RF EXPOSURE REPORT

REPORT NO.:	SA120322E03
MODEL NO.:	F2F
FCC ID:	RRK-F2F
RECEIVED:	Mar. 22, 2012
TESTED:	Apr. 05, 2012
ISSUED:	Apr. 23, 2012
APPLICANT:	Alpha Networks Inc.
ADDRESS:	No.8 Li-shing 7th Rd., Science-based 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
SA120322E03	Original release	Apr. 23, 2012

1. CERTIFICATION

PRODUCT:	MY NET N900
BRAND NAME:	WD
MODEL NO.:	F2F
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Alpha Networks Inc.
TESTED:	Apr. 05, 2012
STANDARDS:	FCC Part 2 (Section 2.1091)
	FCC OET Bulletin 65, Supplement C (01-01)
	IEEE C95.1

The above equipment (Model: F2F) 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:** *Apr. 23, 2012*
(Elsie Hsu, Specialist)

APPROVED BY : _____ , **DATE:** *Apr. 23, 2012*
(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^2)	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

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

where

Pd = power density in mW/cm2

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. ANTENNA GAIN

6. The antennas provided to the EUT, please refer to the following table:

For 2.4GHz									
Transmitter Circuit	Brand	Model	Gain (dBi) (Exclude cable loss)	Cable Loss (dB)	Net Gain (dBi) (Include cable loss)	Cable Lenth (mm)	Antenna Type	Freq. range (MHz to MHz)	Connecter Type
Chain (0)	WHA-YU	C037-511164-A	3.3	0.9	2.4	292	PCB	2400 to 2500	MHF
Chain (1)	WHA-YU	C037-511165-A	3.4	0.64	2.76	272			
Chain (2)	WHA-YU	C037-511166-A	3.5	0.26	3.24	70			
For 5GHz									
Transmitter Circuit	Brand	Model	Gain (dBi) (Exclude cable loss)	Cable Loss (dB)	Net Gain (dBi) (Include cable loss)	Cable Lenth (mm)	Antenna Type	Freq. range (MHz to MHz)	Connecter Type
Chain (0)	WHA-YU	C037-511168-A	5.4	0.21	5.19	57	PCB	4900 to 5850	MHF
Chain (1)	WHA-YU	C037-511169-A	4.7	0.54	4.16	151			
Chain (2)	WHA-YU	C037-511167-A	3.9	0.66	3.24	186			

7. 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^2)	LIMIT (mW/cm^2)
2412-2462	142.801	7.58	20	0.163	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^3 / 3]
Effective Legacy Gain (dBi) = 7.58

802.11g:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2412-2462	407.830	7.58	20	0.465	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^3 / 3]
Effective Legacy Gain (dBi) = 7.58

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2412-2462	595.531	3.24	20	0.250	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
2422-2452	427.052	3.24	20	0.179	1.00

For 15.247(5GHz):

802.11a:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5745 ~ 5825	187.046	9	20	0.296	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^3 / 3]
Effective Legacy Gain (dBi) = 9

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5745 ~ 5825	663.281	5.19	20	0.436	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5755 ~ 5795	636.976	5.19	20	0.419	1.00

For 15.407(5GHz):

802.11a:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5180 ~ 5240	13.853	9.00	20	0.022	1.00

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^3 / 3]
Effective Legacy Gain (dBi) = 9

802.11n(20MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5180 ~ 5240	31.186	5.19	20	0.020	1.00

802.11n(40MHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm^2)	LIMIT (mW/cm^2)
5190 ~ 5230	44.915	5.19	20	0.030	1.00

CONCLUSION:

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

CPD_1 / LPD_1 + CPD_2 / LPD_2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

Therefore, the worst-case situation is 0.465 / 1 + 0.436 / 1 = 0.901, which is less than “1”. This confirmed that the device comply with FCC 1.1310 MPE limit.

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