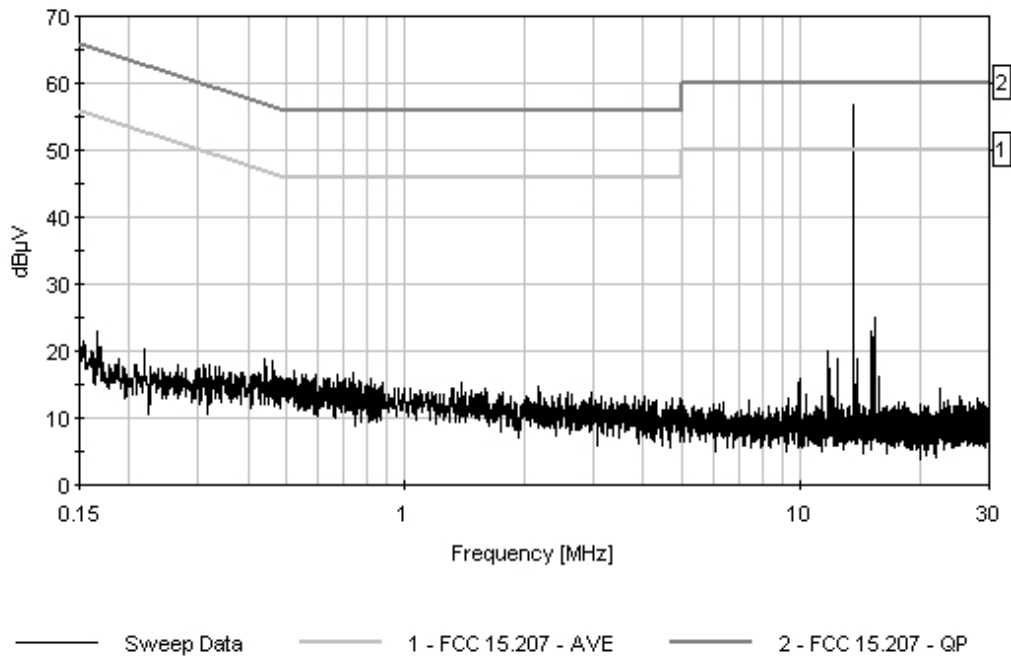
Test Lead: Black

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	13.560M	42.6	+0.4	+0.1	+10.9	+0.0	54.0	60.0	-6.0	Black
	QP									
2	13.561M	18.9	+0.4	+0.1	+10.9	+0.0	30.3	50.0	-19.7	Black
	Ave									
^	13.561M	46.4	+0.4	+0.1	+10.9	+0.0	57.8	50.0	+7.8	Black
4	15.436M	13.7	+0.4	+0.1	+10.8	+0.0	25.0	50.0	-25.0	Black
5	15.157M	11.6	+0.4	+0.1	+10.8	+0.0	22.9	50.0	-27.1	Black
6	15.247M	10.7	+0.4	+0.1	+10.8	+0.0	22.0	50.0	-28.0	Black
7	460.517k	6.2	+0.3	+0.2	+11.9	+0.0	18.6	46.7	-28.1	Black
8	442.337k	6.3	+0.3	+0.2	+12.0	+0.0	18.8	47.0	-28.2	Black
9	525.966k	4.5	+0.3	+0.3	+11.9	+0.0	17.0	46.0	-29.0	Black
10	443.791k	5.3	+0.3	+0.2	+11.9	+0.0	17.7	47.0	-29.3	Black



11	741.219k	4.4	+0.2	+0.3	+11.8	+0.0	16.7	46.0	-29.3	Black
12	466.335k	4.7	+0.3	+0.3	+11.9	+0.0	17.2	46.6	-29.4	Black
13	546.327k	4.2	+0.3	+0.3	+11.8	+0.0	16.6	46.0	-29.4	Black
14	673.588k	4.3	+0.2	+0.3	+11.8	+0.0	16.6	46.0	-29.4	Black
15	562.326k	4.2	+0.2	+0.3	+11.8	+0.0	16.5	46.0	-29.5	Black
16	593.596k	4.2	+0.2	+0.2	+11.8	+0.0	16.4	46.0	-29.6	Black
17	520.875k	3.8	+0.3	+0.3	+11.9	+0.0	16.3	46.0	-29.7	Black
18	27.122M	8.1	+0.5	+0.1	+11.0	+0.0	19.7	50.0	-30.3	Black

CKC Laboratories Date: 9/27/2006 Time: 16:13:12 Indala WO#: 85544  
 FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 12  
 Indala MN 609x



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

Customer: **HID Global Corp.**

Specification: **FCC 15.207 - AVE**

Work Order #: **85544**

Date: 9/27/2006

Test Type: **Conducted Emissions**

Time: 16:22:23

Equipment: **EU Reader**

Sequence#: 13

Manufacturer: **HID Global Corp.**

Tested By: **Randal Clark**

Model: 609x

120V 60Hz

S/N: 092206

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

Function	Manufacturer	Model #	S/N
EU Reader*	HID Global Corp.	609x	092206

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035

**Test Conditions / Notes:**

Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. QP measurements are compared with the QP limit - all other measurements are compared with the average limit. Frequency Range Investigated: 150 kHz to 30 MHz. Temperature: 31°C, Relative Humidity: 36%.

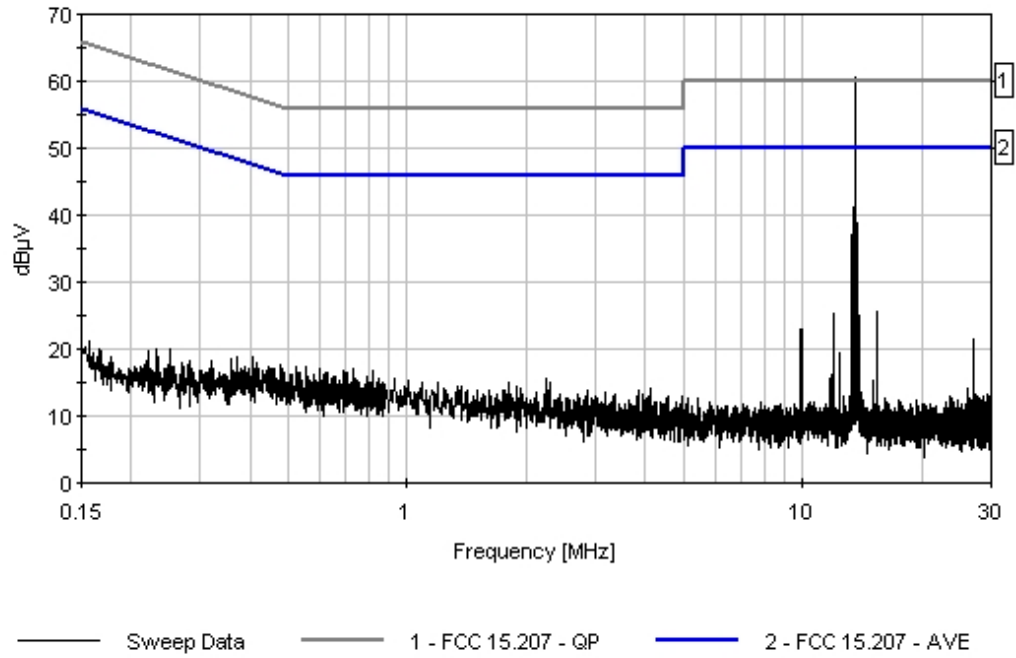
**Transducer Legend:**

T1=LISN Insertion Loss s/n276	T2=Filter 150kHz HP AN02608
T3=Cable - Site D LISN 100k-30M	

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	Dist Table dB	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	13.561M	45.8	+0.5	+0.1	+10.9	+0.0	57.3	60.0	-2.7	White
	QP									
2	13.560M	21.6	+0.5	+0.1	+10.9	+0.0	33.1	50.0	-16.9	White
	Ave									
^	13.561M	49.6	+0.5	+0.1	+10.9	+0.0	61.1	50.0	+11.1	White
4	15.444M	13.9	+0.4	+0.1	+10.8	+0.0	25.2	50.0	-24.8	White
5	27.121M	11.5	+0.4	+0.1	+11.0	+0.0	23.0	50.0	-27.0	White
6	9.974M	11.0	+0.5	+0.1	+10.8	+0.0	22.4	50.0	-27.6	White
	Ambient									
7	10.000M	8.9	+0.5	+0.1	+10.8	+0.0	20.3	50.0	-29.7	White

CKC Laboratories Date: 9/27/2006 Time: 16:22:23 Indala WO#: 85544  
 FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 13  
 Indala MN 609x



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

Customer: **HID Global Corp.**  
 Specification: **FCC 15.209**  
 Work Order #: **85544** Date: 9/27/2006  
 Test Type: **Maximized Emissions** Time: 15:14:18  
 Equipment: **EU Reader** Sequence#: 8  
 Manufacturer: **HID Global Corp.** Tested By: Randal Clark  
 Model: 609x  
 S/N: 092206

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

Function	Manufacturer	Model #	S/N
EU Reader*	HID Global Corp.	609x	092206

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035

**Test Conditions / Notes:**

Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Test data is corrected for test distance using 40 dB per decade falloff in accordance with 15.31 for comparison to the limit at 30 and 300 meters. Frequency Range Investigated: 9kHz to 30MHz. Temperature: 31°C, Relative Humidity: 36%.

**Transducer Legend:**

T1=Cable - Site D 10m 9k-1G	T2=Mag Loop - AN 00226 - 9kHz-30M
T3=15.31 10m 40dB/Dec Correction	

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	8.000M	15.1	+0.8	+9.8	-20.0	+0.0	5.7	29.5	-23.8	Verti 100
2	4.000M	14.5	+0.6	+10.0	-20.0	+0.0	5.1	29.5	-24.4	Verti 100
3	27.122M	12.3	+1.4	+6.6	-20.0	+0.0	0.3	29.5	-29.2	Horiz 100
4	27.121M	7.5	+1.4	+6.6	-20.0	+0.0	-4.5	29.5	-34.0	Verti 100

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

Customer: **HID Global Corp.**

Specification: **FCC 15.209**

Work Order #: **85544**

Date: 9/22/2006

Test Type: **Maximized Emissions**

Time: 16:25:16

Equipment: **EU Reader**

Sequence#: 4

Manufacturer: HID Global Corp.

Tested By: Randal Clark

Model: 609x

S/N: 092206

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

Function	Manufacturer	Model #	S/N
EU Reader*	HID Global Corp.	609x	092206

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035

**Test Conditions / Notes:**

Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Test data is corrected for test distance using 20 dB per decade falloff in accordance with 15.31 for comparison to the limit at 3 meters. Frequency Range Investigated: 30-1000 MHz. Temperature: 28°C Relative Humidity: 37%

**Transducer Legend:**

T1=Cable - Site D 10m 9k-1G	T2=Amp - S/N 604
T3=Bilog Site D	

**Measurement Data:**

Reading listed by margin.

Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	203.418M	43.4	+4.2	-26.5	+8.6	+10.0		39.7	43.5	-3.8	Verti 100
	QP										
^	203.413M	47.3	+4.2	-26.5	+8.6	+10.0		43.6	43.5	+0.1	Verti 100
3	189.857M	43.7	+4.0	-26.6	+8.3	+10.0		39.4	43.5	-4.1	Verti 100
	QP										
^	189.854M	48.9	+4.0	-26.6	+8.3	+10.0		44.6	43.5	+1.1	Verti 100
5	40.702M	38.9	+1.7	-27.0	+12.0	+10.0		35.6	40.0	-4.4	Verti 167
6	271.221M	39.5	+5.3	-26.0	+12.4	+10.0		41.2	46.0	-4.8	Verti 100
	QP										
^	271.222M	42.8	+5.3	-26.0	+12.4	+10.0		44.5	46.0	-1.5	Verti 100
8	257.644M	40.0	+5.1	-26.0	+12.1	+10.0		41.2	46.0	-4.8	Verti 100

9	339.020M QP	37.5	+5.6	-26.4	+13.9	+10.0	40.6	46.0	-5.4	Verti 100
^	339.012M	40.6	+5.6	-26.4	+13.9	+10.0	43.7	46.0	-2.3	Verti 100
11	393.270M	35.8	+6.3	-26.8	+15.2	+10.0	40.5	46.0	-5.5	Verti 100
12	189.862M QP	42.1	+4.0	-26.6	+8.3	+10.0	37.8	43.5	-5.7	Verti 100
13	176.284M	41.8	+3.9	-26.7	+8.4	+10.0	37.4	43.5	-6.1	Verti 100
14	366.176M	35.0	+5.9	-26.6	+14.6	+10.0	38.9	46.0	-7.1	Verti 100
15	339.032M	35.7	+5.6	-26.4	+13.9	+10.0	38.8	46.0	-7.2	Horiz 169
16	271.224M	36.8	+5.3	-26.0	+12.4	+10.0	38.5	46.0	-7.5	Horiz 350
17	339.020M	35.3	+5.6	-26.4	+13.9	+10.0	38.4	46.0 Sample #1	-7.6	Horiz 284
18	108.503M	39.5	+3.0	-26.8	+10.1	+10.0	35.8	43.5	-7.7	Verti 227
19	433.947M	32.3	+6.7	-27.1	+16.1	+10.0	38.0	46.0	-8.0	Verti 100
20	230.543M QP	38.8	+4.7	-26.2	+10.7	+10.0	38.0	46.0	-8.0	Verti 100
^	230.543M	42.9	+4.7	-26.2	+10.7	+10.0	42.1	46.0	-3.9	Verti 100
22	352.577M	34.3	+5.6	-26.5	+14.3	+10.0	37.7	46.0	-8.3	Verti 100
23	216.980M QP	39.1	+4.4	-26.3	+9.7	+10.0	36.9	46.0	-9.1	Verti 100
^	216.957M	43.9	+4.4	-26.3	+9.6	+10.0	41.6	46.0	-4.4	Verti 100
25	135.612M	36.4	+3.4	-26.7	+11.0	+10.0	34.1	43.5	-9.4	Verti 100
26	244.095M	36.0	+4.9	-26.0	+11.6	+10.0	36.5	46.0	-9.5	Verti 100
27	203.406M	37.2	+4.2	-26.5	+8.6	+10.0	33.5	43.5	-10.0	Horiz 284
28	203.406M	36.9	+4.2	-26.5	+8.6	+10.0	33.2	43.5 Sample #1	-10.3	Horiz 284
29	393.277M	30.8	+6.3	-26.8	+15.2	+10.0	35.5	46.0	-10.5	Horiz 284
30	325.451M	32.6	+5.6	-26.4	+13.5	+10.0	35.3	46.0	-10.7	Verti 100
31	67.806M	38.0	+2.3	-26.8	+5.8	+10.0	29.3	40.0	-10.7	Verti 100
32	298.357M	32.6	+5.5	-26.2	+12.8	+10.0	34.7	46.0	-11.3	Verti 100
33	298.319M	32.5	+5.5	-26.2	+12.8	+10.0	34.6	46.0	-11.4	Verti 100

34	81.369M	35.7	+2.5	-27.0	+6.9	+10.0	28.1	40.0	-11.9	Verti 100
35	420.387M	28.5	+6.6	-27.0	+15.8	+10.0	33.9	46.0	-12.1	Verti 100
36	284.779M	31.7	+5.4	-26.1	+12.6	+10.0	33.6	46.0	-12.4	Verti 100
37	406.829M	27.9	+6.5	-26.9	+15.6	+10.0	33.1	46.0	-12.9	Verti 100
38	54.246M	34.6	+2.0	-26.8	+7.3	+10.0	27.1	40.0	-12.9	Verti 100
39	311.911M	29.8	+5.5	-26.3	+13.2	+10.0	32.2	46.0	-13.8	Verti 100
40	162.727M	29.9	+3.8	-26.7	+9.8	+10.0	26.8	43.5	-16.7	Verti 100
41	72.014M	30.9	+2.3	-26.8	+5.9	+10.0	22.3	40.0	-17.7	Verti 100
42	149.169M	26.4	+3.6	-26.7	+10.4	+10.0	23.7	43.5	-19.8	Verti 100

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

Customer: **HID Global Corp.**  
 Specification: **FCC 15.225(a)**  
 Work Order #: **85544** Date: 9/27/2006  
 Test Type: **Maximized Emissions** Time: 15:14:18  
 Equipment: **EU Reader** Sequence#: 7  
 Manufacturer: **HID Global Corp.** Tested By: Randal Clark  
 Model: 609x  
 S/N: 092206

**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

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

Function	Manufacturer	Model #	S/N
EU Reader*	HID Global Corp.	609x	092206

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035

**Test Conditions / Notes:**

Equipment is a Mifare/Desfire EU Reader operating on a frequency of 13.56 MHz. DC power is supplied via support power supply. Power supply is bonded to ground plane. Cable shield is attached to DC common at the power supply. Test data is corrected for test distance using 40 dB per decade falloff in accordance with 15.31 for comparison to the limit at 30 meters. Frequency Range Investigated: Carrier. Temperature: 31°C, Relative Humidity: 36%.

**Transducer Legend:**

T1=Cable - Site D 10m 9k-1G	T2=Mag Loop - AN 00226 - 9kHz-30M
T3=15.31 10m 40dB/Dec Correction	

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	13.561M	46.3	+1.0	+9.6	-20.0	+0.0	36.9	84.0	-47.1	Verti 100
2	13.561M	46.1	+1.0	+9.6	-20.0	+0.0	36.7	84.0	-47.3	Horiz 100