Test Report

Verified code: 546950

Report No.: E20210914342601-4-G1

Customer:	Lumi United Technology Co., Ltd.
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen, China
Sample Name:	Camera Hub G2H Pro
Sample Model:	CH-C01
Receive Sample Date:	Sep.15,2021
Test Date:	Sep.16,2021 ~ Oct.12,2021
Reference Document:	EN 50665:2017 Generic standard for assessment of electronic and electricalequipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz) EN 62311:2008 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields(0 Hz to 300GHz)
Test Result:	Pass

Prepared By: Reviewed By: Approved By:

GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2021-11-03

GUANGZHOU GRG METROLOGY & TEST CO., LTD
Address: No.163 Xipingyun Road, Huangpu Avenue, Tianhe District, Guangzhou（510656）
Tel：（+86）400-602-0999 FAX：（+86）020-38698685 Web：http://www.grgtest.com

Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.

2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.

3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.

4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.

5. Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

6. This report E20210914342601-4-G1 is the modification of report E20210914342601-4. Updated the description of MPE based on the original report, and the original report E20210914342601-4 is invalid.

Table of Contents

1 GENERAL DESCRIPTION OF EUT 4
1.1 APPLICANT INFORMATION 4
1.2 MANUFACTURER 4
1.3 BASIC DESCRIPTION OF EUT 4
2 LABORATORY AND ACCREDITATIONS 5
2.1 LABORATORY 5
2.2 ACCREDITATIONS 5
3 TECHNICAL REQUIREMENTS SPECIFICATION IN 6
3.1 RF EXPOSURE EVALUATION 6
3.2 EVALUATION RESULTS 7
4 APPENDIX A:PHOTOGRAPH OF THE EUT 9

---------- The following blanks ----------

1 GENERAL DESCRIPTION OF EUT

1.1 APPLICANT INFORMATION

Name:	Lumi United Technology Co., Ltd.
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen, China

1.2 MANUFACTURER

Name:	Lumi United Technology Co., Ltd.
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen, China

1.3 BASIC DESCRIPTION OF EUT

Product Name:	Camera Hub G2H Pro
Product Model:	CH-C01
Adding Model:	/
Trade Name:	Aqara
Power Supply:	Input: 5V ⎓ 1A
Frequency Band:	Zigbee: 2405MHz-2475MHz 2.4G Wi-Fi: 2412MHz-2472MHz for 802.11b/g/n HT20
Modulation Type:	Zigbee: OQPSK 2.4G Wi-Fi: DSSS(CCK, DQPSK, DBPSK) for 802.11b OFDM for 802.11g/n HT20
Antenna Type:	Internal antenna
Antenna Gain:	Zigbee: 1.5dBi 2.4G Wi-Fi: 1.5dBi
Hardware Version:	X1
Software Version:	V1.0.3_0006.0004
Sample submitting way:	■Provided by customer □Sampling
Sample No:	E20210914342601-0004
Note:	/

2 LABORATORY AND ACCREDITATIONS

2.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Add.:	No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China.
P.C.:	518000
Tel :	0755-61180008
Fax:	0755-61180008

2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	A2LA(Certificate#:2861.01)
China	CNAS(L0446)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	ISED (Company Number: 24897, CAB identifier:CN0069)
USA	FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site, http://www.grgtest.com

3 TECHNICAL REQUIREMENTS SPECIFICATION IN

3.1 RF EXPOSURE EVALUATION

This European Standard applies to electronic and electrical equipment for which no dedicated Harmonized product or product family standard, or standard relating to low power equipment , regarding human exposure not. Annex A lists such harmonized standards available at the time of writing This list may change with time. The current list of standards harmonized under each directive should be consulted at the time of use of this standard.

The measurements and calculations to demonstrate equipment compliance shall be made according to EN 62311:2008, Clause 4 and 5. The general considerations as defined in EN 62311:2008, Clause 4 and 5 shall apply to all equipment.

The product is deemed to fulfill the requirements of this standard if the calculated and/or measured values are less than or equal to the limits.

Note in the setting of basic restrictions and the derived reference levels, safety factors have been taken into account. In the specification of the assessment method, uncertainty has been constrained. This is the reason for not requiring that the measured values shall be compared to the limit reduced by the measurement uncertainty.

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m²)
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

Notes:

1. f as indicated in the frequency range column.
2. For frequencies between 100 kHz and 10 GHz, S_{eq}, E^2, H^2, and B^2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10 GHz, S_{eq}, E^2, H^2, and B^2 are to be averaged over any $68/f^{1.05}$ -minute period (f in GHz).
4. No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

3.2 EVALUATION RESULTS

2.4GHz Wi-Fi:

Operating Mode with Modulation		
Packet	EIRP Level (dBm)	EIRP Level (mW)
802.11b	17.17	52.119

For the 2.4GHz band the reference level is E field strength 6.25V/m

The Formula

$$r = \frac{\sqrt{30P(\theta,\phi)}}{E}$$

Whereas,
Θ Φ= elevation and azimuth angles to point of investigation
r=distance from observation point to the antenna
P=the maximum output power of transmitter.
r=0.2m

The maximum e.i.r.p of the transmitter is 17.17dBm= 52.119mW= 0.052119W
Since e.i.r.p is used for this calculation, the antenna gain is assumed as 1.5dBi=1.413dB

Station mode:

Zigbee:

Operating Mode with Modulation		
Packet	EIRP Level (dBm)	EIRP Level (mW)
OQPSK	9.44	8.790

The maximum e.i.r.p of the transmitter is 9.44dBm= 8.790mW= 0.00879W
Since e.i.r.p is used for this calculation, the antenna gain is assumed as 1.5dBi=1.413dB

For the Zigbee the reference level is E field strength 2.57V/m.

The Formula

$$r = \frac{\sqrt{30P(\theta,\phi)}}{E}$$

Whereas,
Θ Φ= elevation and azimuth angles to point of investigation
r=distance from observation point to the antenna
P=the maximum output power of transmitter.
r=0.2m

Maximum Simultaneous transmission MPE Ratio for WLAN and Zigbee

Modulation Type	Frequency Band	Transmit		Antenna 1 and Antenna 2 synchronization transmit
		Antenna 1	Antenna 2	
Zigbee	2.4GHz	Yes	no	yes
IEEE 802.11 b	2.4GHz	No	yes	
IEEE 802.11 g	2.4GHz	No	yes	
IEEE 802.11 n HT20	2.4GHz	No	yes	

∑ MPE ratios=6.25/61+2.57/61=0.1446<*1.0*

The antenna of the product, under normal use condition is at least 20cm 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. So, this product under normal use is located on electromagnetic far field between the human body.

4 APPENDIX A:PHOTOGRAPH OF THE EUT

Please refer to the attached document E20210914342601-1-EUT Photo.

---------- End of Report ----------