Neutron Engineering Inc.

FCC RF EXPOSURE REPORT

FCC ID: I88NBG418NV2

Project No.	**: 1404C267**
Equipment	**: Wireless N300 Home Router**
Model	**: NBG-418N v2**
Applicant	**: ZyXEL Communications Corporation**
Address	**: No. 6, Innovation Road II, Hsinchu Science Park, No. 2, Gongye E. 9th Road, Hsinchu Science Park, Hsinchu, Taiwan**
According:	**: FCC Guidelines for Human Exposure IEEE C95.05.1**

Neutron Engineering Inc.

No.3, Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.

TEL : (0769) 8318-3000 FAX : (0769) 8319-6000

MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi r^2} = \frac{EIRP}{4\pi r^2}$$

where:
S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Table for Filed Antenna Table for Filed Antenna

Table for Filed Antenna
Group 1: Non-detachable antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	Shenzhen Hongweiyuan	HWY-24EL5B-106	Dipole	N/A	5
2		SSR-1308008	Dipole	N/A	5

Group 2: Detachable antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	Shenzhen Hongweiyuan	HWY-24EL5B-106	Dipole	N/A	5
2		SSR-1308008	Dipole	N/A	5

Note:
(1)The Group 1 antenna is non-detachable and Group 2 is detachable, Group 2 is recorded as the worst case.
(2) The EUT incorporates a MIMO function. Physically, the EUT provides two completed two transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, **Direction gain** = **GANT**, that is Directional gain=5.

Operating Mode / TX Mode	1TX	2TX
802.11b	V (ANT 1 or ANT 2)	-
802.11g	V (ANT 1 or ANT 2)	-
802.11n(20MHz)	-	V (ANT 1 + ANT 2)
802.11n(40MHz)	-	V (ANT 1 + ANT 2)

TEST RESULTS

EUT：	Wireless N300 Home Router	Model Name ：	NBG-418N v2
Temperature：	25 ℃	Relative Humidity：	55 %
Test Voltage ：	AC 120V/60Hz		
Test Mode ：	TX B MODE		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5	3.1623	16.95	49.5450	0.03118533	1	Complies
5	3.1623	16.85	48.4172	0.03047547	1	Complies
5	3.1623	16.92	49.2040	0.03097065	1	Complies

EUT：	Wireless N300 Home Router	Model Name ：	NBG-418N v2
Temperature：	25 ℃	Relative Humidity：	55 %
Test Voltage ：	AC 120V/60Hz		
Test Mode ：	TX G MODE		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5	3.1623	19.75	94.4061	0.05942242	5	Complies
5	3.1623	19.63	91.8333	0.05780300	5	Complies
5	3.1623	19.7	93.3254	0.05874222	5	Complies

EUT：	Wireless N300 Home Router	Model Name ：	NBG-418N v2
Temperature：	25 ℃	Relative Humidity：	55 %
Test Voltage ：	AC 120V/60Hz		
Test Mode ：	TX N-20M MODE-Total		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5	3.1623	21.61	144.8772	0.09119066	1	Complies
5	3.1623	21.78	150.6607	0.09483101	1	Complies
5	3.1623	21.93	155.9553	0.09816358	1	Complies

EUT：	Wireless N300 Home Router	Model Name ：	NBG-418N v2
Temperature：	25 ℃	Relative Humidity：	55 %
Test Voltage ：	AC 120V/60Hz		
Test Mode ：	TX N-40M MODE		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5	3.1623	21.64	145.8814	0.09182277	1	Complies
5	3.1623	21.68	147.2313	0.09267239	1	Complies
5	3.1623	21.66	146.5548	0.09224660	1	Complies

Note: the calculation distance is 20cm.