



Radio test report

99654430

based on:
FCC part 15; subpart C; section 15.227 (10-1-04 edition)

Cordless Mouse
Logitech Cordless Mouse
M-RAZ105

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This report comprises of three modules. The total number of pages is: 11

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 : 9 June 2005

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-RAZ105
FCC ID	: DZL201959
Hardware version	: --
Serial number	: "P"-sticker
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 Electronic Products & Services (EPS) B.V
Smidshornerweg 18
9822 TL Niekerk
The Netherlands
- | | |
|-----------------|----------|
| FCC listed | : 90828 |
| Industry Canada | : IC3501 |

The samples of the product were received on:

- 13 June 2005

Tests were carried out on:

- 15 June 2005

4 Product documentation

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

Description:	Date:	Identification:
Product description	June 2005	M-RAZ105_Description_GB.doc
Test instructions	10 June 2005	Testing indications for the Cordless Optical Mouse M-RAZ105.doc
Circuit diagram	12 May 2005	M-RAZ105 SCH-221959-0000_B0.pdf
Block diagram	--	M-RAZ105 Block diagram.doc
PCB lay out	12 May 2005	M-RAZ105 GER-211959-0000_B0.pdf
Circuit diagram Membrane	23 February 2005	M-RAZ105_Membrane_PA1.pdf
PCB lay out Membrane	--	M-RAZ105_Membrane_GER.pdf
Bill of Material	12 May 2005	M-RAZ105 BOM.XLS

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

5 Observations and comments

During the tests the product was set in continuous transmit mode (CH1 & CH2 selectable), by means of a test mode.

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 samples were tested according to the following specification(s):

FCC part 15; subpart C; section 15.227 (10-1-04 edition)

8 Conclusions

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

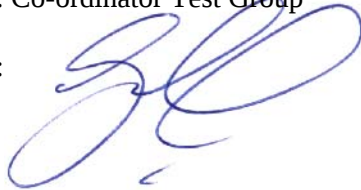
The results of the tests as stated in this report, are exclusively applicable to the product items as identified in this test report. Telefication does not accept any responsibility for the results stated in this test report, with respect to the properties of product items not involved in these tests.

All tests are performed by:

name : J.P. van de Poll

function : Co-ordinator Test Group

signature :



Review of test report by:

name : ing. K.A. Roes

function : Test Engineer

signature :



The above conclusions have been verified by the following signatory:

Date : 5 July 2005

name : drs. ir. W.B.A. Blom

function : Managing Director

signature :



Test results module

1 General information

1.1 Equipment information

Rated RF output power	n.a., integral antenna
Rated radiated RF power	100 nW
Operating frequencies	27.045 MHz; 27.195 MHz
Modulation	FSK
Modulation bit rate	6000 bit/s
ITU emission class	28K0F7D
FCC ID	DZL201959

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 C63.4-2003, sections 5.3 & 8.2.1

Test results :

Radiated emissions (dB μ V/m) (AV)			
Orthogonal plane	Test result @ 3 m 27.045 MHz	Test result @ 3 m 27.195 MHz	Limit @ 3 m
X	40.3	39.8	80.0
Y	57.4	57.4	80.0
Z	57.4	57.4	80.0

Measurement uncertainty with 95% confidence level: ± 4.4 dB

2.2 Field strength of unwanted emissions

Compliance standard : FCC part 15, subpart C, section 15.227 (b).
Method of test : ANSI C63.4-2003, sections 5.4, 8.2.3 & 8.3.1.2; FCC part 15, subpart A, section 15.31(m), 15.33, 15.35.
EUT condition : 27.045 MHz channel
Test results :

< 30 MHz

Frequency (MHz)	Test result @ 3 m distance (dBµV/m) (QP)	EUT orthogonal plane	Limit (dBµV/m)
no emissions detected			

> 30 MHz

Frequency (MHz)	Test result @ 3 m distance (dBµV/m) (QP)	Polarisation	Limit (dBµV/m)
54.088	21.2	H	40.0
121.700	23.2	H	43.5
135.249	29.0	H	43.5
135.249	29.7	V	43.5
148.746	22.4	H	43.5
162.268	22.3	H	43.5
229.908	25.0	H	46.0
297.458	28.9	H	--
310.970	33.9	H	--
311.069	31.9	H	--
324.485	31.3	H	--
338.003	30.8	H	--
338.121	32.8	H	--
365.051	34.4	H	--
365.171	33.1	H	--
378.570	31.7	H	--
392.087	34.3	H	--
405.612	31.1	H	--
419.128	33.0	H	--
446.324	33.8	H	--
473.363	31.9	H	--

Measurement results at frequencies >10th harmonic are informative only.

Measurement uncertainty with 95% confidence level: ± 4.4 dB

Used test equipment module

The following measurement equipment was used:

Description	ID / SN	Manufacturer	Model
Plastic measurement room	12636	Polyforce	--
Open Area Test Site	13886	Comtest	--
Antenna mast 4m	--	EMCO	1070
Controller OATS	--	EMCO	1090
Loop Antenna	1107	Chase	HLA6120
Biconilog antenna 30MHz – 1000MHz	15633	Chase	CBL6111B
EMI test receiver	15667	Rohde & Schwarz	ESCS 30
Turntable OATS	99108	Heinrich Deisel	HD050