



Radio test report 99532631

based on:
FCC part 15; subpart C; section 15.227 (10-1-03 edition)

Cordless Mouse
Logitech Cordless Mouse
M-RAG97

Contents

MAIN MODULE.....	3
1 INTRODUCTION	3
2 PRODUCT	4
3 TEST SCHEDULE	4
4 PRODUCT DOCUMENTATION.....	4
5 OBSERVATIONS AND COMMENTS	5
6 MODIFICATIONS TO THE SAMPLE.....	5
7 SUMMARY.....	5
8 CONCLUSIONS.....	6
TEST RESULTS MODULE	7
1 GENERAL INFORMATION	7
1.1 Equipment information.....	7
2 EMISSION TESTS.....	8
2.1 Field strength of intentional signal	8
2.2 Field strength of unwanted emissions (> 30 MHz).....	9
USED TEST EQUIPMENT MODULE	11
CROSS REFERENCE TABLE RSS-FCC	12

This report comprises of five modules. The total number of pages exclusive of the pages enclosed in the additional information module is: 12

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 17025:1999. 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	:	Logitech Europe S.A.
Address	:	Z.I. Moulin du Choc D
Zipcode	:	CH-1122
City/town	:	Romanel sur Morges
Country	:	Switzerland
Date of order	:	4 June 2004

2 Product

A sample of the following product was submitted for testing:

Product description	: Cordless Mouse
Manufacturer	: Logitech Europe S.A.
Trade mark	: Logitech Cordless Mouse
Type designation	: M-RAG97
FCC ID	: DZL131139
Hardware version	: --
Serial number	: PB2.5-222
Software release	: --

3 Test schedule

Tests were carried out in accordance with the specification detailed in chapter 7 “Summary” of this report.

Tests were carried out at the following location:

- TNO (EPS) B.V., Nierkerk (FCC listed under no. 90828; Industry Canada listed under no.IC3501)

The sample of the product was received on:

- 11 June 2004

Tests was carried out on the following date(s):

- 15 June 2004

4 Product documentation

For production of this report the following product documentation was used:

Description:	Date:	Identification:
Electrical diagram	6 May 2004	SCH-221758-0000
Testing indications for M-RAG97	11 June 2004	M-RAG97
M-RAG97 product description	June, 2004	M-RAG97
Bill of Materials	Not dated	M-RAG97

The fore mentioned documentation would be filed at Telefication for a period of 10 years following the issue of this report.

5 Observations and comments

None.

6 Modifications to the sample

No modifications were made to the sample.

7 Summary

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

INDUCTIVE DATA TRANSMISSION APPLICATION IN THE 27 MHz BAND.

The sample was tested according to the following specification(s):

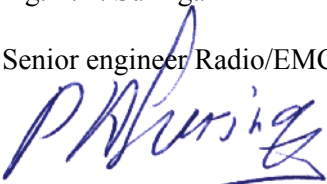
FCC part 15; subpart C; section 15.227 (10-1-03 edition)

8 Conclusions

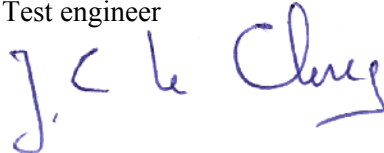
The sample of the product showed **NO NON-COMPLIANCES** to the specification stated in chapter 7 of this report.

The results of the tests as stated in this report, are exclusively applicable to the product item as identified in this report. Telefication does not accept any responsibility for the results stated in this report, with respect to the properties of product items not involved in these tests.

All tests are performed by:

name : ing. P.A. Suringa
function : Senior engineer Radio/EMC
signature : 

Review of test report by:

name : ing. J.C. le Clercq
function : Test engineer
signature : 

The above conclusions have been verified by the following signatory:

date : 21 June 2004
name : J.P. van de Poll
function : Co-ordinator Test Group
signature : 

Test results module

1 General information

1.1 Equipment information

Rated RF output power	n.a., integral antenna
Rated radiated RF power	300 nW
Operating frequencies	27.045 MHz; 27.195 MHz
Modulation	FSK
Data rate	6000 bits/s
ITU emission class	14K0F7D
FCC ID	DZL201758
Antenna	Two inductive loops
	Vertical: 4.3 cm ²
	Horizontal: 16.6 cm ²

2 Emission tests

2.1 Field strength of intentional signal

Compliance standard : FCC part 15, subpart C, section 15.227 (a).
Method of test : ANSI C63.4-2001, sections 5.3 & 8.2.1

Test results :

Radiated emissions (dB μ V/m) (AV)			
	27.045 MHz channel	27.195 MHz channel	
Orthogonal Plane	Test result @ 3 m distance	Test result @ 3 m distance	Limit @ 3 m distance
X	45.7	41.7	80.0
Y	44.1	38.2	80.0
Z	55.2	51.0	80.0

2.2 Field strength of unwanted emissions (> 30 MHz)

Compliance standard : FCC part 15, subpart C, section 15.227 (b).

Method of test : ANSI C63.4-2001, sections 5.4, 8.2.3 & 8.3.1.2; FCC part 15, subpart A, section 15.33, 15.35.

Test results :
(27.045 MHz channel)

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (QP)	Polarisa- tion	Limit (dB μ V/m)
40.57	≤ 16.2	H	40.0
54.20	≤ 7.3	H	40.0
67.62	20.0	H	40.0
81.14	20.5	H	40.0
94.66	Ambient	H	43.5
108.19	15.1	H	43.5
121.71	12.8	H	43.5

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (QP)	Polarisa- tion	Limit (dB μ V/m)
13.523	24.2	V	69.5
40.57	≤ 16.2	V	40.0
54.20	15.3	V	40.0
67.62	17.3	V	40.0
81.14	17.3	V	40.0
94.66	Ambient	V	43.5
108.19	15.1	V	43.5
121.71	15.8	V	43.5

Test results :
(27.195 MHz channel)

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (QP)	Polarisa- tion	Limit (dB μ V/m)
40.79	22.1	H	40.0
54.38	17.1	H	40.0
67.98	20.7	H	40.0
81.57	23.1	H	40.0
95.17	Ambient	H	43.5
108.76	17.9	H	43.5
122.36	16.8	H	43.5
135.95	18.9	H	43.5
149.55	25.7	H	43.5
163.14	16.0	H	43.5
176.74	11.5	H	43.5
190.33	≤ 9.9	H	43.5
203.93	≤ 10.4	H	43.5

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (QP)	Polarisa- tion	Limit (dB μ V/m)
13.595	Ambient	V	69.5
40.79	22.5	V	40.0
54.38	15.5	V	40.0
67.98	Ambient	V	40.0
81.57	16.7	V	40.0
95.17	Ambient	V	43.5
108.76	12.6	V	43.5
122.36	13.0	V	43.5
135.95	14.0	V	43.5
149.55	17.4	V	43.5
163.14	≤ 10.9	V	43.5
176.74	≤ 10.2	V	43.5
190.33	≤ 9.9	V	43.5
203.93	≤ 10.3	V	43.5

Used test equipment module

The following measurement equipment was used:

description	Ident/sn	manufacturer	model
Plastic measurement room	12636	Polyforce	-
Open Area Test Site	13886	Comtest	-
Antenna mast 4m	14277	Heinrich Deisel	MA240
Controller OATS	14278	Heinrich Deisel	HD100
Biconilog antenna 30MHz – 1000MHz	15633	Chase	CBL6111B
EMI test receiver	15667	Rohde & Schwarz	ESCS 30
Turntable OATS	99108	Heinrich Deisel	HD050
Loop antenna	1107	Chase	HLA 6120

Cross reference table RSS-FCC

Non-Momentarily Operated Devices		
US requirement, FCC part 15, subpart C	IC requirement RSS-210 issue 5	Verdict
§ 15.227 (a)	section 8.6.1	pass
§ 15.227 (b)		
§ 15.209	table 3	pass
§ 15.209	table 7	pass