

ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.

MPE ASSESSMENT REPORT

Report Type:

FCC MPE assessment report

Model:

BL-M8822CU1

REPORT NUMBER:

220102158SHA-003

ISSUE DATE:

April 22, 2022

DOCUMENT CONTROL NUMBER:

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Manufacturer: ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.
No.1199, Bin'an Road, Binjiang District, Hangzhou, P.R. China

FCC ID: SVN-M8822CU1

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
Sky Yang

Reviewer
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Revision History

Report No.	Version	Description	Issued Date
220102158SHA-003	Rev. 01	Initial issue of report	April 22, 2022

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	WiFi Module
Type/Model:	BL-M8822CU1
Description of EUT:	WiFi Module
Rating:	3.3Vdc
Category of EUT:	Class B
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	V1.0
Hardware Version:	v5.7.3_32588.20190319_COEX20190318
Sample received date:	December 2, 2021
Date of test:	December 29, 2021 to March 21, 2022

1.2 Technical Specification

For 2.4 GHz ISM Band of Wi-Fi

Frequency Range:	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)
Channel Number:	IEEE 802.11b: 11 IEEE 802.11g: 11 IEEE 802.11n-HT20: 11 IEEE 802.11n-HT40: 9
Data Rate:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS15 IEEE 802.11n-HT40: Up to MCS15
Channel Separation:	5 MHz
Antenna Information:	ANT0 PCB antenna 6.07dBi ANT1 PCB antenna 5.15dBi

For 5 GHz U-NII Bands of Wi-Fi

Frequency Range:	5150 MHz to 5250 MHz (U-NII-1) 5250 MHz to 5350 MHz (U-NII-2A) 5470 MHz to 5725 MHz (U-NII-2C) 5 725 MHz to 5 850 MHz (U-NII-3)
Support Standards:	IEEE 802.11a/n/ac
Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz IEEE 802.11n-HT40/ac-VHT40: 40 MHz IEEE 802.11ac-VHT80: 80 MHz
Channel Number:	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11acVHT80 5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11acVHT80 5470 MHz to 5725 MHz: 11 for IEEE 802.11a/n-HT20/ac-VHT20 5 for IEEE 802.11n-HT40/ac-VHT40 2 for IEEE 802.11ac-VHT80 5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80
Data Rate:	IEEE 802.11a: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS15 IEEE 802.11n-HT40: Up to MCS15 IEEE 802.11ac-VHT20: Up to MCS8 IEEE 802.11ac-VHT40: Up to MCS9 IEEE 802.11ac-VHT80: Up to MCS9
Channel Separation:	IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz IEEE 802.11n-HT40/ac-VHT40: 40 MHz IEEE 802.11ac-VHT80: 80 MHz
Antenna Information:	PCB antenna ANT0: 5150-5250MHz 5.02dBi 5250-5350MHz 6.15dBi 5470-5725MHz 8.46dBi 5725-5850MHz 9.23dBi

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	<p>ANT1: 5150-5250MHz 6.45dBi 5250-5350MHz 6.48dBi 5470-5725MHz 7.26dBi 5725-5850MHz 5.38dBi</p>
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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: CN1175
	IC Registration Lab Registration code No.: 2042B-1
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

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**

MPE Ratios are Calculated as $[(MPE1/Limit) + (MPE2/Limit) + \dots] \leq 1.0$

TEST REPORT**2.2 Assessment Results**

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

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

Where S = power density in mW/cm²

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 220102158SHA-001 and 220102158SHA-002:

The maximum radiated power is Modulation mode: IEE 802.11NHT40 for 2422MHz

Power_{ant0} = (25.17+6.07) dBm = 1330.45mW;

Power_{ant1} = (23.04+5.15) dBm = 659.17mW;

Here R is chosen to be 20cm,

$$S_1 = P / (4\pi R^2) = 1330.45 / (4 * 3.14 * 20 * 20) = 0.265 \text{mW/cm}^2$$

$$S_2 = P / (4\pi R^2) = 659.17 / (4 * 3.14 * 20 * 20) = 0.131 \text{mW/cm}^2$$

$$\text{MPE Ratio} = (0.265/1) + (0.131/1) = 0.396 < 1.0$$

So, the transmitter complies with the RF exposure requirements and the SAR is not required.

The module does not support 2.4G WIFI and 5G WIFI to work simultaneously

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 *****