

TEST REPORT



DANAK

Reg. no. 19

DELTA

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Light & Acoustics

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**Measurements of radio frequency interference from
Fingerprint Reader 100 SC Parallel
Performed for Precise Biometrics AB**

**Project no.: K221263-1
Date: 2000-10-12**

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6. Any dispute arising out of or relating to this Test Report shall be referred to Copenhagen Arbitration. The interpretation and performance of this Test Report shall be governed by and construed in accordance with the laws of Denmark.

DANAK (DANISH ACCREDITATION)

DANAK was established in 1991 in pursuance of the Industry and Trade Promotion Act No. 394 of 13 June 1990. The scheme is a continuation of the accreditation scheme established in 1973 under the auspices of the former Danish National Testing Board (STP).

The requirements to the accredited testing laboratories are laid down in the Danish Agency for Development of Trade and Industry Statutory Order No. 258 of 11 April 1994 on accreditation of laboratories to perform technical testing etc.

The standards DS/EN 45001 „General criteria for the operation of testing laboratories“ and DS/EN 45002 „General criteria for the assessment of testing laboratories“ are integrated parts of the statutory order.

In order to obtain accreditation to perform technical testing it is, among other things, required:

- that the testing laboratory and its personnel are free from any commercial, financial and other pressures which might influence their technical judgement.

- that the testing laboratory operates a quality system which is documented.

- that the testing laboratory is furnished with items of

- equipment required for correct performance of the tests and measurements which the laboratory is accredited to perform.

- that the testing laboratory has sufficient personnel, having the necessary education, training, technical knowledge and experience for their assigned functions.

- that the testing laboratory has procedures for traceable calibration of equipment used for accredited testing.

- that accredited testing is performed after fully documented methods.

- that the testing laboratory has records which contain sufficient information to permit repetition of the test.

- that the testing laboratory is assessed and surveyed by DANAK on a regular basis.

- that the accredited laboratory shall take out an insurance which will cover liability in connection with accredited testing

Test reports carrying the logo of DANAK are used to report accredited testing and the logo shows that the testing has been performed in accordance with the rules of accreditation.

The DELTA logo consists of a red triangle pointing to the right, with the word "DELTA" in white, bold, sans-serif capital letters inside it. To the left of the triangle is a horizontal line of small red squares.

DELTA

Title Measurements of radio frequency interference from
Fingerprint Reader 100 SC Parallel

Test object Fingerprint Reader 100 SC Parallel

Report no. DANAK-195222

Project no. K221263-1

Date of test 2000-07-19

Client Precise Biometrics AB
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Sweden

Telephone: +46 46 311100
Telefax: +46 46 311101

Contact person Mr. Håkan Lohmander

Manufacturer Precise Biometrics AB

Specifications FCC Rules and Regulations, Part 15, Subpart B, class B.

Results The emission from the test object was below the limit of
the above specification.

Test personnel Jesper Nielsen

Date 2000-10-12

Project manager 
Per Hansen,
Facility Manager, EMC
DELTA

Responsible 
Jørgen Duvald Christensen,
Department Manager, EMC
DELTA

The client has received this report in electronic form. DELTA keeps a paper copy of the report.

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electromagnetic field (FCC class B) (4 pages)

1. **Summary of test results**

The results of the emission tests can be summarised as follows:

Emission tests	FCC Rules and Regulations, part 15 Subpart B Class B
Conducted emission, AC mains	Passed
Radiated electromagnetic field	Passed

Abbreviations : Passed : The emission was below the limit.
 Not done : No test was performed.
 N/A : Not applicable.
 Not relevant : The test was not relevant for the test object.

The test results relate only to the specimen tested.

2. Test specimen

Category	:	Electronic identification equipment
Manufacturer	:	Precise Biometrics AB
Model/Type	:	Precise 100 SC Parallel
Part no.	:	MS010004
Serial no.	:	00006219
Supply voltage	:	5.0 VDC supplied from the LapTop PC to the test object. 115 VAC supplied to the LapTop PC power adapter.
Operational mode	:	Test mode (a test programme was executing all functions)
Comments	:	PCB rev. D installed.

3. General test conditions

3.1 Test set-up

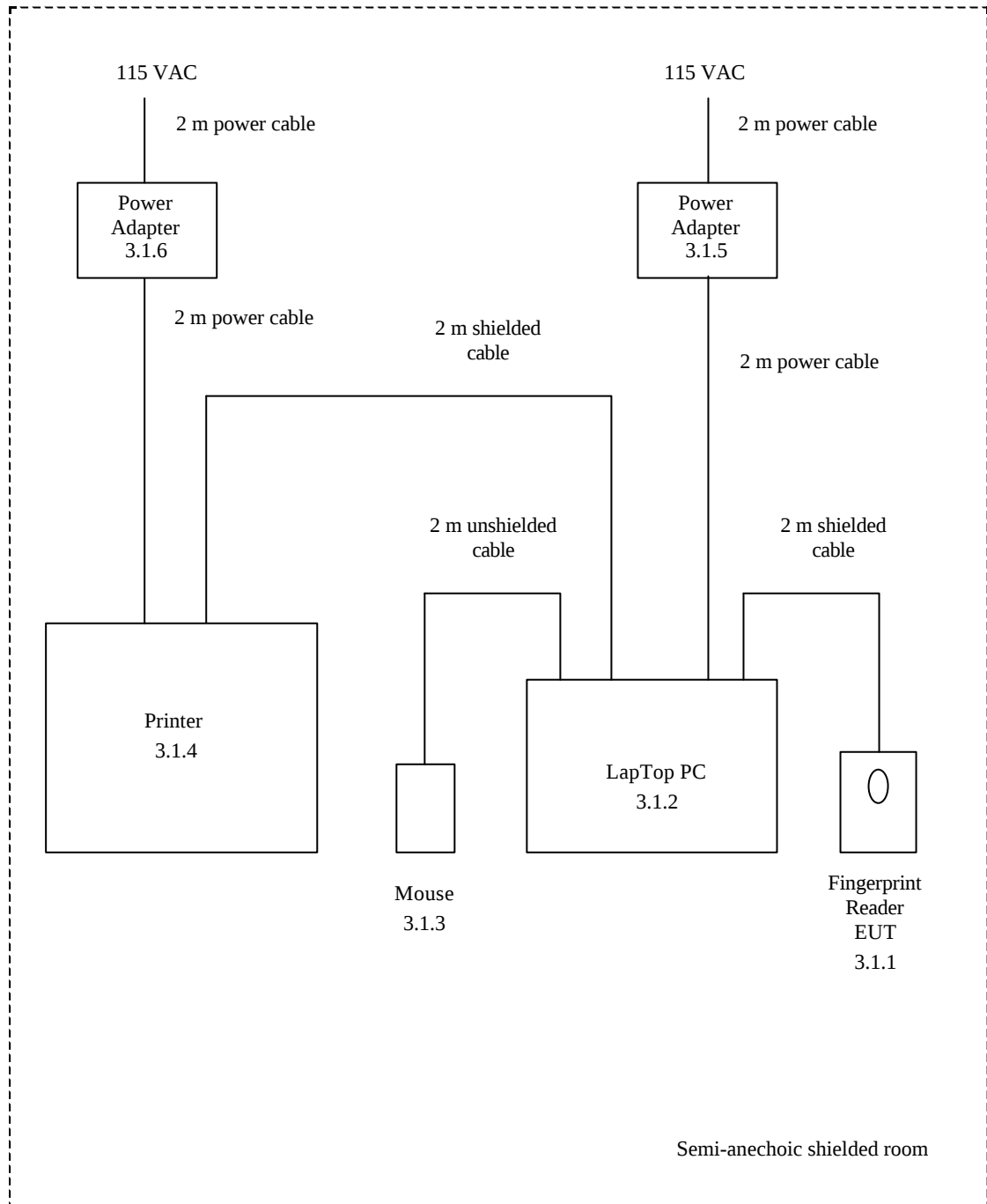


FIG. 1 Test configuration including test object and peripheral equipment

The complete system used during the tests consisted of the following units:

3.1.1 *Fingerprint Reader* *EUT*
Manufacturer : Precise Biometrics AB
Model/type : Precise 100 SC Parallel
Part no. : MS010004
Serial no. : 00006219
FCC ID : -

3.1.2 *LapTop PC* *AUX 1*
Manufacturer : IBM
Model/type : ThinkPad 600E
Part no. : 2645-4BG
Serial no. : 5528TVC
FCC ID : FCC compliant

3.1.3 *Mouse* *AUX 2*
Manufacturer : Microsoft
Model/type : -
Part no. : 83351-576
Serial no. : 0304842-00000
FCC ID : 3872A463

3.1.4 *Printer* *AUX 3*
Manufacturer : Hewlett Packard
Model/type : Deskjet 895 CXi
Part no. : C6410A
Serial no. : H00151N087
FCC ID : FCC compliant

3.1.5 *Power adapter* *AUX 4*
Manufacturer : Hewlett Packard
Model/type : -
Part no. : -
Serial no. : -
FCC ID : FCC compliant

3.1.6	Power adapter	AUX 5
	Manufacturer	: Hewlett Packard
	Model/type	: -
	Part no.	: -
	Serial no.	: -
	FCC ID	: FCC compliant

4. Tests and results

4.1 Conducted emission, AC mains (FCC Part 15, Subpart B, Class B)

	Requirements
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B
Test method	FCC Rules and Regulations Part 15, Subpart B, Class B
Test set-up	ANSI C63.4:1992
Frequency range	0.45 - 30 MHz
Limit (quasi-peak):	0.45-0.50 MHz: 48 dB μ V
Test record sheets and photos	<i>Annex 2</i>

Results:

The emission was within the specified limits.

Climatic conditions:

22.1°C and 49.0 %RH

Comments:

The conducted emission was measured on the AC-mains to the LapTop PC power adapter.

115 VAC supply power to the LapTop PC power adapter.

4.2 Radiated electromagnetic field (FCC Part 15, Subpart B, Class B)

	Requirements	
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B	
Test method	FCC Rules and Regulations Part 15, Subpart B, Class B	
Test set-up	ANSI C63.4:1992	
Measuring distance	3 m	
Frequency range	30 - 1000 MHz	
Limit: (quasi-peak)	30-88 MHz:	40.0 dB μ V/m
	88-216 MHz:	43.5 dB μ V/m
	216-960 MHz:	46.0 dB μ V/m
	960-1000 MHz:	54.0 dB μ V/m
Test record sheets and photos	Annex 3	

Results:

The emission was within the specified limits.

Climatic conditions:

22.1°C and 49.0 %RH

Comments:

115 VAC supply power to the LapTop PC power adapter.

Annex 1

List of instruments

(1 page)

List of instruments

EC NO.	INSTRUMENT	MANUFACTURER	TYPE
29797	BILOG ANTENNA, 30-1000 MHz	SCHAFFNER/CHASE	CBL 6111A
29337	ARTIFICIAL MAINS NETWORK	ROHDE & SCHWARZ	ESH2-Z5
29916	AUTOMATIC EMI RECEIVER	ROHDE & SCHWARZ	ESCS-30
29861	EMI-SOFTWARE Ver. 1.6	ROHDE & SCHWARZ	ES-K1

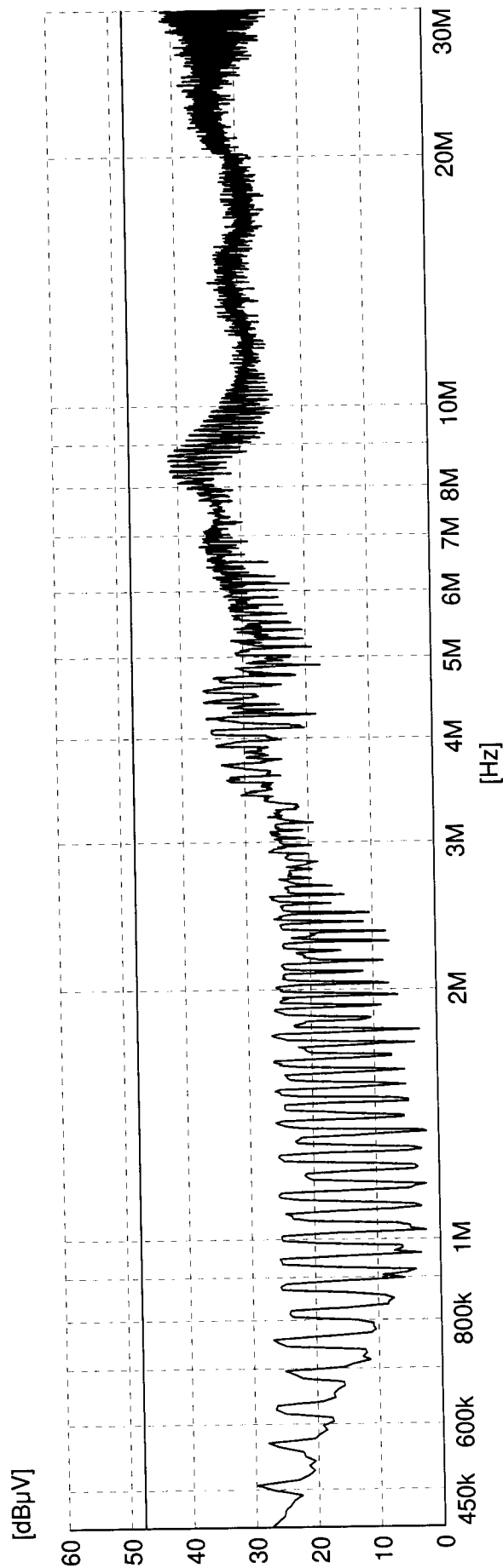
Annex 2

***Test record sheets and photos regarding
conducted emission, AC mains (FCC class B)***

(4 pages)

DELTA Electronics Testing.

EUT: Precise 100 SC Parallel
Manufacturer: Precise Biometrics AB
Operating Condition: Line no: Neutral. 115 VAC.
Test Site: EMC-5
Operator: JN - K221263
Test Specification: FCC class B
Comment: Sheet 3
Start of Test: 2000-07-19

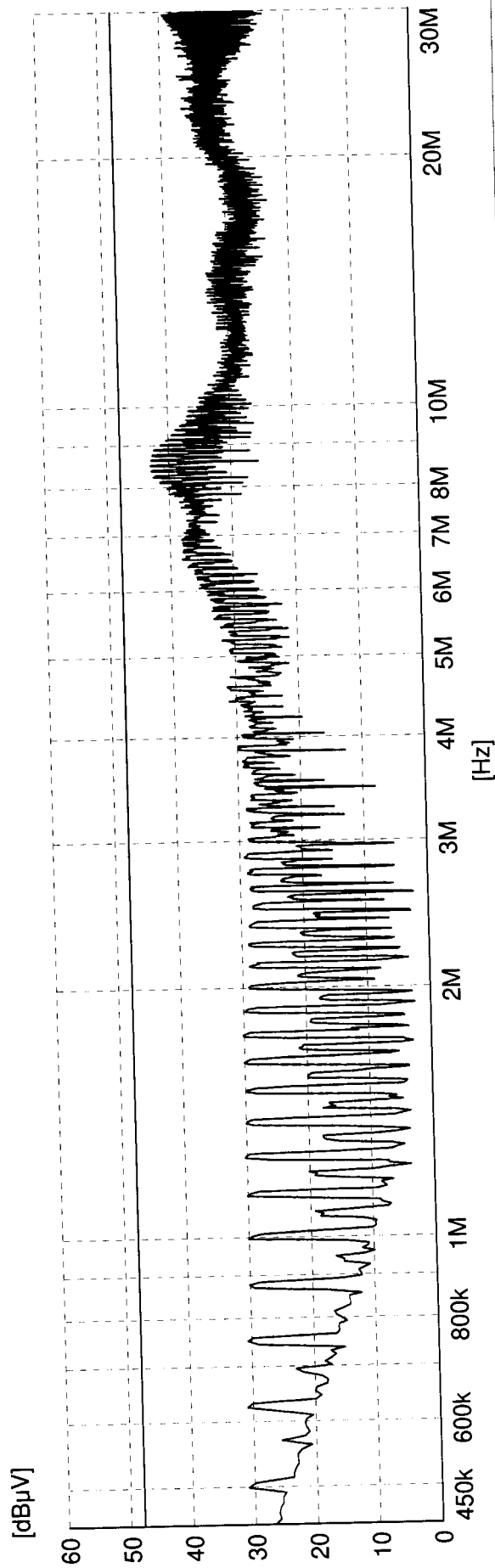


— MES CE 0.45-30 PK MaxPk
— LIM CE, FCC B, QP

Conducted Emission

DELTA Electronics Testing.

EUT: Precise 100 SC Parallel
 Manufacturer: Precise Biometrics AB
 Operating Condition: Line no: Line 1. 115 VAC.
 Test Site: EMC-5
 Operator: JN - K221263
 Test Specification: FCC class B
 Comment: Sheet 4
 Start of Test: 2000-07-19



— MES CE 0.45-30 PK MaxPk
 — LIM CE, FCC B, QP

Conducted Emission



PHOTO A2.1

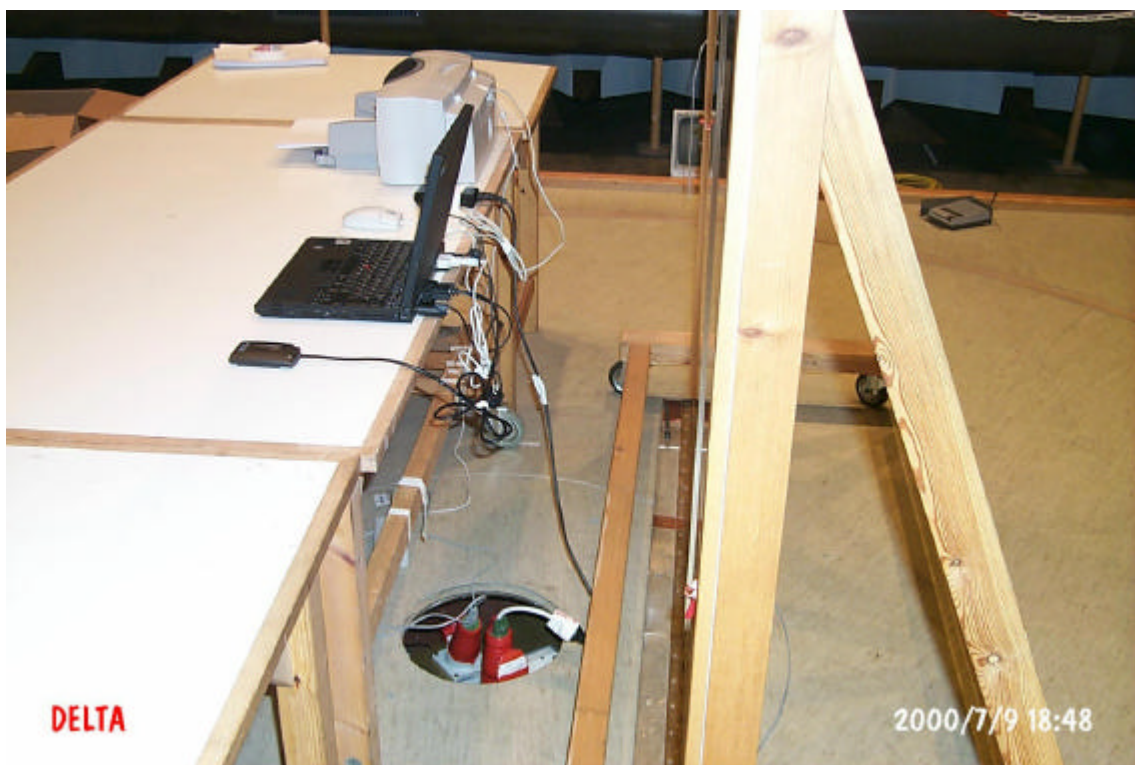


PHOTO A2.2

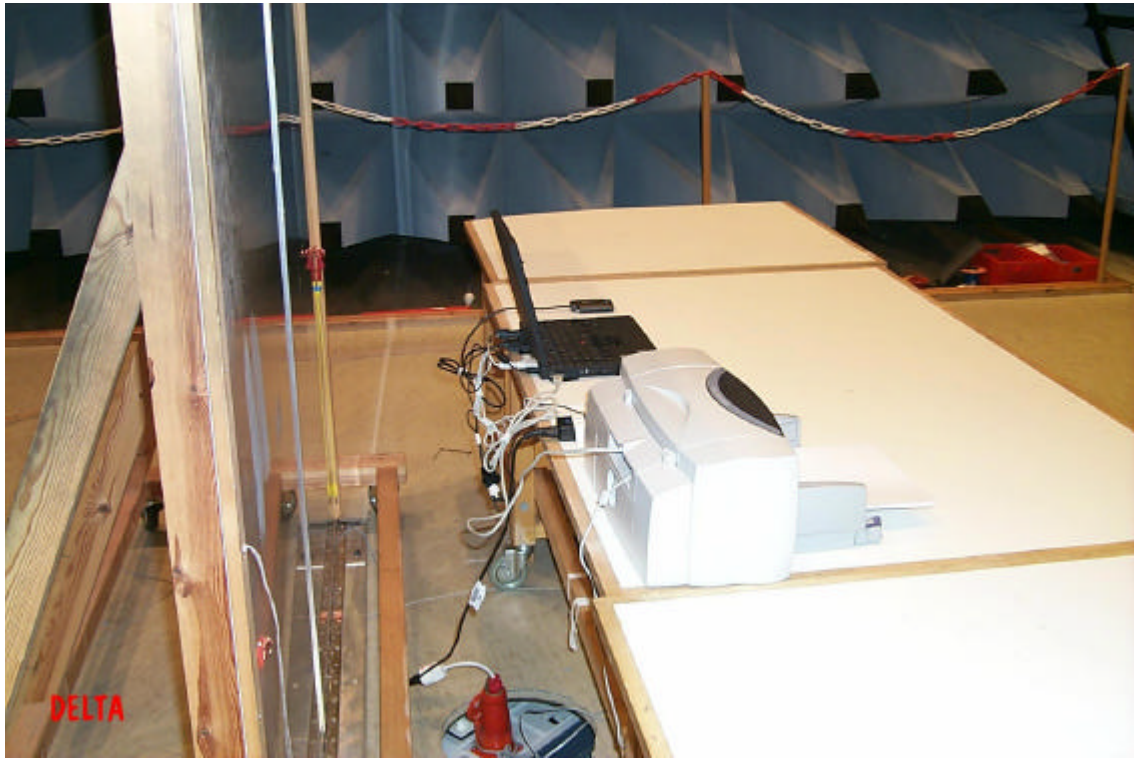


PHOTO A2.3

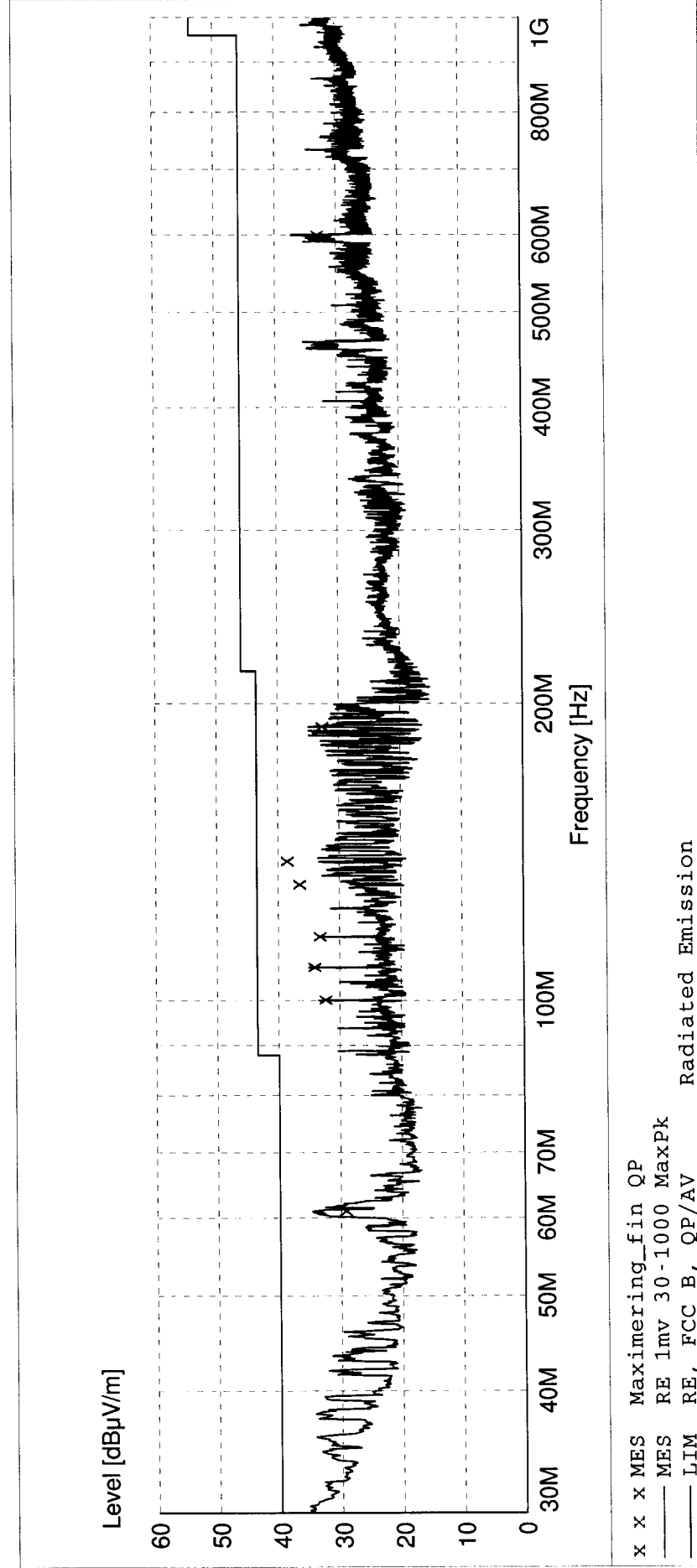
Annex 3

***Test record sheets and photos regarding
radiated electromagnetic field (FCC class B)***

(4 pages)

DELTA Electronics Testing.

EUT: Precise 100 SC Parallel
 Manufacturer: Precise Biometrics AB
 Operating Condition: Ant. 1 meter vertical. 115 VAC.
 Test Site: EMC-5
 Operator: JN - K221263
 Test Specification: FCC class B
 Comment: Sheet 1
 Start of Test: 2000-07-19



MEASUREMENT RESULT: "Maximering_fin QP"

7/19/00 11:25AM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Height cm	Azimuth deg	Polarisation
61.000000	29.60	8.1	40.0	10.4	138.0	163.00	VERTICAL
100.170000	32.70	12.8	43.5	10.8	121.0	89.00	VERTICAL
108.190000	34.50	13.6	43.5	9.0	101.0	46.00	VERTICAL
116.200000	33.60	13.8	43.5	9.9	102.0	35.00	VERTICAL
131.250000	36.90	14.2	43.5	6.6	202.0	195.00	HORIZONTAL
138.600000	38.90	14.0	43.5	4.6	301.0	355.00	HORIZONTAL
189.700000	33.10	11.1	43.5	10.4	145.0	98.00	HORIZONTAL
600.200000	33.40	22.5	46.0	12.6	112.0	0.00	VERTICAL



PHOTO A3.1



PHOTO A3.2



PHOTO A3.3



PHOTO A3.4