


# Maximum Permissible Exposure

**Equipment** : AC1750 Wi-Fi Range Extender  
**Brand Name** : TP-LINK  
**Model No.** : RE450  
**FCC ID** : TE7RE450  
**Standard** : IEEE C95.1  
**Applicant** : TP-LINK TECHNOLOGIES CO., LTD.  
**Manufacturer** : Building 24 (floors 1,3,4,5) and 28  
(floors1-4) Central Science and  
Technology Park,Shennan Rd,  
Nanshan, Shenzhen,China

The product sample received on May 22, 2016 and completely tested on Jun. 07, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in IEEE C95.1 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

  
Kevin Liang/ Assistant Manager



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# 1 Human Exposure Assessment

## 1.1 Maximum Permissible Exposure

### 1.1.1 Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30
Note 1: f = frequency in MHz ; *Plane-wave equivalent power density				
Note 2: For the applicable limit, see FCC 1.1310				

### 1.1.2 MPE Calculation Method

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)



1.1.3 Result of Maximum Permissible Exposure (5.3G)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)
5250-5350	a	5260-5320	52-64 [4]	3	22.73
5250-5350	n (HT20)	5260-5320	52-64 [4]	3	22.98
5250-5350	n (HT40)	5270-5310	54-62 [2]	3	23.55
5250-5350	ac (VHT20)	5260-5320	52-64 [4]	3	22.79
5250-5350	ac (VHT40)	5270-5310	54-62 [2]	3	23.27
5250-5350	ac (VHT80)	5290	58 [1]	3	14.78

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power..

Worst Maximum RF Output Power Result								
Exposure Environment		General Population / Uncontrolled Exposure						
Separation Distance (cm)		20						
Condition		RF Output Power (dBm)						
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
HT40	3	18.97	18.85	18.51	23.55	2.03	25.58	0.0719
<b>Maximum Permissible Exposure Limit (mW/cm<sup>2</sup>)</b>								1

Note 1: N<sub>TX</sub> = Number of Transmit Chains



1.1.4 Result of Maximum Permissible Exposure (5.6G)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)
5470-5725	a	5500-5700	100-140 [8]	3	22.94
5470-5725	n (HT20)	5500-5700	100-140 [8]	3	23.44
5470-5725	n (HT40)	5510-5670	102-134 [3]	3	22.79
5470-5725	ac (VHT20)	5500-5700	100-140 [8]	3	23.12
5470-5725	ac (VHT40)	5510-5670	102-134 [3]	3	22.49
5470-5725	ac (VHT80)	5530	106 [1]	3	20.55

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power..

Worst Maximum RF Output Power Result								
Exposure Environment		General Population / Uncontrolled Exposure						
Separation Distance (cm)		20						
Condition		RF Output Power (dBm)						
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
HT20	3	18.64	18.76	18.61	23.44	2.03	25.47	0.0701
<b>Maximum Permissible Exposure Limit (mW/cm<sup>2</sup>)</b>								<b>1</b>

Note 1: N<sub>TX</sub> = Number of Transmit Chains