RF Exposure Report

Product name	:	WIRELESS VIDEO TRANSMISSION SYSTEM
Trademark	:	HOLLYLAND
Model no.	:	Pyro H
Series Model(s).	:	/
FCC ID	:	2ADZC-9830R
IC ID	:	29803-9830R
Report No	:	C231222039-RF15
Test Standards	:	CFR47 FCC Part 2: Section 2.1093 CFR47 FCC Part 1: Section 1.1310 RSS-102 Issue 5
Applicant	:	Shenzhen Hollyland Technology Co., Ltd
Address of applicant	:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road,Shiyan Street, Baoan District Shenzhen, China
Manufacturer	:	Shenzhen Hollyland Technology Co., Ltd
Manufacturer Address	:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road,Shiyan Street, Baoan District Shenzhen, China
Date of Test Date	:	N/A
Date of issue.	:	Feb 27,2024
Test result	:	Compliance

Reviewed By : Adil Yang

Approved Signatory : Tom Gan

The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver. Any objections must be raised to CSIC within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit.

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1 TEST SUMMARY

1.1 Test Facility

Shenzhen Central Standard International Center Co., Ltd. (CSIC)

Room 201, Building 1, Mogen Fashion Industrial Park, No. 10, Shilongzai Road, Xinshi Community, Dalang Street, Longhua District, Shenzhen.

The test facility is recognized, certified or accredited by the following organizatios:

CNAS	Registration No.: L11671	
FCC	Registration No.: 0031378433	Designation Number: CN1317
IC	CAB identifier: CN0051	
A2LA	Lab Cert. No.: 6426.01	

2 GENERAL INFORMATION

2.1 General Description of EUT

EUT(Product Specifications)			
Product Name:	WIRELESS VIDEO TRANSMISSION SYSTEM		
Trademark:	HOLLYLAND		
Model No.:	Pyro H		
Series Models:	/		
Power supply:	Adapter	Product Name:	SWITCHING ADAPTER
		Product Model:	GQ24-I20200-AX
		Product Spec.:	INPUT：100-240Vac 50/60Hz 1.0A OUTPUT：DC 12.0V 2.0A 24.0W
		Manufacturer:	Dong Guan City GangQi Electronic Co., Ltd.
	Battery	Product Name:	Li-ion
		Product Spec.:	DC 7.4V 4000mAh 29.6Wh
	Type-C	Input: DC 5V 2A	
		Output: DC 5V 2A	
Hardware version:	V18		
Software version:	V1.0.2.1		
WIFI-2.4G (RF Specifications)			
Supported type:	802.11 b/g/n(HT20)		
Modulation:	DSSS(DBPSK/DQPSK/CCK) for 802.11b OFDM(BPSK/QPSK/16QAM/64QAM) for 802.11g/n(HT20)		
Operation frequency:	2412MHz~2462MHz		
Operation bandwidth:	20MHz		
Channel number:	802.11b/g/n(HT20)：11		
Channel separation:	20MHz		
Antenna type:	EXTERNAL ANTENNA		
Antenna gain:	ANT1/2: 2.97dBi		
WIFI-5G (RF Specifications)			
Operating Frequency	5150-5250MHz, 5725-5850MHz		
Channel number:	For 802.11ac(VHT20): 9 For 802.11ac(VHT40): 4		
Channel Spacing	20MHz, 40MHz		
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM,256QAM)		
Antenna Type	EXTERNAL ANTENNA		
Antenna Gain	ANT1/2: 2.34 dBi for 5150MHz-5250MHz; 3.14 dBi for 5725MHz-5850MHz		
Remark: The product also supports battery power supply (the manufacturer claims that batteries are optional accessories during the sales process, and the final product standard does not include			

batteries). The power supply of this product adopts the principle of high-voltage optimization, and there is no battery charging circuit in the product. Therefore, a dedicated charger is required for battery charging. The battery power supply method has been evaluated and tested, but this document only reflects the data of the worst power supply method (adapter power supply).

Remark：The above information and materials are provided by the Manufacturer.

3 Maximum Permissible Exposure (MPE)

3.1 RF Exposure

3.1.1 Limit

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.
Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio frequency (RF) radiation as specified in 1.1307 (b).

The limit for Maximum Permissible Exposure (MPE) specified in RSS-102 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.
Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

According to RSS-102: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio frequency (RF) radiation as specified in 2.5.2

For FCC:

Frequency Range	Electric Field Strength	Magnetic Field Strength	Power Density
[MHz]	[V/m]	[A/m]	[mW/cm^2]
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	f/300
1500 - 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	f/1500
1500 - 100000	--	--	1.0

NOTE: f = Frequency in MHz

For IC:
at above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10^{-2} f $^{0.6834}$W(adjusted for tune-up tolerance), where f is in MHz;

3.1.2 Friss Formula

Per KDB 447498 D01 v06, simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on calculated or measured field strengths or power density, is ≤ 1.0.

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

3.1.3 Classification

The antenna of this 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 or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

3.1.4 EUT Operating Conditions

EUT was enabled to transmit and receive at lowest, middle and highest channels.

3.1.5 Evaluation Result

1) tand-alone transmission MPE

For FCC

Test Results of RF Exposure Calculations for FCC, Stand-alone mode

Test Mode	Max. conducted power incl. tune-up (dBm)	Distance (cm)	MPE (mW/cm^2)	Threshold power (mW/cm^2)	Result
WIFI 2.4G	15.158	20	0.0129	1.0	Pass
WIFI 5G Band I	16.988	20	0.0170	1.0	Pass
WIFI 5G Band II	17.776	20	0.0246	1.0	Pass

Test Results of RF Exposure Calculations for FCC, Simultaneous mode

Co-location Mode	Sum of the MPE ratios	Limit	Result
WIFI 2.4G + WIFI 5G	0.0129/1+0.0246/1<1.0	1.0	Pass

For IC

Test Results of RF Exposure Calculations for ISED, Stand-alone mode

Test Mode	Max. EIRP incl. tune-up (dBm)	Distance (cm)	MPE (W)	Threshold power (W)	Result
WIFI 2.4G	18.128	20	0.065	2.684	Pass
WIFI 5G Band I	19.328	20	0.086	4.531	Pass
WIFI 5G Band II	20.916	20	0.123	4.874	Pass

Note: MPE = 1.31 x 10^{-2} f $^{0.6834}$W, where f in MHz.

Test Results of RF Exposure Calculations for ISED, Simultaneous mode

Co-location Mode	Sum of the MPE ratios	Limit	Result
WIFI 2.4G + WIFI 5G	0.065/2.684+0.123/4.874<1.0	1.0	Pass

3.1.6 Conclusion

Therefore, the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.

**************************THE END**************************