EMC TEST REPORT

No. 0120073E1

Electromagnetic disturbances

EQUIPMENT UNDER TEST

Equipment :	2.4 GHz Wireless PBX
Type / model :	Handset/Compass
Manufacturer :	NSM Technology Ltd.
Tested by request of :	RTX Telecom A/S

SUMMARY

The equipment complies with the requirements of radiated emissions according to the following standard.

FCC part 15 (2000), Radio frequency devices Subpart B:
Unintentional radiators, Class B

Date of issue: September 19, 2001

Issued by: Linda Heikurainen — Approved by: Björn Rosenquist

ITS Intertek Testing Services
ETL SEMKO

Postal address
SEMKO AB
Box 1103
S-164 22 KISTA
SWEDEN

Visiting address
Torshamnsgatan 43
KISTA-STOCKHOLM
SWEDEN

Telephone
+ 46 8 750 00 00

Fax
+ 46 8 750 60 30

CONTENTS

Page

1. Client information 3

2. Equipment under test (EUT) 3
2.1 Identification of the EUT 3
2.2 Additional information about the EUT 3
2.2.1 Power source 3
2.3 Peripheral equipment 3

3. Test specifications 4
3.1 Standards 4
3.2 Additions, deviations and exclusions from standards and accreditation 4

4.Test summary 4

5.Radiated spurious emission, STAND-BY MODE 5
5.1 Operating environment 5
5.2 Measurement uncertainty 5
5.3 Test equipment 5
5.4 Measurement set up 6
5.5 Test protocol 7

1. CLIENT INFORMATION

The EUT has been tested by request of

Company:	RTX Telecom A/S Stroemmen 6 DK-9400 Noerresundby Denmark
Name of contact:	Niels Harsberg

2. EQUIPMENT UNDER TEST (EUT)

2.1 Identification of the EUT

Equipment:	2.4 GHz Wireless PBX
Type/Model:	Handaset/Compass
Brand name:	Cortelco
Manufacturer:	NSM Technology Ltd.
Rating:	3.6 $V_{Nominal}$ 3 AAA NiCd batteries of the 300 mAh type

2.2 Additional information about the EUT

The EUT consists of the following units:

Units	Type
2.4 GHz Wireless PBX	Handset

2.2.1 Power source

Power supply: Batteries of the 300 mAh type. Typical 3.6V

2.3 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not included as part of the testing and evaluation of the EUT.

Equipment
RTX 2201 2.4GHz Communication Tester

Cables	Type	Length
Data cable	25 pins parallel Cable	2 m
Power Cable (220-240 V)	2 wire plus ground	2,5 m

3. TEST SPECIFICATIONS

3.1 Standards

FCC part 15 (2000): Radio frequency devices Subpart B: Unintentional radiators, Class B.

3.2 Additions, deviations and exclusions from standards and accreditation

No additions, deviations or exclusions have been made from standards and accreditation.

4. TEST SUMMARY

The results in this report apply only to sample tested:

	Test	Result	Note
15.107	Conducted spurious emission	Not applicable	1.
15.109	Radiated spurious emission	Pass	

1. Not applicable, this is a battery-operated product.

5. RADIATED SPURIOUS EMISSION, STAND-BY MODE

5.1 Operating environment

Temperature:	22 °C	(15 - 35 °C)
Relative Humidity:	22 %	(30 - 60 %)

5.2 Measurement uncertainty

Measurement uncertainty: ± 4 dB

5.3 Test equipment

Test site: Semi-anechoic shielded chamber. 10 x 20 x 8,5 m (W x L x H)

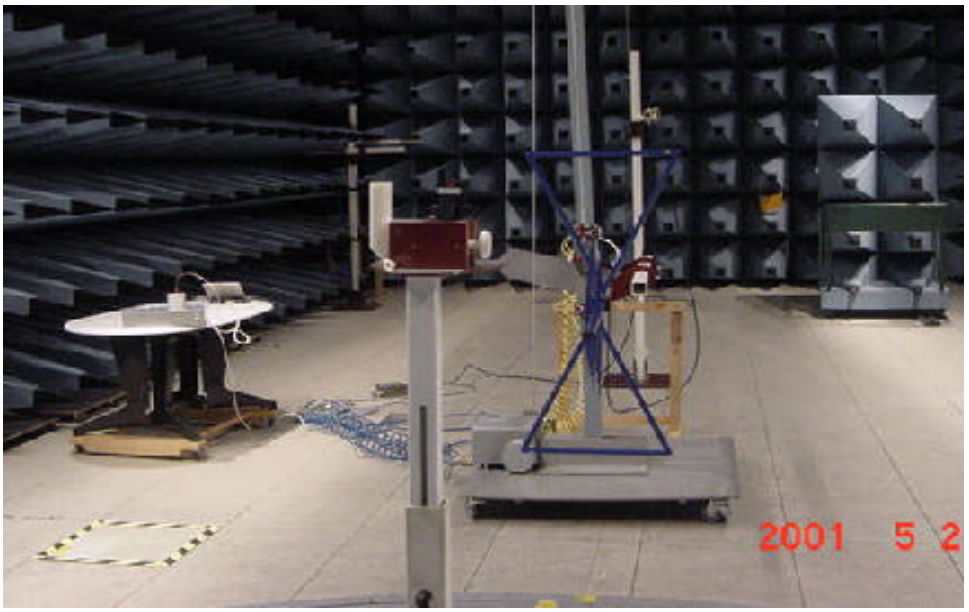
Equipment	Manufacturer	Type	SEMKO No.
Software:	R&S	ES-K1	
Measurement receiver:	R&S	FSEM 30	-
Antenna amplifier:	SEMKO		7992, 7993
Preamplifier:	HP	8449B	6685
High pass filter 4-18GHz:	K&L	4H10-X4500	5133
Antennas:			
Bilog:	Chase	CBL6111A	1550
Double Ridge Waveguide Horn:	EMCO	3115	3006
Pyramidal Horn Antanna:	EMCO	3160-08	30099
Pyramidal Horn Antanna:	EMCO	3160-09	30101

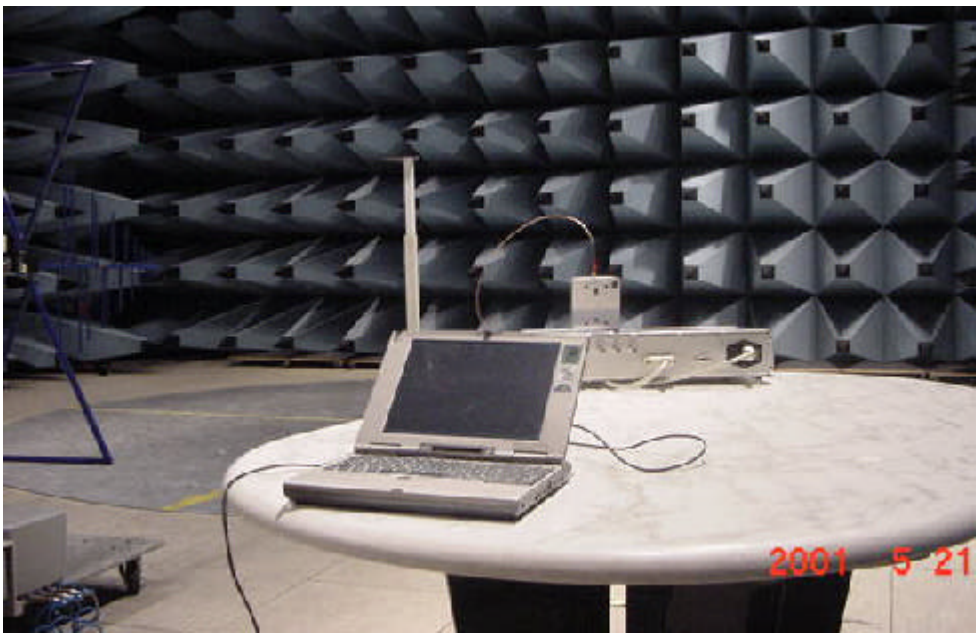
R&S = Rohde & Schwarz

5.4 Measurement set up

During the radiated measurements 30 – 1000 MHz the RTX 2201 2.4GHz Communication Tester was placed inside the large EMC chamber, behind the measurement antenna. This was necessary to get the EUT to operate at the right test sequence. The second graph below shows a measurement in the large EMC chamber with no test equipment but only the RTX 2201 2.4GHz Communication Tester inside the chamber.

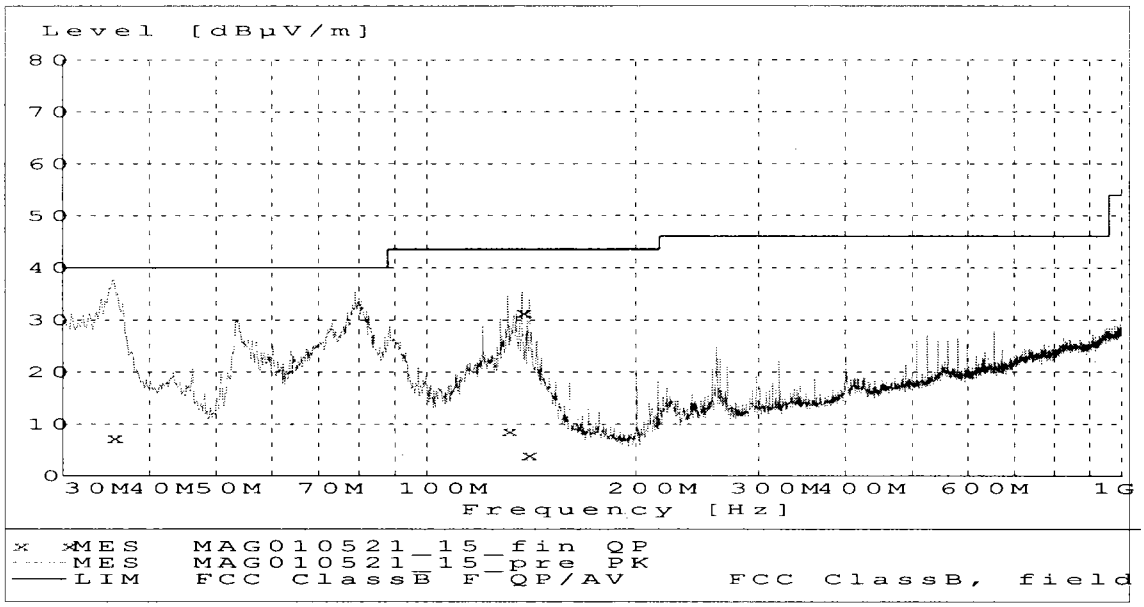
Picture of the test set up.



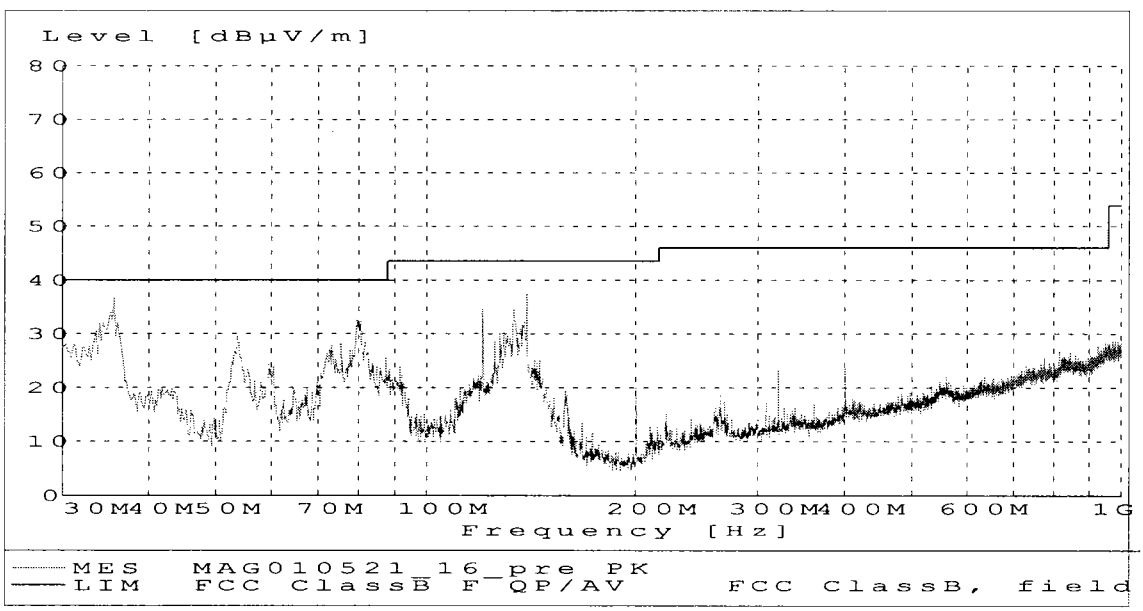


5.5 Test protocol

Date of test: May 21, 2001



Overview sweep max peek at a distance of 10 m (30 – 1000 MHz)



Overview sweep max peek at a distance of 10 m (30 – 1000 MHz) with no EUT inside the chamber, the disturbance comes from the RTX 2201 2.4GHz Communication Tester, se picture above.

Field strength of spurious emission 30-1000 MHz. Standby test data sequence						
Frequency MHz	QP Level [dBµV/m]	QP Limit [dBµV/m]	Height [cm]	Azimuth [deg]	Polarisation	Note
35.44	7	40	151	161	HORIZ.	
130.72	8.5	43.50	151	106	HORIZ.	
136.96	31.5	43.50	101	32	VERT.	
139.52	4	43.50	102	253	HORIZ.	

Fulfil requirements: Yes

Field strength of spurious emission 1-12 GHz. Standby test data sequence						
Frequency	RBW	Measured level		Limit		Note
		Peak	QP/AV	Peak	QP/AV	
[MHz]	[kHz]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dBµV/m]	
1000 – 2400	1000	<45	-	74	54	
2483,5 – 4500	1000	<46	-	74	54	
4500 – 12000	1000	<45	-	74	54	

Fulfil requirements: Yes