

RADIO TEST REPORT

No. 304176R1

EQUIPMENT UNDER TEST

Equipment: S1500 TagMaster Reader
Type / model: S1500/00, rev. P04 B
Manufacturer: HGL Ronneby
Tested by request of: TagMaster AB

SUMMARY

The equipment complies with the requirements of the following standard:

FCC, Part 15.245 (2002)

Note: This test report replaces earlier issued Test Report with same Test Report No. dated 9 May 2003.

Date of issue: 15 October, 2003

Tested by:

Bazhanov

Vladimir Bazhanov

Monica Roos

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Approved by:

Björn Rosenquist

Björn Rosenquist



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1. CLIENT INFORMATION

The EUT has been tested by request of

Company: TagMaster AB
ELECTRUM 410
SE-164 40 Kista
Sweden
Name of contact: Thomas Odén

2. EQUIPMENT UNDER TEST (EUT)**2.1 Identification of the EUT according to the manufacturer/client declaration**

Equipment: S1500 TagMaster Reader
Type/Model: S1500/00, rev P04 B
Brand name: TagMaster
Serial number: 030730773
FCC ID Number: M39S15XX
Brand name: TagMaster
Manufacturer: HGL Ronneby
Rating/Supplying voltage: 12 V / 24 V DC
Rating RF output power: < 10 mW e.i.r.p.
Antenna gain: < 5 dBi
External antenna connector: No
Operating temperature range: -20 to +60 °C
Frequency range: 2435 – 2465 MHz
Number of channels: 99



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2.2 Additional software information about the EUT

During the tests the EUT supported the following software:

Software	Version	Comment
Pyramid	-	

2.3 Peripheral equipment

Peripheral equipment is defined as equipment needed for correct operation of the EUT, but not included as a part of the testing and evaluation of the EUT.

<u>Equipment</u>	<u>Manufacturer / Type</u>	<u>Serial number</u>
AC/DC Adaptor	Amplus / 9935	-
Accumulator Battery	Fritid-Marin / 12 V, 75 Ah	-

2.4 Modifications during the test

No modifications have been made during the tests.



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3. TEST SPECIFICATIONS

3.1 Standards

FCC (10-1-02 Edition): Part 15 – Radio Frequency Devices, Subpart C – Intentional Radiators; §15.245 for the systems operating within the bands 902 -928 MHz, 2435 – 2465 MHz, 5785 – 5815 MHz, 10500 – 10550 MHz, and 24075 – 24175 MHz; §15.205 for restricted bands; §15.209 for radiated limits and §15.207 for conducted limits.

3.2 Additions, deviations and exclusions from standards and accreditation

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

3.3 Test set-up

The EUT was tested supplied with 12 V DC from the accumulator battery or an AC/DC adaptor. Measurement set-ups and the EUT settings are specified in the corresponding sections.

3.4 Operating environment

If not additionally specified, the tests were performed under the following environmental conditions:

Air temperature: 19 - 23 °C
Relative humidity: 24 - 32 %



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4. TEST SUMMARY

The results in this report apply only to the sample tested.

FCC reference	Test	Result	Note
15.245 (b)	Out of band spurious emissions, radiated	Pass	
15.209 (a)	Out of band spurious emissions, radiated	Pass	
15.207 (a)	Conducted disturbance voltage in the frequency range 0,15 - 30 MHz	Pass	
15.245 (b)	Output field strength	Pass	
15. 209 (a)	Band edge compliance	Pass	



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5. MEASUREMENT UNCERTAINTY AND TEST EQUIPMENT

5.1 Measurement uncertainty

Radiated disturbance electric field intensity, 30 – 1000 MHz: ± 4,6 dB
 Radiated disturbance electric field intensity, 1000 – 26000 MHz: ± 6,0 dB

The measurement uncertainty describes the overall uncertainty of the given measured value during operation of the EUT.

Measurement uncertainty is calculated in accordance with EA-4/02-1997.
 The measurement uncertainty is given with a confidence of 95%.

5.2 Test equipment

Equipment	Manufacturer	Type	SEMKO No.
<i>Test site: Semi-anechoic shielded chamber, 10 x 20 x 8,5 m (W x L x H)</i>			30300
Software:	Rohde & Schwarz	ES-K1, V1.60	
Measurement receiver:	Rohde & Schwarz	ESAI	2973/2974
Antenna amplifier:	SEMKO		7992/7993
Antenna, bilog:	Chase	CBL6111B	971
<i>Test site: Bluetooth anechoic shielded chamber, 3,7 x 7,0 x 2,4 m (W x L x H)</i>			12285
Software:	Rohde & Schwarz	ES-K1, V1.60	
Signal analyser:	Rohde & Schwarz	FSIQ 40	9192
Preamplifier:	MITEQ	AFS6/AFS44	12335
Antennas:			
Double Ridge Guide Horn:	EMCO	3115	4936
Horn antenna:	EMCO	3160-08	30099
Horn antenna:	EMCO	3160-09	30101
High pass filter:	K&L Microwave Inc.	4410x4500/180	5133
Attenuator 20 dB:	Hewlett Packard	HP8491A	30090



6. RADIATED SPURIOUS EMISSIONS

6.1 Measurement set-up

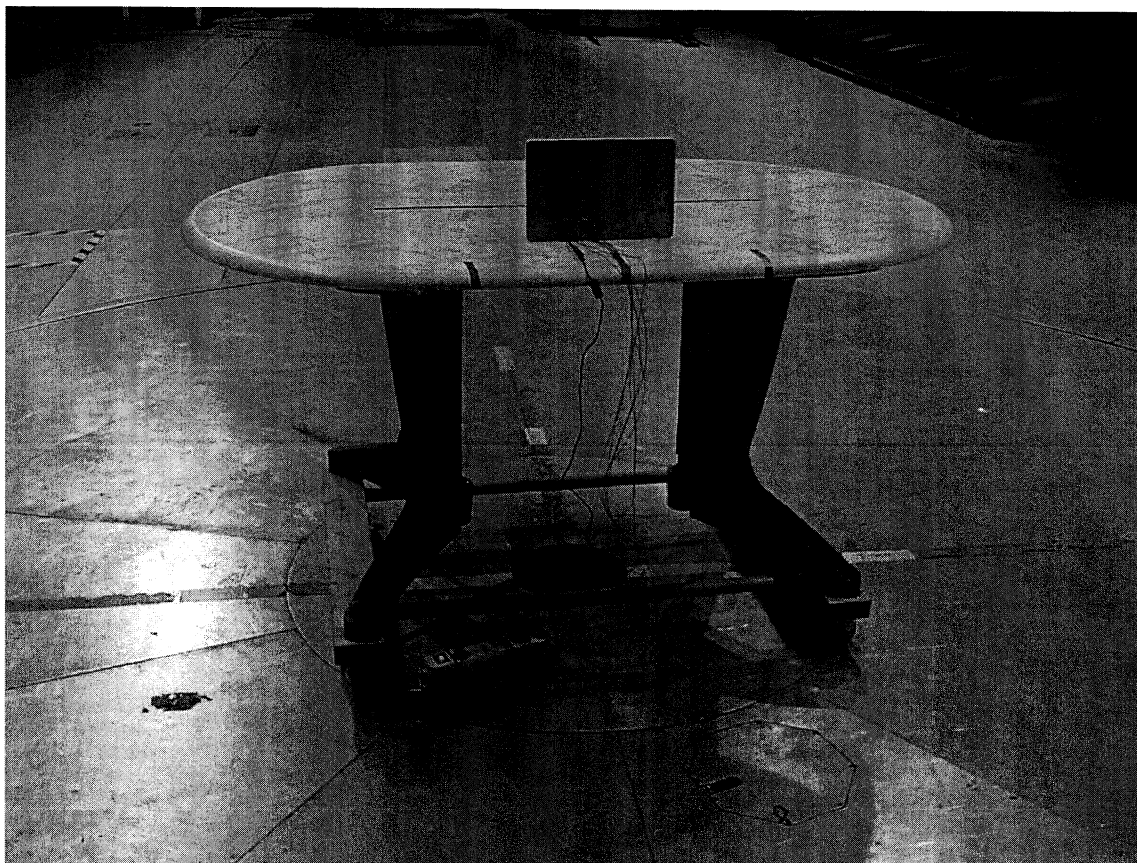
6.1.1 Test site: Semi-anechoic shielded chamber (30 – 1000 MHz)

The radiated disturbance electric field intensity was measured in a semi-anechoic chamber at a distance of 3 m or 10 m the EUT was placed on a non-metallic table, 0,8 m above the reference ground plane. The specified test mode was enabled. Test set-up photo is given below.

An overview sweep with peak detection of the electric field intensity was performed with the measurement receiver in max-hold and with the antenna placed 1,5 m, 2,5 m and 3,5 m above the floor. The polarisation was horizontal and vertical. The measurements were repeated with the EUT rotated in 90-degree steps.

At the frequencies where high disturbance levels were found a search for max disturbance level was performed. With the EUT and antenna in the worst-case configuration quasi-peak measurements were carried out.

Test set-up photo:



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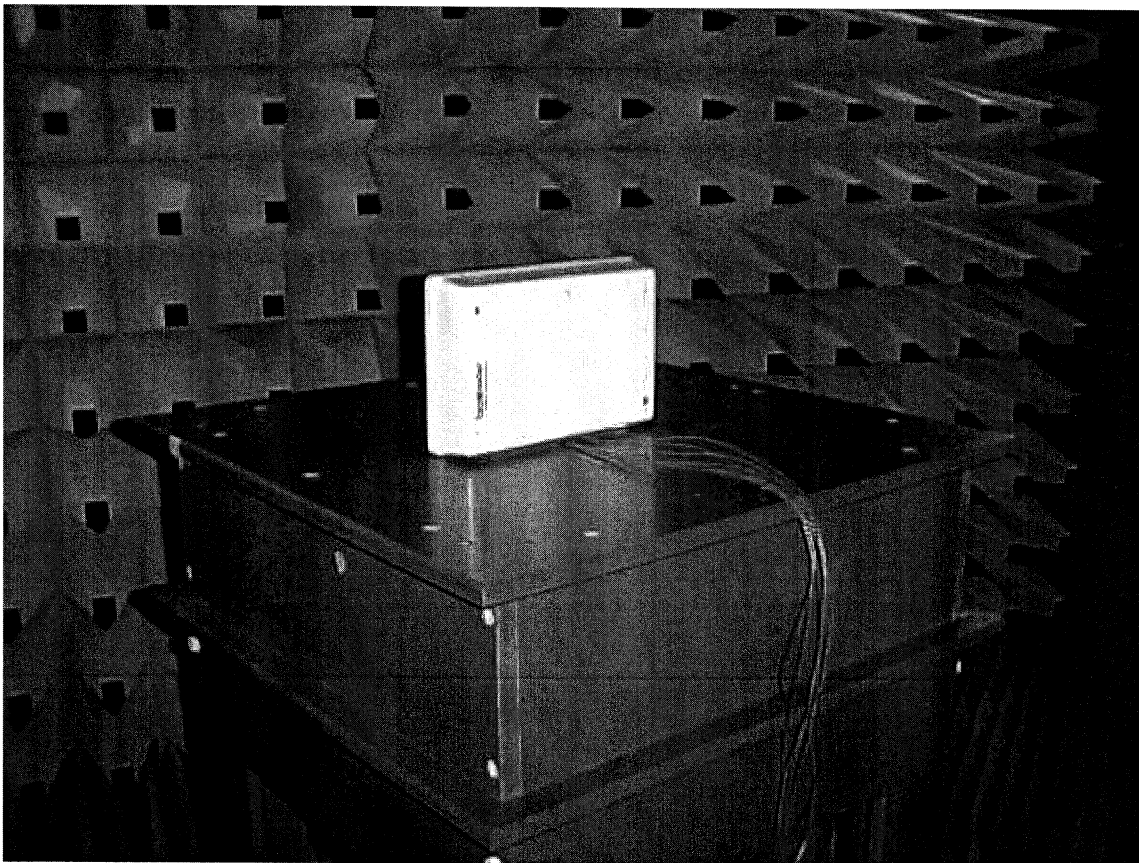
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6.1.2 Test site: Bluetooth anechoic shielded chamber (1 – 26 GHz)

In the Bluetooth anechoic chamber the EUT was placed on a non-metallic table, 1,4 m above the floor. The radiated disturbance electric field intensity was measured at a distance of 3 m. The specified test mode was enabled.

An overview sweep with peak detection of the electric field intensity was performed with the spectrum analyser in max-hold and with the antenna placed 1,4 m above the floor. The polarisation was horizontal and vertical. The measurements were repeated with the EUT rotated in 90-degree steps. If necessary, the sweep was repeated with average detection. Test set-up photo is shown below.



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