

MRT Technology (Taiwan) Co., Ltd Phone: +886-3-3288388

www.mrt-cert.com

Report No.: 1706TW0118-U4 Report Version: Issue Date: 06-25-2017

RF Exposure Evaluation Declaration

FCC ID: **TE7RE450V2**

TP-Link Technologies Co., Ltd. APPLICANT:

Application Type: Certification

Product: AC1750 Wi-Fi Range Extender

Model No.: **RE450**

Trademark: TP-Link

FCC Classification: Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (UNII)

Reviewed By : Paddy Chen (Paddy Chen)

Approved By : Approved By :

(Chenz Ker)



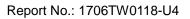


The test results relate only to the samples tested.

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.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

FCC ID: TE7RE450V2 Page Number: 1 of 5





Revision History

Report No.	Version	Description	Issue Date	Note
1706TW0118-U4	Rev. 01	Initial report	06-25-2017	Valid

FCC ID: TE7RE450V2 Page Number: 2 of 5

Report No.: 1706TW0118-U4



1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	AC1750 Wi-Fi Range Extender			
Model No.:	RE450			
Brand Name:	TP-Link			
Frequency Range:	802.11b/g/n-HT20: 2412 ~ 2462MHz			
	802.11n-HT40: 2422 ~ 2452MHz			
	802.11a/n-HT20/ac-VHT20:			
	5180~5320MHz, 5500~5580, 5660~5700MHz, 5745~5825MHz			
	802.11n-HT40/ac-VHT40:			
	5190~5310MHz, 5510~5550MHz, 5670MHz, 5755~5795MHz			
	802.11ac-VHT80:			
	5210MHz, 5290MHz, 5530MHz, 5775MHz			
Type of Modulation:	802.11b: DSSS			
	802.11a/g/n/ac: OFDM			

1.2. Antenna Description

Antenna Type	Frequency	TX	Max Antenna Gain	CDD Directional Gain (dBi)	
	Band (MHz)	Paths	(dBi)	For Power	For PSD
Omni Directional	2412 ~ 2462	3	2.0	2.0	6.77
Omni-Directional	5150 ~ 5850	3	2.5	2.5	7.27

Note: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac mode, and the transmitter output signal is correlated.

For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 3$, $N_{SS} = 1$.

Three antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

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

Array Gain = 10 log (N_{ANT}/N_{SS}) dB = 4.77;

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB for $N_{ANT} \le 4$;

FCC ID: TE7RE450V2 Page Number: 3 of 5



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	Electric Field	Magnetic Field	Power Density	Average Time	
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm ²)	(Minutes)	
(A) Limits for Occupational/ Control Exposures					
300-1500	-		f/300	6	
1500-100,000	1		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: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

r = distance between observation point and center of the radiator in cm

Pd 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.

FCC ID: TE7RE450V2 Page Number: 4 of 5



2.2. Test Result of RF Exposure Evaluation

Product	AC1750 Wi-Fi Range Extender	
Test Item	RF Exposure Evaluation	

Antenna Gain: Refer to clause 1.2.

Test Mode	Frequency Band (MHz)	Maximum Average Output Power (dBm)	Power Density at $R = 20 \text{ cm}$ (mW/cm^2)	Limit (mW/cm²)
	0440 0400	, ,	,	
802.11b/g/n	2412 ~ 2462	26.22	0.1320	1
802.11a/n/ac	5180 ~ 5320	26.07	0.1431	1
	5500 ~ 5580	23.74	0.0837	1
	5660 ~ 5700			
	5745 ~ 5825	24.03	0.0895	1

CONCULISON:

Both of the WLAN 2.4GHz Band and WLAN 5GHz Band can transmit simultaneously. Therefore, the Max Power Density at R (20 cm) = 0.1320mW/cm²+ 0.1431mW/cm² = 0.2751mW/cm² < 1mW/cm².

So the EUT complies with the requirement.

FCC ID: TE7RE450V2 Page Number: 5 of 5