



**HID CORPORATION TEST REPORT**

**FOR THE**

**6125A MULTICLASS RP40**

**FCC PART 15 SUBPART C SECTIONS 15.207, 15.109 & 15.225  
AND RSS-210**

**COMPLIANCE**

**DATE OF ISSUE: MARCH 27, 2006**

**PREPARED FOR:**

HID Corporation  
9292 Jeronimo Road  
Irvine, CA 92618-1905

P.O. No.: 10004647  
W.O. No.: 84665

**PREPARED BY:**

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

Date of test: December 20, 2005 –  
February 14, 2006

**Report No.: FC06-008**

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## ADMINISTRATIVE INFORMATION

**DATE OF TEST:** December 20, 2005 - February 14, 2006

**DATE OF RECEIPT:** December 20, 2005

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

**REPRESENTATIVE:** Frank de Vall

**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:** To demonstrate the compliance of the 6125A MultiCLASS RP40 with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 & 15.225 and RSS-210 devices.

### 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 3082-D		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:



Randy Clark, EMC Engineer



Mike Wilkinson, Lab Manager

**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.

**EUT Operating Frequency**

The EUT was operating at 13.56MHz and 125kHz.

**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.

## **EQUIPMENT UNDER TEST**

### **MultiCLASS RP40**

Manuf: HID  
Model: 6125A  
Serial: 17  
FCC ID: pending

## **PERIPHERAL DEVICES**

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

### **DC Power Supply**

Manuf: Topward  
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
		Cable dB	Lisn dB	HPF dB	Att dB				
13.562000	16.3	0.4	0.4	0.1	10.3	27.5	50.0	-22.5	WA
14.750000	18.5	0.4	0.4	0.1	10.3	29.7	50.0	-20.3	B
18.420000	22.6	0.5	0.4	0.2	10.3	34.0	50.0	-16.0	W
18.450000	29.3	0.5	0.4	0.2	10.3	40.7	50.0	-9.3	B
22.090000	15.5	0.5	0.4	0.1	10.3	26.9	50.0	-23.1	W
22.120000	22.8	0.5	0.4	0.2	10.3	34.2	50.0	-15.8	B

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: EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency range investigated: 150kHz to 30MHz. Temperature: 22°C, Relative Humidity: 48%.

**Table 2: FCC 15.209 – 126 kHz Fundamental 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
		Cable dB	Corr dB	Ant dB				
0.126	40.0	0.1	-60.0	10.2	-9.7	25.6	-35.3	H
0.126	31.0	0.1	-60.0	10.2	-18.7	25.6	-44.3	V

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: EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency Range Investigated: 9kHz - 30MHz. Temperature: 22°C, Relative Humidity: 48%.



**Table 3: FCC 15.209 Highest 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
		Cable dB	Corr dB	Ant dB				
27.124	16.7	1.1	-20.0	6.6	4.4	29.5	-25.1	V
27.128	10.1	1.1	-20.0	6.6	-2.2	29.5	-31.7	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: EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency Range Investigated: 9kHz - 30MHz. Temperature: 22°C, Relative Humidity: 48%.

**Table 4: 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				
122.064	41.2	11.0	-26.7	2.5	10.0	38.0	43.5	-5.5	VQ
352.625	36.9	14.3	-26.5	4.5	10.0	39.2	46.0	-6.8	VQ
678.102	30.0	20.1	-27.6	6.6	10.0	39.1	46.0	-6.9	H
678.118	29.2	20.1	-27.6	6.6	10.0	38.3	46.0	-7.7	V
705.248	32.2	20.4	-27.7	6.8	10.0	41.7	46.0	-4.3	VQ
732.371	28.0	20.7	-27.6	6.9	10.0	38.0	46.0	-8.0	V

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: EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Test distance correction factor used in accordance with 15.35, 20dB per decade. Frequency range investigated: 30-1000 MHz. Temperature: 22°C, Relative Humidity: 48%.

**Table 5: FCC 15.225 – 13.56 kHz Fundamental Emission Levels**

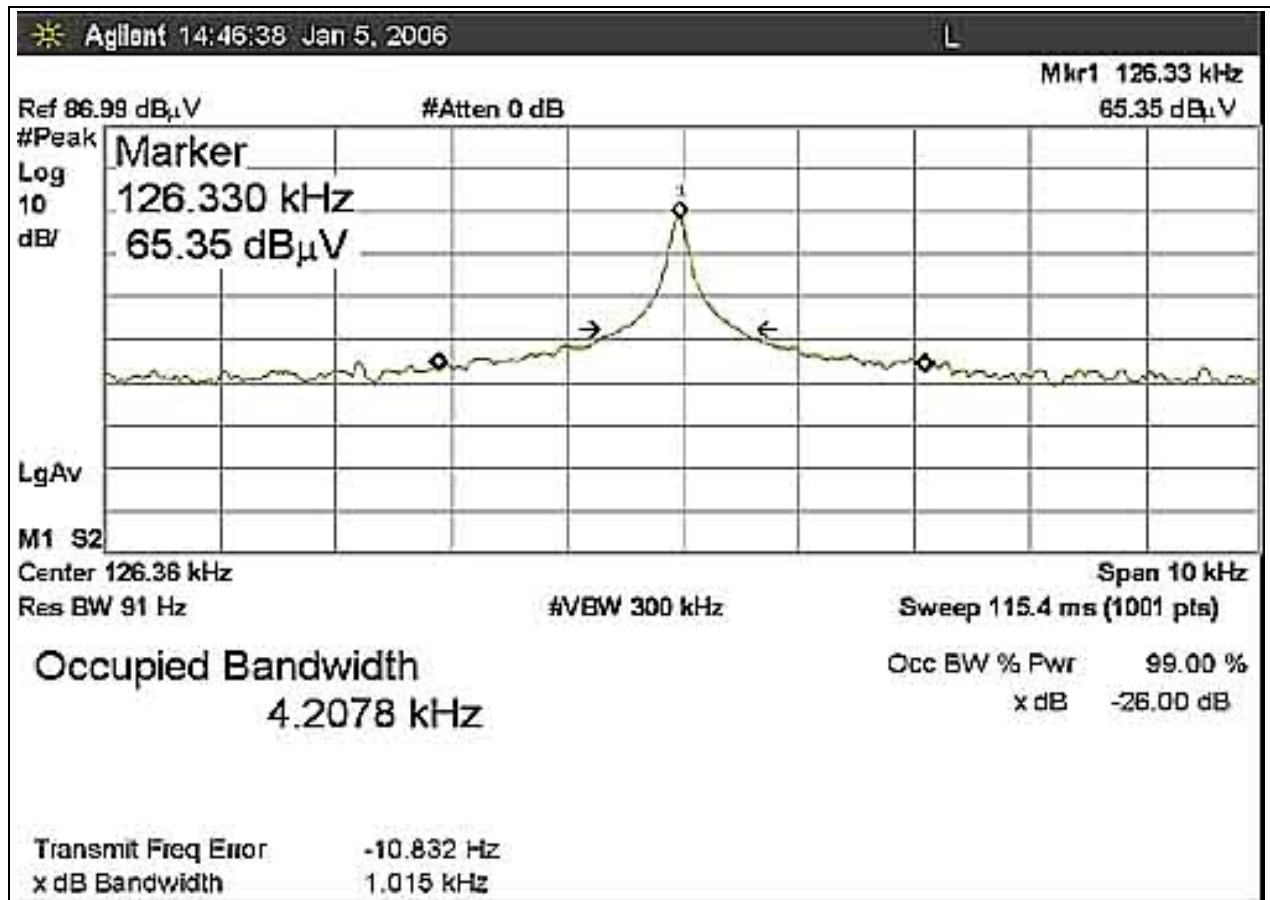
FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
13.562	43.2	9.6		0.8	-19.0	34.6	84.0	-49.4	V
13.562	40.3	9.6		0.8	-19.0	31.7	84.0	-52.3	H

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

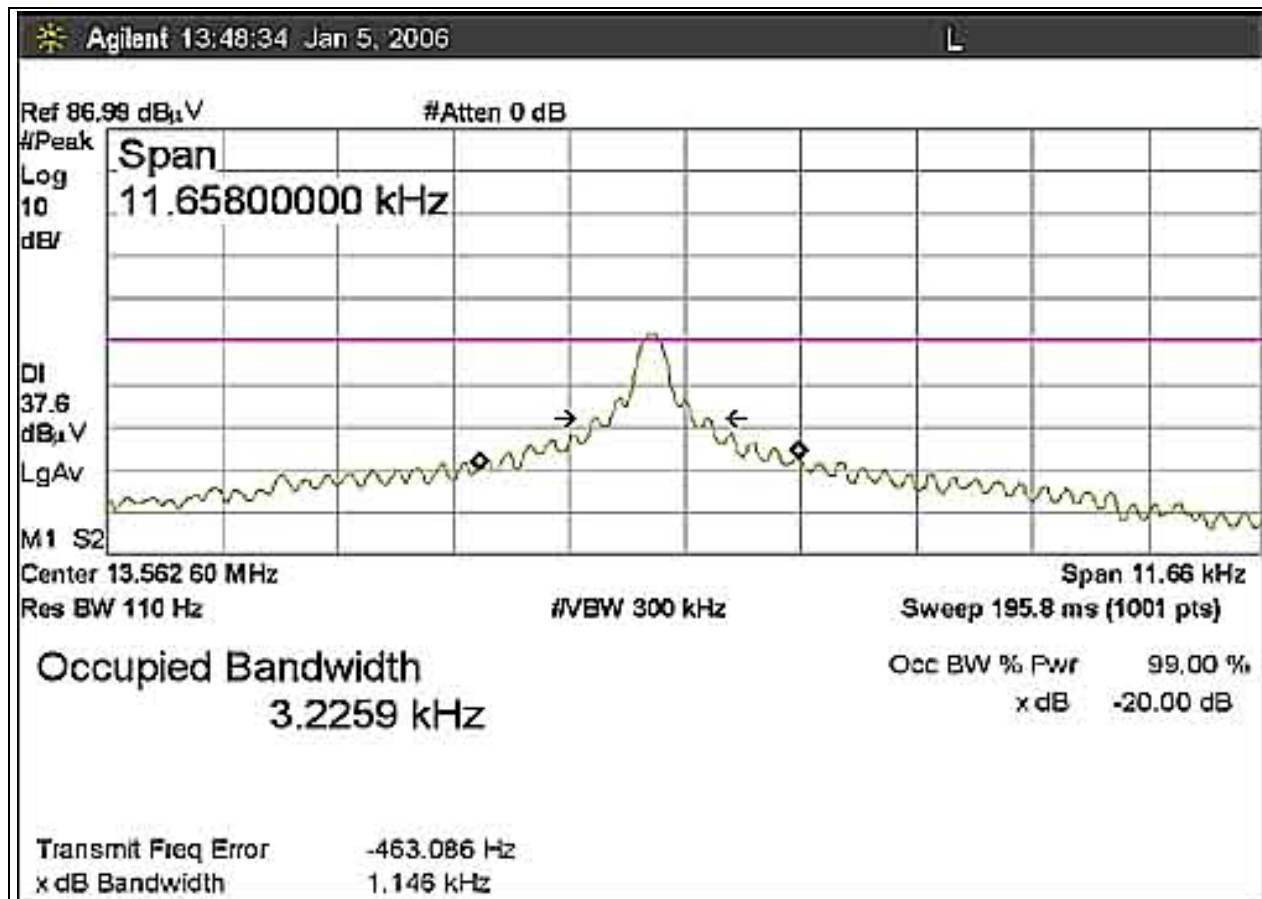
NOTES: H = Horizontal Polarization  
 V = Vertical Polarization

COMMENTS: EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency Range Investigated: 9kHz - 30MHz. Temperature: 22°C, Relative Humidity: 48%.

**OCCUPIED BANDWIDTH 126 kHz**



**OCCUPIED BANDWIDTH 13.56 MHz**



## FREQUENCY STABILITY AND VOLTAGE VARIATIONS

**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  
**WO#:** 84665  
**Test Engineer:** Mike Wilkinson

**Device Model #:** 6125A/RP40  
**Operating Voltage:** 12 VDC  
**Frequency Limit:** 0.01 %

### Temperature Variations

Channel Frequency:		Channel 1 (MHz)	Dev. (MHz)
		<b>13.56212</b>	
Temp (C)	Voltage		
-20	12	13.56196	0.00016
-10	12	13.56320	0.00108
0	12	13.56230	0.00018
10	12	13.56200	0.00012
20	12	13.56212	0.00000
30	12	13.56200	0.00012
40	12	13.56150	0.00062
50	12	13.56230	0.00018

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

20	10.2	13.56210	0.00002
20	12	13.56212	0.00000
20	13.8	13.56220	0.00008

<b>Max Deviation (MHz)</b>	<b>0.00108</b>
<b>Max Deviation (%)</b>	<b>0.00796</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 dB $\mu$ V/m, the spectrum analyzer reading in dB $\mu$ V 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	(dB $\mu$ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB $\mu$ V/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. 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.

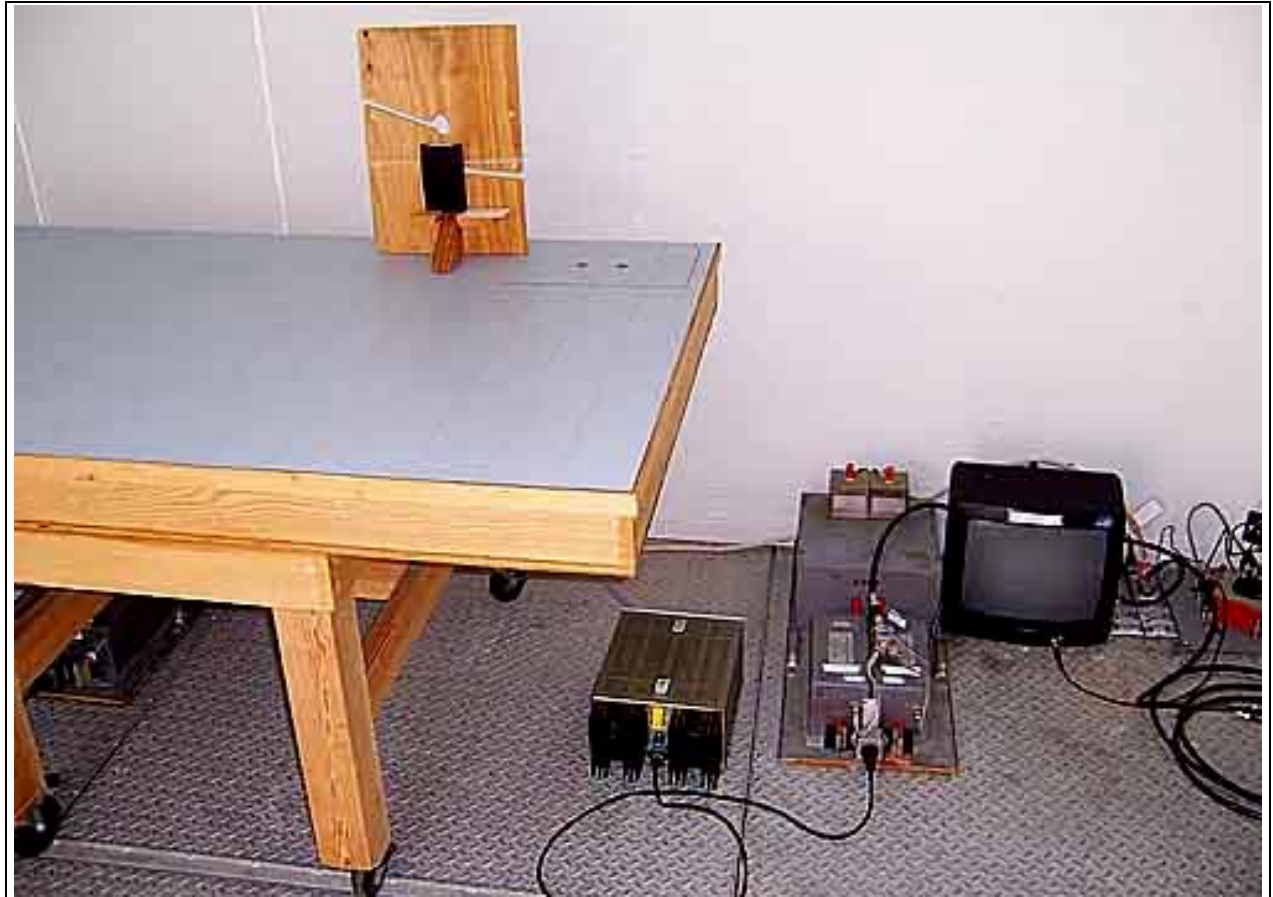
During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the 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 MAINS CONDUCTED EMISSIONS**



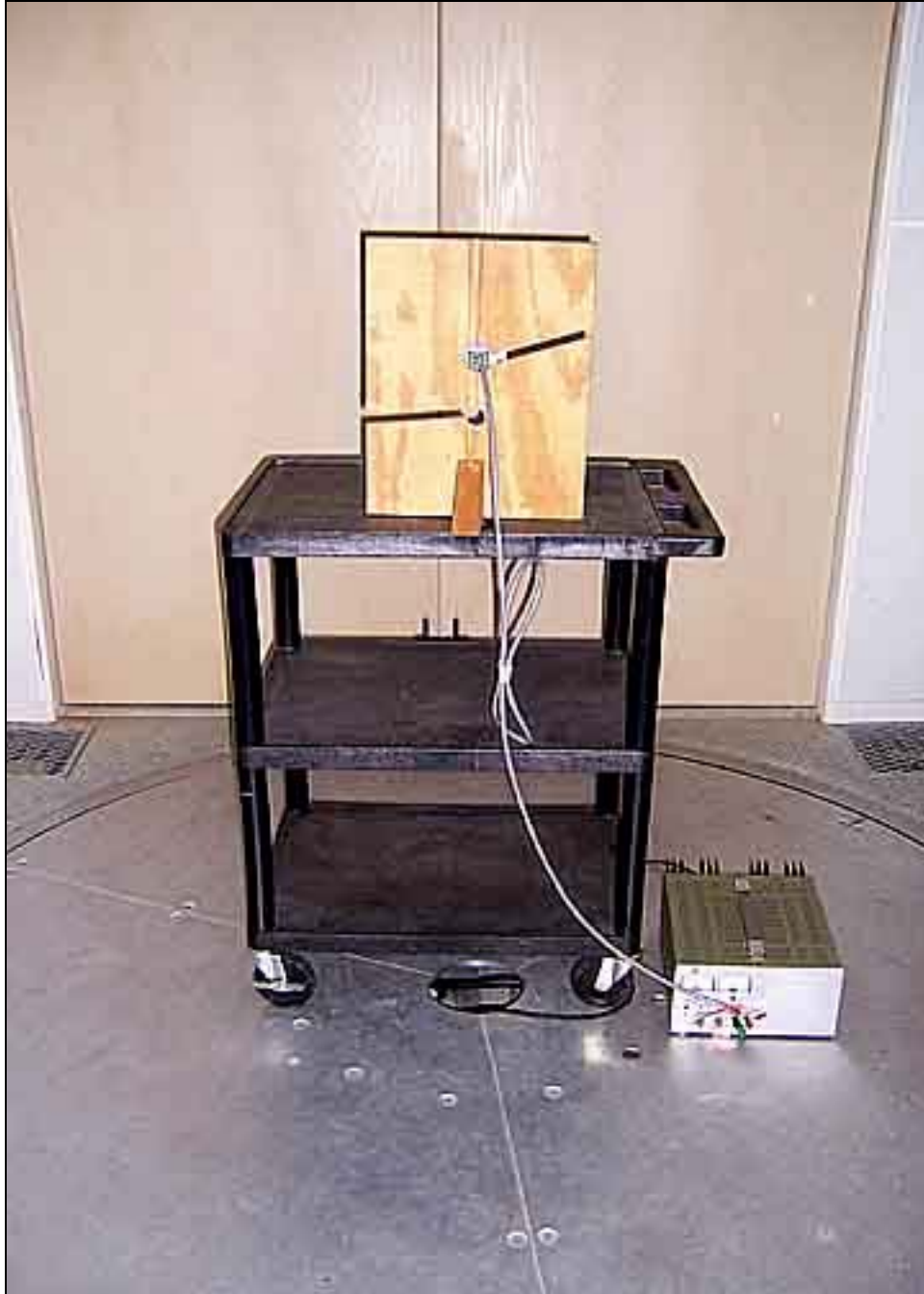
Mains Conducted Emissions - Side View

**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

#### *15.207 Conducted Emissions*

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
LISN, 8028-50-TS-24-BNC	8379276, 280	06/03/2005	06/03/2007	1248 & 1249

#### *15.209 Radiated Emissions – Fundamental and 9 kHz – 30 MHz*

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

#### *15.209 Radiated Emissions – 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 and Voltage Variations*

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer-AF	US44300407	1/12/05	1/12/2007	02660
Temp Chamber	11899	1/24/05	1/24/2007	01879
Thermometer	T-202884	1/18/05	1/18/2007	02242



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

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)  
 Customer: **HID**  
 Specification: **FCC 15.207 AVE**  
 Work Order #: **84665**  
 Test Type: **Conducted Emissions**  
 Equipment: **MultiCLASS RP40**  
 Manufacturer: **HID**  
 Model: **6125A**  
 S/N: **17**

Date: 1/3/2006  
 Time: 12:07:19  
 Sequence#: 27  
 Tested By: Mike Wilkinson  
 120V 60Hz

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

Function	Manufacturer	Model #	S/N
MultiCLASS RP40*	HID	6125A	RP40

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward	TPS-2000	920035

**Test Conditions / Notes:**

EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency range investigated: 150 kHz to 30 MHz. Temperature: 22°C, Relative Humidity: 48%.

**Transducer Legend:**

T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n276
T3=HP Filter AN02608	T4=ATT 10d B Site D Conducted

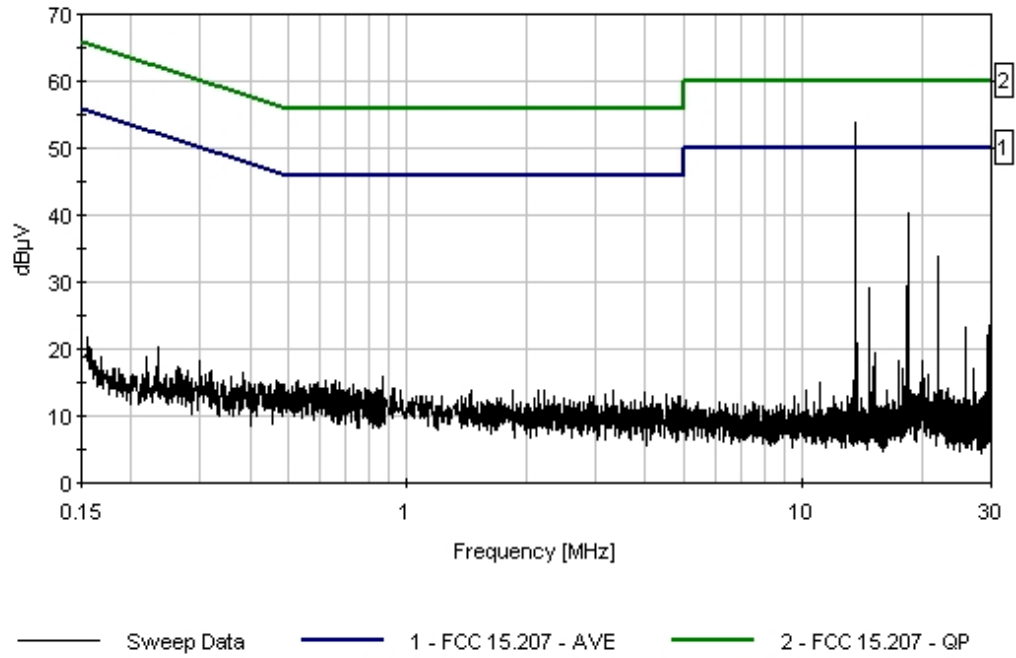
**Measurement Data:**

Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	18.450M	29.3	+0.5	+0.4	+0.2	+10.3	+0.0	40.7	50.0	-9.3	Black
2	22.120M	22.8	+0.5	+0.4	+0.2	+10.3	+0.0	34.2	50.0	-15.8	Black
3	14.750M	18.5	+0.4	+0.4	+0.1	+10.3	+0.0	29.7	50.0	-20.3	Black
4	13.562M	14.3	+0.4	+0.5	+0.1	+10.3	+0.0	25.6	50.0	-24.4	Black
Ave	13.562M	42.6	+0.4	+0.5	+0.1	+10.3	+0.0	53.9	50.0	+3.9	Black
6	29.490M	13.6	+0.6	+0.4	+0.2	+10.3	+0.0	25.1	50.0	-24.9	Black
7	25.820M	12.7	+0.5	+0.4	+0.2	+10.3	+0.0	24.1	50.0	-25.9	Black
8	17.850M	11.4	+0.5	+0.4	+0.2	+10.3	+0.0	22.8	50.0	-27.2	Black
9	9.970M	6.8	+0.3	+0.5	+0.1	+10.3	+0.0	18.0	50.0	-32.0	Black
10	11.050M	6.5	+0.3	+0.5	+0.1	+10.3	+0.0	17.7	50.0	-32.3	Black
11	150.000k	8.9	+0.1	+0.4	+2.7	+10.2	+0.0	22.3	56.0	-33.7	Black

CKC Laboratories Date: 1/3/2006 Time: 12:07:19 HID WO#: 84334  
FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 27  
HID MN 61xxA



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

Customer: **HID**  
 Specification: **FCC 15.207 - AVE**  
 Work Order #: **84665** Date: 1/3/2006  
 Test Type: **Conducted Emissions** Time: 13:03:37  
 Equipment: **MultiCLASS RP40** Sequence#: 28  
 Manufacturer: **HID** Tested By: Mike Wilkinson  
 Model: 6125A 120V 60Hz  
 S/N: RP40

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

Function	Manufacturer	Model #	S/N
MultiCLASS RP40*	HID	6125A	17

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward	TPS-2000	920035

**Test Conditions / Notes:**

EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency range investigated: 150 kHz to 30 MHz. Temperature: 22°C, Relative Humidity: 48%.

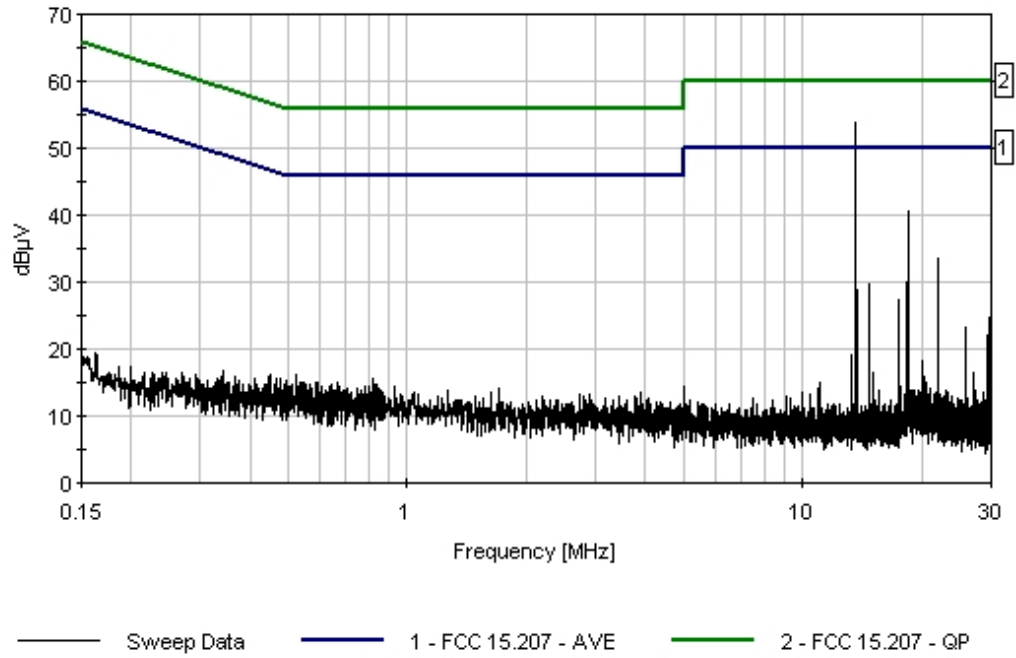
**Transducer Legend:**

T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n280
T3=HP Filter AN02608	T4=ATT 10d B Site D Conducted

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	18.420M	22.6	+0.5	+0.4	+0.2	+10.3	+0.0	34.0	50.0	-16.0	White
2	13.562M	16.3	+0.4	+0.4	+0.1	+10.3	+0.0	27.5	50.0	-22.5	White
^	13.562M	42.6	+0.4	+0.4	+0.1	+10.3	+0.0	53.8	50.0	+3.8	White
4	22.090M	15.5	+0.5	+0.4	+0.2	+10.3	+0.0	26.9	50.0	-23.1	White
5	14.780M	12.0	+0.4	+0.4	+0.1	+10.3	+0.0	23.2	50.0	-26.8	White
6	17.580M	11.5	+0.5	+0.4	+0.2	+10.3	+0.0	22.9	50.0	-27.1	White
7	29.490M	8.7	+0.6	+0.5	+0.2	+10.3	+0.0	20.3	50.0	-29.7	White
8	25.790M	8.3	+0.5	+0.5	+0.2	+10.3	+0.0	19.8	50.0	-30.2	White
9	7.580M	5.3	+0.3	+0.4	+0.1	+10.3	+0.0	16.4	50.0	-33.6	White
10	180.000k	8.1	+0.1	+0.3	+0.4	+10.2	+0.0	19.1	54.5	-35.4	White

CKC Laboratories Date: 1/3/2006 Time: 13:03:37 HID WO#: 84334  
FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 28  
HID MN 61xxA



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

Customer: **HID**  
 Specification: **FCC 15.209**  
 Work Order #: **84665** Date: 1/5/2006  
 Test Type: **Radiated Scan** Time: 13:27:47  
 Equipment: **MultiCLASS RP40** Sequence#: 37  
 Manufacturer: **HID** Tested By: Mike Wilkinson  
 Model: 6125A  
 S/N: 17

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

Function	Manufacturer	Model #	S/N
MultiCLASS RP40*	HID	6125A	17

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward	TPS-2000	920035

**Test Conditions / Notes:**

EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency Range Investigated: 9kHz - 30MHz. Test distance correction factor used in accordance with 15.35, 40dB per decade. Temperature: 22°C, Relative Humidity: 48%.

**Transducer Legend:**

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

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dB	Spec dBµV/m	Margin dB	Polar Ant
1	27.124M	16.7	+1.1	-20.0	+6.6	+0.0	4.4	29.5	-25.1	Vert
2	27.128M	10.1	+1.1	-20.0	+6.6	+0.0	-2.2	29.5	-31.7	Horiz
3	126.326k	40.0	+0.1	-60.0	+10.2	+0.0	-9.7	25.6 Carrier Fundamental	-35.3	Horiz
4	126.326k	31.0	+0.1	-60.0	+10.2	+0.0	-18.7	25.6 Carrier Fundamental	-44.3	Vert

Test Location: CKC Laboratories •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)  
 Customer: **HID**  
 Specification: **FCC 15.209**  
 Work Order #: **84665** Date: 12/23/2005  
 Test Type: **Maximized Emissions** Time: 15:53:23  
 Equipment: **MultiCLASS RP40** Sequence#: 16  
 Manufacturer: **HID** Tested By: Randal Clark  
 Model: 6125A  
 S/N: 17

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

Function	Manufacturer	Model #	S/N
MultiCLASS RP40*	HID	6125A	17

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward	TPS-2000	920035

**Test Conditions / Notes:**

EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply Test distance correction factor used in accordance with 15.35, 20dB per decade. Frequency range investigated: 30-1000 MHz. Temperature: 22°C, Relative Humidity: 48%.

**Transducer Legend:**

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

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	Dist dB	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	705.248M	32.2	+20.4	-27.7	+6.8	+10.0	41.7	46.0	-4.3	Verti 100
^	705.248M	34.1	+20.4	-27.7	+6.8	+10.0	43.6	46.0	-2.4	Verti 100
3	122.064M	41.2	+11.0	-26.7	+2.5	+10.0	38.0	43.5	-5.5	Verti 100
^	122.066M	42.9	+11.0	-26.7	+2.5	+10.0	39.7	43.5	-3.8	Verti 100
5	352.625M	36.9	+14.3	-26.5	+4.5	+10.0	39.2	46.0	-6.8	Verti 100
^	352.626M	39.1	+14.3	-26.5	+4.5	+10.0	41.4	46.0	-4.6	Verti 100
7	678.102M	30.0	+20.1	-27.6	+6.6	+10.0	39.1	46.0	-6.9	Horiz 174
8	678.118M	29.2	+20.1	-27.6	+6.6	+10.0	38.3	46.0	-7.7	Verti 100
9	732.371M	28.0	+20.7	-27.6	+6.9	+10.0	38.0	46.0	-8.0	Verti 100
10	623.856M	29.7	+19.4	-27.6	+6.1	+10.0	37.6	46.0	-8.4	Verti 100

11	40.692M	35.2	+12.0	-27.0	+1.4	+10.0	31.6	40.0	-8.4	Verti 100
	QP									
^	40.700M	40.5	+12.0	-27.0	+1.4	+10.0	36.9	40.0	-3.1	Verti 100
13	759.491M	26.9	+21.0	-27.5	+6.9	+10.0	37.3	46.0	-8.7	Verti 100
14	461.115M	32.6	+16.7	-27.3	+5.1	+10.0	37.1	46.0	-8.9	Verti 100
15	650.997M	28.4	+19.7	-27.5	+6.4	+10.0	37.0	46.0	-9.0	Verti 100
16	379.745M	33.9	+14.9	-26.7	+4.9	+10.0	37.0	46.0	-9.0	Horiz 205
17	352.621M	34.7	+14.3	-26.5	+4.5	+10.0	37.0	46.0	-9.0	Horiz 205
18	515.372M	30.7	+17.7	-27.4	+5.7	+10.0	36.7	46.0	-9.3	Verti 100
19	542.492M	30.0	+18.2	-27.5	+5.9	+10.0	36.6	46.0	-9.4	Verti 100
20	339.060M	34.5	+13.9	-26.4	+4.4	+10.0	36.4	46.0	-9.6	Verti 100
21	339.058M	34.5	+13.9	-26.4	+4.4	+10.0	36.4	46.0	-9.6	Horiz 205
22	135.624M	36.9	+11.0	-26.7	+2.6	+10.0	33.8	43.5	-9.7	Verti 100
23	366.197M	33.5	+14.6	-26.6	+4.7	+10.0	36.2	46.0	-9.8	Horiz 205
24	149.189M	36.7	+10.4	-26.7	+2.8	+10.0	33.2	43.5	-10.3	Verti 100
25	135.653M	36.2	+11.0	-26.7	+2.6	+10.0	33.1	43.5	-10.4	Horiz 205
26	189.872M	38.0	+8.3	-26.6	+3.2	+10.0	32.9	43.5	-10.6	Verti 100
27	244.125M	36.2	+11.6	-26.0	+3.6	+10.0	35.4	46.0	-10.6	Horiz 205
28	325.489M	33.9	+13.5	-26.4	+4.3	+10.0	35.3	46.0	-10.7	Verti 100
29	244.124M	35.8	+11.6	-26.0	+3.6	+10.0	35.0	46.0	-11.0	Verti 100
30	379.744M	31.7	+14.9	-26.7	+4.9	+10.0	34.8	46.0	-11.2	Verti 100
31	406.886M	30.9	+15.6	-26.9	+5.1	+10.0	34.7	46.0	-11.3	Horiz 205
32	488.235M	29.4	+17.2	-27.3	+5.4	+10.0	34.7	46.0	-11.3	Verti 100
33	335.475M	32.2	+13.8	-26.4	+4.4	+10.0	34.0	46.0	-12.0	Verti 100
34	108.503M	35.8	+10.1	-26.8	+2.4	+10.0	31.5	43.5	-12.0	Verti 100
35	366.178M	31.2	+14.6	-26.6	+4.7	+10.0	33.9	46.0	-12.1	Verti 100



36	325.502M	32.5	+13.5	-26.4	+4.3	+10.0	33.9	46.0	-12.1	Horiz 205
37	122.057M	34.6	+11.0	-26.7	+2.5	+10.0	31.4	43.5	-12.1	Horiz 205
38	393.318M	29.9	+15.2	-26.8	+5.0	+10.0	33.3	46.0	-12.7	Horiz 205
39	433.997M	29.1	+16.1	-27.1	+5.0	+10.0	33.1	46.0	-12.9	Verti 100
40	257.703M	33.3	+12.1	-26.0	+3.7	+10.0	33.1	46.0	-12.9	Horiz 205
41	122.062M	33.7	+11.0	-26.7	+2.5	+10.0	30.5	43.5	-13.0	Horiz 205
42	406.870M	29.1	+15.6	-26.9	+5.1	+10.0	32.9	46.0	-13.1	Verti 100
43	239.630M	33.7	+11.3	-26.1	+3.5	+10.0	32.4	46.0	-13.6	Verti 100
44	271.244M	32.1	+12.4	-26.0	+3.8	+10.0	32.3	46.0	-13.7	Verti 100
45	433.989M	27.9	+16.1	-27.1	+5.0	+10.0	31.9	46.0	-14.1	Horiz 205
46	239.628M	33.1	+11.3	-26.1	+3.5	+10.0	31.8	46.0	-14.2	Horiz 225
47	393.314M	27.9	+15.2	-26.8	+5.0	+10.0	31.3	46.0	-14.7	Verti 100
48	287.566M	30.7	+12.6	-26.1	+4.0	+10.0	31.2	46.0	-14.8	Verti 100
49	311.916M	29.6	+13.2	-26.3	+4.2	+10.0	30.7	46.0	-15.3	Horiz 205
50	311.945M	29.4	+13.2	-26.3	+4.2	+10.0	30.5	46.0	-15.5	Verti 100
51	420.265M	26.6	+15.8	-27.0	+5.1	+10.0	30.5	46.0	-15.5	Verti 100
52	149.189M	31.0	+10.4	-26.7	+2.8	+10.0	27.5	43.5	-16.0	Horiz 205
53	216.999M	33.1	+9.7	-26.3	+3.4	+10.0	29.9	46.0	-16.1	Verti 100
54	176.306M	32.1	+8.4	-26.7	+3.0	+10.0	26.8	43.5	-16.7	Verti 100
55	217.006M	32.0	+9.7	-26.3	+3.4	+10.0	28.8	46.0	-17.2	Horiz 205
56	203.427M	30.2	+8.6	-26.5	+3.3	+10.0	25.6	43.5	-17.9	Verti 100
57	216.999M	30.7	+9.7	-26.3	+3.4	+10.0	27.5	46.0	-18.5	Horiz 205

58	230.566M	29.4	+10.7	-26.2	+3.4	+10.0	27.3	46.0	-18.7	Horiz 205
59	298.391M	25.6	+12.8	-26.2	+4.1	+10.0	26.3	46.0	-19.7	Horiz 205
60	162.749M	27.6	+9.8	-26.7	+2.9	+10.0	23.6	43.5	-19.9	Verti 100
61	162.749M	24.4	+9.8	-26.7	+2.9	+10.0	20.4	43.5	-23.1	Horiz 205

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

Customer: **HID**  
 Specification: **FCC 15.225(a) (30 Meters)**  
 Work Order #: **84665** Date: 1/5/2006  
 Test Type: **Radiated Scan** Time: 14:27:20  
 Equipment: **MultiCLASS RP40** Sequence#: 38  
 Manufacturer: **HID** Tested By: Mike Wilkinson  
 Model: 6125A  
 S/N: 17

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

Function	Manufacturer	Model #	S/N
MultiCLASS RP40*	HID	6125A	17

**Support Devices:**

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward	TPS-2000	920035

**Test Conditions / Notes:**

EUT is an iClass reader operating on a carrier frequency of 13.56MHz and 125kHz simultaneously. EUT is transmitting continuously with tags in the field. Power supply chassis bonded to ground plane. Drain wire not connected to power supply. Frequency Range Investigated: 9kHz - 30MHz. Temperature: 22°C, Relative Humidity: 48%.

**Transducer Legend:**

T1=Cable - 10 Meter	T2=Mag Loop - AN 00226 - 9kHz-30M
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**Measurement Data:** Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV/m	Margin dB	Polar Ant
1	13.562M	43.2	+0.8	+9.6	-19.0	34.6	84.0	-49.4	Vert
2	13.562M	40.3	+0.8	+9.6	-19.0	31.7	84.0	-52.3	Horiz