

TEST REPORT FCC Rules and Regulations Part PART 15.249				
Report Reference No GTS20210617003-1-1				
FCC ID	. 2AKMW-YP-860			
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Date of issue	. Jun.18, 2021			
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Applicant's name	. YouPro Technology Co.,Ltd			
Address	. 7 Floor, Solar silicon valley, Longhua	District,Shenzhen city,China		
Standard	FCC Rules and Regulations P	art PART 15.249		
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Test item description	. Camera Wireless Remote			
Trade Mark	_N/A			
Manufacturer	· YouPro Technology Co.,Ltd			
Model/Type reference	. YP-860			
Listed Models	YP870,VT-2, MC-292, FWP-C, FWP- FWP-P,YP-20 . FSK	N, FWP-S2, FWP-F, FWP-O,		
Frequency	. 2406.5MHz			
Ratings	DC 3.0 V From Battery			
Result	PASS			

TEST REPORT

Test Report No. : GTS20210617003-1-1		Jun.18, 2021		
•		Date of issue		
Equipment under Test	: Camera Wireless Remote			
Model /Type	: YP-860			
Listed Models	: YP870,VT-2, MC-292, FWP-C O, FWP-P,YP-20	S, FWP-N, FWP-S2, FWP-F, FWP-		
Applicant	: YouPro Technology Co.,Ltd			
Address	: 7 Floor, Solar silicon valley, Lo	onghua District,Shenzhen city,China		
Manufacturer	: YouPro Technology Co.,Ltd			
Address	: 7 Floor, Solar silicon valley, Lo	onghua District,Shenzhen city,China		

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The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

<u>ANSI C63.4: 2014:</u> –American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz Range of 9 kHz to 40GHz

2. <u>SUMMARY</u>

2.1. General Remarks

Date of receipt of test sample	:	Mar. 07, 2021
Testing commenced on	:	Mar. 07, 2021
Testing concluded on	:	Jun. 18, 2021

2.2. Product Description

Name of EUT	Camera Wireless Remote
Model Number	YP-860
List Model:	YP870,VT-2, MC-292, FWP-C, FWP-N, FWP-S2, FWP-F, FWP-O, FWP-P,YP-20
Power Rating	DC 3.0V From Battery
Sample ID:	GTS20210617003-1-1-1#(Engineer sample) GTS20210617003-1-1-2#(Normal sample)
Operation frequency	2406.5MHz
Modulation	FSK
Antenna Type	PCB antenna
Antenna Gain	0dB(Max)

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	•	0	230V / 50 Hz	0	120V / 60Hz
		Ο	12 V DC	0	24 V DC
		•	Other (specified in blank bel	ow)

<u>DC 3.0 V</u>

2.4. Short description of the Equipment under Test (EUT)

This is a Camera Wireless Remote

For more details, refer to the user's manual of the EUT.

2.5. EUT operation mode

The Applicant use Key to control the EUT for staying in continuous transmitting and receiving mode for testing .There is 100 channels provided to the EUT. Channel Low,Mid and High was selected to test.

Channel	Frequency (MHz)
01	2406.5

Test frequency:

2.6. Block Diagram of Test Setup



2.7. Modifications

No modifications were implemented to meet testing criteria.

3. <u>TEST ENVIRONMENT</u>

3.1. TEST FACILITY

Test Firm : Shenzhen Global Test Service Co., Ltd.

Address No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

3.2. Test Facility

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

CNAS (No. CNAS L8169)

Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)

Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

Industry Canada Registration Number. is 24189.

FCC Designation Number is CN1234.

FCC Registered Test Site Number is165725.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Radiated Emission:

Temperature:	25 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

Conducted testing:

Temperature:	25 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

3.4. Summary of measurement results

FCC PART 15.249				
FCC Part 15.249(a)	Field Strength of Fundamental	PASS		
FCC Part 15.209	Spurious Emission	PASS		
FCC Part 15.209	Band edge	PASS		
FCC Part 15.215(c)	20dB bandwidth	PASS		
FCC Part 15.207	Conducted Emission	N/A		
FCC Part 15.203	Antenna Requirement	PASS		

3.5. Statement of the measurement uncertainty

=	2.23dB, k=2
=	3.08dB, k=2
=	4.42dB, k=2
=	4.06dB, k=2
	= = =

Calibration Calibration **Test Equipment** Manufacturer Model No. Serial No. Date Due Date **ENV216** 3560.6550.08 2020/09/19 2021/09/18 LISN R&S R&S LISN ESH2-Z5 893606/008 2020/09/19 2021/09/18 **EMI** Test Receiver R&S ESPI3 101841-cd 2020/09/19 2021/09/18 **EMI Test Receiver** R&S ESCI7 101102 2020/09/19 2021/09/18 Spectrum Analyzer N9020A MY48010425 2020/09/19 2021/09/18 Agilent Spectrum Analyzer R&S FSV40 100019 2020/09/19 2021/09/18 Vector Signal MY49060502 2020/09/19 2021/09/18 Agilent N5181A generator Agilent E4421B 3610AO1069 2020/09/19 2021/09/18 Signal generator **Climate Chamber ESPEC** EL-10KA A20120523 2020/09/19 2021/09/18 Controller EM Controller **EM Electronics** N/A N/A N/A 1000 Horn Antenna Schwarzbeck **BBHA 9120D** 01622 2020/09/19 2021/09/18 Beijing Da Ze Technology ZN30900C 15006 2020/10/11 2021/10/10 Active Loop Antenna Co.,Ltd. **Bilog Antenna** Schwarzbeck **VULB9163** 000976 2020/05/26 2021/05/25 **Broadband Horn** SCHWARZBECK **BBHA 9170** 791 2020/09/19 2021/09/18 Antenna #202 2020/09/19 Amplifier Schwarzbeck BBV 9743 2021/09/18 Amplifier Schwarzbeck BBV9179 9719-025 2020/09/19 2021/09/18 Amplifier EMCI EMC051845B 980355 2020/09/19 2021/09/18 Temperature/Humidi Gangxing 02 2020/09/19 2021/09/18 CTH-608 ty Meter 9SH10-**High-Pass Filter** K&L 2700/X12750-KL142031 2020/09/19 2021/09/18 0/0 41H10-K&L 1375/U12750-KL142032 2020/09/19 2021/09/18 **High-Pass Filter** 0/0 HUBER+SUHNE RF Cable(below RG214 **RE01** 2020/09/19 2021/09/18 1GHz) R RF Cable(above HUBER+SUHNE **RG214 RE02** 2020/09/19 2021/09/18 1GHz) R Data acquisition Agilent U2531A TW53323507 2020/09/19 2021/09/18 card **Power Sensor** Agilent U2021XA MY5365004 2020/09/19 2021/09/18 **Test Control Unit** Tonscend JS0806-1 178060067 2020/06/19 2021/06/18 Automated filter Tonscend JS0806-F 19F8060177 2020/06/19 2021/06/18

3.6. Equipments Used during the Test

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bank					
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

Note: The Cal.Interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

Frequency range (MHz)	Limit (dBuV)					
Trequency range (MHz)	Quasi-peak	Average				
0.15-0.5	66 to 56*	56 to 46*				
0.5-5	56	46				
5-30	60	50				
* Decreases with the logarithm of the frequency.						

TEST RESULTS

The EUT is powered by Battery, So this test item is not applicable for the EUT.

4.2. Radiated Emission and Band Edges

TEST CONFIGURATION

Frequency range 9 KHz – 30MHz



Frequency range 30MHz - 1000MHz



Frequency range above 1GHz-25GHz



- 1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –25GHz.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°C to 360°C to acquire the highest emissions from EUT.
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measurements have been completed.
- 5. The EUT minimum operation frequency was 26MHz and maximum operation frequency was 1910MHz.so radiated emission test frequency band from 9KHz to 25GHz.
- 6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

U U	0	
Test Frequency range Test Receiver/Spectrum Setting		Detector
9KHz-150KHz RBW=200Hz/VBW=3KHz,Sweep time=Aut		QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
	Peak Value: RBW=1MHz/VBW=3MHz,	
	Sweep time=Auto	Book
IGHZ-40GHZ	Average Value: RBW=1MHz/VBW=10Hz,	reak
	Sweep time=Auto	

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Transd=AF +CL-AG

RADIATION LIMIT

According 15.249, the field strength of emissions from intentional radiators operated within 902MHz-928 MHz shall not exceed 94dBµV/m (50mV/m):

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Padiated emission limits

	Distance (Matere)		Dedicted (u) (/m)
Frequency (MHZ)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

Remark:

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1. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

For 30MHz-1GHz



For 1GHz to 25GHz

Frequency(MHz):			246	5.50		Polarity:		HORIZ	ONTAL	
No.	Frequency (MHz)	Emiss Leve (dBuV	ion el /m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
1	2390.00	48.64	PK	74	25.36	15.32	28.72	4.60	0.00	33.32
1	2390.00		AV	54						
2	2406.50	92.79	PK	114	21.21	59.21	28.9	4.68	0.00	33.58
2	2406.50	84.15	AV	94	9.85	50.57	28.9	4.68	0.00	33.58
3	2483.50	51.95	PK	74	22.05	18.32	28.93	4.70	0.00	33.63
3	2483.50		AV	54						
4	2500.00	47.53	PK	74	26.47	13.85	28.96	4.72	0.00	33.68
4	2500.00		AV	54					0.00	
5	4813.00	54.85	PK	74	19.15	50.01	33.77	6.99	35.92	4.84
5	4813.00	44.36	AV	54	9.64	39.52	33.77	6.99	35.92	4.84

	Frequency	(MHz):		246	5.50	Polarity:		VERTICAL		
No.	Frequency (MHz)	Emiss Leve (dBuV	ion el /m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre- amplifier (dB)	Correction Factor (dB/m)
1	2390.00	50.31	PK	74	23.69	16.99	28.72	4.60	0.00	33.32
1	2390.00		AV	54						
2	2406.50	92.06	PK	114	21.94	58.48	28.9	4.68	0.00	33.58
2	2406.50	84.31	AV	94	9.69	50.73	28.9	4.68	0.00	33.58
3	2483.50	52.19	PK	74	21.81	18.56	28.93	4.70	0.00	33.63
3	2483.50		AV	54						
4	2500.00	47.45	PK	74	26.55	13.77	28.96	4.72	0.00	33.68
4	2500.00		AV	54					0.00	
5	4813.00	54.67	PK	74	19.33	50.13	33.51	6.92	35.89	4.54
5	4813.00	45.00	AV	54	9.00	40.46	33.51	6.92	35.89	4.54

4.3. 20dB Bandwidth Measurement

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30KHz RBW and 300KHz VBW.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

LIMIT

N/A

TEST RESULTS

Modulation	Channel	20dB bandwidth (KHz)	Result
FSK	CH01	458.7	Pass

Note: 1.The test results including the cable lose.



4.4. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Information

The directional gains of antenna used for transmitting is 0.00 dBi.

5. Test Setup Photos of the EUT



6. Test Photos of the EUT



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.....End of Report.....