



RF Exposure Evaluation Declaration

Product Name : 300Mbps Wi-Fi Range Extender with Power Outlet
Pass-through
Model No. : TL-WA860RE
FCC ID : TE7WA860REV4

Applicant : 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

Date of Receipt : Sep. 08th, 2017
Test Date : Sep. 08th, 2017 ~ Sep. 20th, 2017
Issued Date : Oct. 19th, 2017
Report No. : 1792036R-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, A2LA 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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EUT Voltage : AC 120V/60Hz

Test Voltage : AC 120V/60Hz

Brand Name : tp-link

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°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	300Mbps Wi-Fi Range Extender with Power Outlet Pass-through
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

Model No.	N/A					
Antenna manufacturer	N/A					
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"/>	Sectorized		
			<input type="checkbox"/>	Beam-forming		
Antenna Type	<input checked="" type="checkbox"/>	External	<input checked="" type="checkbox"/>	Dipole		
			<input type="checkbox"/>	Sectorized		
	<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	

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

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 m (mW/cm ²)
802.11b/g/n(20MHz)	2412 ~ 2462	25.16	2.0	0.103	1.0
802.11n(40MHz)	2422 ~ 2452	24.34	2.0	0.086	1.0

Note: The simultaneous transmission power density is 0.103mW/cm² for 300Mbps Wi-Fi Range Extender with Power Outlet Pass-through without any other radio equipment.

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