



中国认可
国际互认
检测
TESTING
CNAS L5313



RF Exposure Evaluation Declaration

Product Name : TKG-1MU
Model No. : TKG-1MU
FCC ID : BXTTKG1MU

Applicant : Kaga Electronics Co.,Ltd.
Address : 20 Kandamatsunagacho,Chiyoda-ku
Tokyo 101-8628,Japan

Date of Receipt : Aug. 13, 2018
Test Date : Aug. 14, 2018~ Sep. 05, 2018
Issued Date : Sep. 14, 2018
Report No. : 1882083R-RF-US-P20V01
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Test Report Certification

Issued Date : Sep. 14, 2018


Report No. : 1882083R-RF-US-P20V01




Product Name : TKG-1MU
Applicant : Kaga Electronics Co.,Ltd.
Address : 20 Kandamatsunagacho,Chiyoda-ku
Tokyo 101-8628,Japan
Manufacturer : eSky wireless Inc
Address : 22-303,#328 xinghu street ,suzhou ,China
Model No. : TKG-1MU
FCC ID : BXTTKG1MU
EUT Voltage : DC 9-16V
Test Voltage : AC 120V/60Hz
Brand Name : Kaga
Applicable Standard : KDB 447498D01V06
FCC Part1.1310
Test Result : Complied
Performed Location : DEKRA Testing and Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou,
215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Registration Number: CN1199

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Approved By : 

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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/cm ²)	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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is 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	:	TKG-1MU
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

Antenna manufacturer	N/A		
Antenna Delivery	<input checked="" type="checkbox"/> 1*TX+1*RX	<input type="checkbox"/> 2*TX+2*RX	<input type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/> SISO		
	<input type="checkbox"/> MIMO	<input type="checkbox"/> Basic	
		<input type="checkbox"/> Sectorized antenna systems	
		<input type="checkbox"/> Cross-polarized antennas	
		<input type="checkbox"/> Unequal antenna gains, with equal transmit powers	
		<input type="checkbox"/> Spatial Multiplexing	
		<input type="checkbox"/> CDD	
		<input type="checkbox"/> Beam-forming	
Antenna Type	<input checked="" type="checkbox"/> External	<input checked="" type="checkbox"/> Dipole	
	<input type="checkbox"/> Internal	<input type="checkbox"/> PIFA	
		<input type="checkbox"/> PCB	
		<input type="checkbox"/> Ceramic Chip Antenna	
		<input type="checkbox"/> Metal plate type F antenna	
		<input type="checkbox"/> Cross-polarize Antenna	
Antenna Gain	Band 2: 3.13dBi Band 4: 3.52dBi Band 12: 2.23dBi		

- Output Power into Antenna & RF Exposure Evaluation Distance
- Standlone modes

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Power Density Limit at R = 20 cm (mW/cm ²)
LTE Band 2	1850-1910	26.71	3.13	0.19	1.0
LTE Band 4	1710-1755	27.09	3.52	0.23	1.0
LTE Band 12	699-716	25.82	2.23	0.13	0.47

Note: The simultaneous transmission power density is 0.23mW/cm² for TKG-1MU without any other radio equipment.

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