

# RF EXPOSURE REPORT

**REPORT NO.:** SA110913E01A

**MODEL NO.:** WUS-ND12A

**FCC ID:** RRK-WUSND12A

**RECEIVED:** Sep. 13, 2011

**TESTED:** Nov. 30, 2011

**ISSUED:** Dec. 15, 2011

**APPLICANT:** Alpha Networks Inc.

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Industrial Park, Hsinchu, 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
SA110913E01A	Original release	Dec. 15, 2011

## 1. CERTIFICATION

**PRODUCT:** 802.11a/b/g/n USB module  
**BRAND NAME:** Alpha  
**MODEL NO.:** WUS-ND12A  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** Alpha Networks Inc.  
**TESTED:** Nov. 30, 2011  
**STANDARDS:** FCC Part 2 (Section 2.1091)  
FCC OET Bulletin 65, Supplement C (01-01)  
IEEE C95.1

The above equipment (Model: WUS-ND12A) 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:** Dec. 15, 2011  
( Lori Chung, Specialist )

**APPROVED BY :**  , **DATE:** Dec. 15, 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)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 3. MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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. ANTENNA GAIN

1. There are two antennas provided to this EUT, please refer to the following table:

Transmitter Circuit	Manufacture	Antenna Type	Gain (dBi)	Antenna Connector
Chain (0)	Alpha	PCB Printed	2.4GHz : 0.7 5.15~5.25GHz: 2.97 5.25~5.35GHz: 3.27 5.47~5.725GHz :2.60 5.725~5.850GHz :2.60	NA
Chain (1)	Alpha	PCB Printed	2.4GHz : 1.39 5.15~5.25GHz: 3.61 5.25~5.35GHz: 3.98 5.47~5.725GHz :2.87 5.725~5.850GHz :2.87	NA

## 2. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For 15.247(2.4GHz):

802.11b:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	114.8	0.7	20	0.027	1.00

802.11g:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	416.9	0.7	20	0.097	1.00

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	709.8	1.39	20	0.194	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2422-2452	355.8	1.39	20	0.097	1.00

**For 15.247(5GHz):**

**802.11a:**

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 ~ 5825	251.2	2.6	20	0.091	1.00

**802.11n(20MHz):**

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 ~ 5825	458.3	2.9	20	0.178	1.00

**802.11n(40MHz):**

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755 ~ 5795	486.1	2.9	20	0.189	1.00



**For 15.407(5GHz):**

**802.11a:**

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180-5240	32.4	3.0	20	0.013	1.00

**802.11n(20MHz):**

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180-5240	27.6	3.0	20	0.013	1.00

**802.11n(40MHz):**

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5190-5230	47.7	3.0	20	0.022	1.00

**--- END ---**