Starmatrix Industries

MPE ASSESSMENT REPORT

Report Type:
FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

Model:
SMP7501AW, SMP7502AW

REPORT NUMBER:
231100587SHA-003

ISSUE DATE:
May 27, 2024

DOCUMENT CONTROL NUMBER:
TTRFFCCMPE-01_V1

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Report no.: 231100587SHA-003

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Applicant:	Starmatrix Industries NO.1, Xinwanbao Road, Phoenix Industrial Park, Yanling, Danyang, Zhenjiang, Jiangsu,China
Manufacturer:	Starmatrix Industries NO.1, Xinwanbao Road, Phoenix Industrial Park, Yanling, Danyang, Zhenjiang, Jiangsu,China
Manufacturer Site:	Starmatrix Industries NO.1, Xinwanbao Road, Phoenix Industrial Park, Yanling, Danyang, Zhenjiang, Jiangsu,China
Product Name:	VARIABLE SPEED SWIMMING POOL PUMP
Type/Model:	SMP7501AW, SMP7502AW
FCC ID:	2BEPJ-SMP

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:
KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:	**REVIEWED BY:**
Project Engineer Dylan Tang	Reviewer Wakeyou Wang

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Revision History

Report No.	Version	Description	Issued Date
231100587SHA-003	Rev. 01	Initial issue of report	May 27, 2024

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	VARIABLE SPEED SWIMMING POOL PUMP
Type/Model:	SMP7501AW, SMP7502AW
Description of EUT:	The EUT is VARIABLE SPEED SWIMMING POOL PUMP, it supports Bluetooth and WIF function. The differences between SMP7501AW and SMP7502AW is that the supply voltage and power line, two models of PCB layout and circuit design are the same.
Rating:	AC 110V ~120 V 60Hz for SMP7501AW AC 220V ~240 V 60Hz for SMP7502AW
Category of EUT:	Class A
EUT type:	☒ Table top ☐ Floor standing
Software Version:	RQM006_800W_WIFI SV1.0
Hardware Version:	RQM006 HV2.0
Sample received date:	December 1, 2023
Date of test:	December 1, 2023 ~ May 20, 2024

1.2 Technical Specification

Frequency Range:	2402-2480MHz
Support Standards:	IEEE 802.15.1
Type of Modulation:	GFSK
Channel Number:	40
Data Rate:	1Mbps,2Mbps
Antenna Information:	3.37dBi, PCB antenna

Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20), IEEE 802.11n(HT40)
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n(HT20): OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n(HT40): OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Operating Frequency:	2412MHz to 2462MHz for IEEE 802.11b/g/n(HT20)

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	2422MHz to 2452MHz for IEEE 802.11n(HT40)
Channel Number:	11 Channels for 802.11b, 802.11g ,802.11n(HT20) 7 Channels for 802.11n(HT40)
Channel Separation:	5 MHz

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1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

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2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density S_{eq} (W/m^2)
0-1 Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Mobile device exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

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2.2 Assessment Results

Power density (S) is calculated according to the formula:

$S = PG / (4\pi R^2)$

Where S = power density in mW/cm^2

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report: 231100587SHA-001&231100587SHA-002.

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

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Frequency band	Power		Antenna Gain		R	S	Limits
(MHz)	dBm	mW	dBi	(Numeric)	(cm)	(mW/cm2)	(mW/cm2)
2402 – 2480	6.66	4.57	3.37	2.17	20	0.002	1
2412 - 2462	15.87	38.64	3.37	2.17	20	0.0167	1

Note: 1 mW/cm2 from 1.310 Table 1.

BLE and 2.4 G WIFI Module can simultaneous transmitting, so the maximum rate of MPE is, 0.002/1+0.0167/1=0.0187<1.0.

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Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended.

**********END**********