



中国认可
国际互认
检测
TESTING
CNAS L5313



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 (floors1-4) Central
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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

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

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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

5G Antenna

- 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/cm ²)
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/cm ²)
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.

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