

TEST REPORT

REPORT CERTIFICATE issued by a FCC listed Test Laboratory

CUSTOMER AND

MANUFACTURER: Precise Biometrics AB
Scheelevägen 19 C
SE-223 70 Lund
Sweden

Project no: 05255

EQUIPMENT UNDER

TEST (EUT): Combined Fingerprint and Smart Card Reader,
Type Precise 200MC, MS 010 126 R1A, without s/n.

TEST SPEC:

47 Cfr Ch. 1 (10-1-05 Edition):
Part 15, Subpart B, Class B.
§15.107: Conducted Emission, AC power line
§15.109: Radiated Emission

DATE OF TEST:

December 9 - 14, 2005

TEST SITE:

Svenska EMC Lab AB, Karlskrona, Sweden.
FCC registration number: 90967.

CONFORMITY:

The EUT (Equipment Under Test), did pass the above mentioned tests.
The test result shows full compliance with the technical specification
for Class B Digital Devices.

Approved, Karlskrona December 15, 2005



Hans Östergren
Manager Svenska EMC Lab AB

DATE OF RECEIPT:

December 9, 2005

CONDITION OF EUT:

No remarks. Operates as intended.

TEST PERSONNEL:

Svenska EMC Lab AB: Hans Östergren

ASSISTANT PERSONNEL:

Precise Biometrics AB: Per Ola Olsson.

EUT DESCRIPTION:

EUT is a combined fingerprint reader and smart card reader. Its primary use is logical access.
EUT has only one fixed cable for connection to USB port. EUT is powered through the USB cable.
See Appendix 1

CALIBRATION DECLARATION:

The test equipment is calibrated with tractability to national or international standards.
All instruments were within the calibration interval. Before starting the tests, the conducted emission test system and the radiated emission test system were checked with Generator CNE III as reference source.

ESTIMATED UNCERTAINTY:

Expanded uncertainty ($k = 2$):

Conducted Emission, 0.45 – 30 MHz:	± 1.1 dB
Field Strength, emission 30 – 300 MHz:	± 2.2 dB
Field Strength, emission 300 – 700 MHz:	± 2.3 dB
Field Strength, emission 700 – 2000 MHz:	± 2.4 dB
Field Strength, emission 1 to 2 GHz:	± 3.0 dB
Frequency:	± 100 Hz

The uncertainties are for a confidence level of not less than 95 %.

TEST EQUIPMENT LIST:

Type/Manufacturer/Bandwidth	s/n	Calibration information	
		Date	Interval
EMI Test System, Monitor EZM,	860157/014	2005-07	12 months
Rohde & Schwarz EP-6, 20 Hz - 1300 MHz			
Test Receiver, Rohde & Schwarz ESH-3,	894979/013	2005-07	12 months
9 kHz - 30 MHz			
Test Receiver, Rohde & Schwarz ESVP,	893497/006	2005-07	12 months
20 - 1300 MHz			
Pulse Limiter, Rohde & Schwarz ESH3-Z2	357881052	2005-07	12 months
DC - 30 MHz			
Plotter, Rohde & Schwarz DOP 2	893117/0108	NA	NA
Spectrum Analyzer Tektronix 2755AP,	B010111	2005-07	12 months
10 kHz - 21 GHz			
Preamplifier, Mini-Circuits ZHL-42,	860701	2005-02	12 months
0.7 - 4.2 GHz			
LISN 50 OHM/50 μ H, Electro Metrics EM-7820	2771	2005-07	12 months
10 kHz - 30 MHz, 16 A			
LISN 50 OHM/50 μ H, MEB NNB-4/200	C96001/3	2004-07	12 months
0.15 - 30 MHz, 200 A			
Cable to Test Receiver, RG 223	006	2005-08	12 months
Cable to LISN, RG 223	015	2005-08	12 months
Biconical Antenna, Schwarzbeck BBA9106	93-92196.1	2005-07	24 months
30 - 300 MHz			
Log-periodic Antenna, Schwarzbeck	91071205	2004-07	24 months
UHALP9107, 300 - 1000 MHz			
Double Ridged Guide Antenna, EMCO 3115,	2338	2003-07	36 months
1 - 18 GHz			
Antenna Cable, RG 214	001	2005-08	12 months
Antenna Cable, Sucoflex 104	171288/4	2005-08	12 months
Antenna Mast System, Jyske EMC, h = 1 - 4 m	02	NA	NA
Turn Table, Jyske EMC, h = 1 m	01	NA	NA
Anechoic Chamber, 8 x 4.5 x 3 m	1	2003-04	36 months
Open Area Test Site for 3 m antenna distance	1	2003-12	36 months

TEST SET-UP AND PROCEDURE:

As laid out in ANSI C.63.4:2003 Document. Tested as tabletop equipment.
See Appendix 2 and 3.

TEST CONDITIONS:

Rating:

- PC: 115 VAC, 50-60 Hz, 0.7 A. Class I.
- EUT: 5 VDC, 0.5 A.

Clock Frequency: 7.38 MHz, 12.0 MHz, 192.0 MHz.

Measured frequency range: 0.15 – 2 000 MHz.

Configuration: See Appendix 4. A minimum system was configured with a PC and its peripherals. EUT was connected to the USB port, other devices to the serial and parallel ports (15.31(i)).

The system consists of:

- PC, IBM Thinkpad 600E, Type 2645-4BG, s/n 5528TVC02/99, FCC ID: Tested to comply with FCC regulations.
- AC/DC Adapter, IBM IZORV 860 PF, Type OZK6543, s/n 2M04T7782PF, FCC ID: Tested to comply with FCC regulations.
- Printer, HP DeskJet 895cxi, Type C6410A, s/n HU0151N087, FCC ID: Tested to comply with FCC regulations.
- AC/DC Adapter to Printer, Type C6409-60014, s/n T5844428252, FCC ID: Tested to comply with FCC regulations.
- Mouse, Microsoft Wheelhouse, Type X05-51692, s/n 0304842-00000, FCC ID: Tested to comply with FCC regulations.

Cables:

- Unshielded mains cable of 1.8 m length with safety ground to the AC/DC Adapter (PC).
- Shielded DC cable of 1.8 m length without safety ground from AC/DC Adapter to PC.
- Shielded USB (signal and power) cable of 2 m length from EUT 200MC to the PC (USB port). This cable is with two ferrites of same type, one in each cable end.
- Shielded Printer cable of 1.8 m length from PC to Printer (parallel port).
- Unshielded mains cable of 1.8 m length without safety ground to the AC/DC Adapter (Printer).
- Shielded DC cable of 2 m length without safety ground from AC/DC Adapter to Printer.
- Shielded Mouse cable of 1.8 m length from PC to external Mouse (serial port).

See also Appendix 4.

Operating Conditions: Operating in a test application with continuous reading of the smart card and scanning the fingerprints, and with communication between the PC and the peripherals.

Ambient Humidity: 31 % RH

Ambient temperature: 21 °C.

Mains voltage at test: 115 VAC.

TEST PERFORMANCE:

§15.107: Conducted Emission test, AC power line:

The conducted emission was measured on the 115 VAC power input terminals (PC Power Supply) through a 50 ohm 50 micro-Henry LISN (Line Impedance Stabilization Network) in the frequency range 0.15 to 30 MHz. The two lines were measured with a quasi-peak detector and also with an average detector. Worst cases were recorded. See Appendix 5 and 6.

§15.109: Radiated Emission:

Pre-test: Tested in the Anechoic Chamber at 3 m antenna distance with vertical and horizontal antenna polarizations to find the radiating frequencies in the range 30 – 2 000 MHz.

Final test: Measured in the frequency range 30 MHz – 2 000 MHz at an antenna distance of 3 m, on the open area test site. The emission was maximized by rotating the table, varying the antenna height 1 – 4 m and the antenna polarization. Measured with CISPR quasi-peak detector. The 6 highest levels were recorded. See Appendix 7 and 8.

SUMMARY OF RESULTS:

§15.107: Conducted Emission test, AC power line. See Appendix 5 and 6.

The margin to limit was – 18.9 dB(QP) at 0.1878 MHz, and – 10.8 dB(AV.) at 0.4387 MHz.

§15.109: Radiated Emission. See Appendix 7 and 8.

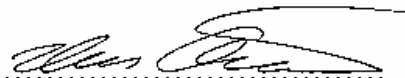
The margin to limit was – 9.2 dB(QP) at 451 MHz.

The Combined Fingerprint and Smart Card Reader, Type Precise 200MC, MS 010 126 R1A, without s/n, did pass the above mentioned tests for Class B Digital Devices.

REMARK:

The above test results relates to the tested item only.

Karlskrona December 15, 2005



Hans Östergren
Test Engineer
Manager Svenska EMC Lab AB
Sr. EMC Engineer

EUT



Test set-up, Conducted Emission



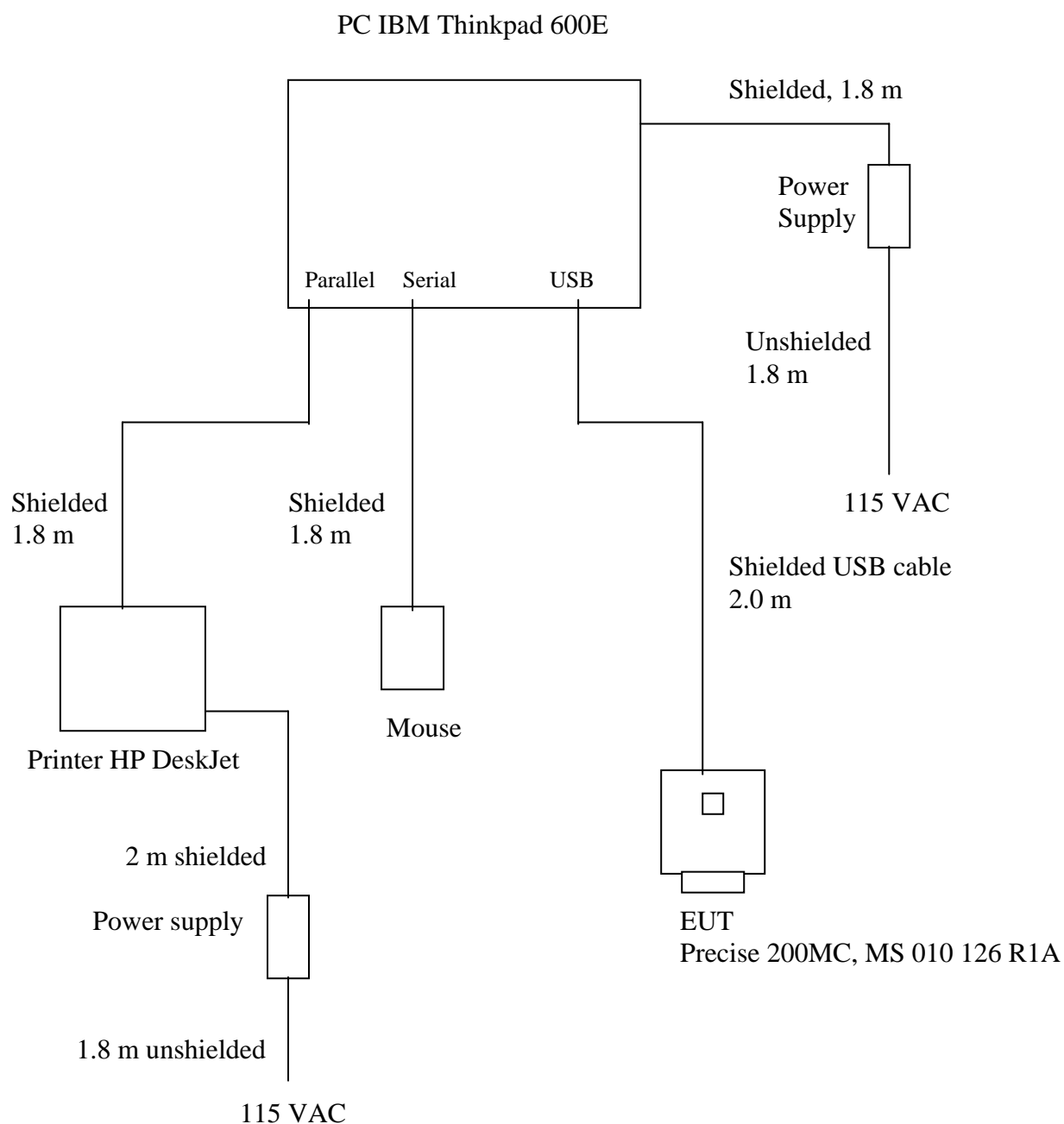
Test set-up, Conducted Emission



Test set-up, Radiated Emission



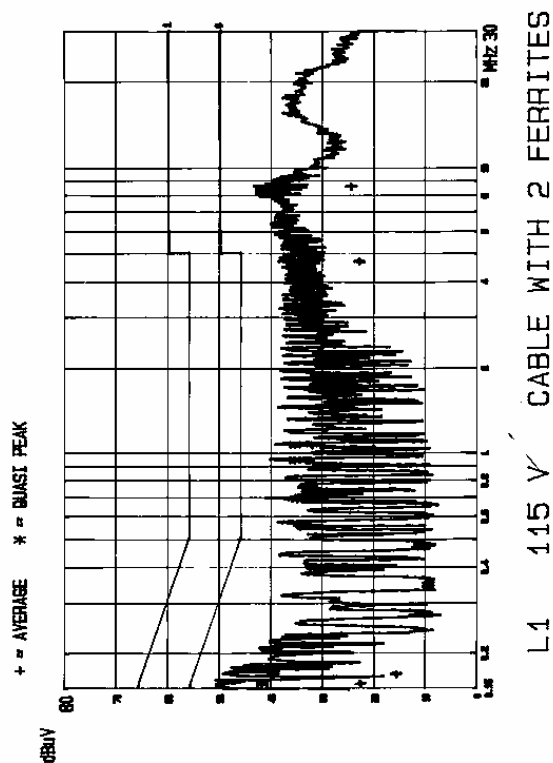
Configuration



Frequency MHz	Average dBuV	AV-Margin dBuV	Quasi dBuV	Peak dBuV	qp-Margin dBuV
0.1570	23.2	-33.6	41.5	41.5	-24.3
0.1890	23.2	-40.0	39.2	39.2	-26.0
0.6903	23.4	-12.6	34.6	34.6	-31.4
0.9415	22.6	-13.4	35.0	35.0	-31.0
1.0681	21.7	-14.3	35.0	35.0	-31.0
4.7048	22.4	-23.6	34.3	34.3	-31.7
8.6455	24.1	-25.9	37.7	37.7	-22.3

* Limit exceeded

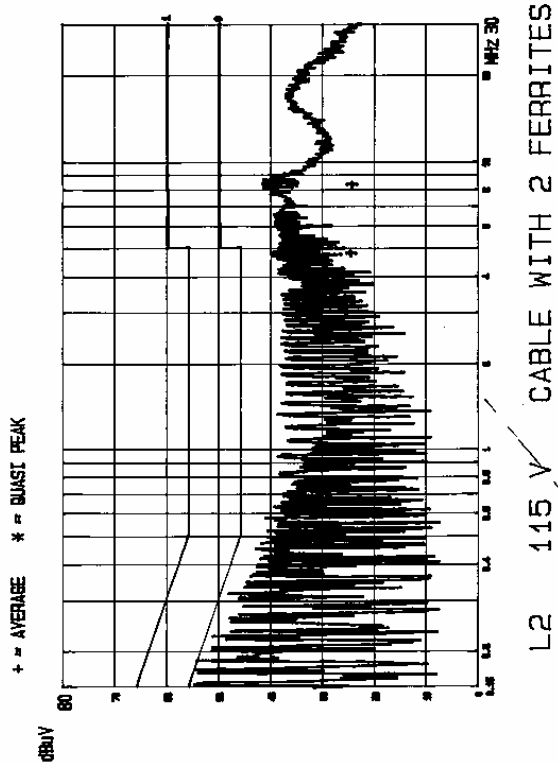
PRECISE BIOMETRICS AB
 Conducted Emission Test
 Start of Test: 14.DEC'85 . 16:02
 E.U.T.: 200 MC R1A
 Oper. Condition: ACTIVE
 Operator: HANS OSTERGREN
 Test Spec: FCC Part 15, Subpart B Conducted RFI, Class B, 0.4 Ed
 Start Fr. Stop Fr. IF-BW Display Att. Transducer
 MHz MHz KHz Mode dB type
 0.1500 30.0000 10.00 Max Hold 0 EM7820L1



Frequency MHz	Average dBuV	AV-Margin dBuV	Quasi dBuV	Peak dBuV	QP-Margin dBuV
0.1878	39.2	-15.0		45.3	-18.9
0.3133	37.3	-12.7		39.9	-20.1
0.4387	36.4	-10.8		37.6	-19.6
4.8108	24.3	-21.7		35.7	-20.3
8.3665	24.0	-25.0		35.7	-24.3

* Limit exceeded

PRECISE BIOMETRICS AB
 Conducted Emission Test
 Start of Test: 14.DEC'85 . 15:52
 E.U.T.: 200 MC R1A
 Oper. Condition: ACTIVE
 Operator: HANS OSTERGREN
 Test Spec: FCC Part 15, Subpart B Conducted RFI, Class B, 04 Ed
 Start Fr. Stop Fr. IF-BW Display Att. Transducer
 MHz MHz kHz Mode dB type
 0.1500 30.0000 10.00 Max Hold 0 EM7820L2



PRECISE BIOMETRICS AB

OATS

Start of Test: 09 DEC 2005

E.U.T.: 200 MC R1A

Oper. Condition: ACTIVE

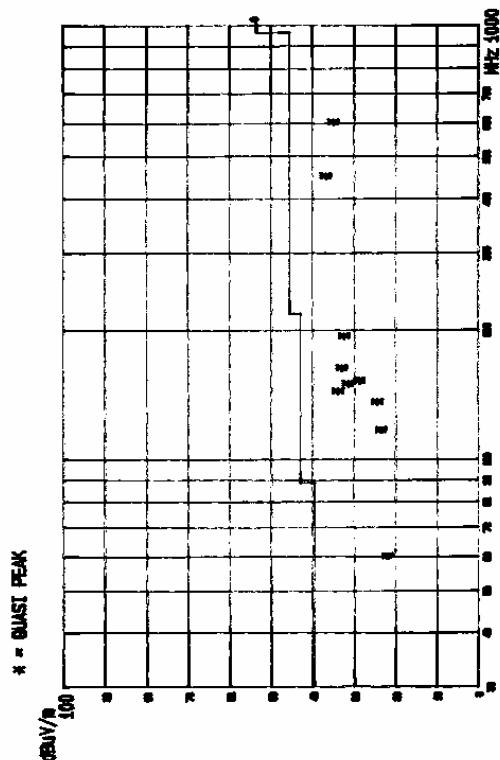
Operator: HANS OSTERGREN

Test Spec: FCC Part 15, Subpart B, Class B, 3 m OATS

Start Fr. Stop Fr. IF-BW Detec Att. Meas.T. Trained.
MHz kHz dB s type
30.0000 299.9999 120 Peak LN 0.020 LOM9106
300.0000 1000.0000 120 Peak LN 0.020 LOM9107

Frequency MHz	Measure Level: dBuV/m	Margin dB	P h/v	Y = 1 u e s Height m	Azimuth deg.
59.9940	22.2	-17.8	y	1.00	0
117.1060	23.5	-19.9	h	2.00	0
136.6840	24.7	-18.8	y	1.00	45
144.0120	34.0	-9.5	y	1.00	45
149.5460	31.5	-12.0	y	1.00	45
152.2760	28.8	-14.7	y	1.00	45
162.5830	33.0	-10.5	y	1.00	90
192.5250	32.5	-11.0	y	1.00	180
450.9980	36.8	-9.2	y	1.00	0
599.5390	35.2	-10.8	y	1.00	0

* Limit exceeded



3 M CABLE WITH 2 FERRITES

Radiated Fieldstrength Test. Calculation of Final Emission Levels

EUT: Combined Fingerprint and Smart Card Reader,
Type Precise 200MC, MS 010 126 R1A, without s/n.

TEST SPEC: 47 Cfr Ch. 1 (10-1-05 Edition):
Part 15, Subpart B, Class B.
§15.109: Radiated Emission
3 m antenna distance.

DATE OF TEST: December 9, 2005

OPERATION: Active with continuous transmitting of data at highest speed.

Field strength (dB μ V/m) = Amplitude (dB μ V) + Antenna factor (dB/m) + cable loss (dB)

Tested frequency range: 30 – 2 000 MHz

Measured quasi-peak values of the 6 highest levels in the frequency range 30 – 2 000 MHz.

Freq.	Level	Cable loss	Antenna factor	Field strength	Limit	Distance	Margin	Antenna height	Antenna polaris.
MHz	dB μ V	dB	dB	dB μ V/m	dB μ V/m	m	dB	m	V/H
144.0	15.9	3.3	14.8	34.0	43.5	3	- 9.5	1.0	V
149.5	13.1	3.3	15.1	31.5	43.5	3	- 12.0	1.0	V
162.4	14.0	3.4	15.6	33.0	43.5	3	- 10.5	1.0	V
192.9	13.1	3.8	16.5	32.5	43.5	3	- 11.0	1.0	V
451.0	12.8	6.0	18.0	36.8	46.0	3	- 9.2	1.0	V
599.5	5.5	7.2	22.5	35.2	46.0	3	- 10.8	1.0	V