



# RF EXPOSURE REPORT

**REPORT NO.:** SA110302E02

**MODEL NO.:** DWR-117, DWR-112

**FCC ID:** KA2WR117A1

**ACCORDING:** FCC Guidelines for Human Exposure  
IEEE C95.1

**APPLICANT:** D-Link Corporation

**ADDRESS:** No.289, Sinhu 3rd Rd., Neihu District, Taipei City  
114, Taiwan, R.O.C.

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

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA110302E02	Original release	May 06, 2011



## 1.CERTIFICATION

**PRODUCT:** 3G WiFi 11N Router with miiiCasa home gateway  
**BRAND NAME:** D-Link  
**MODEL NO.:** DWR-117, DWR-112  
**TEST SAMPLE:** MASS-PRODUCTION  
**APPLICANT:** D-Link Corporation  
**STANDARDS:** IEEE C95.1

The above equipment (Model: DWR-117) 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** : Carol Liao , **DATE:** May 06, 2011  
( Carol Liao, Specialist )

**APPROVED BY** : May Chen , **DATE:** May 06, 2011  
( May Chen, Deputy Manager )

## 2.RF Exposure Limit

### 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

### 3.MPE calculation Formula

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

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

### 4.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**.

## 5. calculation result of maximum conducted power

### For WLAN: 15.247(2.4GHz)

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	25.5	2.91	20	0.136	1.00

### For 3G USB dongle: DWM-156

CHANNEL FREQUENCY (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
1880	826.038	3	20	0.164	1.00

### For 3G USB dongle: DWM-152

CHANNEL FREQUENCY (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
824.7	683.912	3	20	0.136	0.5498

NOTE: Limit of power density = 824.7 (MHz) / 1500 = 0.5498

### For 3G USB dongle: E180

CHANNEL FREQUENCY (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
1880	979.49	3	20	0.195	1.00

### CONCLUSION:

Both of the WLAN and 3G USB dongle can transmit simultaneously, the formula of calculated the MPE is:

$$CPD_1 / LPD_1 + CPD_2 / LPD_2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is  $0.136 / 1 + 0.136 / 0.5498 = 0.383$ , which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

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