



**ADDENDUM TO CERTIFICATION
TEST REPORT FC98-027**

FOR THE

4043A (4043-300) AMH100 HANDHELD READER

**FCC PART 15 SUBPART C AND
FCC 2.1043(b)(2) PERMISSIVE CHANGE II
COMPLIANCE**

DATE OF ISSUE: JANUARY 31, 2000

PREPARED FOR:

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Irvine, CA 92618-1905

P.O. No:
W.O. No: 73039

Report No: FC98-027A

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Date of test: November 9-11, 1999

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A handwritten signature in cursive script that reads 'Dennis Ward'. The signature is written in dark ink and is positioned above a horizontal line.

Dennis Ward
Director of Laboratories
CKC Laboratories, Inc.

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DATEch (Germany); A2LA (USA); FCC (USA); VCCI (Japan); BSMI (Taiwan); HOKLAS (Hong Kong).
CKC Laboratories, Inc. has Letters of Acceptance through an MRA for the following agencies:
ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); TUV Rheinland-Germany; TUV Rheinland-Korea; TUV Rheinland-Russia; Radio Communications Agency (RA); NEMKO (Norway).

ADMINISTRATIVE INFORMATION

DATE OF TEST: November 9-11, 1999

PURPOSE OF TEST: To demonstrate the compliance of the 4043A (4043-300) AMH100 Handheld Reader, with the requirements for FCC Part 15 Subpart C and FCC Part 2.1043(b)(2) Permissive Change II 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:
Handheld Reader
Manuf: HID Corporation
Product: AMH100 Handheld Reader
Model: 4043A
Final Assy: 4043-300
Serial: 2099-00272
FCC ID: JQ64043

SUMMARY OF RESULTS

The HID Corporation 4043A (4043-300) AMH100 Handheld Reader, was tested in accordance with ANSI C63.4 1992 for compliance with FCC Part 15 Subpart C and FCC Part 2.1043(b)(2) Permissive Change II.

As received, the above equipment was found to be fully compliant with the limits of FCC Part 15 Subpart C and FCC Part 2.1043(b)(2) Permissive Change II. The results in this report apply only to the items tested, as identified herein.

PERMISSIVE II CHANGE DESCRIPTION

- 1) The Reader will now operate with a personal computer in addition to a portable data terminal.
- 2) There are now 4 transmitter power levels instead of the previous 8 power levels. The transmit timings have also changed.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

Hand held reader capable of reading from and writing to the Atmel AT24RF08 tag when used in conjunction with a host computer.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB 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(s):

PC

Manuf: IBM
Model: 310ED
Serial: 60A1130
FCC ID: HLZ 315

Power Supply

Manuf: Ault
Model: SC102TA0503F01
Serial: N/A
FCC ID: DoC

REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the 4043A (4043-300) AMH100 Handheld 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: Six Highest Radiated Emission Levels- (9kHz-30MHz)									
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	FCC 15.31 dB				
0.125Fundamental	41.5	10.5			-40.0	12.0	25.7	-13.7	N
0.250	26.9	10.6			-40.0	-2.5	19.6	-22.1	N
0.500	12.5	10.3			0.0	22.8	33.6	-10.8	N
0.625	8.7	10.5			0.0	19.2	31.7	-12.5	N
0.750	11.8	11.0			0.0	22.8	30.1	-7.3	N
0.875	9.5	10.9			0.0	20.4	28.7	-8.3	N

Test Method: ANSI C63.4 1992
Spec Limit : FCC Part 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 operating in a normal configuration, reading a tag located in the field. The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified Unit.

Table 2: Six Highest Radiated Emission Levels-(30MHz-1000MHz)

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Ant DB	Amp dB	Cable dB	Dist dB				
42.278	48.0	10.8	-27.1	0.7		32.4	40.0	-7.6	V
42.590	46.8	10.8	-27.0	0.8		31.4	40.0	-8.6	V
399.423	44.3	16.6	-27.0	3.8		37.7	46.0	-8.3	VQ
448.925	43.6	17.3	-27.4	4.3		37.8	46.0	-8.2	H
515.440	42.3	18.2	-27.6	4.7		37.6	46.0	-8.4	H
519.541	41.4	18.2	-27.6	4.7		36.7	46.0	-9.3	H

Test Method: ANSI C63.4 1992
Spec Limit : FCC Part 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 operating in a normal configuration, reading a tag located in the field.
The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified unit.

Table 3: Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV	SPEC LIMIT dBµV	MARGIN dB	NOTES
		Lisn DB	dB	dB	dB				
0.560415	42.1	0.1				42.2	48.0	-5.8	B
1.691218	42.2	0.1				42.3	48.0	-5.7	B
1.884880	37.3	0.1				37.4	48.0	-10.6	BQ
2.072930	38.4	0.1				38.5	48.0	-9.5	BQ
9.238040	35.0	0.2				35.2	48.0	-12.8	WQ
9.512170	41.8	0.2				42.0	48.0	-6.0	B

Test Method:
Spec Limit :

ANSI C63.4 1992
FCC Part 15.207

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

COMMENTS: EUT is operating in a normal configuration, reading a tag located in the field. The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified unit.

TABLE A
LIST OF TEST EQUIPMENT

Barn Lab

1. Spectrum Analyzer, Hewlett Packard, Model No. 8566B, CKC 1, S/N 2403A08241 (Display Unit), S/N 2209A01404 (rf Unit). Calibration date: July 7, 1999. Calibration due date: July 7, 2000.
2. Preamp, Hewlett Packard, Model No. 8447D, S/N 1937A02604. Calibration Date: April 28, 1999. Calibration Due: April 28, 2000.
3. Quasi-Peak Adapter, Hewlett Packard, Model No. 85650A, S/N 2811A01267. Calibration Date: July 7, 1999. Calibration Due: July 7, 2000.
4. Biconical Antenna, A & H Systems, Model No. SAS-200/542, S/N 156. Calibration Date: May 20, 1999. Calibration Due: May 20, 2000.
5. Log Periodic Antenna, A & H Systems, Model No. SAS-200/512, S/N 154. Calibration Date: May 20, 1999. Calibration Due: May 20, 2000.
6. Mag Loop Antenna, EMCO, Model 6502, S/N 1074. Calibration date: June 16, 1999. Calibration due date: June 16, 2000.
7. LISN (FCC), Solar Electronics, S/N 855996, 992. Calibration date: June 4, 1999. Calibration due date: June 4, 2000.
8. Mariposa Site B (Barn). Calibration date: July 6, 1999. Calibration due date: July 6, 2000.
9. Test software, EMI Test 3.08.

EUT SETUP

The equipment under test (EUT) and the peripheral(s) 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 Tables 1-3 for radiated and conducted emissions. 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 handheld devices.

I/O cables were connected to the EUT and peripherals 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 4043A (4043-300) AMH100 Handheld Reader. For radiated measurements below 30 MHz, the magloop antenna was used at distance of 30 meters from the edge of the EUT. For radiated measurements 30-300 MHz, the biconical antenna was used at a distance of 3 meters from the EUT. For frequencies from 300 to 1000 MHz, the log periodic antenna was used at a distance of 3 meters from the EUT. 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 dB μ V, 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

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in Tables 1, 2 and 3 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 for the 4043A (4043-300) AMH100 Handheld 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 4043A (4043-300) AMH100 Handheld 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 (and Permissive Change II) 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. The frequency ranges below 30 MHz were scanned using the magnetic loop antenna. 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 peripherals 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.

Power Output Measurement

At a distance of 30 meters, the maximum ERP for 4043A (4043-300) AMH100 Handheld Reader was measured at 52 dBuV/m. In accordance with 15.31, a 40 dB correction factor was used to adjust the distance. The factor corrected the reading to 12 dBuV/m.

SAMPLE CALCULATIONS

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

$$\begin{aligned} & \text{Meter reading (dB}\mu\text{V)} \\ & + \text{Antenna Factor (dB)} \\ & + \text{Cable Loss (dB)} \\ & - \text{Distance Correction (dB)} \\ & - \text{Pre-amplifier Gain (dB)} \\ & = \text{Corrected Reading (dB}\mu\text{V/m)} \end{aligned}$$

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

A typical data sheet will display the following in column format:

#	Freq MHz	Rdng dB μ V	Cable	Amp	Bicon	Mag	Log	Dist Table	Corr dB μ V/m	Spec	Margin	Polar
	LISN	FCC 15.31										

means reading number

Freq MHz is the frequency in MHz of the obtained reading.

Rdng dB μ V is the reading obtained on the spectrum analyzer in dB μ V.

Amp is short for the preamplifier factor or gain in dB.

Bicon is the biconical antenna factor in dB.

Log is the log periodic antenna factor in dB.

Mag is the magnetic loop antenna factor in dB.

Cable is the cable loss in dB of the coaxial cable on the OATS.

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 dB μ V/m is the corrected reading which is now in dB μ V/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.

LISN is the listen factor in dB.

FCC 15.31 is the average correction called in FCC Part 15.31.

APPENDIX A

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	Version 2.7
CRT was displaying:	N/A
Power Supply Manufacturer:	N/A, Powered from Symbol HandHeld Computer, or from optional power supply when connected to a PC
Power Supply Part Number:	N/A
AC Line Filter Manufacturer:	N/A
AC Line Filter Part Number:	N/A
DC voltage used during testing: 5.0V DC	

I/O PORTS	
Type	#
RS-232	1

CRYSTAL OSCILLATORS	
Type	Freq In MHz
Ceramic Resonator	8.0

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
All (Excite, receive, Communicate to host)	ENG—191 Rev 3	8 MHz	4	N/A

CABLE INFORMATION

Cable #: 1	Cable(s) of this type: 1
Cable Type: Coil Construction: Multi-wire Connected To End (1): 4043A (4043-300) AMH100 Handheld Reader Connector At End (1): Soldered to board Shield Grounded At (1): N/A Part Number: 25-33665-01 M	Shield Type: None Length In Meters: 0.92 Connected To End (2): Host Computer Connector At End (2): RJ-45 Shield Grounded At (2): N/A Number of Conductors: 10 (7 used)
Notes: Cable modified version of C&M 25-33665-01	

REQUIRED EUT CHANGES TO COMPLY:
None.

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

PHOTOGRAPH SHOWING CONDUCTED EMISSIONS



Conducted Emissions - Front View

APPENDIX B

MEASUREMENT DATA SHEETS

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

Customer: **HID Corporation**
Specification: **FCC 15 C PARA 15.209**
Work Order #: **73039**
Test Type: **Maximized Emissions**
Equipment: **Access Control**
Manufacturer: HID Corporation
Model: 4043A (4043-300)
S/N: 2099-00272

Date: Wed Nov-10-1999
Time: 14:40:41
Sequence#: 5
Tested By: Dustin Oaks

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control*	HID Corporation	4043A (4043-300)	2099-00272

Support Devices:

Function	Manufacturer	Model #	S/N
PC	IBM	310ED	60A1130
Power Supply	Ault		

Test Conditions / Notes:

EUT is operating in a normal configuration, reading a tag located in the field. The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified Unit.

Measurement Data: Reading listed by margin. Test Distance: 30 Meters

#	Freq MHz	Rdng dBµV	Mag dB	Cable dB	FCC 15.31 dB	Dist Table dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	750.155k	11.8	+11.0	+0.0	+0.0	+0.0	22.8	30.1	-7.3	None
2	875.155k	9.5	+10.9	+0.0	+0.0	+0.0	20.4	28.7	-8.3	None
3	500.155k	12.5	+10.3	+0.0	+0.0	+0.0	22.8	33.6	-10.8	None
4	625.155k	8.7	+10.5	+0.0	+0.0	+0.0	19.2	31.7	-12.5	None
5	124.771k	41.5	+10.5	+0.0	-40.0	+0.0	12.0	25.7	-13.7	None
6	250.155k	26.9	+10.6	+0.0	-40.0	+0.0	-2.5	19.6	-22.1	None
7	375.155k	18.5	+10.5	+0.0	-40.0	+0.0	-11.0	16.1	-27.1	None

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

Customer: **HID Corporation**

Specification: **FCC 15.209**

Work Order #: **73039**

Date: Wed Nov-10-1999

Test Type: **Maximized Emissions**

Time: 16:43:43

Equipment: **Access Control**

Sequence#: 8

Manufacturer: HID Corporation

Tested By: Dustin Oaks

Model: 4043A (4043-300)

S/N: 2099-00272

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control*	HID Corporation	4043A (4043-300)	2099-00272

Support Devices:

Function	Manufacturer	Model #	S/N
PC	IBM	310ED	60A1130
Power Supply	Ault		

Test Conditions / Notes:

EUT is operating in a normal configuration, reading a tag located in the field. The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified unit.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Bicon dB	Log dB	Amp dB	cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	42.278M	48.0	+10.8	+0.0	-27.1	+0.7	+0.0	32.4	40.0	-7.6	Vert
2	448.925M	43.6	+0.0	+17.3	-27.4	+4.3	+0.0	37.8	46.0	-8.2	Horiz
3	399.423M	44.3	+0.0	+16.6	-27.0	+3.8	+0.0	37.7	46.0	-8.3	Vert
^	399.398M	50.1	+0.0	+16.6	-27.0	+3.8	+0.0	43.5	46.0	-2.5	Vert
5	515.440M	42.3	+0.0	+18.2	-27.6	+4.7	+0.0	37.6	46.0	-8.4	Horiz
6	42.590M	46.8	+10.8	+0.0	-27.0	+0.8	+0.0	31.4	40.0	-8.6	Vert
7	519.541M	41.4	+0.0	+18.2	-27.6	+4.7	+0.0	36.7	46.0	-9.3	Horiz
8	34.597M	44.0	+11.5	+0.0	-27.0	+0.7	+0.0	29.2	40.0	-10.8	Vert
9	500.568M	38.7	+0.0	+17.9	-27.6	+4.6	+0.0	33.6	46.0	-12.4	Horiz
10	65.432M	44.4	+8.6	+0.0	-26.8	+1.0	+0.0	27.2	40.0	-12.8	Vert
11	510.406M	37.1	+0.0	+18.1	-27.6	+4.7	+0.0	32.3	46.0	-13.7	Horiz
12	399.418M	38.6	+0.0	+16.6	-27.0	+3.8	+0.0	32.0	46.0	-14.0	Horiz
^	399.377M	46.9	+0.0	+16.6	-27.0	+3.8	+0.0	40.3	46.0	-5.7	Horiz

14	69.800M	43.4	+7.9	+0.0	-26.8	+1.0	+0.0	25.5	40.0	-14.5	Vert
15	457.449M	36.9	+0.0	+17.4	-27.4	+4.3	+0.0	31.2	46.0	-14.8	Vert
16	564.918M	34.4	+0.0	+19.0	-27.7	+5.0	+0.0	30.7	46.0	-15.3	Horiz
17	423.368M	36.9	+0.0	+16.9	-27.2	+4.0	+0.0	30.6	46.0	-15.4	Vert
18	44.817M	40.1	+10.7	+0.0	-27.0	+0.8	+0.0	24.6	40.0	-15.4	Vert
19	505.060M	35.0	+0.0	+18.0	-27.6	+4.6	+0.0	30.0	46.0	-16.0	Horiz
20	568.279M	33.5	+0.0	+19.0	-27.7	+5.0	+0.0	29.8	46.0	-16.2	Horiz
21	582.794M	32.7	+0.0	+19.2	-27.8	+5.1	+0.0	29.2	46.0	-16.8	Horiz
22	449.124M	35.0	+0.0	+17.3	-27.4	+4.3	+0.0	29.2	46.0	-16.8	Vert
23	424.883M	35.0	+0.0	+17.0	-27.2	+4.1	+0.0	28.9	46.0	-17.1	Horiz
24	441.396M	33.7	+0.0	+17.2	-27.3	+4.2	+0.0	27.8	46.0	-18.2	Vert
25	77.673M	40.5	+7.1	+0.0	-26.9	+1.1	+0.0	21.8	40.0	-18.2	Vert
26	516.416M	32.4	+0.0	+18.2	-27.6	+4.7	+0.0	27.7	46.0	-18.3	Vert
27	469.912M	33.3	+0.0	+17.5	-27.5	+4.4	+0.0	27.7	46.0	-18.3	Vert
28	74.272M	39.9	+7.5	+0.0	-26.8	+1.0	+0.0	21.6	40.0	-18.4	Vert
29	500.522M	32.2	+0.0	+17.9	-27.6	+4.6	+0.0	27.1	46.0	-18.9	Vert
30	496.162M	31.7	+0.0	+17.9	-27.6	+4.6	+0.0	26.6	46.0	-19.4	Vert
31	120.287M	35.8	+13.5	+0.0	-26.8	+1.6	+0.0	24.1	43.5	-19.4	Vert

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

Customer: **HID Corporation**

Specification: **FCC 15.207**

Work Order #: **73039**

Test Type: **Conducted Emissions**

Equipment: **Access Control**

Manufacturer: **HID Corporation**

Model: **4043A (4043-300)**

S/N: **2099-00272**

Date: Thu Nov-11-1999

Time: 15:17:07

Sequence#: 9

Tested By: Dustin Oaks

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control*	HID Corporation	4043A (4043-300)	2099-00272

Support Devices:

Function	Manufacturer	Model #	S/N
PC	IBM	310ED	60A1130
Power Supply	Ault		

Test Conditions / Notes:

EUT is operating in a normal configuration, reading a tag located in the field. The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified unit.

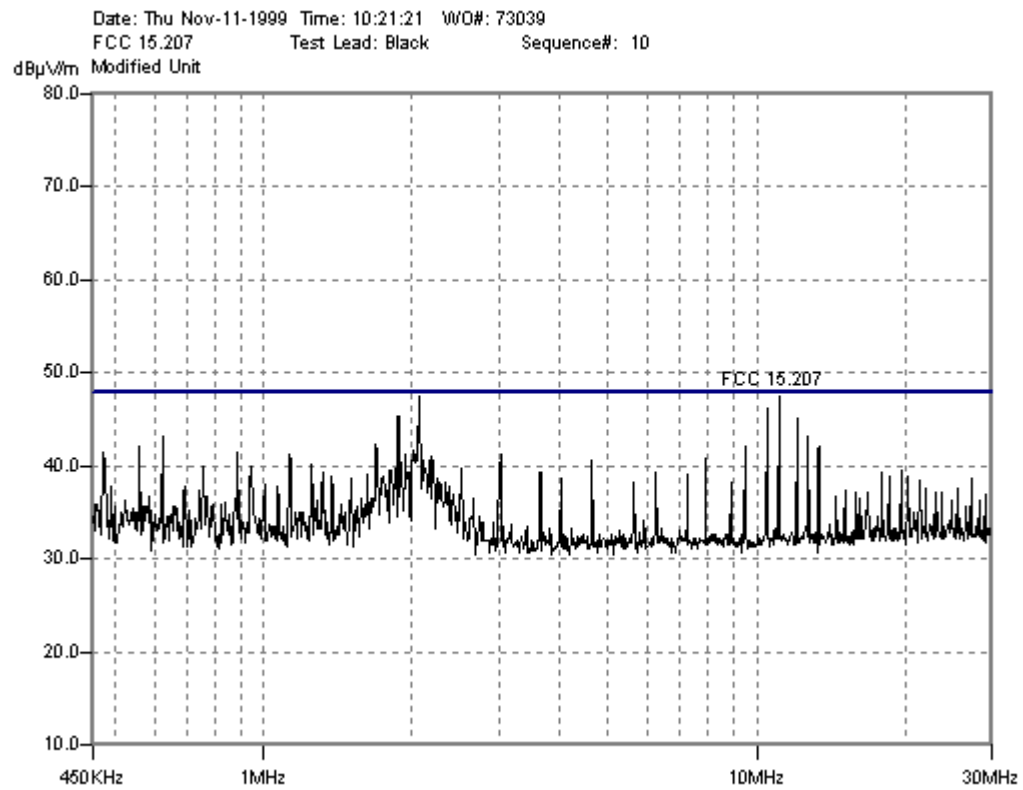
Measurement Data:

Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBµV	LISN				Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	1.691M	42.2	+0.1				+0.0	42.3	48.0	-5.7	Black
2	560.415k	42.1	+0.1				+0.0	42.2	48.0	-5.8	Black
3	9.512M	41.8	+0.2				+0.0	42.0	48.0	-6.0	Black
4	2.073M	38.4	+0.1				+0.0	38.5	48.0	-9.5	Black
QP											
^	2.076M	47.4	+0.1				+0.0	47.5	48.0	-0.5	Black
6	1.885M	37.3	+0.1				+0.0	37.4	48.0	-10.6	Black
QP											
^	1.880M	45.2	+0.1				+0.0	45.3	48.0	-2.7	Black
8	621.140k	35.6	+0.1				+0.0	35.7	48.0	-12.3	Black
QP											
^	625.141k	43.0	+0.1				+0.0	43.1	48.0	-4.9	Black
10	10.487M	33.2	+0.2				+0.0	33.4	48.0	-14.6	Black
QP											
^	10.486M	45.8	+0.2				+0.0	46.0	48.0	-2.0	Black
12	12.103M	32.4	+0.2				+0.0	32.6	48.0	-15.4	Black
QP											
^	12.109M	45.0	+0.2				+0.0	45.2	48.0	-2.8	Black

14	11.106M	31.9	+0.2	+0.0	32.1	48.0	-15.9	Black
^	11.107M	46.6	+0.2	+0.0	46.8	48.0	-1.2	Black
16	12.749M	25.2	+0.2	+0.0	25.4	48.0	-22.6	Black
^	12.757M	43.0	+0.2	+0.0	43.2	48.0	-4.8	Black



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

Customer: **HID Corporation**

Specification: **FCC 15.207**

Work Order #: **73039**

Test Type: **Conducted Emissions**

Equipment: **Access Control**

Manufacturer: **HID Corporation**

Model: **4043A (4043-300)**

S/N: **2099-00272**

Date: Thu Nov-11-1999

Time: 11:17:41

Sequence#: 10

Tested By: Dustin Oaks

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control*	HID Corporation	4043A (4043-300)	2099-00272

Support Devices:

Function	Manufacturer	Model #	S/N
PC	IBM	310ED	60A1130
Power Supply	Ault		

Test Conditions / Notes:

EUT is operating in a normal configuration, reading a tag located in the field. The laptop is running PROXTRAK Demo software, version 3. EUT receives DC power via an AC/DC adapter connected to the laptop's RS232 port. Modified unit.

Measurement Data:

Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	LISN				Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	9.238M	35.0	+0.2				+0.0	35.2	48.0	-12.8	White
QP											
^	9.236M	42.9	+0.2				+0.0	43.1	48.0	-4.9	White
3	1.966M	34.3	+0.1				+0.0	34.4	48.0	-13.6	White
QP											
^	1.965M	45.5	+0.1				+0.0	45.6	48.0	-2.4	White
5	10.857M	33.0	+0.2				+0.0	33.2	48.0	-14.8	White
QP											
^	10.853M	46.7	+0.2				+0.0	46.9	48.0	-1.1	White
7	11.482M	32.6	+0.2				+0.0	32.8	48.0	-15.2	White
QP											
^	11.483M	46.7	+0.2				+0.0	46.9	48.0	-1.1	White
9	2.022M	32.6	+0.1				+0.0	32.7	48.0	-15.3	White
QP											
^	2.022M	46.4	+0.1				+0.0	46.5	48.0	-1.5	White
11	12.608M	32.5	+0.2				+0.0	32.7	48.0	-15.3	White
QP											
^	12.605M	44.1	+0.2				+0.0	44.3	48.0	-3.7	White
13	9.861M	32.4	+0.2				+0.0	32.6	48.0	-15.4	White
QP											

^	9.860M	45.6	+0.2	+0.0	45.8	48.0	-2.2	White
15	848.277k	30.5	+0.1	+0.0	30.6	48.0	-17.4	White
QP								
^	845.972k	43.1	+0.1	+0.0	43.2	48.0	-4.8	White
17	592.430k	28.2	+0.1	+0.0	28.3	48.0	-19.7	White
QP								
^	592.600k	56.4	+0.1	+0.0	56.5	48.0	+8.5	White

