

RF Exposure Evaluation Declaration

Product Name : AC750 Wireless Dual Band
Gigabit Router

Model No. : Archer C2
FCC ID : TE7C2

Applicant : TP-LINK TECHNOLOGIES CO., LTD.
Address : Building 24 (floors 1,3,4,5) and 28 (floors 1-4) Central
Science and Technology Park, Shennan Rd,
Nanshan,
Shenzhen, China

Date of Receipt : Feb. 18, 2016
Issued Date : May. 27, 2016
Report No. : 1612033R-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 or any agency of the government.
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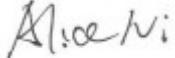
Test Report Certification

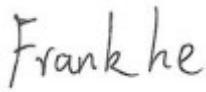
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Science and Technology Park,Shennan Rd, Nanshan,
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Manufacturer : TP-LINK TECHNOLOGIES CO., LTD
Address : Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central
Science and Technology Park,Shennan Rd, Nanshan,
Shenzhen,China
Model No. : Archer C2
FCC ID : TE7C2
Brand Name : AC 100-240V, 50/60Hz
EUT Voltage : TP-LINK
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

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Laboratory Information

We, **QuiTek 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 QuiTek Corporation's Web Site : <http://www.quietek.com/english/about/certificates.aspx?bval=5>
The address and introduction of QuiTek 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:

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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
1612033R-RF-US-P20V01	V1.0	Initial Issued Report	May. 27, 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/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	:	AC750 Wireless Dual Band Gigabit Router		
Test Item	:	RF Exposure Evaluation		
Test Site	:	AC-6		

2.4G Antenna :

Model No.		N/A		
Antenna manufacturer		TP-LINK		
Antenna Delivery		<input type="checkbox"/> 1*TX+1*RX	<input checked="" type="checkbox"/> 2*TX+2*RX	<input type="checkbox"/> 3*TX+3*RX
Antenna technology		<input type="checkbox"/> SISO		
		<input checked="" type="checkbox"/> MIMO	<input type="checkbox"/> Basic	
			<input checked="" 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	
Antenna Technology		Ant Gain (dBi)		Directional Gain (dBi)
				For Power For PSD
<input checked="" type="checkbox"/> CDD		Ant 0: 2 Ant 1: 2		2 5
<input type="checkbox"/> Beam-forming		N/A		N/A N/A

5G Antenna :

Antenna Model	N/A					
Antenna Manufacturer	TPlink					
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				
	MIMO	<input type="checkbox"/>	Basic methodology with NANT transmit antennas			
		<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"/>	Cyclic Delay Diversity (CDD)			
Antenna Type	Dipole Antenna					
Antenna Gain	3dBi					

- Output Power into Antenna & RF Exposure Evaluation Distance:
Standalone modes

2.4GHz:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 20 cm (mW/cm2)
802.11b/g/n(20MHz) with CDD	2412 - 2462	26.23	5	0.2641
802.11n(40MHz) with CDD	2422 - 2452	24.55	5	0.1794

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/n(20MHz)/ac(20MHz)	5180 - 5240 5745 - 5825	21.43	3	0.0552
802.11n(40MHz)/ac(40MHz)	5190 - 5230 5755 - 5795	19.06	3	0.0320
802.11ac(80MHz)	5210 5775	15.38	3	0.0137

Simultaneous transmission:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 25 cm (mW/cm ²)
802.11b/g/n(20MHz) with CDD	2412 - 2462	26.23	5	0.2641
802.11a/n(20MHz)/ac(20MHz)	5180 - 5240 5745 - 5825	21.43	3	0.0552
Simultaneous transmission power density				0.3193

So according to transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$ and the power density limit according to KDB 447498D01V06 and FCC Part1.1310(b), the limit is 1mW/cm²

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

Test Mode	Frequency Range (MHz)	Maximum EIRP (dBm)	Limit of Power Density S(mW/cm ²)	Safety Distance r(cm)
802.11b/g/n(20MHz) with CDD	2412 - 2462	31.23	1	10.28
802.11a/n(20MHz)/ac(20MHz)	5180 - 5240 5745 - 5825	24.43	1	

Note: The safety distance is 20cm for AC750 Wireless Dual Band Gigabit Router without any other radio equipment.

The End