



RF Exposure Evaluation Declaration

FCC ID: TE7T4E

APPLICANT: TP-Link Technologies Co., Ltd.

Application Type: Certification

Product: AC1200 Wireless Dual Band PCI Express Adapter

Model No.: Archer T4E

Brand Name: tp-link

FCC Classification: Digital Transmission System (DTS)
Unlicensed National Information Infrastructure (NII)

Test Date: November 06 ~ December 04, 2018

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The test results relate only to the samples tested.

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

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Revision History

Report No.	Version	Description	Issue Date	Note
1811RSU003-U5	Rev. 01	Initial Report	12-17-2018	Valid

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	AC1200 Wireless Dual Band PCI Express Adapter
Model No.	Archer T4E
Brand Name:	tp-link
Wi-Fi Specification:	802.11a/b/g/n/ac

1.2. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	TX Paths	Max Antenna Gain (dBi)	CDD Directional Gain (dBi)	
				For Power	For PSD
Dipole Antenna	2400 ~ 2500	2	2.0	2.0	5.01
	5150 ~ 5850	2	2.0	2.0	5.01

Note:

- 802.11a, 802.11b, 802.11g support single transmission at Ant A port only.
- The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 2$, $N_{SS} = 1$.

If all antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,

$$\text{Array Gain} = 10 \log (N_{ANT} / N_{SS}) \text{ dB} = 3.01;$$

- For power measurements on IEEE 802.11 devices,

$$\text{Array Gain} = 0 \text{ dB for } N_{ANT} \leq 4$$

2. RF Exposure Evaluation

2.1. 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

Calculation Formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

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, 1mW/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.

2.2. Test Result of RF Exposure Evaluation

Product	AC1200 Wireless Dual Band PCI Express Adapter
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 1.2.

Test Mode	Frequency Band (MHz)	Max Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)
802.11b/g/n	2412 ~ 2462	24.18	2.0	26.18
802.11a/n/ac	5180 ~ 5320, 5500 ~ 5580, 5660 ~ 5700, 5745 ~ 5825	23.30	2.0	25.30

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
802.11b/g/n	2412 ~ 2462	26.18	0.0826	1
802.11a/n/ac	5180 ~ 5320, 5500 ~ 5580, 5660 ~ 5700, 5745 ~ 5825	25.30	0.0674	1

CONCLUSION:

The WLAN 2.4GHz and 5GHz Band cannot transmit simultaneously.

The max Power Density at R (20 cm) = 0.0826mW/cm² < 1mW/cm².

Therefore, the Min Safety Distance is 20cm.

The End

Appendix A - Test Setup Photograph

Refer to “1811RSU003-UT” file.

Appendix B - EUT Photograph

Refer to “1811RSU003-UE” file.