



# RF EXPOSURE REPORT

**REPORT NO.:** SA120816C23  
**MODEL NO.:** TL-WDR3500  
**FCC ID:** TE7WDR3500  
**RECEIVED:** Aug. 16, 2012  
**TESTED:** Aug. 24 ~ Sep. 04, 2012  
**ISSUED:** Sep. 10, 2012

**APPLICANT:** TP-LINK TECHNOLOGIES CO., LTD.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

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**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei  
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA120816C23	Original release	Sep. 10, 2012



## 1. CERTIFICATION

**PRODUCT:** N600 Wireless Dual Band Router  
**MODEL NO.:** TL-WDR3500  
**BRAND:** TP-LINK  
**APPLICANT:** TP-LINK TECHNOLOGIES CO., LTD.  
**TESTED:** Aug. 24 ~ Sep. 04, 2012  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**STANDARDS:** **FCC Part 2 (Section 2.1091)**  
**FCC OET Bulletin 65, Supplement C (01-01)**  
**IEEE C95.1**

The above equipment (model: TL-WDR3500) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** :  , **DATE** : Sep. 10, 2012  
Pettie Chen / Senior Specialist

**APPROVED BY** :  , **DATE** : Sep. 10, 2012  
Gary Chang / Technical Manager

## 2. RF EXPOSURE

### 2.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm <sup>2</sup> )	AVERAGE TIME (minutes)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE CALCULATION FORMULA

$$Pd = (Pout * G) / (4 * pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

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

### 2.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

FREQUENCY BAND (MHz)	MODULATION MODE	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	802.11b	21.88	5.01	20	0.097	1
	802.11g	29.20	5.01	20	0.524	1
	802.11n (20MHz)	29.12	5.01	20	0.515	1
	802.11n (40MHz)	27.13	5.01	20	0.326	1
5180-5240	802.11a	14.04	6	20	0.020	1
	802.11n (20MHz)	14.72	6	20	0.023	1
	802.11n (40MHz)	16.75	6	20	0.037	1
5745-5825	802.11a	26.69	6	20	0.370	1
	802.11n (20MHz)	26.78	6	20	0.377	1
	802.11n (40MHz)	26.78	6	20	0.377	1

### NOTE:

**For 2.4GHz Band:** Directional gain = 2dBi + 10log(2) = 5.01dBi

**For 5.0GHz Band:** Directional gain = 3dBi + 10log(2) = 6dBi

### CONCLUSION:

Both of the WLAN 2.4G & 5.0G can transmit simultaneously, the formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

1. WLAN 2.4G + WLAN 5.0G = 0.524 + 0.377 = 0.901

Therefore, the maximum calculation of this situation is 0.901, which is less than the "1" limit.