



RF Exposure Evaluation Declaration

FCC ID: TE7RE230V2

APPLICANT: TP-Link Technologies Co., Ltd.

Application Type: Certification

Product: AC750 Wi-Fi Range Extender
AC1200 Wi-Fi Range Extender

Model No.: RE230, RE330

Trademark: tp-link

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

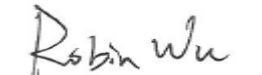
Test Date: December 22, 2020

Reviewed By:



(Kevin Guo)

Approved By:



(Robin Wu)



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
2008RSU036-U5	Rev. 01	Initial Report	12-30-2020	Valid

CONTENTS

Description	Page
1. General Information	4
1.1. Applicant	4
1.2. Manufacturer	4
1.3. Testing Facility	4
2. PRODUCT INFORMATION.....	5
2.1. Feature of Equipment under Test	5
2.2. Description of Available Antennas.....	5
3. RF Exposure Evaluation	6
3.1. Limits	6
3.2. Test Result of RF Exposure Evaluation	7
Appendix A - EUT Photograph	8

2. PRODUCT INFORMATION

2.1. Feature of Equipment under Test

Product Name	AC750 Wi-Fi Range Extender AC1200 Wi-Fi Range Extender
Model No.	RE230, RE330
Brand Name:	tp-link
Wi-Fi Specification:	802.11a/b/g/n/ac

Note: There is the same hardware design, PCB layout between the models, different models and product names for different marketing requirements. Only RE230 (Product name: AC750 Wi-Fi Range Extender) was selected for final tests.

2.2. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	T _x Paths	Max Antenna Gain (dBi)	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
PCB Antenna	2412 ~ 2462	2	2.0	--	2.0	5.01
	5150 ~ 5850	2	3.0	6.01	3.0	6.01

Note 1: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

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,
Array Gain = $10 \log (N_{ANT} / N_{SS})$ dB;
- For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB for $N_{ANT} \leq 4$;

Note 2: The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac, not include 802.11a/b/g. BF Directional gain = $G_{ANT} + 10 \log (N_{ANT})$.

Note 3: All information is provided by the manufacturer.

3. RF Exposure Evaluation

3.1. 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: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

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.

3.2. Test Result of RF Exposure Evaluation

Product	AC750 Wi-Fi Range Extender
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 2.2.

Test Mode	Frequency Band (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)
802.11b/g/n	2412 ~ 2462	21.83	2.0	23.83
802.11a/n/ac	5180 ~ 5240 5260 ~ 5320 5500 ~ 5720 5745 ~ 5825	23.34	6.01 ^{Note}	29.35

Note: This is beamforming mode.

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Safety Distance (cm)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)
802.11b/g/n	2412 ~ 2462	23.83	20	0.0481	1
802.11a/n/ac	5180 ~ 5240 5260 ~ 5320 5500 ~ 5720 5745 ~ 5825	29.35	20	0.1713	1

CONCLUSION:

WLAN 2.4GHz Band and WLAN 5GHz can transmit simultaneously.

The max Power Density at R (20 cm) = $0.0481\text{mW/cm}^2 + 0.1713\text{mW/cm}^2 = 0.2194\text{mW/cm}^2 < 1\text{mW/cm}^2$.

So the safety distance is 20cm for device installed without any other radio equipment.

Appendix A - EUT Photograph

Refer to "2008RSU036-UE" file.