

DELTA Test Report



EMC emission test of Combined Fingerprint and Smart Card Reader Precise 250MC according to FCC specifications

Performed for Precise Biometrics AB

DANAK-198457

Project no.: A504068-1

Page 1 of 16

14 August 2006

DELTA
Danish Electronics,
Light & Acoustics

Venlighedsvej 4
2970 Hørsholm
Denmark

Tel. (+45) 72 19 40 00
Fax (+45) 72 19 40 01
www.delta.dk



Title EMC emission test of Combined Fingerprint and Smart Card Reader Precise 250MC according to FCC specifications

Test object Combined Fingerprint and Smart Card Reader, type Precise 250MC

Report no. DANAK-198457

Project no. A504068-1

Test period 08 August 2006

Client Precise Biometrics AB
Scheelevägen 19C
223 70 Lund
Sweden

Tel.: +46 (0)46 31 11 06
Fax: +46 (0)46 31 11 01

Contact person Mr. Per Ola Olsson
e-mail po@precisebiometrics.com

Manufacturer Precise Biometrics AB

Specifications FCC Rules and Regulations Part 15, Subpart B, Class B

Results The measured AC mains conducted emission and radiated electromagnetic field from the test object were below the Class B limits of FCC Rules and Regulations Part 15B.

Test personnel Karsten Kruse Jensen

Date 14 August 2006

Responsible



Claus Rømer Andersen
Team Manager - EMC
DELTA

Table of contents	Page
1. Summary of tests	4
2. Test object and auxiliary equipment	5
2.1 Test object	5
2.2 Auxiliary equipment	6
3. General test conditions	8
3.1 Test setup during test	8
4. Test results	9
4.1 Measurement of radio frequency voltage on AC mains	9
4.2 Measurement of radio frequency electromagnetic field	12
5. List of instruments	16

1. Summary of tests

Tests	Test methods	Results
Measurement of radio frequency voltage on AC mains	FCC Rules and Regulations Part 15 B, Class B (ANSI C63.4:2003)	Passed
Measurement of radio frequency electromagnetic field	FCC Rules and Regulations Part 15 B, Class B (ANSI C63.4:2003)	Passed

The given result is based on a shared risk principle with respect to the measurement uncertainty.

Conclusion

The test object mentioned in this report meets the requirements of the standard stated below.

- FCC Rules and Regulations Part 15, Subpart B, Class B (ANSI C63.4:2003).

The test results relate only to the object tested.

2. Test object and auxiliary equipment

2.1 Test object

Test object 2.1.1

Name of test object	Combined Fingerprint and Smart Card Reader
Model / type	Precise 250MC
Part no.	MS010114 R2A
Serial no.	94
FCC ID	PBKMS010114
Manufacturer	Precise Biometrics AB
Supply voltage	115 VAC
Comments	None.

2.2 Auxiliary equipment

Auxiliary equipment 2.2.1

Name of auxiliary equipment	PC
Model / type	IBM 2545-4BG
Serial no.	5528TVC 02/99
FCC ID	Tested to comply with FCC Regulations
Manufacturer	IBM
Supply voltage	Supplied from AC/DC Adapter
Comments	Laptop PC.

Auxiliary equipment 2.2.2

Name of auxiliary equipment	AC/DC Adapter for PC
Model / type	IBM 02K6543
Serial no.	2M04T7782PF
FCC ID	-
Manufacturer	IBM
Supply voltage	115 VAC
Comments	None.

Auxiliary equipment 2.2.3

Name of auxiliary equipment	Printer
Model / type	HP Deskjet 895 CXi (C6410A)
Serial no.	HU0151N087
FCC ID	Tested to comply with FCC regulations
Manufacturer	HP
Supply voltage	Supplied from AC/DC Adapter
Comments	None.

Auxiliary equipment 2.2.4

Name of auxiliary equipment	AC/DC Adapter for printer
Model / type	HP C6409-60014
Serial no.	T5844428252
FCC ID	-
Manufacturer	HP
Supply voltage	115 VAC
Comments	None.

Auxiliary equipment 2.2.5

Name of auxiliary equipment	Mouse
Model / type	X05-51692
Serial no.	8851-576-0304842-00000
FCC ID	Tested to comply with FCC regulations
Manufacturer	Microsoft
Supply voltage	Supplied from PC
Comments	None.

3. General test conditions

3.1 Test setup during test

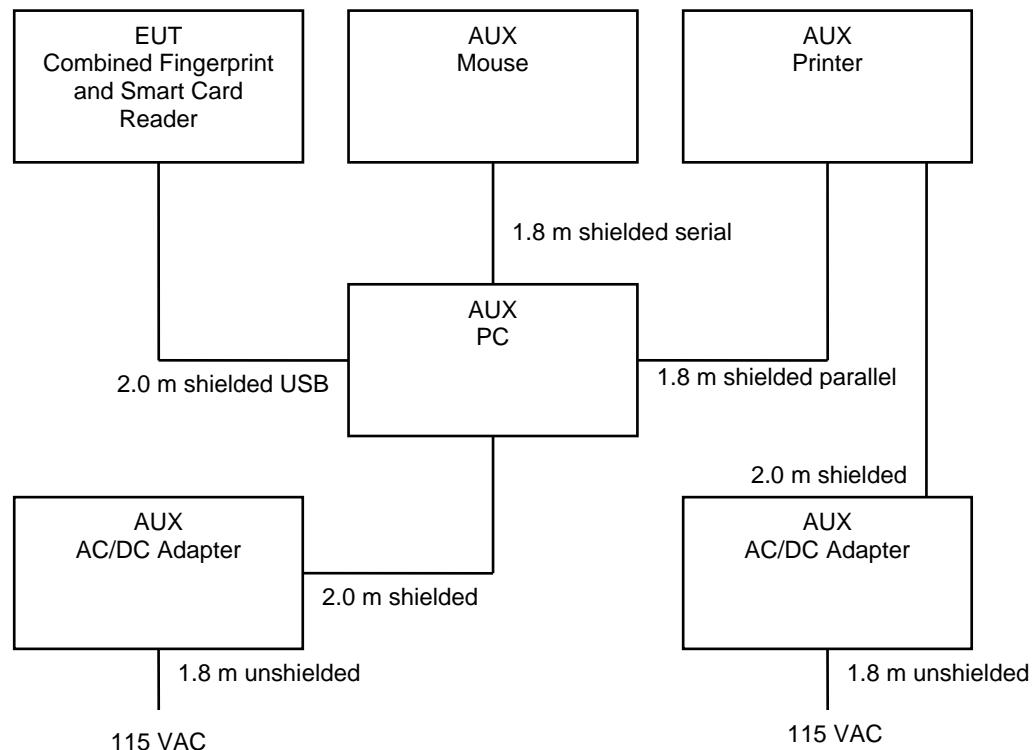


Figure 3.1 Test setup during test.

The test object was tested in a representative minimum configuration, consisting of a PC with mouse and printer.

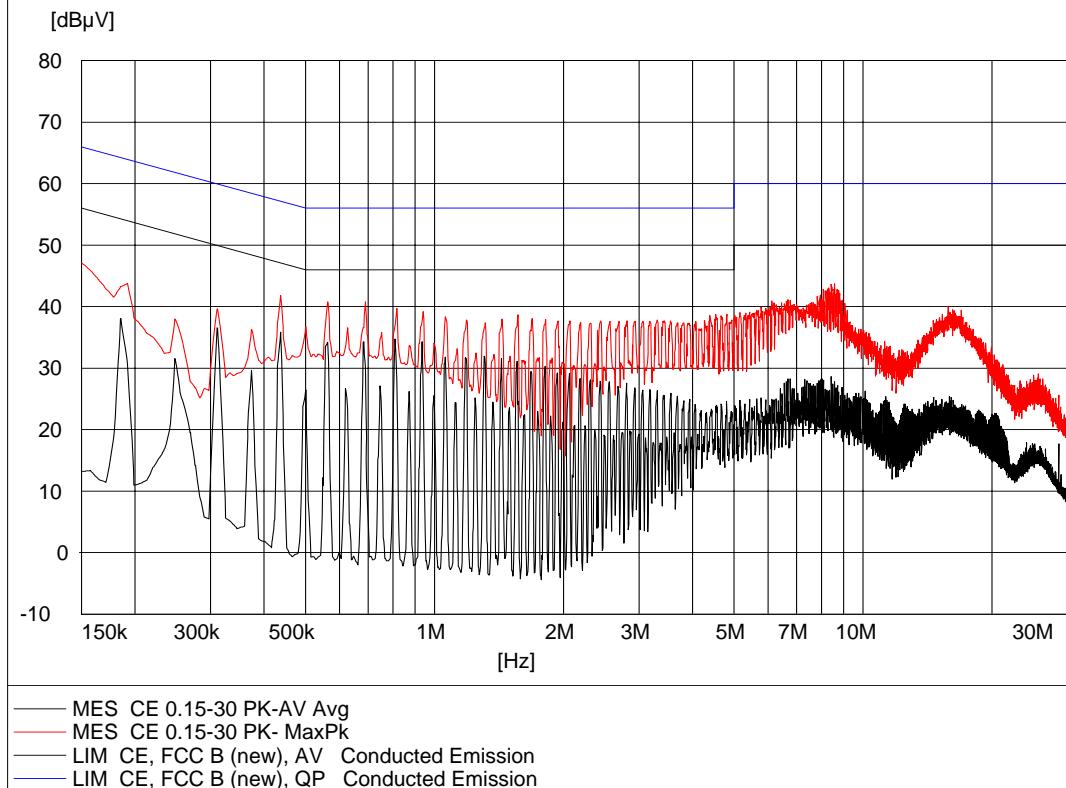
During the test a test software application was running on the PC. This application was continuously reading fingerprint scans and smart card readings from the test object.

4. Test results

4.1 Measurement of radio frequency voltage on AC mains

Test object	Combined Fingerprint and Smart Card Reader	Sheet	CE-1
Type	Precise 250MC	Project no.	A504068-1
Serial no.	94	Date	2006-08-08
Client	Precise Biometrics AB	Initials	KKJ
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B	Frequency	0.15-30 MHz

Test method	ANSI C63.4:2003	Temperature	25°C
Characteristics	Artificial mains network: 50 Ω, 50 μH	Humidity	56% RH
Detector	Peak and average	Bandwidth	10 kHz
Test equipm.	EMI room Hørsholm (90529) 29461 49421 29916 29861	Uncertainty	2 dB



Line under test

Line.

Test result

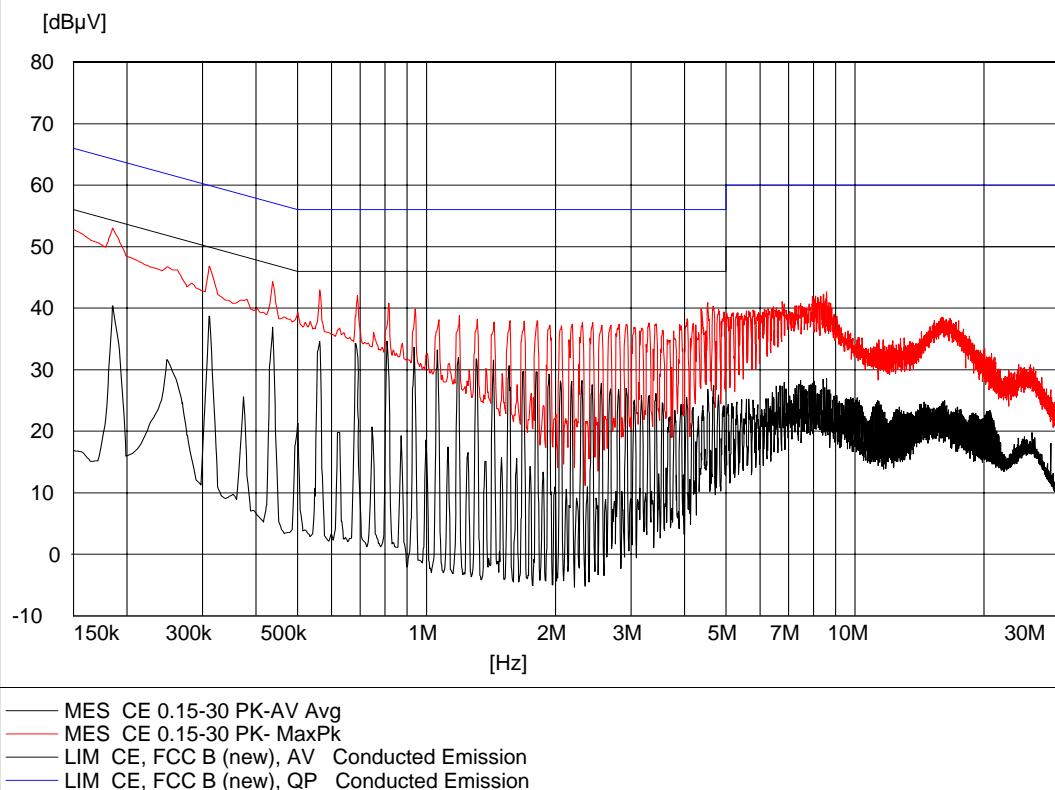
The measured voltages were below the limit.

Comments

Mains voltage: 115 VAC.

Test object	Combined Fingerprint and Smart Card Reader	Sheet	CE-2
Type	Precise 250MC	Project no.	A504068-1
Serial no.	94	Date	2006-08-08
Client	Precise Biometrics AB	Initials	KKJ
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B	Frequency	0.15-30 MHz

Test method	ANSI C63.4:2003	Temperature	25°C
Characteristics	Artificial mains network: 50 Ω, 50 µH	Humidity	56% RH
Detector	Peak and average	Bandwidth	10 kHz
Test equipm.	EMI room Hørsholm (90529) 29461 49421 29916 29861	Uncertainty	2 dB



Line under test

Neutral.

Test result

The measured voltages were below the limit.

Comments

Mains voltage: 115 VAC.



Photo 4.1.1 Test setup regarding measurement of RF voltage on AC mains.

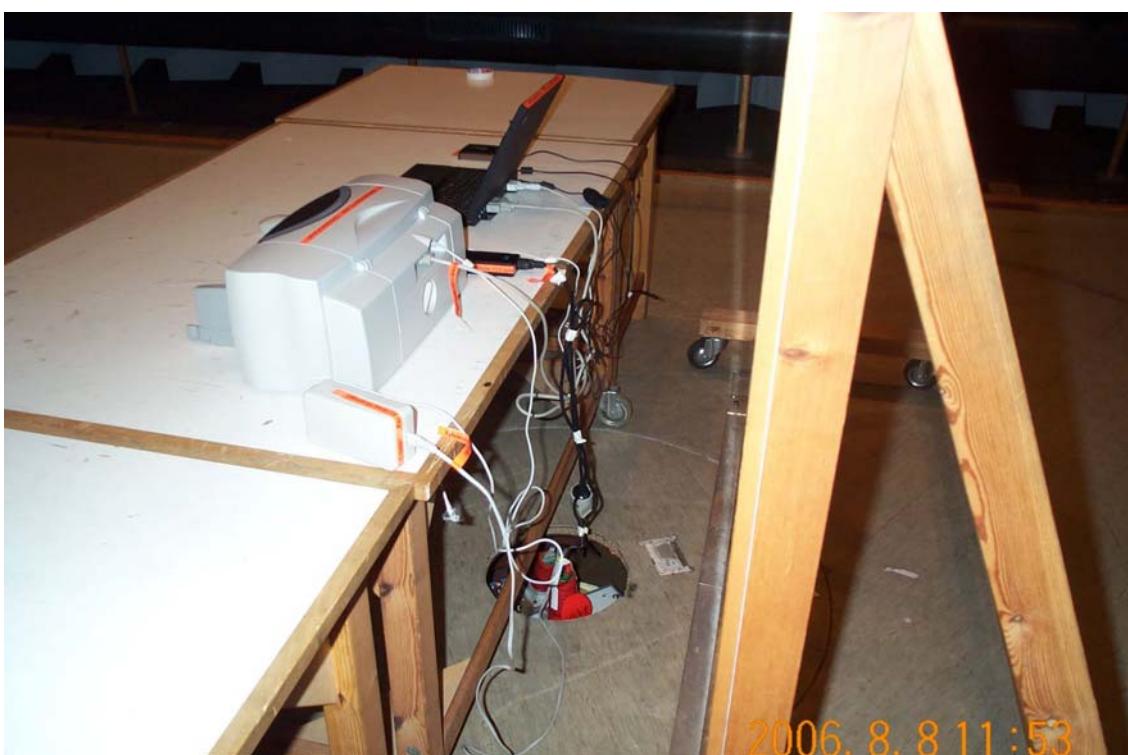
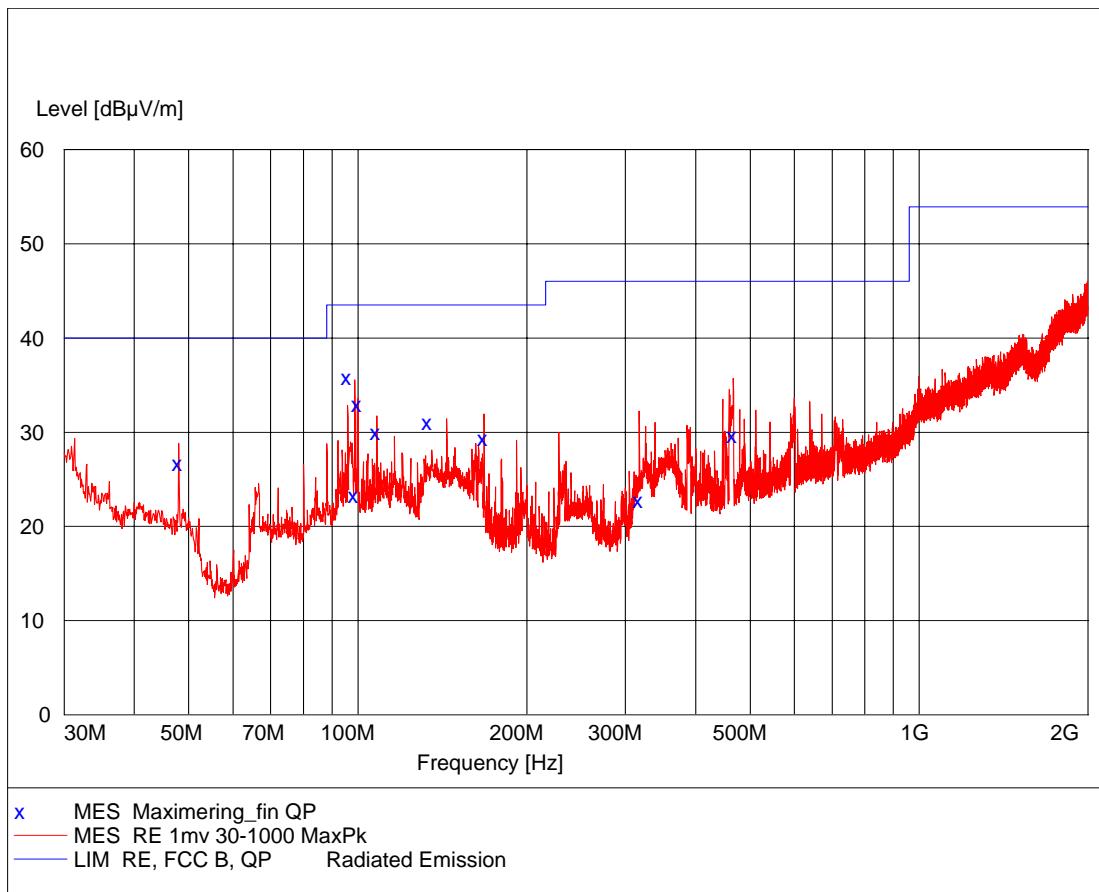


Photo 4.1.2 Test setup regarding measurement of RF voltage on AC mains.

4.2 Measurement of radio frequency electromagnetic field

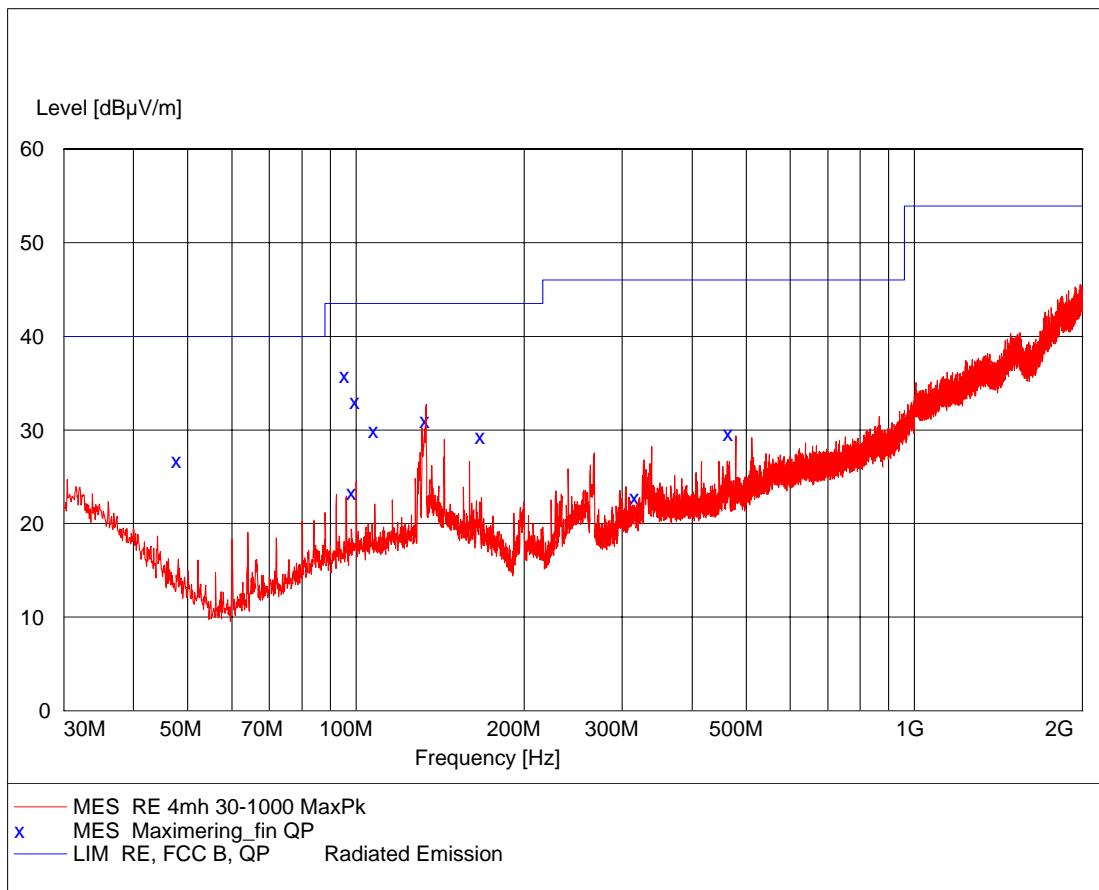
Test object	Combined Fingerprint and Smart Card Reader	Sheet	RE-1
Type	Precise 250MC	Project no.	A504068-1
Serial no.	94	Date	2006-08-08
Client	Precise Biometrics AB	Initials	KKJ
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B	Frequency	30-2000 MHz

Test method	ANSI C63.4:2003	Temperature	25°C
Characteristics	Pre-scan, Antenna at 10 m, 1 m height, vert. pol.	Humidity	56% RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm (90529) 29461 49421 29916 29861 29797	Uncertainty	4 dB



Test object	Combined Fingerprint and Smart Card Reader	Sheet	RE-2
Type	Precise 250MC	Project no.	A504068-1
Serial no.	94	Date	2006-08-08
Client	Precise Biometrics AB	Initials	KKJ
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B	Frequency	30-2000 MHz

Test method	ANSI C63.4:2003	Temperature	25°C
Characteristics	Pre-scan, Antenna at 10 m, 4 m height, hor. pol.	Humidity	56% RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm (90529) 29461 49421 29916 29861 29797	Uncertainty	4 dB



Test object	Combined Fingerprint and Smart Card Reader	Sheet	RE-3
Type	Precise 250MC	Project no.	A504068-1
Serial no.	94	Date	2006-08-08
Client	Precise Biometrics AB	Initials	KKJ
Specification	FCC Rules and Regulations Part 15, Subpart B, Class B	Frequency	30-2000 MHz

Test method	ANSI C63.4:2003	Temperature	25°C
Characteristics	Peak search ant. at 10 m, height: 1-4 m, v/h pol.	Humidity	56% RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm (90529) 29461 49421 29916 29861 29797	Uncertainty	4 dB

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
48.000000	26.70	10.6	40.0	13.3	111.0	174.00	VERTICAL
96.010000	35.80	12.2	43.5	7.7	101.0	65.00	VERTICAL
98.800000	23.30	12.5	43.5	20.2	113.0	59.00	VERTICAL
100.150000	33.00	12.6	43.5	10.5	101.0	262.00	VERTICAL
108.170000	30.00	13.3	43.5	13.5	101.0	288.00	VERTICAL
133.500000	31.00	14.0	43.5	12.5	246.0	1.00	HORIZONTAL
168.000000	29.30	12.4	43.5	14.2	101.0	348.00	VERTICAL
317.300000	22.80	16.5	46.0	23.2	147.0	65.00	VERTICAL
466.400000	29.60	20.2	46.0	16.4	112.0	18.00	VERTICAL

Test result	The measured field strengths are below the limit.
Compliant	Yes.
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation.



Photo 4.2.1 Field measurement test setup.



Photo 4.2.2 Field measurement test setup.

5. List of instruments

INSTRUMENT NO.	DESCRIPTION	MANUFACTURER	TYPE NO.
29461	ARTIFICIAL MAINS NETWORK	ROHDE & SCHWARZ	ESH2/Z5
29797	BILOG ANTENNA, 30-2000 MHz	CHASE ELECTRICS LTD	CBL 6111A
29861	EMI-SOFTWARE Ver. 1.60	ROHDE & SCHWARZ	ES-K1, PART: 1026.6790.02
29916	AUTOMATIC TEST RECEIVER, 9 kHz-2.75 GHz	ROHDE & SCHWARZ	ESCS 30 1102.4500.30
49421	IMPULSE VOLTAGE LIMITER	ROHDE & SCHWARZ	ESH3/Z2