RF Exposure Evaluation Declaration

Product Name : Integrated Gimbal Camera

Model No. : YTXJ01FM

FCC ID : 2AG53YTXJ01FM

Applicant : BEIJING FIMI TECHNOLOGY LIMITED

Address : 07C, Block A, Floor 7, No.28 Xinxi Road Jia, Haidian District, Beijing, China

Date of Receipt : Dec. 09, 2015

Issued Date : May. 06, 2016

Report No. : 15C2019R-RF-US-P20V01

Report Version : V1.0

Test Report Certification

Issued Date : May. 06, 2016
Report No. : 15C2019R-RF-US-P20V01

Product Name	:	Integrated Gimbal Camera
Applicant	:	BEIJING FIMI TECHNOLOGY LIMITED
Address	:	07C, Block A, Floor 7, No.28 Xinxi Road Jia, Haidian District, Beijing, China
Manufacturer	:	BEIJING FIMI TECHNOLOGY LIMITED
Address	:	07C, Block A, Floor 7, No.28 Xinxi Road Jia, Haidian District, Beijing, China
Model No.	:	YTXJ01FM
FCC ID	:	2AG53YTXJ01FM
EUT Voltage	:	DC 15.2V
Applicable Standard	:	KDB 447498D01V06
		FCC Part1.1310(b)
Test Result	:	Complied
Performed Location	:	Quietek Corporation - Suzhou EMC Laboratory
		No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
		TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
		FCC Registration Number: 800392

Documented By :

(signature: Alice Ni)

(Senior Adm. Specialist: Alice Ni)

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(signature: Frank he)

(Senior Engineer: Frank He)

Approved By :

(signature: Harry Zhao)

(Engineering Manager : Harry Zhao)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/english/about/certificates.aspx?bval=5
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859　　　　　E-Mail : service@quietek.com

LinKou Testing Laboratory :
No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789　　　　　E-Mail : service@quietek.com

Suzhou Testing Laboratory :
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098　　E-Mail : service@quietek.com

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
15C2019R-RF-US-P20V01	V1.0	Initial Issued Report	May. 06, 2016

1. RF Exposure Evaluation

1.1. Limits

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

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18℃ and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	Integrated Gimbal Camera
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

● Antenna Gain:

Antenna No.	Antenna	Manufacturer	Model No.	Peak Gain
Antenna 1	Internal WIFI Antenna	N/A	GY196HT337-005	3.75dBi for 5GHz
Antenna 2	Internal WIFI Antenna	N/A	GY196HT337-006	5.92dBi for 5GHz

● Output Power into Antenna & RF Exposure Evaluation Distance:

5GHz:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm2)
802.11a	5745 - 5825	18.05	3.75	0.0301
802.11n(20MHz)	5745 - 5825	17.85	5.92	0.0474
802.11n(40MHz)	5755 - 5795	17.13	5.92	0.0402

So according to transmission formula: $Pd = (Pout*G)/(4*pi*r^2)$ and the power density limit according to KDB 447498D01V06 and FCC Part1.1310(b), the limit is 1mW/cm^2

Safety Distance Calculation Formula:

The power flux:

$$S = \frac{P*G_{(\theta,\phi)}}{4*\pi*r^2}$$

So safety distance as following:

$$r = \sqrt{\frac{P*G}{4*\pi*S}}$$

P = input power of the antenna

G = antenna gain relative to an isotropic antenna

θ, Φ = elevation and azimuth angles.

r = distance from the antenna to the point of investigation

Frequency Range (MHz)	Maximum EIRP (dBm)	Limit of Power Density S(mW/cm^2)	Safety Distance r(cm)
5745 - 5825	23.77	1	4.35

Note: The safety distance is 4.35cm for Integrated Gimbal Camera without any other radio equipment.

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