CERTIFICATION TEST REPORT

FOR THE

ASSET ID AND PROXIMITY READER,
6015A AMR100 PROPERTY PASS READER

FCC PART 15 SUBPART C

COMPLIANCE

DATE OF ISSUE: FEBRUARY 25, 1999

PREPARED FOR:

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9292 Jeronimo
Irvine, CA 92618-1905

P.O. No: 007480
W.O. No: 70831

Report No: FC99-011

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Date of test: Februrary 2, 11, 22, 1999

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TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	Februrary 2, 11, 22, 1999
PURPOSE OF TEST:	To demonstrate the compliance of the Asset ID and Proximity Reader, 6015A AMR100 Property Pass Reader, with the requirements for FCC Subpart C devices.
MANUFACTURER:	HID Corporation 9292 Jeronimo Irvine, CA 92618-1905
REPRESENTATIVE:	Frank de Vall
TEST LOCATION:	CKC Laboratories, Inc. 5473A Clouds Rest Mariposa, CA 95338
TEST PERSONNEL:	Dustin Oaks
TEST METHOD:	ANSI C63.4 1992
FREQUENCY RANGE TESTED:	9 kHz – 1000 MHz
EQUIPMENT UNDER TEST:	**Asset ID and Proximity Reader** Manuf: HID Corporation Model: 6015A AMR100 Property Pass Reader Serial: N/A FCC ID: JQ66015 (pending)

SUMMARY OF RESULTS

The HID Corporation Asset ID and Proximity Reader, 6015A AMR100 Property Pass Reader, was tested in accordance with ANSI C63.4 1992 for compliance with FCC 15 Subpart C.

As received, the above equipment was found to be fully compliant with the limits of FCC 15 Subpart C. The results in this report apply only to the items tested, as identified herein.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

RFID Proximity Property Pass Reader.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ±4dB measurement uncertainty.

EUT OPERATING FREQUENCY

The EUT was operating at 0.125 MHz.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device:

DC Power Supply
Manuf: HP
Model: 6205C
Serial: 2228A-01775
FCC ID:

DC Power Supply
Manuf: Topward Electronics
Model: 2306
Serial: 920035
FCC ID:

REPORT OF MEASUREMENTS

The following tables report the highest worst case levels recorded during the tests performed on the Asset ID and Proximity Reader, 6015A AMR100 Property Pass Reader. All readings taken are peak readings unless otherwise noted by a "Q" or "A". The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: Fundamental Radiated Emission Level

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
0.125	49.1	-27.8		0.1		21.4	25.7	-4.3	NA

Test Method: ANSI C63.4 1992
Spec Limit : FCC 15.209
Test Distance: 30 Meters

NOTES:
H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode. 40dB/dec correction factor used IAW 15.31. This correction is required in the frequency range of 9kHz to 490kHz due to the spec being at 300 meters.

Table 2: Six Highest Radiated Emission Levels - 9 kHz - 30 MHz									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Ant dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
0.249	31.0	-25.3		0.1		5.8	19.8	-14.0	NA
0.375	34.1	-25.7		0.1		8.5	16.2	-7.7	N
0.501	10.3	12.8		0.2		23.3	33.6	-10.3	N
0.626	7.5	11.6		0.2		19.3	31.7	-12.4	N
0.751	9.0	10.7		0.2		19.9	30.1	-10.2	N
0.876	7.5	10.0		0.2		17.7	28.7	-11.0	N

Test Method: ANSI C63.4 1992
Spec Limit : FCC 15.209
Test Distance: 30 Meters

NOTES:
H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode. 40dB/dec correction factor used IAW 15.31. This correction is required in the frequency range of 9kHz to 490kHz due to the spec being at 300 meters.

Table 3: Six Highest Radiated Emission Levels - 30 MHz - 1000 MHz									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Ant dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
30.195	47.8	13.5	-27.3	1.0		35.0	40.0	-5.0	VQ
54.202	51.5	10.3	-27.2	1.3		35.9	40.0	-4.1	VQ
56.448	51.6	10.0	-27.2	1.3		35.7	40.0	-4.3	VQ
60.070	49.4	9.6	-27.2	1.3		33.1	40.0	-6.9	HQ
157.180	47.9	13.8	-27.0	2.3		37.0	43.5	-6.5	H
160.072	49.0	14.1	-27.0	2.3		38.4	43.5	-5.1	HQ

Test Method: ANSI C63.4 1992
Spec Limit : FCC 15.209
Test Distance: 3 Meters

NOTES:
H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode.

Table 4: Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Lisn dB	dB	dB	dB	CORRECTED READING dBµV	SPEC LIMIT dBµV	MARGIN dB	NOTES
17.006150	40.2	0.0				40.2	48.0	-7.8	W
17.134690	40.7	0.0				40.7	48.0	-7.3	B
18.158160	39.3	0.0				39.3	48.0	-8.7	B
18.407200	39.5	0.0				39.5	48.0	-8.5	W
18.656240	39.4	0.0				39.4	48.0	-8.6	B
18.905280	38.8	0.0				38.8	48.0	-9.2	W

Test Method: ANSI C63.4 1992
Spec Limit : FCC 15.207
Test Distance: No Distance

NOTES: Q = Quasi Peak Reading
A = Average Reading
B = Black Lead
W = White Lead

COMMENTS: EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode, with Proxcard in Field. Moved Black wire inside EUT from TB2 -2 to TB5 -3. Neg DC lead tied to Chassis ground on DC Supply.

TABLE A

LIST OF TEST EQUIPMENT

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, S/N 2209A01404. Calibration date: June 12, 1998. Calibration due date: June 12, 1999.

2. Preamp, Hewlett Packard, Model No. 8447D, S/N 1937A02604. Calibration date: April 10, 1998. Calibration due date: April 10, 1999.

3. Quasi-Peak Adapter, Hewlett Packard, Model No. 85650A, S/N 2811A01267. Calibration date: June 12, 1998. Calibration due date: June 12, 1999.

4. Biconical Antenna, A & H Systems, Model No. SAS-200/542, S/N 156. Calibration date: June 9, 1998. Calibration due date: June 9, 1999.

5. Log Periodic Antenna, A & H Systems, Model No. SAS-200/512, S/N 154. Calibration date: June 9, 1998. Calibration due date: June 9, 1999.

6. Magnetic Loop Antenna, EMCO, Model No. 6502, S/N 1074. Calibration date: May 11, 1998. Calibration due date: May 11, 1999.

7. LISN (FCC), Solar Electronics, S/N 855996, 992. Calibration date: May 28, 1998. Calibration due date: May 28, 1999.

8. Site B (Barn) Calibration date: June 18, 1998. Site B (Barn) Calibration due date: June 18 1999.

9. Test software, EMI Test 2.91.

EUT SETUP

The equipment under test (EUT) and the peripheral listed were set up in a manner that represented their normal use. Any special conditions required for the EUT to operate normally are identified in the comments that accompany Table 1 for fundamental radiated emissions, Tables 2 & 3 for radiated emissions and Table 4 for conducted characteristics. Additionally, a complete description of all the ports and I/O cables is included on the information sheets contained in Appendix A.

During radiated emissions testing, 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. This configuration is typical for radiated emissions testing of table top devices. This unit is a wall mount device, but is tested as a table top device.

I/O cables were connected to the EUT and peripheral in the manner required for normal operation of the system. Excess cabling was bundled in the center in a serpentine fashion using 30-40 centimeter lengths.

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 is 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. Conducted emissions tests required the use of the LISN's listed in Table A.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the Asset ID and Proximity Reader, 6015A AMR100 Property Pass Reader. For radiated measurements below 30 MHz, the Magnetic Loop Antenna was used. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. For the fundamental testing and radiated emissions testing for frequencies of 9 kHz – 30 MHz, the antennas were located at a distance of 30 meters from the edge of the EUT. For radiated emissions testing for the frequencies of 30 MHz – 1000 MHz, the antenna was located at a distance of 3 meters from the edge of the table. Conducted emissions tests required the use of the FCC type LISN's.

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.

TABLE B : ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	450 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
RADIATED EMISSIONS	1000 MHz	40 GHz	1 MHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in Tables 1-4 indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "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 for the Asset ID and Proximity Reader, 6015A AMR100 Property Pass Reader.

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

When the frequencies are less than 30 MHz, 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.

TEST METHODS

The radiated and conducted emissions data of the Asset ID and Proximity Reader, 6015A AMR100 Property Pass Reader, 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 the "Sample Calculations". The corrected data was then compared to the FCC Part 15, Subpart C emissions limits to determine compliance.

Preliminary and final measurements were taken in order to better ensure that all emissions from the EUT were found and maximized.

Radiated Emissions Testing

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode with the I/O cables and line cords facing the antenna. For radiated measurements below 30 MHz, the Magnetic Loop Antenna was used. The frequency range of 30 MHz - 88 MHz was then scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks, which were at or near the limit, were recorded. The frequency range of 100 - 300 MHz was scanned with the biconical antenna in the same manner, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. 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.

For the final radiated scan, the equipment was again positioned with its I/O and power cables facing the antenna. A thorough scan of all frequencies was manually made using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation, antenna height and configuration of the peripheral and cables. Maximizing of the cables was achieved by monitoring the spectrum analyzer on a closed circuit television monitor while the EUT cables were being moved and rearranged on the EUT table for maximum emissions. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

Conducted Emissions Testing

For conducted emissions testing, a 30 to 50 second sweep time was used for automated measurements in the frequency bands of 450 kHz to 1.705 MHz, 1.705 MHz to 3 MHz, and 3 MHz to 30 MHz. All readings within 20 dB of the limit were recorded. At frequencies where the recorded emissions were close to the limit, further investigation was performed manually at a slower sweep rate.

SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the emissions readings in Tables 1, 2, 3 and 4. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula:

Meter reading (dBµV)
+ Antenna Factor (dB)
+ Cable Loss (dB)
- Distance Correction (dB)
- Pre-amplifier Gain (dB)

= Corrected Reading(dBµV/m)

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

A typical data sheet will display the following in column format (not necessarily in this order):

#	Freq MHz	Rdng dBuV	Mag L	Pream	Bicon	Horn	Log 1	Dist	Corr dBuV/m	Spec	Margin	Polar

means reading number
Freq MHz is the frequency in MHz of the obtained reading.
Rdng dBuV is the reading obtained on the spectrum analyzer in dBµV.
Pream is short for the preamplifier factor or gain in dB.
Bicon is the biconical antenna factor in dB.
Log 1 is the log periodic antenna factor in dB.
Horn is the horn antenna factor in dB.
Mag L is the magnetic loop antenna factor in dB.
Barn is the correction factor used for the Barn site.
40dB- is the 15.31 correction factor for measuring signals at distances other than specified in 15.209.
Dist is the distance factor (in dB). It is used when testing at a different test distance than the one stated in the spec.
Corr dBµV/m is the corrected reading which is now in dBµV/m (field strength).
Spec is the specification limit (dB) stated in the agency's regulations.
Margin is the closeness to the specified limit in dB; + is over and - is under the limit.
Polar is the Polarity of the antenna with respect to earth.

APPENDIX A

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	None
CRT was displaying:	NA
Power Supply Manufacturer:	Customer Supplied
Power Supply Part Number:	
AC Line Filter Manufacturer:	NA
AC Line Filter Part Number:	NA
The EUT has no power cord.	

I/O PORTS	
Type	#
DC Power & Signals	

CRYSTAL OSCILLATORS	
Type	Frequency
Clock Oscillator	20 MHz

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks	Layers	Location
All Electronics	Rev B	20 MHz	4	

REQUIRED EUT CHANGES TO COMPLY:

CABLE INFORMATION

Cable #:	1	Cable(s) of this type:	
Cable Type:	Shielded	Shield Type:	Foil with Drain
Construction:	Multiconductor	Length In Meters:	166
Connected To End (1):	Reader	Connected To End (2):	DC supply & Controller
Connector At End (1):	None	Connector At End (2):	None
Shield Grounded At (1):	Shield Ground	Shield Grounded At (2):	NC
Part Number:		Number of Conductors:	6 to 10
Notes:			

Cable Routing For Worst Case Emissions.

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View

NOTES:

PHOTOGRAPH SHOWING CONDUCTED EMISSIONS

Conducted Emissions - Front View

NOTES:

APPENDIX B

MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest Rd, Barn • Mariposa, CA 95338 • (800)-500-4EMC

Customer:	**HID Corporation**	Date:	Feb-11-99
Specification:	**FCC 15.209**	Time:	11:34
Test Type:	**Field Strength**	Sequence#:	1
Equipment:	**Asset ID and Proximity Reader**		
Manufacturer:	HID Corporation	Tested By:	Dustin Oaks
Model:	6015A AMR100 Property Pass Reader		
S/N:	N/A		

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

Function	Manufacturer	Model #	S/N
Asset ID and Proximity Reader*	HID Corporation	6015A AMR100 Property Pass Reader	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A-01775

Test Conditions / Notes:

EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode. 40dB/dec correction factor used IAW 15.31. This correction is required in the frequency range of 9kHz to 490kHz due to the spec being at 300 meters.

Measurement Data: Sorted by Margin Test Distance: 30 Meters

#	Freq	Rdng dBµV	Mag L dB	Barn dB	40dB- dB	dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
1	125.000k Average	49.1	+12.2	+0.1	-40.0		+0.0	21.4	25.7	-4.3	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest Rd, Barn • Mariposa, CA 95338 • (800)-500-4EMC

Customer:	**HID Corporation**	Date:	Feb-2-99
Specification:	**FCC 15.209**	Time:	13:38
Test Type:	**Field Strength**	Sequence#:	2
Equipment:	**Asset ID and Proximity Reader**		
Manufacturer:	HID Corporation	Tested By:	Dustin Oaks
Model:	6015A AMR100 Property Pass Reader		
S/N:	N/A		

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

Function	Manufacturer	Model #	S/N
Asset ID and Proximity Reader*	HID Corporation	6015A AMR100 Property Pass Reader	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A-01775

Test Conditions / Notes:

EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode. 40dB/dec correction factor used IAW 15.31. This correction is required in the frequency range of 9kHz to 490kHz due to the spec being at 300 meters.

Measurement Data: Sorted by Margin Test Distance: 30 Meters

#	Freq	Rdng dBµV	Mag L dB	Barn dB	40dB- dB	dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
1	374.820k	34.1	+14.3	+0.1	-40.0		+0.0	8.5	16.2	-7.7	None
2	750.795k	9.0	+10.7	+0.2	+0.0		+0.0	19.9	30.1	-10.2	None
3	500.681k	10.3	+12.8	+0.2	+0.0		+0.0	23.3	33.6	-10.3	None
4	876.160k	7.5	+10.0	+0.2	+0.0		+0.0	17.7	28.7	-11.0	None
5	625.795k	7.5	+11.6	+0.2	+0.0		+0.0	19.3	31.7	-12.4	None
6	249.200k	31.0	+14.7	+0.1	-40.0		+0.0	5.8	19.8	-14.0	None
Average											
^	249.130k	39.6	+14.7	+0.1	-40.0		+0.0	14.4	19.7	-5.3	None

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest Rd, Barn • Mariposa, CA 95338 • (800)-500-4EMC

Customer: **HID Corporation**
Specification: **FCC 15.209**
Test Type: **Maximized Emissions**
Equipment: **Asset ID and Proximity Reader**
Manufacturer: HID Corporation
Model: 6015A AMR100 Property Pass Reader
S/N: N/A

Date: Feb-11-99
Time: 11:34
Sequence#: 4
Tested By: Dustin Oaks

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

Function	Manufacturer	Model #	S/N
Asset ID and Proximity Reader*	HID Corporation	6015A AMR100 Property Pass Reader	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	HP	6205C	2228A-01775

Test Conditions / Notes:

EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode.

Measurement Data: Sorted by Margin Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	Pream dB	Bicon dB	Log 1 dB	Barn dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
1	54.202 Quasi Peak	51.5	-27.2	+10.3	+0.0	+1.3	+0.0	35.9	40.0	-4.1	Vert
^	54.184	52.5	-27.2	+10.3	+0.0	+1.3	+0.0	36.9	40.0	-3.1	Vert
3	56.448 Quasi Peak	51.6	-27.2	+10.0	+0.0	+1.3	+0.0	35.7	40.0	-4.3	Vert
^	56.440	54.7	-27.2	+10.0	+0.0	+1.3	+0.0	38.8	40.0	-1.2	Vert
5	30.195 Quasi Peak	47.8	-27.3	+13.5	+0.0	+1.0	+0.0	35.0	40.0	-5.0	Vert
^	30.195	49.3	-27.3	+13.5	+0.0	+1.0	+0.0	36.5	40.0	-3.5	Vert
7	160.072 Quasi Peak	49.0	-27.0	+14.1	+0.0	+2.3	+0.0	38.4	43.5	-5.1	Horiz
^	160.067	50.8	-27.0	+14.1	+0.0	+2.3	+0.0	40.2	43.5	-3.3	Horiz
9	157.180	47.9	-27.0	+13.8	+0.0	+2.3	+0.0	37.0	43.5	-6.5	Horiz
10	60.070 Quasi Peak	49.4	-27.2	+9.6	+0.0	+1.3	+0.0	33.1	40.0	-6.9	Horiz
^	60.054	51.6	-27.2	+9.6	+0.0	+1.3	+0.0	35.3	40.0	-4.7	Horiz
12	120.064	47.5	-27.2	+13.8	+0.0	+2.0	+0.0	36.1	43.5	-7.4	Horiz
13	62.460 Quasi Peak	48.3	-27.2	+9.2	+0.0	+1.3	+0.0	31.6	40.0	-8.4	Vert
^	62.418	57.1	-27.2	+9.2	+0.0	+1.3	+0.0	40.4	40.0	+0.4	Vert
15	153.939	46.3	-27.0	+13.5	+0.0	+2.3	+0.0	35.1	43.5	-8.4	Horiz
16	51.180	46.7	-27.2	+10.7	+0.0	+1.3	+0.0	31.5	40.0	-8.5	Horiz
17	150.064	46.4	-27.0	+13.1	+0.0	+2.2	+0.0	34.7	43.5	-8.8	Horiz

18	80.075	48.6	-27.1	+7.6	+0.0	+1.6	+0.0	30.7	40.0	-9.3	Horiz
19	52.922	46.0	-27.2	+10.5	+0.0	+1.3	+0.0	30.6	40.0	-9.4	Horiz
20	112.192	46.2	-27.2	+13.1	+0.0	+1.9	+0.0	34.0	43.5	-9.5	Horiz
21	140.036	45.1	-27.1	+13.5	+0.0	+2.1	+0.0	33.6	43.5	-9.9	Horiz
22	380.089	40.1	-27.1	+0.0	+18.7	+3.8	+0.0	35.5	46.0	-10.5	Vert
23	54.494	44.8	-27.2	+10.3	+0.0	+1.3	+0.0	29.2	40.0	-10.8	Horiz
24	108.159	43.6	-27.1	+12.8	+0.0	+1.9	+0.0	31.2	43.5	-12.3	Horiz
25	128.186	42.4	-27.2	+14.0	+0.0	+2.0	+0.0	31.2	43.5	-12.3	Vert
26	82.203 Quasi Peak	45.1	-27.1	+8.1	+0.0	+1.6	+0.0	27.7	40.0	-12.3	Vert
^	82.169	56.8	-27.1	+8.1	+0.0	+1.6	+0.0	39.4	40.0	-0.6	Vert
28	350.074	36.9	-26.9	+0.0	+20.0	+3.6	+0.0	33.6	46.0	-12.4	Horiz
29	340.051	36.2	-26.8	+0.0	+20.5	+3.6	+0.0	33.5	46.0	-12.5	Horiz
30	70.187	44.9	-27.2	+8.2	+0.0	+1.4	+0.0	27.3	40.0	-12.7	Horiz
31	360.065	36.0	-27.0	+0.0	+19.6	+3.7	+0.0	32.3	46.0	-13.7	Vert
32	30.100	38.7	-27.3	+13.6	+0.0	+1.0	+0.0	26.0	40.0	-14.0	Horiz
33	360.059	35.6	-27.0	+0.0	+19.6	+3.7	+0.0	31.9	46.0	-14.1	Horiz
34	114.437	41.2	-27.2	+13.3	+0.0	+1.9	+0.0	29.2	43.5	-14.3	Vert
35	400.057	36.4	-27.2	+0.0	+17.9	+3.9	+0.0	31.0	46.0	-15.0	Vert
36	166.686	38.3	-26.9	+14.7	+0.0	+2.4	+0.0	28.5	43.5	-15.0	Vert
37	440.056	34.7	-27.7	+0.0	+18.5	+4.3	+0.0	29.8	46.0	-16.2	Horiz
38	80.026	41.4	-27.1	+7.6	+0.0	+1.6	+0.0	23.5	40.0	-16.5	Horiz
39	180.049	35.5	-26.9	+15.9	+0.0	+2.5	+0.0	27.0	43.5	-16.5	Horiz
40	410.056	34.4	-27.3	+0.0	+18.1	+4.0	+0.0	29.2	46.0	-16.8	Horiz
41	450.071	32.8	-27.8	+0.0	+18.6	+4.4	+0.0	28.0	46.0	-18.0	Horiz
42	267.064	32.8	-26.6	+18.2	+0.0	+3.1	+0.0	27.5	46.0	-18.5	Vert
43	370.053	31.2	-27.0	+0.0	+19.1	+3.7	+0.0	27.0	46.0	-19.0	Horiz
44	227.195	33.3	-26.7	+16.8	+0.0	+2.9	+0.0	26.3	46.0	-19.7	Vert
45	400.062	31.6	-27.2	+0.0	+17.9	+3.9	+0.0	26.2	46.0	-19.8	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest Rd, Barn • Mariposa, CA 95338 • (800)-500-4EMC

Customer:	**HID Corporation**	Date:	Feb-22-99
Specification:	**FCC pt 15.207**	Time:	17:02
Test Type:	**Conducted Emissions**	Sequence#:	22
Equipment:	**Asset ID and Proximity Reader**		
Manufacturer:	HID Corporation	Tested By:	Dustin Oaks
Model:	6015A AMR100 Property Pass Reader		
S/N:	N/A		

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

Function	Manufacturer	Model #	S/N
Asset ID and Proximity Reader*	HID Corporation	6015A AMR100 Property Pass Reader	N/A

Support Devices:

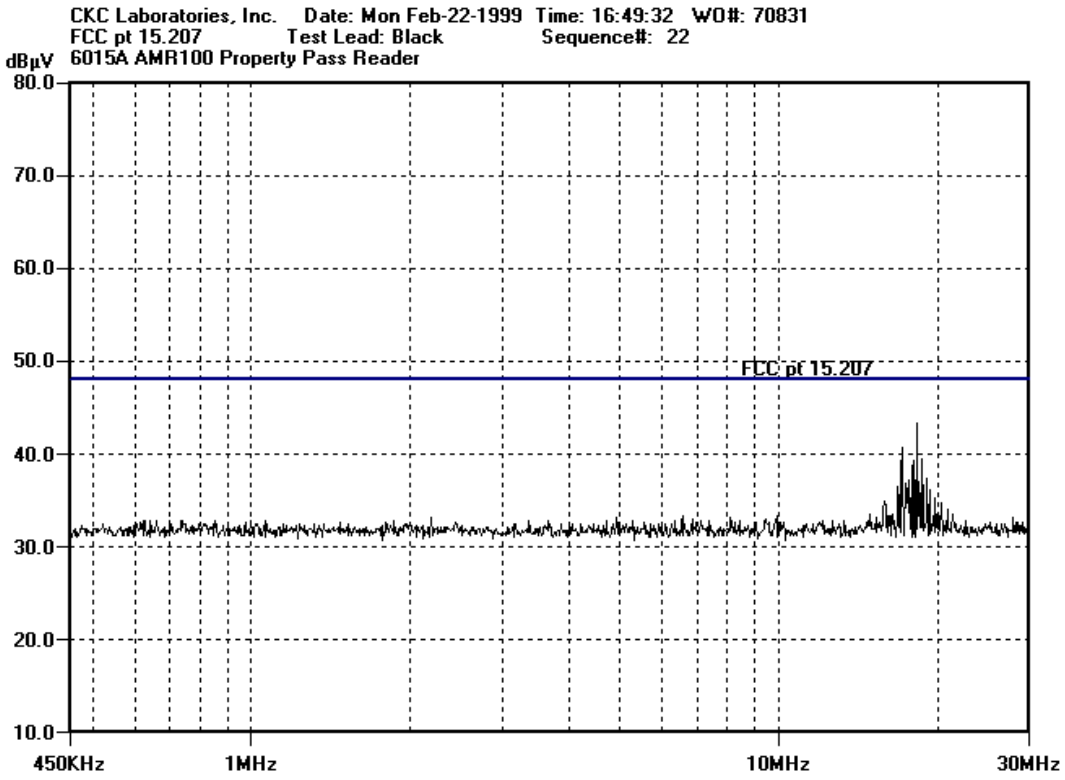
Function	Manufacturer	Model #	S/N
Power Supply	Topward Electronics Instruments	2306	920035

Test Conditions / Notes:

EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode, with Proxcard in Field. Moved Black wire inside EUT from TB2 -2 to TB5 -3. Neg DC lead tied to Chassis ground on DC Supply.

Measurement Data: Sorted by Margin Test Lead: Black

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
1	17.135	40.7					+0.0	40.7	48.0	-7.3	Black
2	18.656	39.4					+0.0	39.4	48.0	-8.6	Black
3	18.158	39.3					+0.0	39.3	48.0	-8.7	Black
4	17.022	39.3					+0.0	39.3	48.0	-8.7	Black
5	17.909	38.7					+0.0	38.7	48.0	-9.3	Black
6	19.154	37.3					+0.0	37.3	48.0	-10.7	Black
7	17.660	37.2					+0.0	37.2	48.0	-10.8	Black
8	18.407	37.0					+0.0	37.0	48.0	-11.0	Black
9	17.376	36.9					+0.0	36.9	48.0	-11.1	Black
10 Quasi Peak	18.280	31.0					+0.0	31.0	48.0	-17.0	Black
^	18.283	43.4					+0.0	43.4	48.0	-4.6	Black


CKC Laboratories, Inc. Date: Mon Feb-22-1999 Time: 16:49:32 WO#: 70831
FCC pt 15.207 Test Lead: Black Sequence#: 22
6015A AMR100 Property Pass Reader
dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
FCC pt 15.207
450KHz
1MHz
10MHz
30MHz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest Rd, Barn • Mariposa, CA 95338 • (800)-500-4EMC

Customer:	**HID Corporation**	Date:	Feb-22-99
Specification:	**FCC pt 15.207**	Time:	17:02
Test Type:	**Conducted Emissions**	Sequence#:	21
Equipment:	**Asset ID and Proximity Reader**		
Manufacturer:	HID Corporation	Tested By:	Dustin Oaks
Model:	6015A AMR100 Property Pass Reader		
S/N:	N/A		

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

Function	Manufacturer	Model #	S/N
Asset ID and Proximity Reader*	HID Corporation	6015A AMR100 Property Pass Reader	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward Electronics Instruments	2306	920035

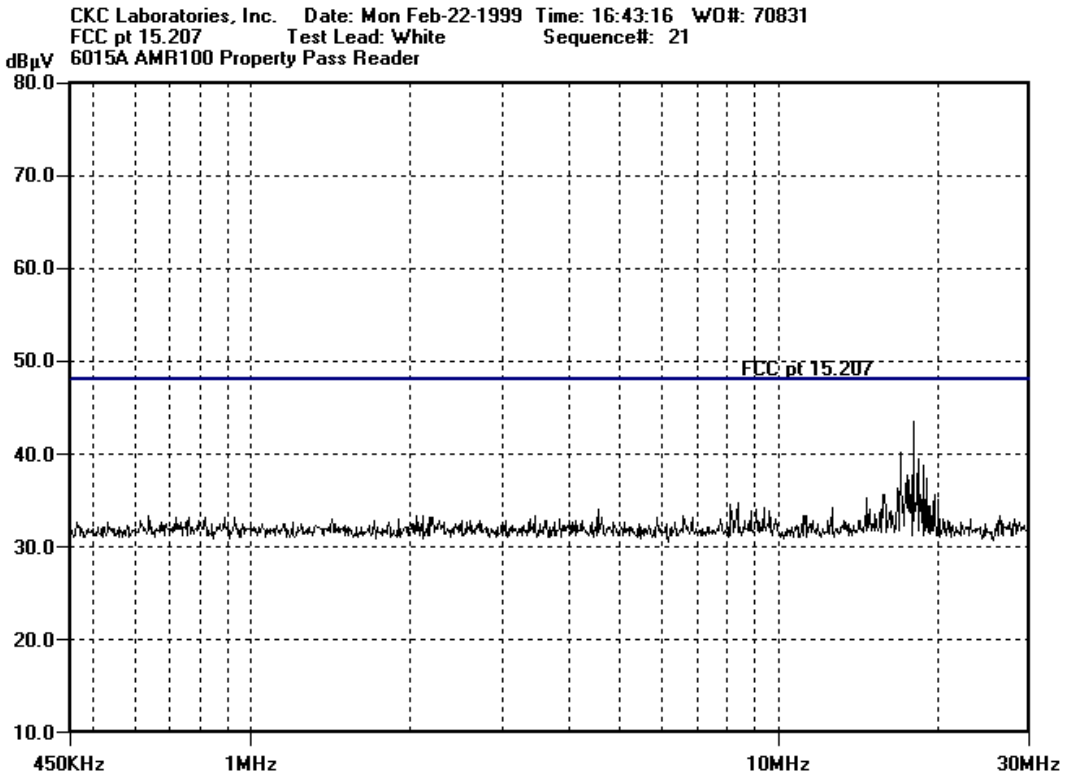
Test Conditions / Notes:

EUT is a proximity reader operating on 125kHz and requires 12VDC to operate. EUT is operating in continuos read tag mode, with Proxcard in Field. Moved Black wire inside EUT from TB2 -2 to TB5 -3. Neg DC lead tied to Chassis ground on DC Supply.

Measurement Data: Sorted by Margin Test Lead: White

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
1	17.006	40.2					+0.0	40.2	48.0	-7.8	White
2	18.407	39.5					+0.0	39.5	48.0	-8.5	White
3	18.905	38.8					+0.0	38.8	48.0	-9.2	White
4	17.909	37.8					+0.0	37.8	48.0	-10.2	White
5	17.635	37.7					+0.0	37.7	48.0	-10.3	White
6	19.154	37.3					+0.0	37.3	48.0	-10.7	White
7	17.376	36.9					+0.0	36.9	48.0	-11.1	White
8	16.894	36.4					+0.0	36.4	48.0	-11.6	White
9	15.873	35.7					+0.0	35.7	48.0	-12.3	White

10	18.028	30.5		+0.0	30.5	48.0	-17.5	White
	Quasi Peak							
^	18.034	43.5		+0.0	43.5	48.0	-4.5	White


CKC Laboratories, Inc. Date: Mon Feb-22-1999 Time: 16:43:16 WO#: 70831
FCC pt 15.207 Test Lead: White Sequence#: 21
6015A AMR100 Property Pass Reader
dBµV
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
FCC pt 15.207
450KHz
1MHz
10MHz
30MHz