



Radio test report 99529331

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

Cordless Keyboard
Logitech Cordless Keyboard
Y-RQ52
Y-RR53
Y-RR57

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This report comprises of three modules. The total number of pages 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 : 3 March 2004

2 Product

A sample of the following product was submitted for testing:

Product description	: Cordless Keyboard
Manufacturer	: Logitech Europe S.A.
Trade mark	: Logitech Cordless Keyboard
Type designation	: Y-RQ52
Variant 1	: Y-RR53
Variant 2	: Y-RR57
FCC ID	: DZL131836
Hardware version	: --
Serial number	: Y-RQ52 : 0404220072 Y-RR53 : MCC41500247 Y-RR57 : SCC42100004
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:

- 7 June 2004

Tests were carried out between the following dates:

- 9 June 2004 and 15 June 2004

4 Product documentation

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

Description:	Date:	Identification:
Testing indications	June 2004	Cordless Keyboard Y-RQ52
Testing indications	June 2004	Cordless Keyboard Y-RR53
Testing indications	June 2004	Cordless Keyboard Y-RR57
Product Description	June 2004	Y-RQ52
Product Description	June 2004	Y-RR53
Product Description	June 2004	Y-RR57
Block diagram	--	Tantalus (Y-RQ52)
Block diagram	--	Hercules-CR (Y-RR53)
Block diagram	--	Frogfish-CR (Y-RR57)
PCB lay out	8 May 2004	P/No 131836 PAS, 10 pages
Circuit diagram	3 June 2004	Y-RR57 FROGFISH - MAIN
Circuit diagram	3 June 2004	Y-RR57 FROGFISH - RF
Schematic diagram iNAV2	13 May 2002	129352

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

The Y-RQ52 has been tested completely, whereas the Y-RR53 and the Y-RR57 have been verified at spot frequencies only.

Product & product variants comparison:

Keyboard	main PCB (RF part w/o antenna)	Antenna	i-Nav matrix	Multi Media matrix
Y-RQ52	yes	printed on membrane	membrane	membrane
Y-RR53	same as above	printed on membrane, slightly different from above	PCB (only passive components)	membrane
Y-RR57	same as above	cable, different from above	no	no

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 (10-1-03 edition)

8 Conclusions

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

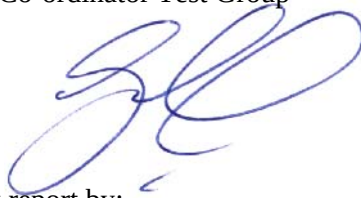
The results of the tests as stated in this report, are exclusively applicable to the product items as identified in this test report. Telefication does not accept any responsibility for the results stated in this test report, with respect to the properties of product items not involved in these tests.

All tests are performed by:

name : J.P. van de Poll

function : Co-ordinator Test Group

signature :

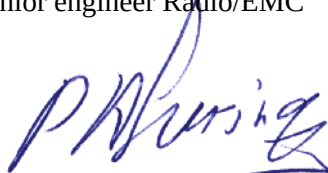


Review of test report by:

name : ing. P.A. Suringa

function : Senior engineer Radio/EMC

signature :



The above conclusions have been verified by the following signatory:

Date : 1 July 2004

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	400 nW
Operating frequencies	27.095 MHz; 27.145 MHz
Modulation	FSK
Modulation bit rate	2400 bit/s
ITU emission class	7K00F2D
FCC ID	DZL131836

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 :

Y-RQ52:

Radiated emissions (dB μ V/m) (AV)			
	27.095 MHz channel	27.145 MHz channel	
Orthogonal plane	Test result @ 3 m distance	Test result @ 3 m distance	Limit @ 3 m distance
X	41.3	42.2	80.0
Y	58.6	58.6	80.0
Z	59.4	59.3	80.0

Y-RR53:

Radiated emissions (dB μ V/m) (AV)			
	27.095 MHz channel	27.145 MHz channel	
Orthogonal plane	Test result @ 3 m distance	Test result @ 3 m distance	Limit @ 3 m distance
X	35.1	35.4	80.0
Y	54.3	55.0	80.0
Z	54.7	55.4	80.0

Y-RR57:

Radiated emissions (dB μ V/m) (AV)			
	27.095 MHz channel	27.145 MHz channel	
Orthogonal plane	Test result @ 3 m distance	Test result @ 3 m distance	Limit @ 3 m distance
X	35.3	40.2	80.0
Y	50.9	56.1	80.0
Z	50.5	55.2	80.0

Measurement uncertainty: -2.4 dB / +1.6 dB

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 15.31(m), 15.33, 15.35.

Test results :

Y-RQ52:

Frequency (MHz)	Test result @ 3 m distance (dBµV/m) (QP)	Polarisation	Limit (dBµV/m)
40.640	26.1	H	40.0
81.290	26.2	H	40.0
108.370	36.1	H	43.5
121.930	39.5	H	43.5
135.480	31.2	H	43.5
149.030	37.9	H	43.5
162.570	41.0	H	43.5
176.105	36.9	H	43.5
189.665	28.6	H	43.5
203.200	32.4	H	43.5
216.795	34.9	H	46.0
230.335	39.8	H	46.0
243.885	43.1	H	46.0
257.435	40.3	H	46.0
270.985	36.1	H	46.0
284.475	20.9	H	46.0
298.025	31.7	H	46.0
311.575	33.9	H	46.0
325.115	34.4	H	46.0
338.725	33.2	H	46.0
352.275	32.3	H	46.0
365.830	30.8	H	46.0
379.370	29.1	H	46.0
392.890	29.1	H	46.0
406.475	29.5	H	46.0
420.020	28.6	H	46.0
433.565	25.8	H	46.0
447.110	23.9	H	46.0
460.665	25.6	H	46.0
474.130	25.0	H	46.0

Y-RR53:

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (QP)	Polarisation	Limit (dB μ V/m)
135.480	41.9	H	43.5
162.570	36.4	H	43.5
243.885	42.0	H	46.0

Y-RR57:

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (QP)	Polarisation	Limit (dB μ V/m)
135.480	27.5	H	43.5
162.570	35.5	H	43.5
243.885	40.8	H	46.0

Measurement uncertainty: -2.4 dB / +1.6 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	14277	Heinrich Deisel	MA240
Controller OATS	14278	Heinrich Deisel	HD100
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