



# RF EXPOSURE REPORT

**REPORT NO.:** SA130410C18B

**MODEL NO.:** TD-W9980

**FCC ID:** TE7TDW9980V1

**RECEIVED:** Apr. 10, 2013

**TESTED:** Jun. 11 ~ Jul. 26, 2013

**ISSUED:** Jul. 11, 2014

**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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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA130410C18B	Original release	Jul. 11, 2014



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## 1. CERTIFICATION

**PRODUCT:** N600 Wireless Dual Band Gigabit VDSL2 Modem Router

**MODEL NO.:** TD-W9980

**BRAND:** TP-LINK

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

**TESTED:** Jun. 11 ~ Jul. 26, 2013

**TEST SAMPLE:** PRODUCTION SAMPLE

**STANDARDS:** FCC Part 2 (Section 2.1091)

FCC OET Bulletin 65, Supplement C (01-01)

IEEE C95.1

The above equipment (model: TD-W9980) 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 : Jul. 11, 2014

Pettie Chen / Senior Specialist

**APPROVED BY** :  , DATE : Jul. 11, 2014

Ken Liu / Senior Manager



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## 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 22cm away from the body of the user. So, this device is classified as **Mobile Device**.



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## 2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

FREQUENCY BAND (MHz)	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	21.90	6.51	22	0.114	1
5180-5240	16.83	9.77	22	0.075	1
5745-5825	27.39	9.77	22	0.855	1

**2.4GHz:** Directional gain =  $3.5\text{dBi} + 10\log(2) = 6.51\text{dBi}$

**5.0GHz:** Directional gain =  $5\text{dBi} + 10\log(3) = 9.77\text{dBi}$

### CONCLUSION:

Both of the 2.4 and 5GHz can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

1. WLAN 2.4G + WLAN 5.0G =  $0.114 + 0.855 = 0.969$

Therefore, the maximum calculation of this situation is 0.969, which is less than the "1" limit.