

**EMISSION MEASUREMENTS IN ACCORDANCE
WITH FCC PART 15 AND ANSI C63.4-1992 ON A
ANTI SHOPLIFTING SYSTEM, BRAND TRAMPLE,
TYPE SYSTEM Qg.**

FCC ID: OI6SYSTEMQG

FCC report layout endorsed by the FCC by
Public Notice of March 11, 1992.

Accredited by	:STERLAB accreditation number L029 D.A.R., TTI-P-G.127/96-00
Competent body	:Article 10-2 EMC Directive
Notified body nr. 0122	:Article 10-5 EMC Directive Low Voltage Directive TTE Directive
Certification body	:Electrical Products Safety regulation, Hong Kong
Designated laboratory	:TTE Directive
Notified test service	:Automotive Directive
FCC listed	:31040/SIT
VCCI registered	:R-592 C-607

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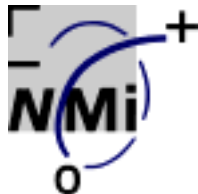
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Description of EUT: Anti shoplifting system
Manufacturer: Trample B.V.
Brand mark: Trample
Type: System Qg
FCC ID: OI6SYSTEMQG

MEASUREMENT/TECHNICAL REPORT

TRAMPLE B.V.

FCC ID: OI6SYSTEMQG

August 18, 1999

This report concerns: Original grant	
Equipment type: Shoplifting Detection Device	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	yes no
If yes defer until: not applicable	
Transition Rules Request per 15.37	yes no
Report prepared by:	Name : P.A.J.M. Robben, B.Sc.E.E. Company name : NMI Certin B.V. Address : Smidshornerweg 18 Telephone number : + 31 594 505005 Telefax number : + 31 594 504804 Mailing address : P.O. Box 15 City/Place/Postal cd. : 9822 ZG NIEKERK Country : The Netherlands Email : et-desk@nmi.nl

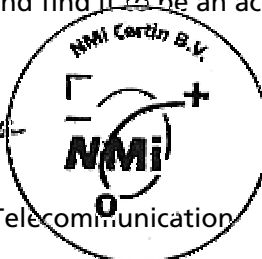
The data taken for this test and report herein was done in accordance with FCC Part 15 and ANSI C63.4-1992 measurements. NMI Certin B.V., location Niekerk, The Netherlands, certifies that the data is accurate and contains a true representation of the emission-profile of the Equipment Under Test (EUT) on the date of the test noted in the test report. I have reviewed the test report and find it to be an accurate description of the test(s) performed and the EUT so tested.

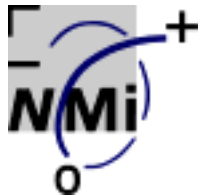
Date: August 18, 1999

Signature:

J.S. Sikkema, B.Sc.E.E.

Department EMC and Telecommunication

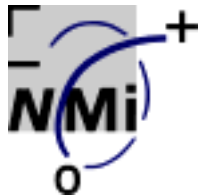




Description of EUT: Anti shoplifting system
Manufacturer: Trample B.V.
Brand mark: Trample
Type: System Qg
FCC ID: OI6SYSTEMQG

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Description of EUT:	Anti shoplifting system
Manufacturer:	Trample B.V.
Brand mark:	Trample
Type:	System Qg
FCC ID:	OI6SYSTEMQG

1 General Information.

1.1 Product description.

1.1.1 Introduction

The anti shoplifting system, brand Trample, type System Qg, has been developed as a shop-lifting system detection system for shops. A miniature responder (called label) is attached to the products to be protected. These labels are disabled after paying. In the event of theft, they are still present and are detected when they enter the vicinity of the detection pillars consisting of a transmitter and a receiver pillar. The pillars form one or more passages and are located at the exit of the sales.

1.1.2 Choice of frequency

The operating frequency of the anti shoplifting system, brand Trample, type System Qg is specified as: 8.2 ± 1 MHz

1.1.3 Operating principles

The heart of the system is the label. The label contains a resonant circuit, consisting of an air cored loop and a capacitor. If the loop enters an alternating magnetic field, such as that of a primary transmitting loop, an electric voltage is generated in the windings. If the frequency of the alternating magnetic field corresponds to the resonant frequency of the label (determined by the self-inductance of the loop and the capacity of the capacitor), the voltage over the loop will cause an alternating current in the series connection of the coil and the capacitor. The current in the loop then generates its own, secondary, alternating magnetic field, which is 90 degrees phase shifted. This secondary field induces a voltage in the receiver antenna and is phase sensitive detected.

In this way energy is absorbed from the transmitting circuit by the label circuit. This energy is dissipated in the loss resistance, which should be connected in series with the loop and capacitor in the label.

1.2 Related Submittal(s)/grant(s).

Not applicable.

1.3 Test Methodology.

The Test methodology of ANSI C63.4-1992 has been applied to provide adequate measuring data.

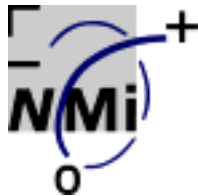
Complete data of the tested model has been recorded.

According to FCC Part 15, § 101 the EUT shall be classified as an intentional radiator and is therefore subject to certification.

1.4 Test facility.

The FCC has per Public Notice declared that the measurement facilities located at the NMI Certin B.V. Testsite Niekerk, Smidshornerweg 18, The Netherlands, have been reviewed and found to be in compliance with the requirements of § 2.948 (previously § 15.38) of the FCC rules per August 4, 1994.

The description of the measuring facilities have been filed with reference 31040/SIT, 1300B3 at the FCC's Offices.



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1.5 List of measurement equipment.

NMi number	Description	Marketing name	Type
14277	Antennamast 4m	Heinrich Deisel	HD100
14278	Controller OATS	Heinrich Deisel	MA240
14340	Biconilog antenna 20MHz - 1100MHz	EMCO	3143
12473	Log-per antenna 200MHz - 1000MHz	Eaton	96005
12471	Biconical antenna 20MHz - 200MHz	Eaton	94455-1
12636	Plastic measurement room	Polyforce	-
13886	Open Area Test Site	Comtest	-
99108	Turntable OATS	Heinrich Deisel	HD050
15667	Measuring receiver 9kHz - 2750MHz	Rohde & Schwarz	ESCS30
12507	Artificial mains network 3-phase	Rohde & Schwarz	ESH2-Z5
13313	Impuls limiter	Rohde & Schwarz	ESH3Z2.357...
99115	Voltage probe	Schwarzbeck	TK9416

1.6 Bandwidth and antenna factors.

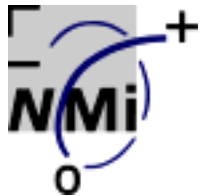
The utilized measuring equipment is stated in § 1.5. The bandwidth of the receiver switches automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. Also the antennafactors are included in the testreceiver. The receiver automatically calculates the appropriate correction factor for the utilized antenna and also the appropriate correction factor for the cable loss. The total correction is automatically added to the measured value.

2 Product labelling.

The following text shall be attached to the EUT, by means of a label, or -in case the enclosure is too small- on a prominent location in the users manual.

**This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions: (1)
This device may not cause harmful interference, and (2)
this device must accept any interference received,
including interference that may cause undesired
operation.**

The dimensions of the label, the location of the label and the type of font can be found in the FCC regulation book CFR 47, parts 0 to 19, revised as per October 1, 1997.



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3 System test configuration.

3.1 Justification.

In accordance with § 11.2.4. of ANSI C63.4-1992 the placing and manipulation of interface cables has been carried out. The anti shoplifting system, brand Trample, type System Qg, includes of the following equipment:

Transmitter with QF TX board V4.1

Receiver with QF RX board V5.0

Power supply, brand Phihong, type PSA-30U-240

3.2 EUT mode of operation.

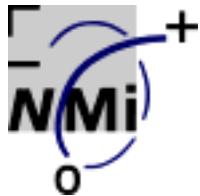
During all measurements a label was placed between the antennas in order to generate a continuous detection signal.

3.3 Special accessories.

Not applicable.

3.4 Equipment modifications.

Not applicable.



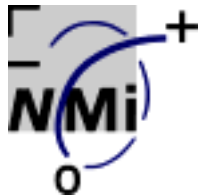
Description of EUT: Anti shoplifting system
Manufacturer: Trample B.V.
Brand mark: Trample
Type: System Qg
FCC ID: OI6SYSTEMQG

3.5 Description of tested EUT.

Unit title	:	System Qg
Model number	:	n.a.
Serial number	:	n.a.
FCC ID number	:	OI6SYSTEMQG
Frequency range	:	specified as 8.2 ± 1 MHz
Description/details	:	See § 1.1 of this report
Power supply	:	Brand: Phihong, type: PSA-30U-240, input: 100-240VAC 50/60 Hz, output: 24VDC/1.25A
Clock oscillators	:	32.768 kHz
Cabinet & Screening	:	Metal enclosure
Interface Cable(s) connected	:	3-wire connection between transmitter/receiver
Method of screening	:	Connected to enclosure
Method of grounding	:	Connected to earth by means of AC mains plug
Operating configuration	:	Transmitter with QF TX board V4.1 Receiver with QF RX board V5.0

Applicant's information

Applicant's representative	:	M.H. Heerspink
Company	:	Trample B.V.
Address	:	Meulenakker 9
Postal code and city	:	7841 EP Sleen
Country	:	The Netherlands
Telephone number	:	+31-591-361928
Fax number	:	+31-591-362223



Description of EUT:	Anti shoplifting system
Manufacturer:	Trample B.V.
Brand mark:	Trample
Type:	System Qg
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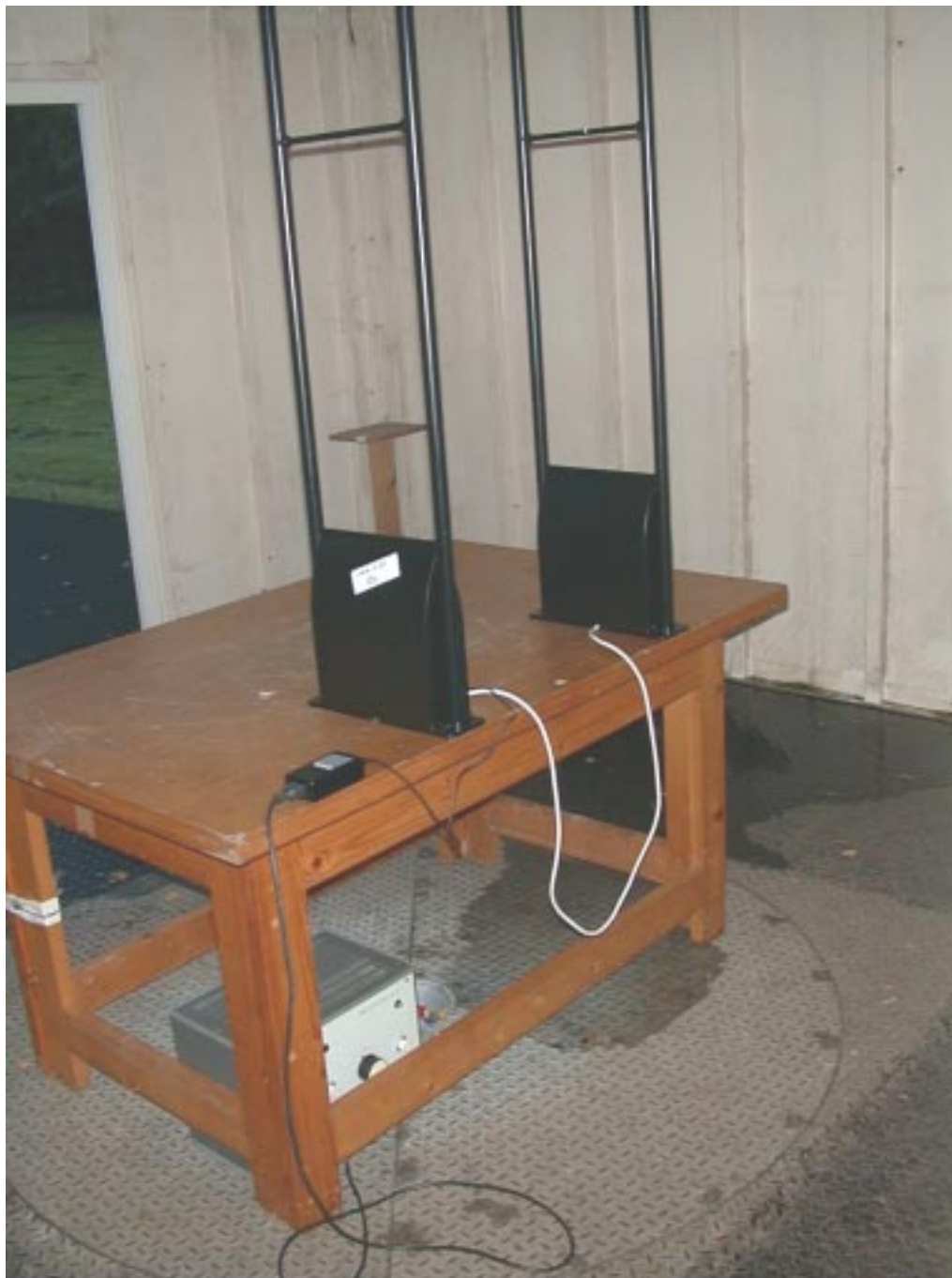
4 Conducted and radiated measurement photos.

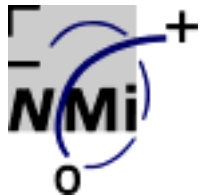
On pages 9 and 10 the conducted emission measurements test setup photos are given, on page 11 and 12 the radiated emission measurements test setup photos are given.











Description of EUT: Anti shoplifting system
Manufacturer: Trample B.V.
Brand mark: Trample
Type: System Qg
FCC ID: OI6SYSTEMQG

5 Conducted emission data.

5.1 Conducted emission data (the system was sweeping).

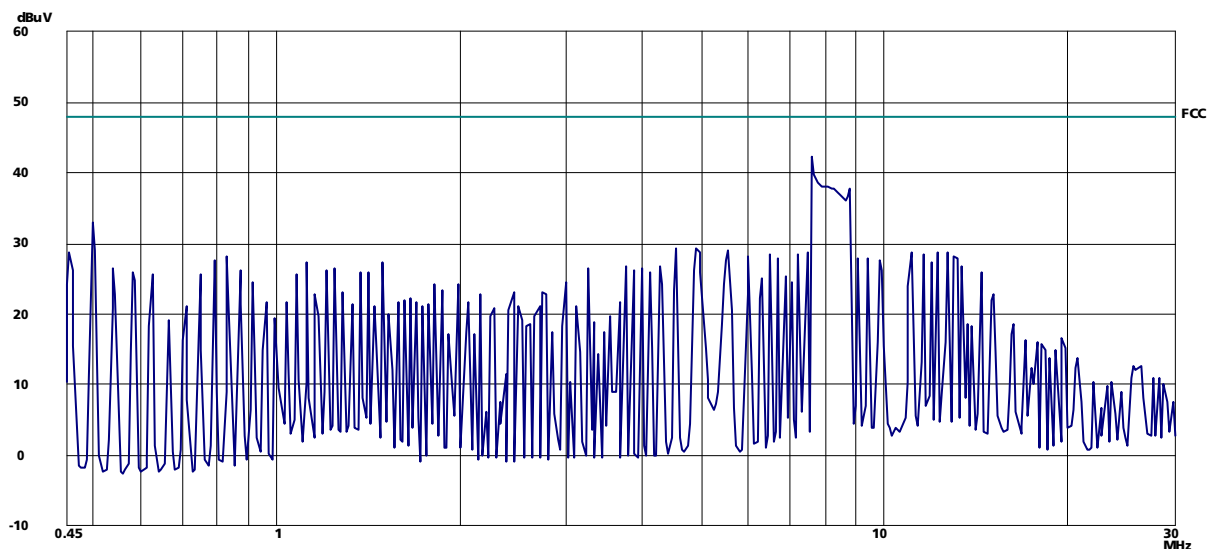


Figure 1

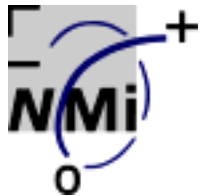
The results of the disturbance voltage level measurements at the AC mains connection terminal **LINE** of the EUT in accordance with FCC Part 15, § 207 and ANSI C63.4-1992, in the configuration and operation mode(s) as stated in this testreport, are depicted in figure 1. Measurement results are quasi-peak results. The system was sweeping.

Test engineer:

Tester signature :

Date: August 18, 1999

Typed/printed name : P.A.J.M. Robben, B.Sc.E.E.



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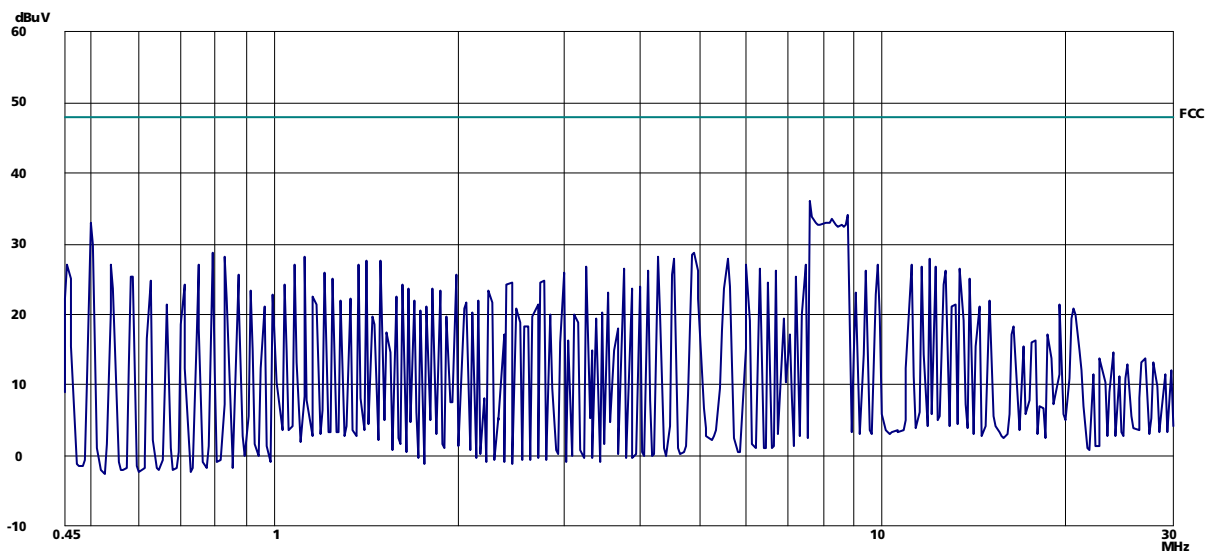


Figure 2

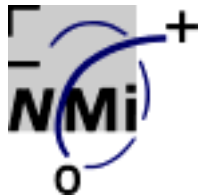
The results of the disturbance voltage level measurements at the AC mains connection terminal **NEUTRAL** of the EUT in accordance with FCC Part 15, § 207 and ANSI C63.4-1992, in the configuration and operation mode(s) as stated in this testreport, are depicted in figure 2. Measurement results are quasi-peak results. The system was sweeping.

Test engineer:

Tester signature :

Date: August 18, 1999

Typed/printed name : P.A.J.M. Robben, B.Sc.E.E.



Description of EUT: Anti shoplifting system
Manufacturer: Trample B.V.
Brand mark: Trample
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5.2 Conducted emission data (sweep stopped).

Frequency (MHz)	Measurement results dB(μV) Neutral	Measurement results dB(μV) Line	Limits dB(μV)	Result
	Quasi-peak	Quasi-peak	Quasi-peak	
7.300 (a)	39.2	38.6	48.0	PASS
14.600 (b)	12.8	11.5	48.0	PASS
21.900 (c)	11.6	10.8	48.0	PASS
29.200 (d)	11.9	11.0	48.0	PASS
8.860 (e)	45.5	44.7	48.0	PASS
17.7630 (f)	19.4	18.7	48.0	PASS
26.599 (g)	4.5	5.0	48.0	PASS

Table 1

The results of the disturbance voltage level measurements at the AC mains connection terminal **LINE** and **NEUTRAL** of the EUT in accordance with FCC Part 15, § 207 and ANSI C63.4-1992, in the configuration and operation mode(s) as stated in this testreport, are depicted in table 1. Measurement results are quasi-peak results. The sweeping of the EUT was stopped for the purpose of this measurement. The frequencies as stated in table 1 are defined as follows.

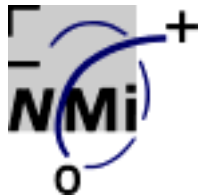
- a. Local signal (lower part)
- b. Second harmonic (lower part)
- c. Third harmonic (lower part)
- d. Fourth harmonic (lower part)
- e. Local signal (higher part)
- f. Second harmonic (higher part)
- g. Third harmonic (higher part)

Test engineer:

Tester signature :

Date: August 18, 1999

Typed/printed name : P.A.J.M. Robben, B.Sc.E.E.



Description of EUT: Anti shoplifting system
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6 Radiated emission data.

6.1 Radiated field strength measurements (frequency range of 30 MHz to 1000 MHz, E-field)

Frequency (MHz)	Measurement results dB(μV)/m @ 3 metres Quasi-peak		Limits dB(μV)/m @ 3 metres Quasi-peak
	Vertical	Horizontal	
32.800	31.1	31.1	40.0
36.000	38.4	36.3	40.0
41.000	27.8	27.5	40.0
48.010	32.5	27.0	40.0
49.200	24.8	23.7	40.0
57.400	21.6	21.4	40.0
60.010	35.8	24.3	40.0
65.600	21.2	21.3	40.0
72.010	27.3	24.3	40.0
82.000	24.0	23.8	40.0
84.010	29.1	20.1	40.0

Measured levels on frequencies not stated in this report have been measured more than 20 dB below the applicable limit.

Table 2

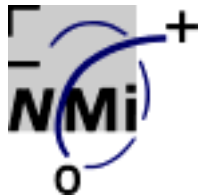
Results of the radiated emission (electric components) measurements in accordance with FCC Part 15, § 209 and ANSI C63.4-1992, in the configuration and operation mode(s) as stated in this testreport, are depicted in table 2. Measurement results are quasi-peak results. The system was sweeping during the measurements.

Test engineer:

Tester signature :

Date: August 18, 1999

Typed/printed name : P.A.J.M. Robben, B.Sc.E.E.



Description of EUT: Anti shoplifting system
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6.2 Radiated field strength measurements (frequency range of 9 kHz to 30 MHz, H-field)

6.2.1 Radiated field strength measurements (H-field, the system was sweeping)

Frequency (MHz)	Measurement results dB(μ V)/m @ 30 metres Quasi-peak	Limits dB(μ V)/m Quasi-peak FCC Part 15, sect. 223	Limits dB(μ V)/m Quasi-peak FCC Part 15, sect. 209
0.009 - 0.490	<<	n.a.	2400/F (300 m.)
0.490 - 1.705	<<	n.a.	24000/F (30 m.)
1.705 - 7.620	<<	40.0	n.a.
7.620	31.7	40.0	n.a.
8.840	34.0	40.0	n.a.
9.200 - 10.00	<<	40.0	n.a.
10.00 - 30.00	<<	n.a.	29.5

Measured levels on frequencies not stated in this report have been measured more than 20 dB below the applicable limit.

Table 3

Results of the radiated electric field strength (H-field) measurements, carried out in accordance with FCC Part 15, § 209 and § 223 (edition 10-1-97) and ANSI C63.4-1992, on the EUT are depicted in table 3.

Note 1: According to FCC Part 15, § 223, bandwidth shall be more than 10% of the frequency to apply the limits as given in table 3. The bandwidth of the system is 7.2 MHz - 9.2 MHz.

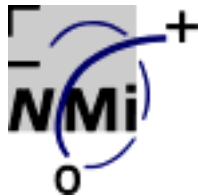
Note 2: The EUT sweeps from 7.2 MHz to 9.2 MHz. The sweep does not stop in bands as listed in FCC Part 15, § 15.205 (restricted bands of operation). The fundamental emission is outside the bands, as listed in FCC Part 15, § 15.205, for more than 99% of the time when the device is actively transmitting, without compensation for duty cycle.

Test engineer:

Tester signature :

Date: August 18, 1999

Typed/printed name : P.A.J.M. Robben, B.Sc.E.E.



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6.2.2 Radiated field strength measurements (H-field, sweep stopped)

Frequency (MHz)	Measurement results dB(μV) @ 30 metres Quasi-peak	Antenna factor (dB)	Cable attn. (dB)	Measurement results dB(μV)/m @ 30 metres Quasi-peak	Limits dB(μV)/m Quasi-peak FCC Part 15, sect. 223	Limits dB(μV)/m Quasi-peak FCC Part 15, sect. 209
7.620 (a)	17.0	17.0	1	35.0	40.0	n.a.
15.240 (b)	<<	17.0	1	< 18.0	n.a.	29.5
22.860 (c)	<<	17.0	1	< 18.0	n.a.	29.5
8.840 (d)	20.8	17.0	1	38.8	40.0	n.a.
17.680 (e)	<<	17.0	1	< 18.0	n.a.	29.5
26.520 (f)	<<	17.0	1	< 18.0	n.a.	29.5

Measured levels on frequencies not stated in this report have been measured more than 20 dB below the applicable limit.

Table 4

Results of the radiated electric field strength (H-field) measurements, carried out in accordance with FCC Part 15, § 209, § 223, § 15.31c (edition 10-1-97) and ANSI C63.4-1992, on the EUT are depicted in table 3. The sweeping of the EUT was stopped for the purpose of this measurement. The frequencies as stated in table 4 are defined as follows:

- a. Local signal (lower part)
- b. Second harmonic (lower part)
- c. Third harmonic (lower part)
- d. Local signal (higher part)
- e. Second harmonic (higher part)
- f. Third harmonic (higher part)

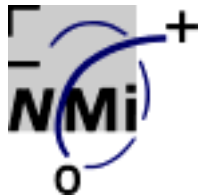
Note: According to FCC Part 15, § 223, bandwidth shall be more than 10% of the frequency to apply the limits as given in table 4. The bandwidth of the system is 7.2 MHz - 9.2 MHz.

Test engineer:

Tester signature :

Date: August 18, 1999

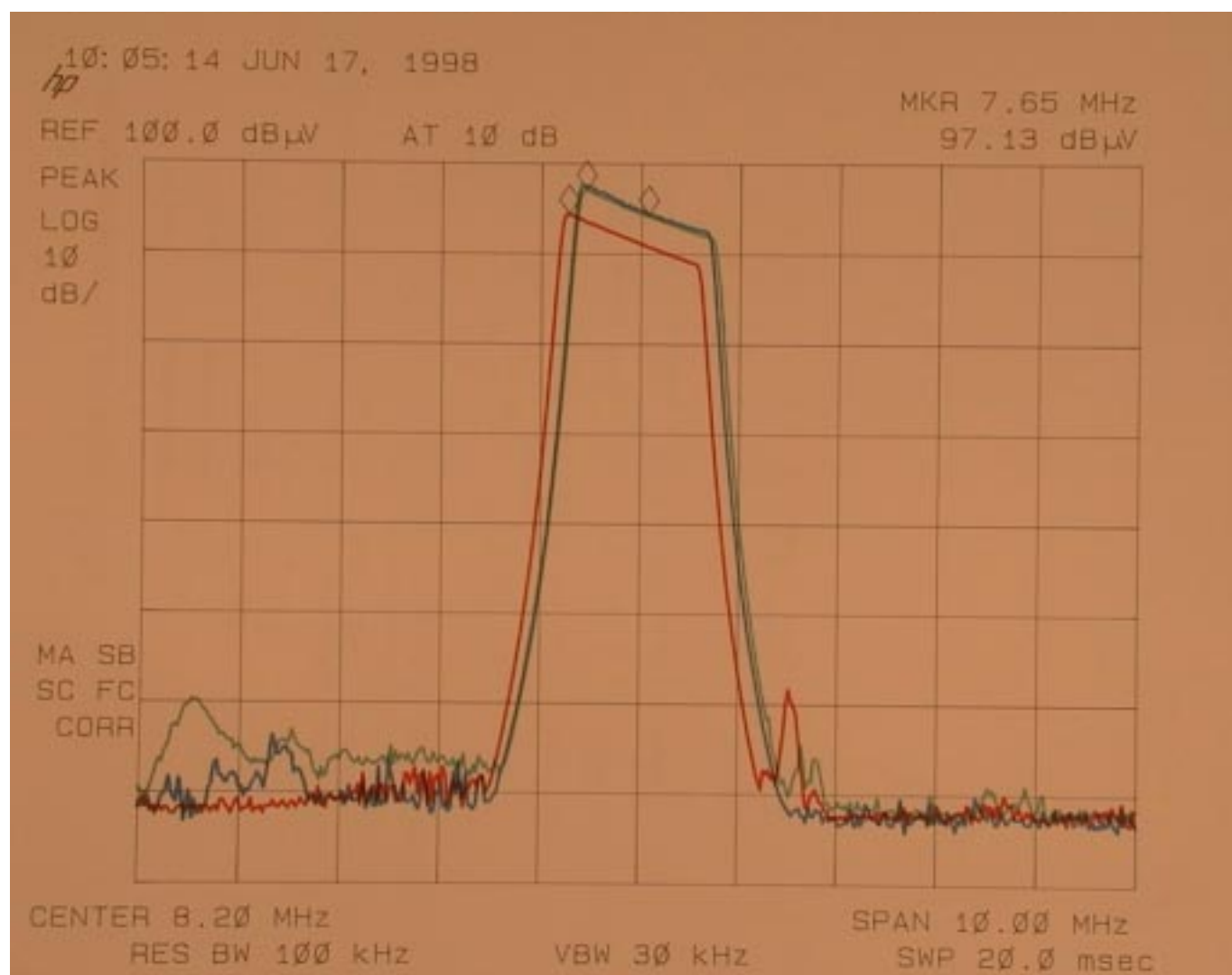
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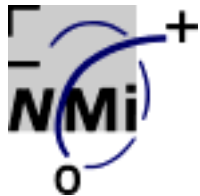


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7 Frequency sweep bandwidth.

The frequency sweep bandwidth of the EUT has been measured with a spectrum monitor and an active loop-antenna. Measuring distance 3 metres. Operation conditions: receiver and transmitter of EUT on. The centre frequency of the system during the measurement was 8.2 MHz.





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8 Photos of tested EUT.

Not applicable, see § 4 of this report