

RF Exposure Evaluation Report

Product : Smart Wi-Fi Garage Door Opener
Trade mark : meross, Refoss
Model/Type reference : MSG100, MSG100Black, MSG200, RSG100, MSS710
Serial Number : N/A
Report Number : EED32L00064302
FCC ID : 2AMUU-MSG100V3
Date of Issue : Jul. 04, 2019
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01v06
Test result : PASS

Prepared for:

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2 Version

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4 General Information

4.1 Client Information

Applicant:	Chengdu Meross Technology Co.,Ltd.
Address of Applicant:	No.1935, Floor 19, Unit 1, Building 7, No.1700 of Tianfu Avenue North, Gaoxin, Chengdu, China
Manufacturer:	Chengdu Meross Technology Co., Ltd.
Address of Manufacturer:	No.1935, Floor 19, Unit 1, Building 7, No.1700 of Tianfu Avenue North, Gaoxin, Chengdu, China
Factory 1:	Chengdu Youchuangda Technology Co.,Ltd.
Address of Factory 1:	B8 Building, IoT Industrial Park, 777 HuaFu Avenue, Shuangliu District, Chengdu, Sichuan Province
Factory 2:	CHENGDU XUGUANG TECHNOLOGY CO.,LTD.
Address of Factory 2:	2 Section of Park Road, Longquanyi, Chengdu, China

4.2 General Description of EUT

Product Name:	Smart Wi-Fi Garage Door Opener
Model No.(EUT):	MSG100, MSG100Black, MSG200, RSG100, MSS710
Test Model No.:	MSG100
Trade Mark:	meross, Refoss
Firmware version of the sample:	msg100_v3_rc0101(manufacturer declare)
Hardware version of the sample:	V3.0(manufacturer declare)
EUT Supports Radios application	2.4G WiFi: IEEE802.11b/g/n(20MHz)/n(40MHz)

4.3 Product Specification subjective to this standard

Frequency Range:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Test Software of EUT:	MT7682 QA 0.3.0.8 (manufacturer declare)
Antenna Type:	Internal Antenna
Antenna Gain:	1.5dBi
Power Supply:	AC 120V, 60Hz
Max Conducted Peak Output Power:	15.61dBm The Max Conducted Peak Output Power: data refer to the report EED32L00064301
Sample Received Date:	Mar. 27, 2019
Sample tested Date:	May 30, 2019 to Jul. 02, 2019

The tested sample(s) and the sample information are provided by the client.

Model No.: MSG100, MSG100Black, MSG200, RSG100, MSS710

Only the model MSG100 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being model name.

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R= distance to the centre of radiation of the antenna

EIRP = P*G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user.

Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

Antenna Gain: 1.5dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power(dBm)	Gain (dBi)	EIRP* (dBm)	EIRP (mW)	R (cm)	S (mW/cm ²)	Limit (mW/cm ²)	Result
Lowest	2412	15.61	1.5	17.11	51.40	20	0.01	1.0	Pass

Note: Refer to report No. EED32L00064301 for EUT test Max Conducted Peak Output Power value.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32L00064301 for EUT external and internal photos.

*** End of Report ***

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