



中国认可
国际互认
检测
TESTING
CNAS L5313



DEKRA

RF Exposure Evaluation Declaration

Product Name : AC1900 Smart Wi-Fi Router
Model No. : K3C
FCC ID : YJYK3C

Applicant : Phicomm (Shanghai) Co., Ltd.
Address : NO.3666,Sixian Rd.,Songjiang District, Shanghai,
P.R.China

Date of Receipt : Feb. 21st, 2017
Issued Date : Aug. 16th, 2017
Report No. : 1772153R-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.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.

Test Report Certification

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Product Name : AC1900 Smart Wi-Fi Router
Applicant : Phicomm (Shanghai) Co., Ltd.
Address : NO.3666,Sixian Rd.,Songjiang District, Shanghai,
P.R.China
Manufacturer : Phicomm (Shanghai) Co., Ltd.
Address : NO.3666,Sixian Rd.,Songjiang District, Shanghai,
P.R.China
Model No. : K3C
FCC ID : YJYK3C
EUT Voltage : DC 12V
Test Voltage : AC 120V/60Hz
Brand Name : PHICOMM
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: 800392

Documented By :



(Adm. Specialist: Kathy Feng)

Reviewed By :



(Senior Engineer: Frank He)

Approved By :



(Engineering Manager : Harry Zhao)

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°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	AC1900 Smart Wi-Fi Router
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

2.4G:

Antenna manufacturer	N/A		
Antenna Delivery	<input checked="" type="checkbox"/> 1*TX+1*RX	<input type="checkbox"/> 2*TX+2*RX	<input checked="" type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/> SISO for 802.11b/g		
	<input checked="" type="checkbox"/> MIMO for 802.11n	<input type="checkbox"/> Basic	
		<input checked="" type="checkbox"/> CDD	
Antenna Type	<input type="checkbox"/> External	<input type="checkbox"/> Dipole	
		<input type="checkbox"/> PIFA	
	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> PCB	
		<input type="checkbox"/> Ceramic Chip Antenna	
		<input type="checkbox"/> Metal plate type F antenna	
Antenna Gain #1	4dBi		
Antenna Gain #2	4dBi		
Antenna Gain #3	4dBi		
Beam-forming Gain	Power : 8.77dBi		
	PSD : 8.77dBi		

5G:

Antenna manufacturer	N/A		
Antenna Delivery	<input checked="" type="checkbox"/> 1*TX+1*RX	<input type="checkbox"/> 2*TX+2*RX	<input checked="" type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/> SISO for 802.11a		
	<input checked="" type="checkbox"/> MIMO for 802.11n/ac	<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 checked="" type="checkbox"/> CDD	
		<input checked="" type="checkbox"/> Beam-forming	
Antenna Type	<input type="checkbox"/> External	<input type="checkbox"/> Dipole	
	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> PIFA	
		<input checked="" 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 #0	6dBi
Antenna Gain #1	6dBi		
Antenna Gain #2	6dBi		
Directional Gain For CDD	Power: 6dBi		
	PSD : 10.77dBi		
Directional Gain For Beam-forming	Power: 10.77dBi		
	PSD : 10.77dBi		

- **Output Power into Antenna & RF Exposure Evaluation Distance**

Standalone modes:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 22 cm (mW/cm ²)	Power Density Limit at R = 22 m (mW/cm ²)
802.11b/g/n(20MHz)	2412 ~ 2462	18.69	4.0	0.0305	1.0
802.11n(40MHz)	2422 ~ 2452	14.74	4.0	0.0123	1.0
802.11 n(20MHz) with Beam-forming	2412 ~ 2462	23.12	8.77	0.254	1.0
802.11 n(40MHz) with Beam-forming	2422 ~ 2452	19.06	8.77	0.100	1.0
802.11a/n/ac(20MHz)	5180-5240 5745-5825	29.97	6.0	0.6500	1.0
802.11n/ac (40MHz)	5190-5230 5755-5795	29.66	6.0	0.6053	1.0
802.11ac(80MHz)	5210, 5775	29.17	6.0	0.5407	1.0
802.11n(20MHz) with Beamforming	5180-5240 5745-5825	25.08	10.77	0.6323	1.0
802.11n(40MHz) with Beamforming	5190-5230 5755-5795	25.06	10.77	0.6294	1.0
802.11ac(20MHz) with Beamforming	5180-5240 5745-5825	25.13	10.77	0.6397	1.0
802.11ac(40MHz) with Beamforming	5190-5230 5755-5795	24.93	10.77	0.6109	1.0
802.11ac(80MHz) with Beamforming	5210, 5775	23.97	10.77	0.4897	1.0

Simultaneous transmission:

Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 22cm (mW/cm ²)	Power Density Limit at R = 22 cm (mW/cm ²)
2412 ~ 2462	23.12	8.77	0.254	1.0
5180-5240 5745-5825	29.97	6.0	0.650	1.0
Simultaneous transmission power density			0.904	1.0

Note: The simultaneous transmission power density is 0.904mW/cm² for AC1900 Smart Wi-Fi Router without any other radio equipment.

————— The End —————