



Radio test report

20071094301

based on:

- FCC Part 15 Subpart C, sections 15.209 & 15.249 (10-1-06 Edition)
- RSS-210, Issue 6 (Sept. 2005 edition)

Cordless Mouse
Logitech
M-RCH105

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This report comprises of four modules. The total number of pages is: 16

Main module

1 Introduction

This report contains the result of tests performed by:

Telefication B.V.
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 : Logitech Europe S.A.
Address : Z.I. Moulin du Choc D
Zipcode : 1122
City/town : Romanel sur Morges
Country : Switzerland
Date of order : 23 January 2007

2 Product

A sample of the following product was submitted for testing:

Product description	: Cordless Mouse
Manufacturer	: Logitech Technology Co., Ltd.
Trade mark	: Logitech
Type designation	: M-RCH105
FCC ID	: DZLMRCH105
IC ID	: --
Hardware version	: --
Serial number	: --
Software release	: --

3 Test schedule

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

Tests are carried out at the following location:

- Telefication, Zevenaar

The samples of the product were received on:

- 30 January 2007

Tests are carried out between:

- 6 February and 28 March 2007

4 Product documentation

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

Description:	Date:	Identification:
M-RCH105: Product Description	31 January 2007	1 page
Circuit diagrams	January 03, 2007	PALERMO 07, 5 pages
Circuit diagram	December 04, 2006	Palermo 07 sidekey
PCB lay out	02/14/07	9 pages
PCB lay out Sidekey	12/04/06	6 pages
Testing indications	--	1 page
Bill of materials	--	M-RCH105
Block diagram	--	M-RCH105

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

Initially an appointment has been made for final measurements of unwanted emissions 30 - 1000 MHz on the Open Area Test Site of TNO EPS in Nieuwerkerk

TNO Electronic Products & Services (EPS) B.V
Smidshornerweg 18
9822 TL Nieuwerkerk
The Netherlands

FCC listed : 90828
Industry Canada : IC3501 A-1

Exploratory measurements (section 2.4) revealed that these final measurements are unnecessary.

All measurements were performed in test mode with the RF power level set at 0 dBm.

Peak emission limits, as shown in the plots, have been converted to effective isotropic radiated power by using: $P(\text{dBm}) = E(\text{dB}\mu\text{V/m}) - 95.2 (\text{dB})$.

The M-RCH105 is a cordless mono-directional optical mouse. It works with the C-UAT51 receiver or any compatible receiver.

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):

INTENTIONAL RADIATOR OPERATING IN THE FREQUENCY BAND 2400 - 2483.5 MHz

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

FCC Part 15 Subpart C, section 15.209 & 15.249 (10-1-06 Edition);
RSS-210, Issue 6 (Sept. 2005 edition).

8 Conclusions

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

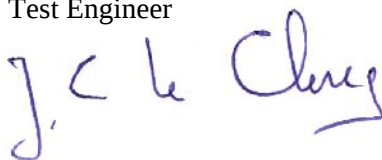
The results of the tests as stated in this report, are exclusively applicable to the product items as identified in this test report. Telefication does not accept any responsibility for the results stated in this test report, with respect to the properties of product items not involved in these tests.

All tests are performed by:

name : ing. J.C. le Clercq

function : Test Engineer

signature :

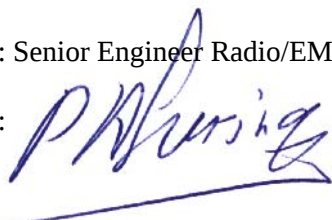


Review of test report by:

name : ing. P.A. Suringa

function : Senior Engineer Radio/EMC

signature :



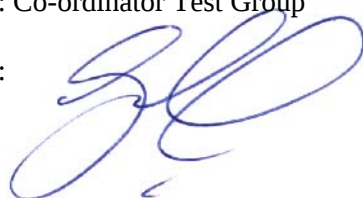
The above conclusions have been verified by the following signatory:

Date : 10 April 2007

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	1 mW
Operating frequency range	2402 MHz to 2479 MHz (24 channels)
Modulation	GFSK
Modulation bit rate	1 Mbits/s
ITU emission class	1M00F1D
Duty cycle (during testing)	5 %
FCC ID	DZLMRCH105
IC ID	--

2 Emission tests

2.1 Field strength of intentional signal

Compliance standard : FCC part 15, subpart C, section 15.249 (a) & (e)
Method of test : ANSI C63.4-2003, sections 5.5 & 8.2.4

Test results :

(only the highest of the two polarizations are stated)

Average field strength*:

Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (AV)	Polarisation	Limit (dB μ V/m)
2402	70.4	H	94
2448	69.4	H	94
2479	67.8	H	94

* based on duty cycle factor of 5.0 %

Peak field strength:

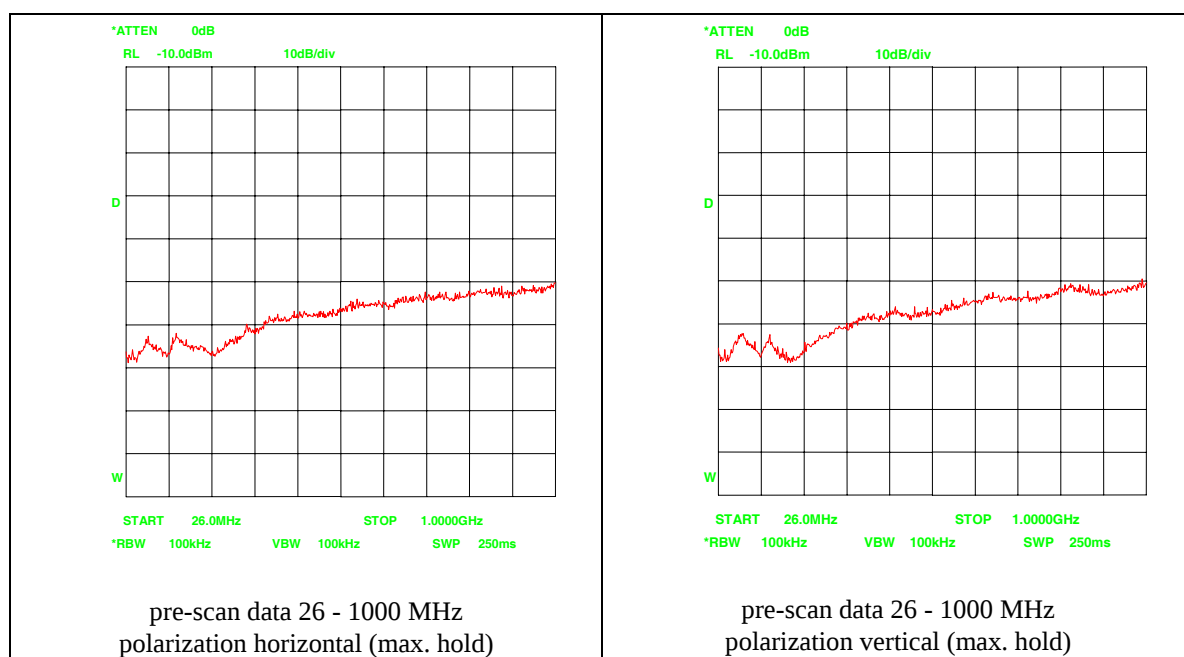
Frequency (MHz)	Test result @ 3 m distance (dB μ V/m) (PK)	Polarisation	Limit (dB μ V/m)
2402	96.4	H	114
2448	95.4	H	114
2479	93.8	H	114

Measurement uncertainty: +4.5 dB / -6.1 dB

2.2 Field strength of unwanted emissions 30 - 1000 MHz

Compliance standard : FCC part 15, subpart C, section 15.249 (d)
Method of test : ANSI C63.4-2003, sections 5.5, 8.2.3, 8.2.4 & 8.3.1.1;
FCC part 15, subpart A, section 15.31(m), 15.33, 15.35.
EUT condition : 2448 MHz channel
Test results :

Exploratory measurements of unwanted emissions 30 - 1000 MHz



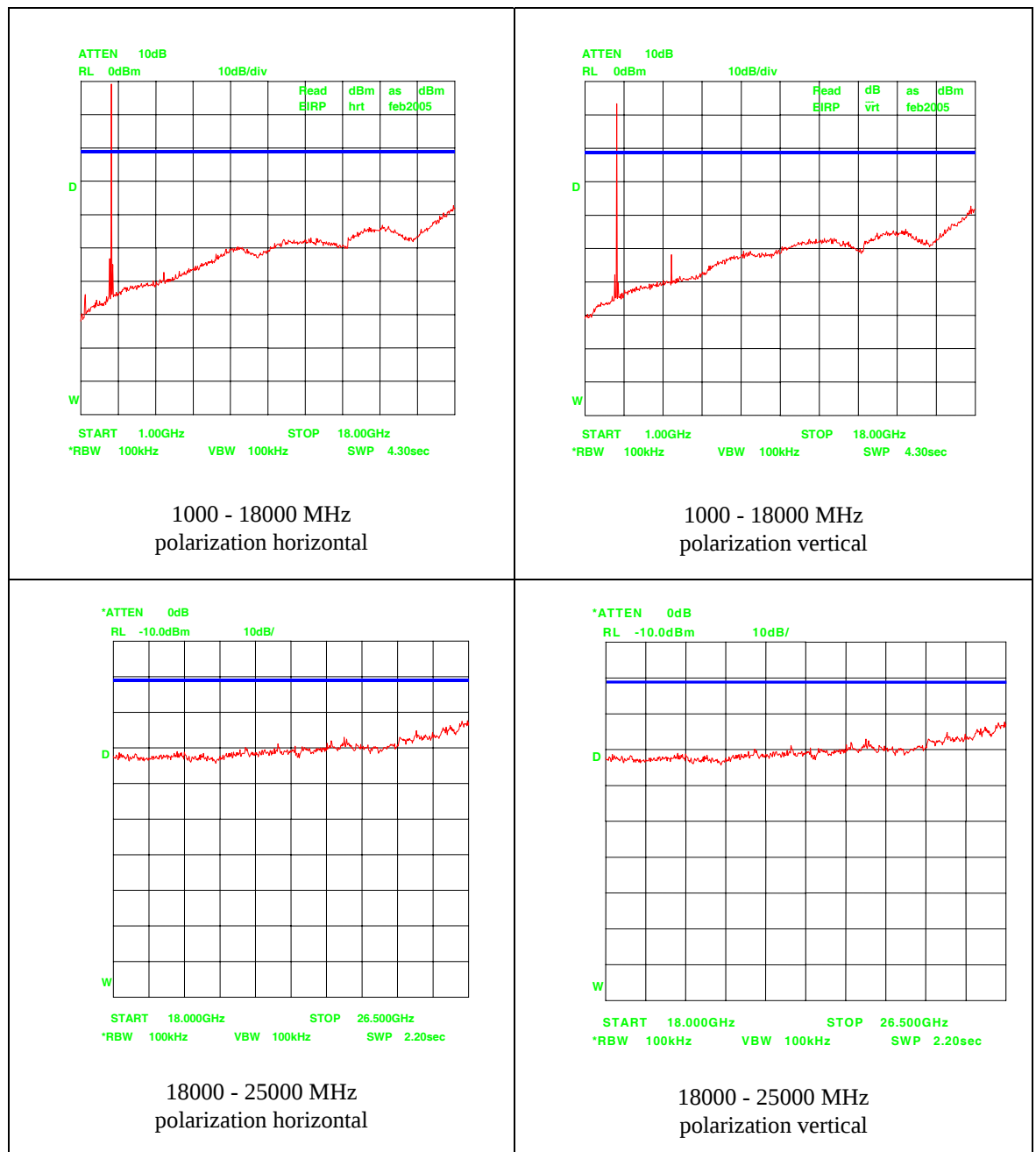
As there were no emissions detected above measurement system noise floor, measurements on an OATS (Open Area Test Site) are considered unnecessary.

2.3 Field strength of unwanted emissions > 1000 MHz

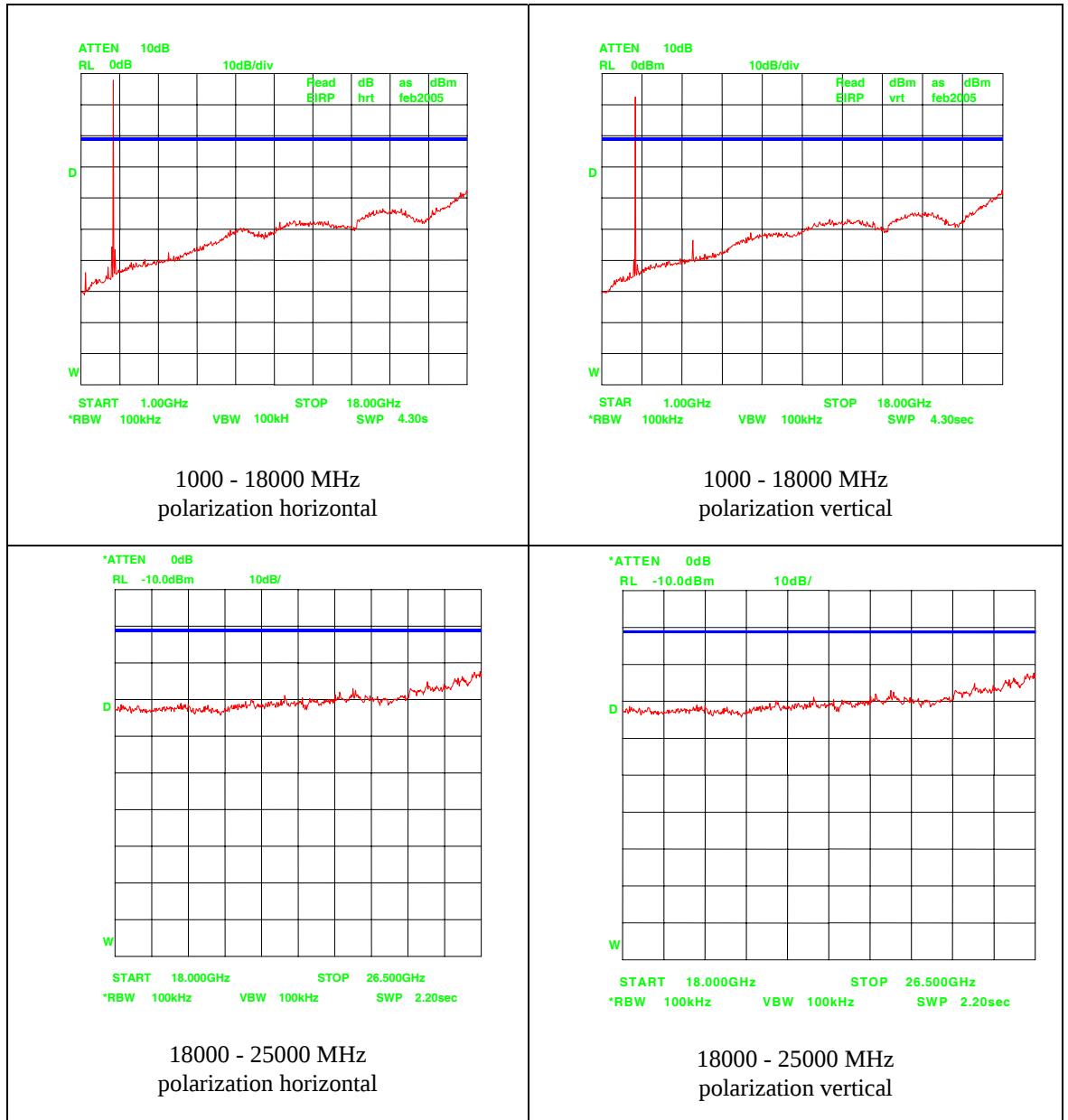
Compliance standard : FCC part 15, subpart C, section 15.209 (a)& 15.249 (a) & (e)
Method of test : ANSI C63.4-2003, sections 5.5, 8.2.3, 8.2.4 & 8.3.1.2;
FCC part 15, subpart A, section 15.31(m), 15.33, 15.35;
Measuring distance : 3 m
Test results :

Unwanted emissions transmitter (peak values):

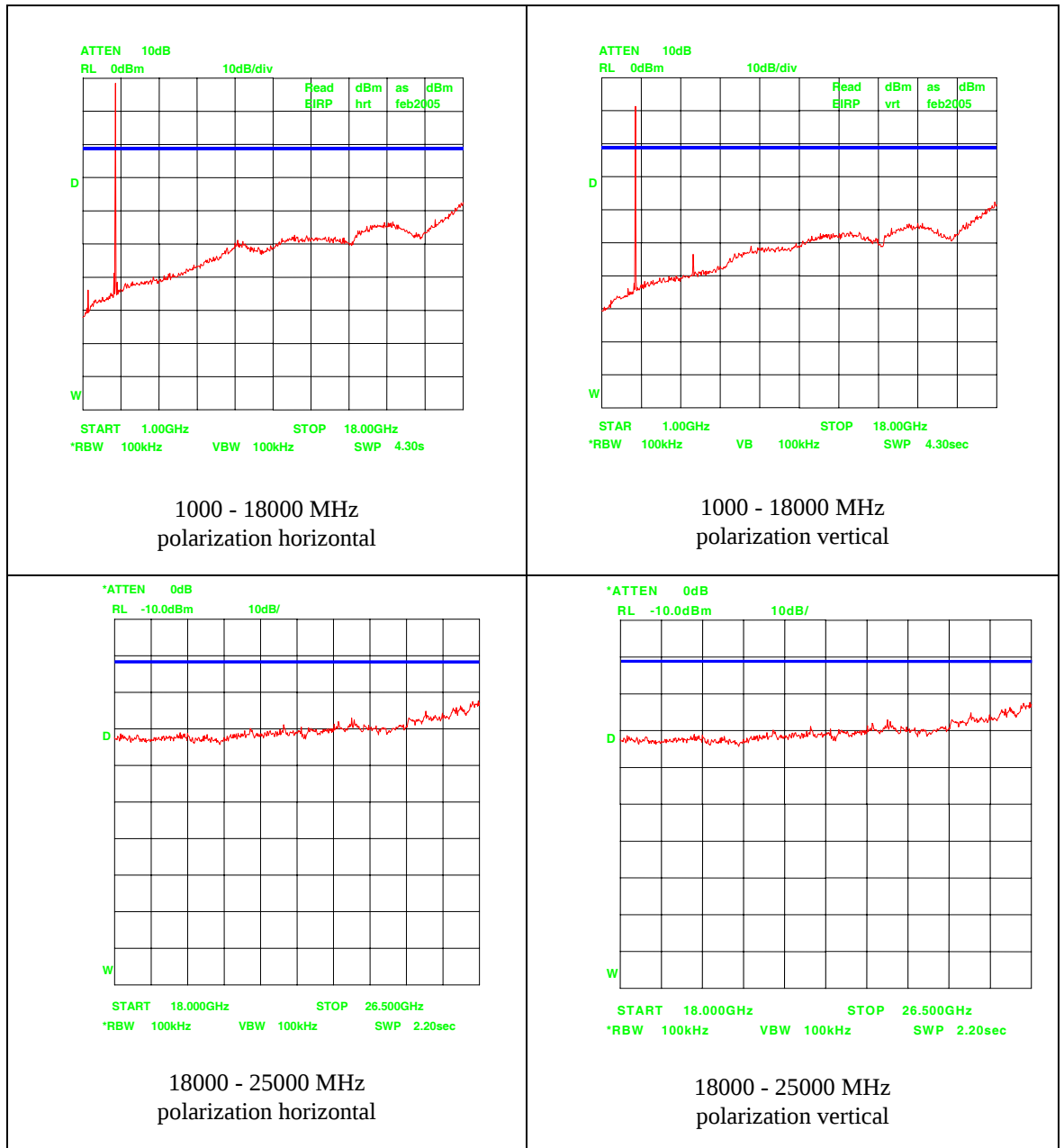
Low channel (2402 MHz)



Mid channel (2448 MHz)



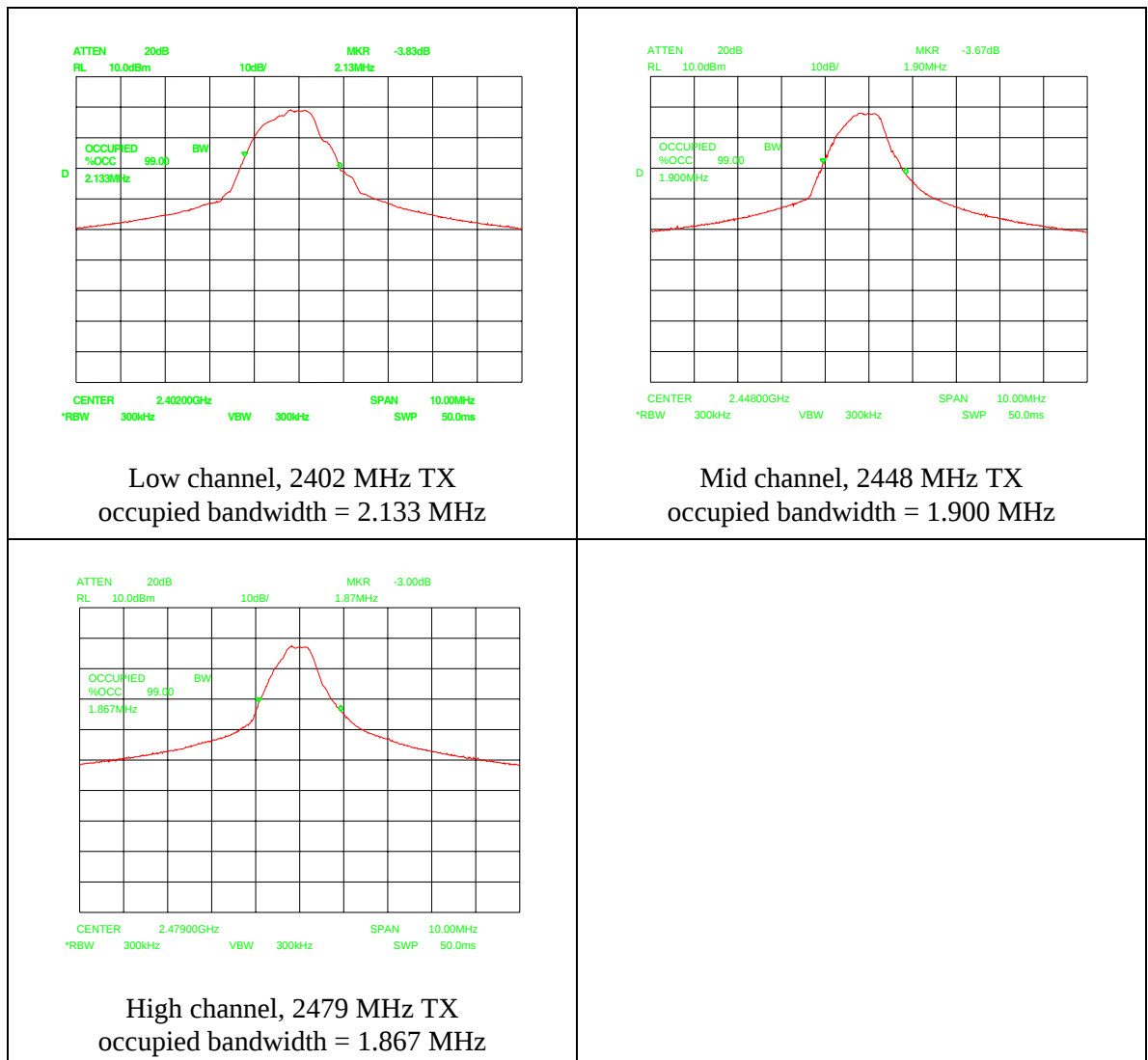
High channel (2479 MHz)



Measurement uncertainty: +4.5 dB / -6.1 dB

2.4 Occupied Bandwidth (99%)

Compliance standard : RSS Gen par. 4.4.1
Test results :



Measurement uncertainty: +115/ -115 kHz

Used test equipment module

Description	ID / SN	Manufacturer	Model	Used at par.
Artificial mains network	TE 00208	Rohde & Schwarz	ESH3-Z5	2.1
Pulse limiter	TE 00227	Rohde & Schwarz	ESH3-Z2	2.1
Test receiver	TE 11128	Rohde & Schwarz	ESCI	2.1
Spectrum Analyzer	TE 00481	Hewlett Packard	HP8563E	2.3, 2.5, 2.6
RF Pre-amplifier up to 1000 MHz	TE 00098	Rohde & Schwarz	ESV-Z3	2.3
RF Pre-amplifier 1 - 26.5 GHz	TE 00093	Hewlett Packard	HP8449B	2.2, 2.4
Biconilog antenna	TE 00700	EMCO	3143	2.3
Horn Antenna	TE 00532	EMCO	3115	2.2, 2.4
Anechoic Chamber	TE 01064	Euroshield	RFD-F-100	2.2, 2.3, 2.4
Thermo-hygrometer	TE 00096	Lufft	B145	all
Tripod	--	EMCO	--	2.3, 2.4
Antenna tower	--	HD	AS 620p	2.2, 2.3, 2.4
Turntable	--	HD	DS 412	2.2, 2.3, 2.4
Turntable controller	--	HD	HD 050	2.2, 2.3, 2.4
Horn antenna	TE 00608	Scientific Atlanta	12A-18	2.4
Power meter	TE 00249	Hewlett Packard	435B	2.2
Power sensor	TE 00355	Hewlett Packard	8481A	2.2
Attenuator (10 dB setting)	TE 00499	Hewlett Packard	8495B	2.2

Cross reference table

Category I transmitter	
CNR RSS-210 Issue 6	FCC 47 CFR Ch. 1 part 15 subpart C (10-1-06 Edition)
A2.9	§ 15.209 and § 15.249