Johnson Health Tech. Co., Ltd.

MPE ASSESSMENT REPORT

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

Model:
AP6398SV

REPORT NUMBER:
230801126SHA-005

ISSUE DATE:
July 29, 2024

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TEST REPORT

Report no.: 230801126SHA-005

Applicant:	**Johnson Health Tech. Co., Ltd.** **No. 999, Sec. 2, Dongda Rd., Daya Dist., Taichung City 428, China.**
Manufacturer:	**AMPAK Technology Inc.** **8F, No.15-1, Zhonghua Road, Hsinchu Industril Park, Hukou, Hsinchu, Taiwan, 30352**
Factory:	**AMPAK Technology Inc.** **8F, No.15-1, Zhonghua Road, Hsinchu Industril Park, Hukou, Hsinchu, Taiwan, 30352**
FCC ID:	**TN7-AP6398SV**

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 Eric Li	Reviewer Wakeyou Wang

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TEST REPORT

Revision History

Report No.	Version	Description	Issued Date
230801126SHA-005	Rev. 01	Initial issue of report	July 29, 2024

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Wireless Module
Type/Model:	AP6398SV
Description of EUT:	EUT is a Wi-Fi and Bluetooth functionalities module. There is one model. We tested it and listed the worst results in this report.
Rating:	DC3.3V
EUT type:	☒ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	February 20, 2021
Date of test:	February 20, 2021 ~ February 27, 2021

1.2 Technical Specification

Frequency Band:	2402MHz to 2480MHz
Support Standards:	Bluetooth Low Energy
Type of Modulation:	GFSK
Channel Number:	40
Data Rate	1MHz,2MHz
Channel Separation:	2MHz
Antenna Information:	PCB Antenna(main antenna, number 0), gain is 1.51dBi

Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	Bluetooth 5.1 (BR+EDR)
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, π/4 DQPSK, 8DPSK
Channel Number:	79 (0 - 78)
Data Rate:	Max 3 Mbps
Channel Separation:	1 MHz
Antenna:	PCB Antenna(main antenna, number 0), gain is 1.51dBi

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Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20
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)
Channel Number:	11 Channels for 802.11b, 802.11g and 802.11n(HT20)
Channel Separation:	5 MHz
Antenna:	PCB Antenna(Main antenna, number 0), gain is 1.51dBi PCB Antenna(Aux antenna, number 1), gain is 1.53dBi

Frequency Range:	5150 ~ 5250MHz, 5725 ~ 5850MHz
Support Standards:	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80)
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Number:	For 5150 ~ 5250MHz band: Channel 36 - 48 For 5725 ~ 5850MHz band: Channel 149 - 165
Antenna:	PCB Antenna(Main antenna, number 0), Antenna gain is 4.66dBi, PCB Antenna(Aux antenna, number 1), Antenna gain is 4.69dBi

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**

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 230801126SHA-001, 230801126SHA-002, 230801126SHA-003, 230801126SHA-004:

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.

The WiFi can support simultaneous transmission.

Mode	Frequency band	Max Power	Antenna Gain	R	S	Limits
	(MHz)	dBm	dBi	(cm)	(mW/cm2)	(mW/cm2)
WiFi	2400 -2483.5	18.77	1.52	20	0.0213	1
	5150-5250	16.34	4.68	20	0.0252	1
	5725-5850	15.63	4.68	20	0.0214	1
BLE	2400 -2483.5	9.35	1.51	20	0.0024	1
BR+EDR	2400 -2483.5	0.93	1.51	20	0.0003	1

Note: 1 mW/cm2 from 1.310 Table 1

The sum of the MPE ratios for all simultaneously transmitting is
$0.0213/1+0.0252/1+0.0024/1+0.0003/1=0.0492 \leqslant 1.0$

For the device can support simultaneous transmission, according to 447498 D01 General RF Exposure Guidance v06,

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 **********