

TEST REPORT

REPORT CERTIFICATE issued by a FCC listed Test Laboratory

CUSTOMER AND

Project no: 05255

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

**EQUIPMENT
UNDER**

TEST (EUT): Combined Fingerprint and Smart Card Reader, Type Precise 250MC,
p/n MS 010114-P1C, without s/n.

TEST SPEC: 47 Cfr Ch. 1 (10-1-04 Edition):

Part 15, Subpart B, Class B.
§15.107: Conducted Emission, AC power line
§15.109: Radiated Emission

DATE OF TEST: June 1 - 7, 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 June 6, 2005



Hans Östergren
Manager Svenska EMC Lab AB

DATE OF RECEIPT:

June 1, 2005

CONDITION OF EUT:

No remarks. Operates as intended.

TEST PERSONNEL:

Svenska EMC Lab AB: Bo Gidlöw.

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.

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	p/n	Calibration information	
			Date	Interval
EMI Test System, Monitor EZM, Rohde & Schwarz EP-6, 20 Hz - 1300 MHz	860157/014	93-1110	2004-07	12 months
Test Receiver, Rohde & Schwarz ESH-3, 9 kHz - 30 MHz	894979/013	93-1108	2004-07	12 months
Test Receiver, Rohde & Schwarz ESVP, 20 - 1300 MHz	893497/006	93-1109	2004-07	12 months
Pulse Limiter, Rohde & Schwarz ESH3-Z2 DC - 30 MHz	357881052	93-1113	2004-07	12 months
Plotter, Rohde & Schwarz DOP 2	893117/0108	93-1112	NA	NA
Spectrum Analyzer Tektronix 2755AP, 10 kHz - 21 GHz	B010111	93-1106	2004-07	12 months
Preamplifier, Mini-Circuits ZHL-42, 0.7 – 4.2 GHz	-	860701	2005-02	12 months
LISN 50 OHM/50 μ H, Electro Metrics EM-7820 10 kHz - 30 MHz, 16 A	2771	95-1247	2004-07	12 months
Cable to Test Receiver, RG 223	006	93-1222	2004-08	12 months
Cable to LISN, RG 223	015	93-1231	2004-08	12 months
Biconical Antenna, Schwarzbeck BBA9106 30 - 300 MHz	-	93-92196.1	2004-07	24 months
Log-periodic Antenna, Schwarzbeck UHALP9107, 300 - 1000 MHz	91071205	93-92196	2004-07	24 months
Double Ridged Guide Antenna, EMCO 3115, 1 - 18 GHz	2338	93-85122	2003-07	36 months
Antenna Cable, RG 214	001	93-1217	2004-08	12 months
Antenna Cable, Sucoflex 104	171288/4	93-1239	2004-08	12 months
Antenna Mast System, Jyske EMC, h = 1 - 4 m	02	93-90172	NA	NA
Turn Table, Jyske EMC, h = 1 m	01	93-90171	NA	NA
Anechoic Chamber, 8 x 4.5 x 3 m	1	93-87151	2003-04	36 months
Open Area Test Site for 3 m antenna distance	1	93-1108	2003-12	36 months

TEST SET-UP AND PROCEDURE:

As laid out in ANSI C.63.4:2001 Document. Tested as tabletop equipment.
See Appendix 1 and 2.

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 3. 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 250MC to the PC (USB port).
- 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 3.

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: 43 % RH

Ambient temperature: 22 °C.

Mains voltage at test: 116 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 4 and 5.

§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. See Appendix 6 and 7.

SUMMARY OF RESULTS:

§15.107: Conducted Emission test, AC power line. See Appendix 4 and 5.

The margin to limit was – 17.7 dB(QP) at 0.1535 MHz, and – 9.8 dB(AV.) at 0.5653 MHz.

§15.109: Radiated Emission. See Appendix 6 and 7.

The margin to limit was – 4.3 dB(QP) at 132.0 MHz.

The Combined Fingerprint and Smart Card Reader, Type Precise 250MC, p/n MS 010114-P1C 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 June 6, 2005



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

Test set-up, Conducted Emission



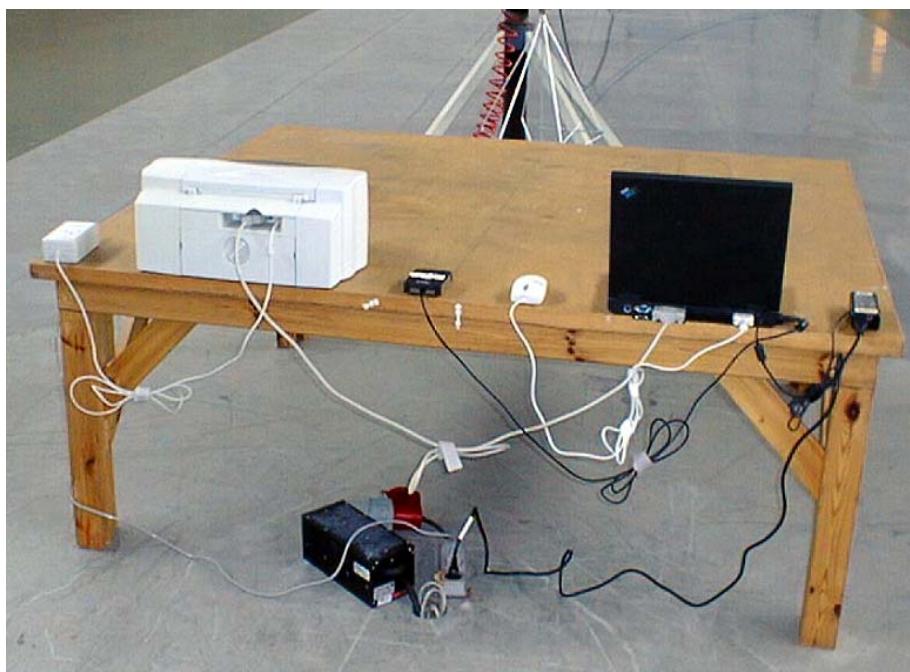
Test set-up, Conducted Emission



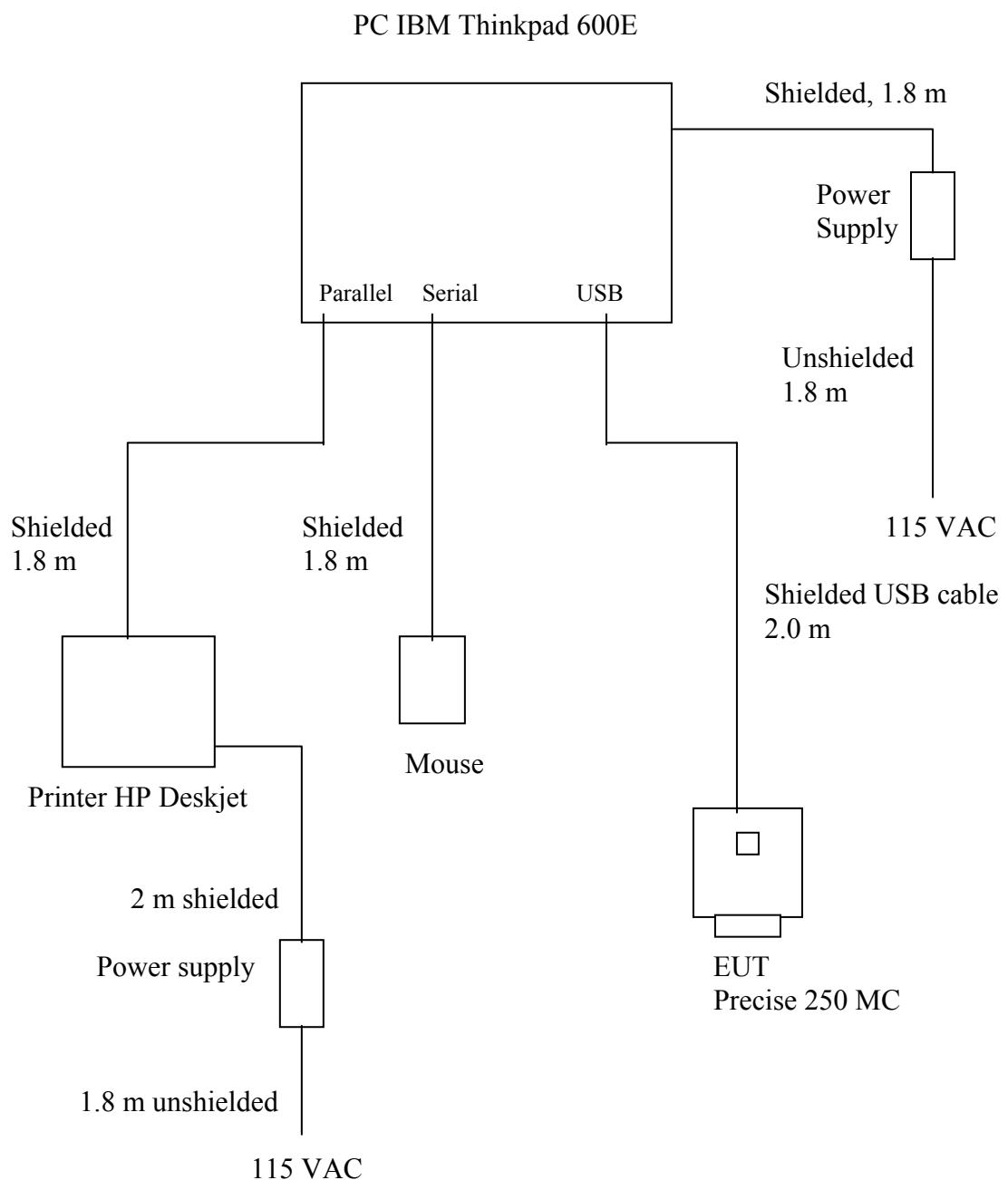
Test set-up, Radiated Emission



Test set-up, Radiated Emission



Configuration

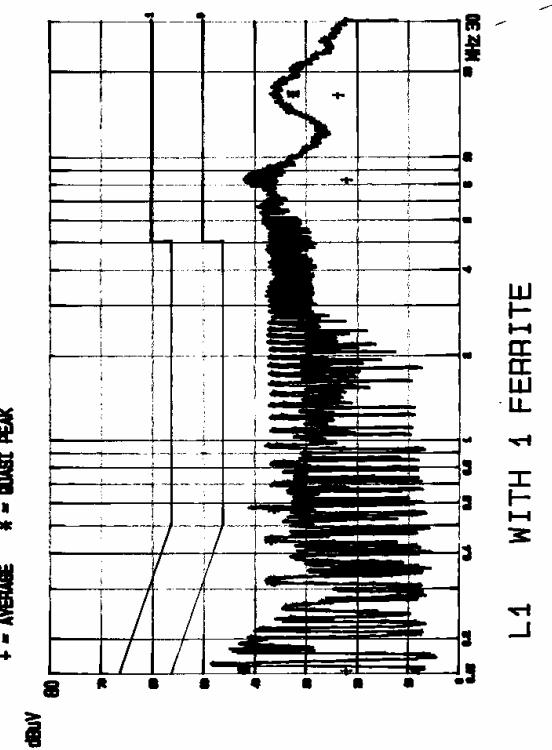


PRECISE BIOMETRICS AB
Conducted Emission Test
Start of Test: 07.JUN'05 . 12:13
E.U.T.: 250 MC MS040414-P4C
Oper. Condition: ACTIVE
Operator: HANS OSTERBREN
Test Spec: FCC Part 15, Subpart B Conducted RFI, Class B, 04 Ed

Start Fr. Stop Fr. IF-BW Dispaly Att. Transducer
MHz MHz kHz Mode dB type
0.1500 30.0000 10.00 Max Hold 0 EM7620L4

Frequency MHz	Average dBmV	AV-Margin dBmV	Peak dBmV	GP-Margin dBmV
0.1692	22.2	-33.8	42.8	-23.2
0.1883	37.1	-17.4	41.3	-22.9
0.3140	36.3	-13.7	37.5	-22.5
0.4399	36.9	-10.3	37.7	-19.5
0.6603	36.2	-9.8	37.1	-18.9
0.8743	22.3	-27.7	38.8	-21.2
16.5235	23.8	-25.2	33.2	-26.8

* Limit exceeded

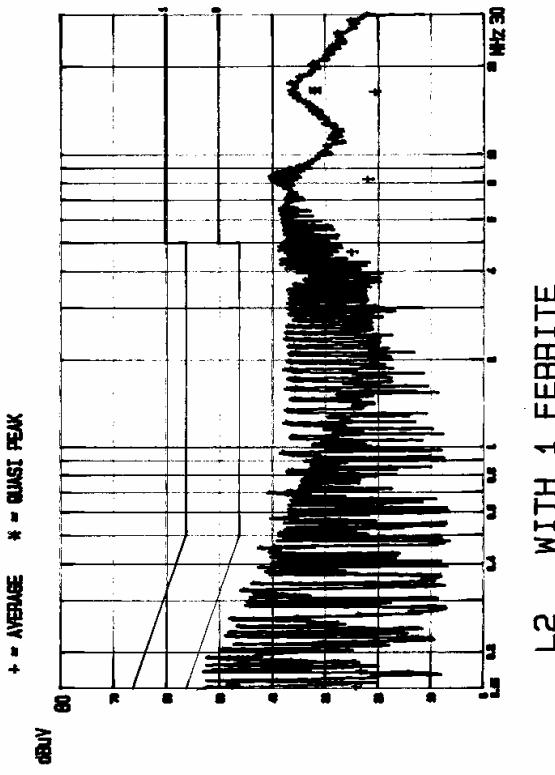


PRECISE BIOMETRICS AB
 Conducted Emission Test
 Start of Test: 07.JUN'05 . 12:01
 E.U.T.: 280 MC MB01014-P1C
 Oper. Condition: ACTIVE
 Operator: HANS OSTERBREN
 Test Spec: FCC Part 15, Subpart B Conducted RFI, Class B. 04 Ed

Start Fr. Stop Fr. IF-BW
 MHz MHz kHz
 0.1500 30.0000 10.00 Att. Transducer
 Max Hold 0 EM7820L4

	Frequency MHz	Average dBuV	AV-Margin dBuV	Quasi Peak dBuV	GP-Margin dBuV
0.1535	0.1535	24.2	-31.8	48.3	-17.7
0.1729	0.1729	23.3	-31.7	46.0	-19.0
0.1880	0.1880	40.2	-14.0	46.2	-16.0
0.1891	0.1891	36.8	-10.6	36.9	-18.1
4.6872	4.6872	25.0	-24.0	37.0	-19.5
8.2675	8.2675	22.4	-27.0	37.5	-22.5
16.8070	16.8070	20.7	-29.9	32.7	-27.3

* Limit exceeded



PRECISE BIOMETRICS AB
Radiated Emission test on OATS

Start of Test: 30.MAY'85 . 15:18

E.u.T.: 280 MC MB01014-P1C SN

Oper. Condition: ACTIVE

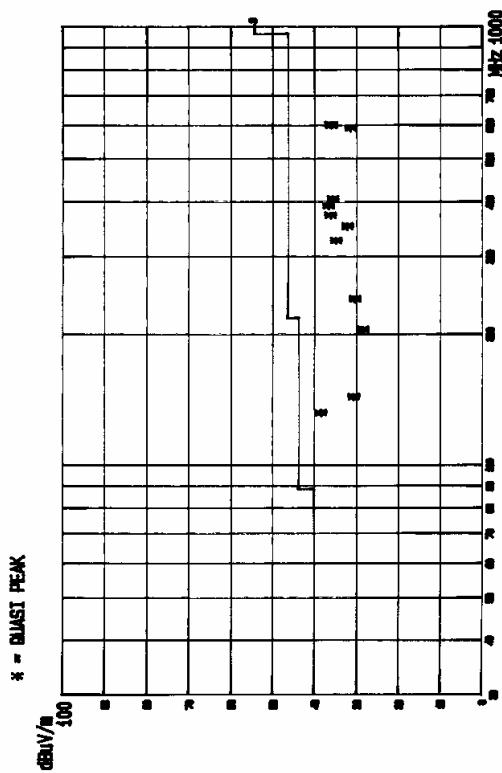
operator: HANS OSTERGREN

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

Start Fr. MHz	Stop Fr. MHz	IF-BW kHz	Detect Att. dB	Meas. T. s.	Transd. type
30.0000	299.9999	120	Peak LN	0.020	LONG106
300.0000	1000.0000	120	Peak LN	0.020	LONG107

Frequency MHz	Measured Level dBV/m	Margin dB	Point P dBV/m	Y-axis 1 dBV/m	Height m	Azimuth deg.
132.0040	39.2	-4.2	39.2	80	80	
144.0049	31.3	-14.4	31.3	90	90	
204.0140	29.1	-14.0	29.1	270	270	
240.0500	31.1	-5.0	31.1	290	290	
328.1080	35.9	-10.8	35.9	180	180	
361.4820	32.0	-14.8	32.0	160	160	
372.5520	32.8	-15.5	32.8	180	180	
381.4200	37.7	-14.2	37.7	180	180	
408.4200	35.7	-10.8	35.7	180	180	
589.6880	32.0	-14.0	32.0	180	180	
599.2650	35.9	-9.9	35.9	180	180	
599.2700	35.9	-9.9	35.9	180	180	

* Limit exceeded



3 M ANTENNA DISTANCE. WITH 1 FERRITE

Radiated Fieldstrength Test. Calculation of Final Emission Levels

EUT: Combined Fingerprint and Smart Card Reader, Type Precise 250MC, p/n MS 010114-P1C, without s/n.

TEST SPEC: 47 Cfr Ch. 1 (10-1-04 Edition):
Part 15, Subpart B, Class B.
§15.109: Radiated Emission
3 m antenna distance.

DATE OF TEST: June 1 - 7, 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
132.0	22.0	3.1	14.1	39.2	43.5	3	- 4.3	1.0	V
326.1	12.5	5.1	17.3	35.7	46.0	3	- 10.3	1.5	V
372.6	11.4	5.4	17.8	36.8	46.0	3	- 9.2	1.5	V
391.4	14.4	5.6	17.8	37.4	46.0	3	- 8.6	1.5	V
406.4	12.6	5.7	18.0	36.3	46.0	3	- 9.7	1.2	V
599.3	10.8	7.2	22.5	36.9	46.0	3	- 9.1	1.0	V