EMF Assessment Report

EN 62479:2010

For

Applicant :	**SHENZHEN MARK TRADING CO., LTD.**
Address :	**6th Floor, Building A, DongFangYaYuan, Chen Tian Communities, Xixiang Bao'an District, Shenzhen, China**
Product Name :	**Wireless gaming mouse**
Model Name :	**M720W, M***W, GM-***W, MO-***W(***stand for 0-9)**
Brand Name :	**MARVO,XTRIKE ME, @ONE**
Report No. :	**MTWN19070327**
Date of Issue :	**Jul.29, 2019**

Issued by :	**Shenzhen Most Technology Service Co., Ltd..**
Address :	**No. 5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China**
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CONTENTS

1. TEST RESULT CERTIFICATION

Applicant Name:	SHENZHEN MARK TRADING CO., LTD.
Address:	6th Floor, Building A, DongFangYaYuan, Chen Tian Communities, Xixiang Bao'an District, Shenzhen, China
Manufacturer Name:	SHENZHEN MARK TRADING CO., LTD.
Address:	6th Floor, Building A, DongFangYaYuan, Chen Tian Communities, Xixiang Bao'an District, Shenzhen, China
Brand Name:	MARVO,XTRIKE ME, @ONE
Equipment Under Test:	Wireless gaming mouse
Model Number:	M720W
Series Model Number:	M***W, GM-***W, MO-***W(***stand for 0-9)
Difference description:	Only difference in model names
Test Standard	EN 62479:2010
File Number:	MTWN19070327
Date of Test:	Jul.24-26, 2019

We (MOST) for compliance with the requirements set forth in the European Standard EN 62479:2010. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared by (+ signature): Lili Lu

Lili Lu (Engineer) Jul.24-26, 2019

Review by (+ signature): Sunny

SHENZHEN MOST TECHNOLOGY SERVICE CO., LTD. APPROVED

Sunny Deng (Engineer) Jul.29, 2019

Approved by (+ signature):

Yvette Zhou (Manager) Jul.29, 2019

2. Technical Information

Note: the following data is based on the information by the applicant.

2.1 EUT Description

Product	Wireless gaming mouse
Trade Name	MARVO
Model Number	M720W
Power Supply	Transmitter: DC 1.5V by Battery Receiver: DC 5V by PC (AC 230V/50Hz for PC)
Frequency Range	2408MHz-2474 MHz
Modulation Type	GFSK for 2.4G
Channel Number	34
Temperature Range	-20°C ~ +55°C

Note:

1. *For more details, please refer to the User's manual of the EUT.*

2.2 Objective

EUT Satisfy RED Directive 2014/53/EU - Article 3.1(a), Ref LVD Directive 2014/35/EU- Article 3, 12

2.3 Test Standards and Results

The EUT has been tested according to EN 62479:2010

EN 62479:2010	Assessment of the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (10MHz – 300GHz)

Test items and the results are as bellow:

№	Basic Standard	Test Result
1	EN 62479:2010	PASS

3. Details of Test

3.1 Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Most Technology Service Co., Ltd.
Address:	No. 5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China

3.2 Identification of the Responsible Testing Location

Test Site:	Shenzhen Most Technology Service Co., Ltd.
Address:	No. 5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 16 requirements. The **FCC** Registration Number is **490827.** The **CNAS** Registration Number is **CNAS L3573.**

3.3 Description of Test Modes

The EUT had been tested under the operating condition. There are three modulation have been tested as following:

Mode	**Frequency (MHz)**
2.4G	2408

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed. The field strength of spurious emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis) with adapter respectively. The worst emission was found in stand-up position (Y axis).

3.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35ºC
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 k Pa

3.5 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO.

- Uncertainty of Conducted Emission, Uc = ±1.8dB
- Uncertainty of Radiated Emission, Uc = ±3.2dB

4. EN 62479 requirements

4.1 Human Exposure to the Electromagnetic Fields

4.1.1. LIMIT

Low-power exclusion level(P_{max})

Low-power electronic and electrical equipment is deemed to comply with the provisions of this standard if it can be demonstrated using routes B, C or D that the available antenna power and/or the average total radiated power is less than or equal to applicable low-power exclusion level Pmax.

Low-power exclusion level P_{max} based on considerations of SAR

When SAR is the basic restriction, a conservative minimum value for P_{max} can be derived, equal to the localized SAR limit (SAR_{max}) multiplied by the averaging mass (m):

$$P_{max} = SAR_{max}\, m \qquad (A.1)$$

Example values of P_{max} according to Equation (A.1) are provided in Table A.1 for cases described by the ICNIRP guidelines [1], IEEE Std C95.1-1999 [2] and IEEE Std C95.1-2005 [3] where SAR limits are defined. Other exposure guidelines or standards may be applicable depending on national regulations.

Table A.1 – Example values of SAR-based P_{max} for some cases described by ICNIRP, IEEE Std C95.1-1999 and IEEE Std C95.1-2005

Guideline / Standard	SAR limit, SAR_{max} W/kg	Averaging mass, m g	P_{max} mW	Exposure tier[a]	Region of body[a]
ICNIRP [1]	2	10	20	General public	Head and trunk
	4	10	40	General public	Limbs
	10	10	100	Occupational	Head and trunk
	20	10	200	Occupational	Limbs
IEEE Std C95.1-1999 [2]	1,6	1	1,6	Uncontrolled environment	Head, trunk, arms, legs
	4	10	40	Uncontrolled environment	Hands, wrists, feet and ankles
	8	1	8	Controlled environment	Head, trunk, arms, legs
	20	10	200	Controlled environment	Hands, wrists, feet and ankles
IEEE Std C95.1-2005 [3]	2	10	20	Action level	Body except extremities and pinnae
	4	10	40	Action level	Extremities and pinnae
	10	10	100	Controlled environment	Body except extremities and pinnae
	20	10	200	Controlled environment	Extremities and pinnae

[a] Consult the appropriate standard for more information and definitions of terms.

4.1.2. conformity assessment methods

Compiance of electromagnetic emissions from electronic and electrical equipment with the basic restrictions usually is determinded by measurements and, in some cases, calculation of the exposure level. If the electrical power used by or radiated by the equipment is sufficiently low, the electromagnetic fields emitted will be incapable of producing exposures that exceed the basic restrictions. This standard provides simple EMF assessment procedures for this low power equipment.

4.1.3. Test Results

Transmitter:

Modulation type	EPR/EIRP dBm	ERP/EIRP mW	Limit mW	Result Pass/Fail
GFSK	-4.34	0.368	20	PASS

Receiver:

Modulation type	EPR/EIRP dBm	ERP/EIRP mW	Limit mW	Result Pass/Fail
GFSK	-4.47	0.357	20	PASS

Since average output power at worse case is: 0.368mW for Transmitter, 0.357mW for Receiver,which cannot exceed the exempt condition, 20mW specified in EN 62479.

*** End of the Reports***