

Test report 20083675300

based on:
FCC Part 15 Subpart C, section 15.225; subpart B,
section 15.109

General purpose 13.56 MHz RFID reader
Dialog ID
MR50

Contents

MAIN MODULE.....	3
1 INTRODUCTION	3
2 PRODUCT	4
3 TEST SCHEDULE	4
4 PRODUCT DOCUMENTATION.....	5
5 OBSERVATIONS AND COMMENTS.....	5
6 MODIFICATIONS	5
7 SUMMARY	5
8 CONCLUSIONS	6
TEST RESULTS MODULE.....	7
SUMMARY.....	7
EMISSION TESTS	8
1.1 Field strength of emissions (< 30 MHz)	8
1.2 Field strength of unwanted emissions (> 30 MHz).....	10
1.3 Frequency tolerance.....	12
USED TEST EQUIPMENT MODULE.....	13

This report comprises of three modules. The total number of pages is: 13

Main module

1 Introduction

This report contains the result of tests performed by:

Telefication bv
Edisonstraat 12a
6902 PK Zevenaar
The Netherlands

Telefication complies with the accreditation criteria for test laboratories as laid down in ISO/IEC 17025:2005. The accreditation covers the quality system of the laboratory as well as the specific activities as described in the authorized annex bearing the accreditation number L021 and is granted on 30 November 1990 by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie). The contents of this test report, if reproduced, shall be copied in full, unless special consent in writing for reproduction in part is granted by Telefication. Copyright of this test report is reserved to Telefication.

Ordering party:

Company name	:	Dialoc ID B.V.
Address	:	Daltonstraat 42-44
Zipcode	:	3846 BX
City/town	:	Harderwijk
Country	:	The Netherlands
Date of order	:	16 December 2008

2 Product

A sample of the following product was submitted for testing:

Product name	: General purpose 13.56 MHz RFID reader
Product category	: Intentional radiators
Manufacturer	: Dialoc ID B.V.
Trade mark	: Dialoc ID
Type designation	: MR50
FCC ID	: KX2MR50-0001
Hardware version	: --
Software version	: --
Serial number	: 7

3 Test schedule

Tests are carried out in accordance with the specification detailed in chapter 6 "Summary" of this report.

Tests are carried out at the following location:

- Telefication, Zevenaar

Telefication is designated by the FCC as an Accredited Test Firm for compliance testing of equipment subject to Certification under Parts 15 & 18.
The Registration Number is: 282250.

The sample of the product was received on:

- 4 February 2009

Tests are carried out on:

- 4 and 5 February 2009
-

4 Product documentation

For production of this report the following product documentation has been used:

Description:	Date:	Identification:
Product Manual, version 1.0	January 2009	MR50/MR51
Antenna electrical diagram, 1 sht.	4 March 2009	Doc. No. 06503011
Reader electrical diagram, 2 shts, rev 1.3.	2 December 2004	Acsys industrial

The above-mentioned documentation will be filed at Telefication for a period of 10 years following the issue of this report.

5 Observations and comments

The MR50 industrial reader is a general purpose 13.56 MHz RFID reader. The MR50 comes with an external 50 Ohm antenna.

6 Modifications

None.

7 Summary

The product is intended for use in the following application area:

Short Range Device

The sample is tested according to the following specification:

FCC Part 15 Subpart C, section 15.225; subpart B, section 15.109

8 Conclusions

The sample of the product showed **NO NON-COMPLIANCES** to the specification stated in chapter 6 of this report.

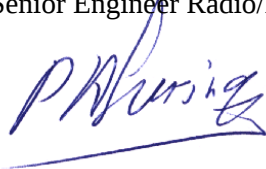
The results of the tests as stated in this report, are exclusively applicable to the product item as identified in this report. Telefication accepts no responsibility for any stated properties of product items in this test report, which are not supported by the tests as specified in chapter 7 "Summary".

All tests are performed by:

name : Ing. P.A. Suringa

function : Senior Engineer Radio/EMC

signature :



Review of test methods and report by:

name : G.J. Gort

function : Senior Engineer

signature :



The above conclusions have been verified by the following signatory:

date : 6 March 2009

name : Ing. P.A.J.M. Robben

function : Co-ordinator Test Group

signature :



Test results module

Summary

According to FCC Part 15 subparts C, section 15.225, the following tests have been performed:

Port	Reference	Phenomenon	Result
Enclosure and antenna	15.225 (a), (b), (c), (d)	Radiated emissions	P
Antenna	15.225 (e)	Frequency tolerance	P

Results:

P = pass
F = fail

NA = not applicable
NP = not performed

Emission tests

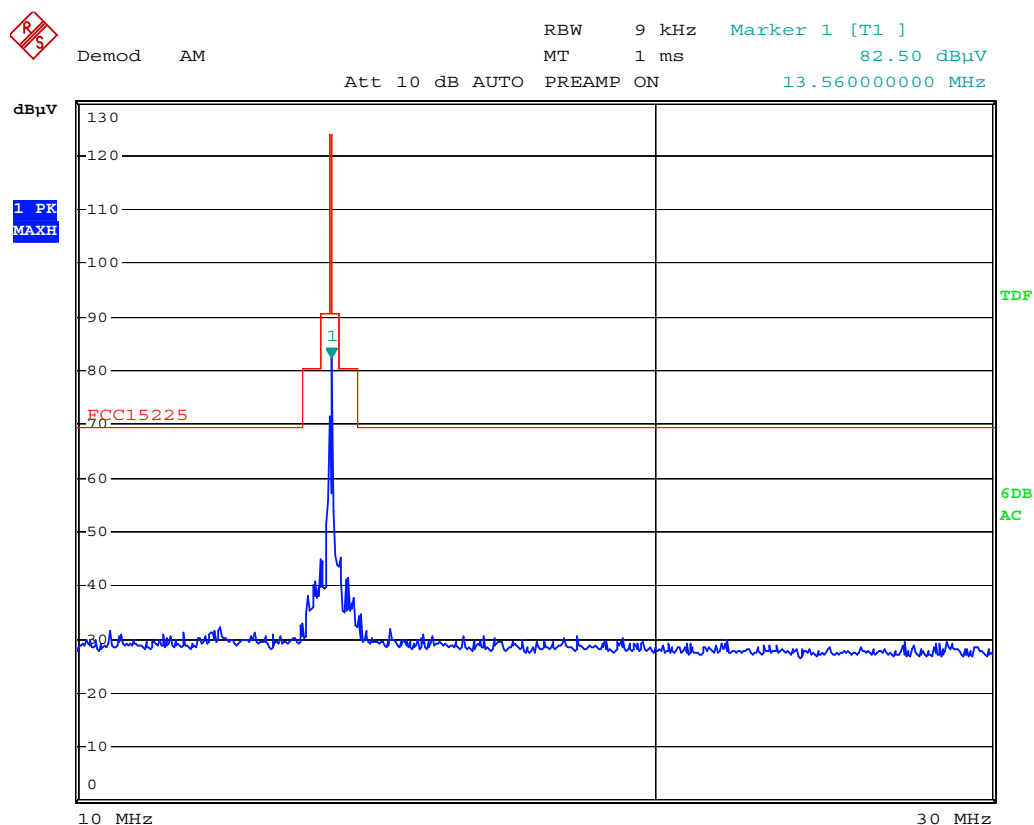
1.1 Field strength of emissions (< 30 MHz)

Compliance standard : FCC part 15, subpart C, section 15.225(a), (b), (c)

Method of test : ANSI C63.4-2003, sections 5.3 & 8.2.1; FCC part 15, subpart A, section 15.31 (f)(2), 15.33, 15.35.

Test results :

(units in dB μ V/m)



Measurement uncertainty

+1.9 / -2.1 dB

Remark 1: when applying an inverse linear distance extrapolation factor of 40 dB for the measuring distance of 3 meter, the field strength is $82.5 - 40 = 42.5$ dB μ V/m.

Remark 2: in the plot the limit is modified for an inverse linear distance extrapolation factor of 40 dB (at 30 m).

Test equipment used: (Item numbers)	1, 2, 7
-------------------------------------	---------

Item numbers refer to the used test equipment module.

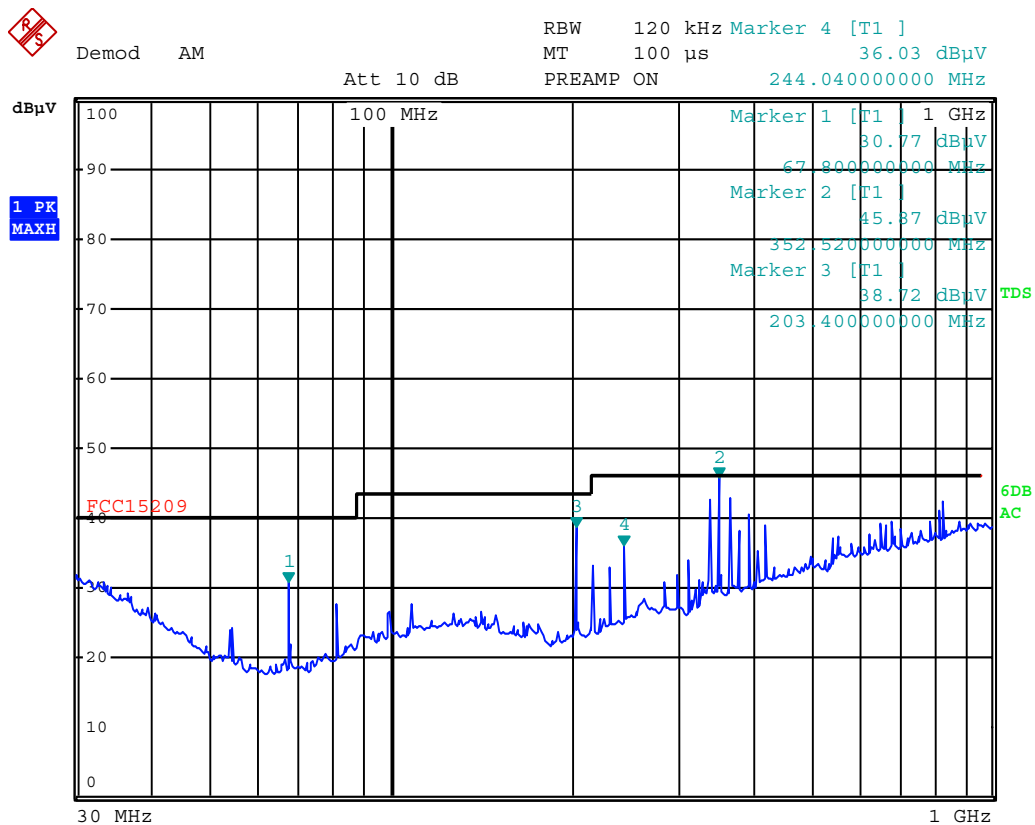
1.2 Field strength of unwanted emissions (> 30 MHz)

Compliance standard : FCC part 15, subpart C, section 15.225 (d)
 FCC part 15, subpart B, section 15.109 (a)

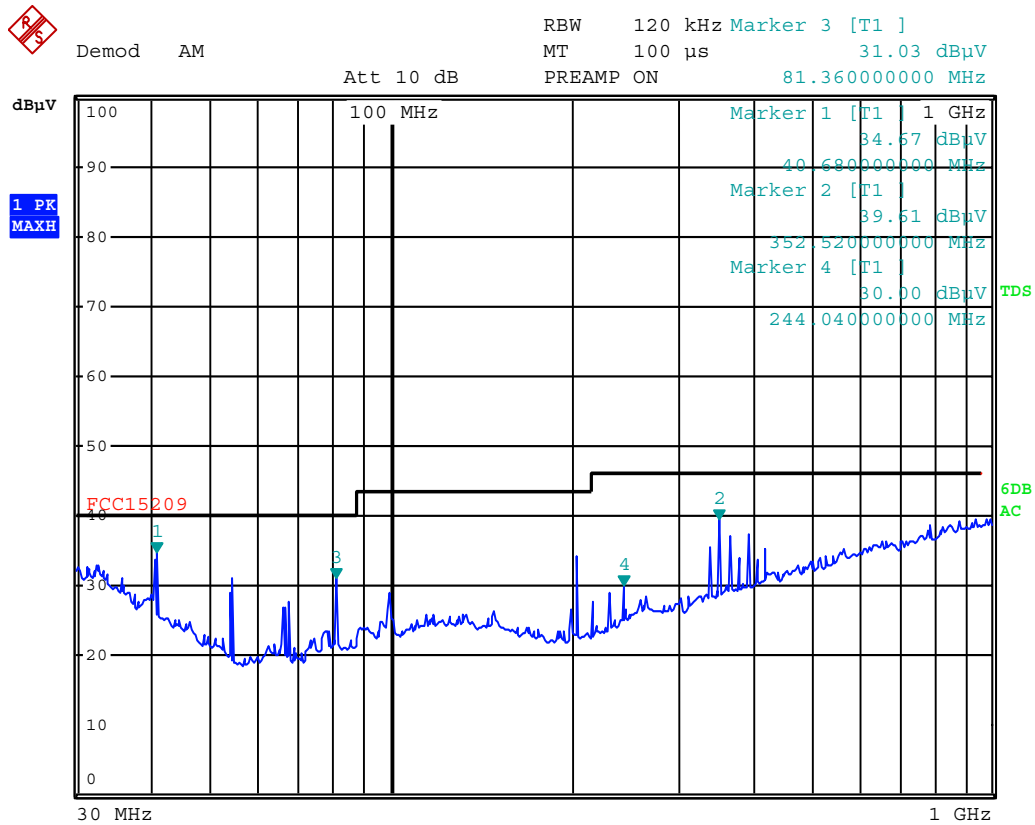
Method of test : ANSI C63.4-2003, sections 5.4.2 & 8.2.3; FCC part 15, subpart A, sections 15.33, 15.35.

Test results: :

Horizontal polarization



Vertical polarization



Uncertainty	
Horizontal polarization	
30 – 200 MHz	4.5 dB
200 – 1000 MHz	3.6 dB
Vertical polarization	
30 – 200 MHz	5.4 dB
200 – 1000 MHz	4.6 dB

Test equipment used: (Item numbers)	2, 7, 8
-------------------------------------	---------

Item numbers refer to the used test equipment module.

1.3 Frequency tolerance

Compliance standard : FCC part 15, subpart C, section 15.225 (e)

Method of test : ANSI C63.4-2003, annex H.5

Test results: :

Temperature variation

Temp. (°C)	-20	-10	0	10	20	30	40	50
Deviation (%)*)	-0.0007	0	-0.0004	0	Ref.	0	+0.00007	+0.0004

*) w.r.t. operating frequency of 13.558 MHz

Voltage variation

Voltage	Deviation (%)*)
11.7 V	0
27.6 V	0

*) w.r.t. operating frequency of 13.558 MHz

Test equipment used: (Item numbers)	9, 10, 11, 12
-------------------------------------	---------------

Item numbers refer to the used test equipment module.

Used test equipment module

Ref	Description	ID	Manufacturer	Model
1	Active loop antenna	TE 00746	R & S	HFH 2-Z2
2	Test receiver	TE 00091	R & S	ESCI
3	Large triple loop antenna	TE 01066	Telefication	--
4	Logper/bow-tie antenna	TE 00700	EMCO	3143
5	Spectrum analyzer	TE 00359	HP	8563E
6	Compact anechoic chamber (CFAC)	TE 01064	Euroshield	RFD-F-100
7	Semi anechoic chamber (SAC)	TE 00861	Comtest	--
8	Bilog antenna	TE 00967	Chase	CBL6112A
9	Climate chamber	TE 00392	CTS	KK-35/70
10	Spectrum analyzer	TE 00099	HP	8562 ^E
11	Digital multimeter	TE 00143	HP	34401A
12	Power supply	TE 00715	Delta	E060-06