



Neutron Engineering Inc.

FCC RF EXPOSURE REPORT

FCC ID: NDD9564281116

Issued Date : Apr. 09, 2012
Project No. : 1112C180A
Equipment : 300N Wireless LAN High Power Broadband Router
Model Name : BR-6428HPN, GR-428HPN
Applicant : EDIMAX TECHNOLOGY CO., LTD.
Address : No.3 , Wu-Chuan 3rd Road , Wu-Ku Industrial Park , Taipei Hsien, Taiwan
Manufacturer : EDIMAX TECHNOLOGY CO., LTD.
Address : No.3 , Wu-Chuan 3rd Road , Wu-Ku Industrial Park , Taipei Hsien, Taiwan

According: : FCC Guidelines for Human Exposure IEEE C95.1

Neutron Engineering Inc.

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MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

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

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
Group 1

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	ARISTOTLE	RFA-02-3-C52M3-B70	Dipole Antenna	R-SMA	3.0
2	ARISTOTLE	RFA-02-3-C52M3-B70	Dipole Antenna	R-SMA	3.0

Group 2

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	ARISTOTLE	RFA-02-5-C15M3-B70	Dipole Antenna	R-SMA	5.0
2	ARISTOTLE	RFA-02-5-C15M3-B70	Dipole Antenna	R-SMA	5.0

The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers (2T2R), Group 2 was the worst case due to they are equivalent antennas with same type and antenna gain of group is more higher.

This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so

Directional gain = $G_{ANT} + 10 \log(N)$ dBi, that is Directional gain=5+10log(2)dBi=8;
So, the out power limit is 30-8+6=28; and power density limit is 8-8+6=6

Operating Mode TX Mode	1TX	2TX
802.11b	V (ANT1 or ANT2)	-
802.11g	V (ANT1 or ANT2)	-
802.11n(20MHz)	-	V (ANT1 & ANT2)
802.11n(40MHz)	-	V (ANT1 & ANT2)



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Test Result:

EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX B MODE /CH01, CH06, CH11		

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
5.0	3.1623	23.2000	208.9296	0.13150745	1	Complies
5.0	3.1623	24.1700	261.2161	0.16441838	1	Complies
5.0	3.1623	24.0800	255.8586	0.16104616	1	Complies

EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX G MODE /CH01, CH06, CH11		

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
5.0	3.1623	24.3000	269.1535	0.16941442	1	Complies
5.0	3.1623	24.2600	266.6859	0.16786122	1	Complies
5.0	3.1623	24.2700	267.3006	0.16824818	1	Complies

EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N MODE-20MHz /CH01, CH06, CH11-ANT1		

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
5.0	3.1623	24.3100	269.7739	0.16980496	1	Complies
5.0	3.1623	24.3000	269.1535	0.16941442	1	Complies
5.0	3.1623	24.3200	270.3958	0.17019640	1	Complies



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EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N MODE-20MHz /CH01, CH06, CH11-ANT2		

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
5.0	3.1623	24.3100	269.7739	0.16980496	1	Complies
5.0	3.1623	24.2800	267.9168	0.16863603	1	Complies
5.0	3.1623	24.3100	269.7739	0.16980496	1	Complies

EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N MODE-40MHz /CH03, CH06, CH09 - ANT 1		

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
5.0	3.1623	24.2500	266.0725	0.16747515	1	Complies
5.0	3.1623	24.2800	267.9168	0.16863603	1	Complies
5.0	3.1623	24.2500	266.0725	0.16747515	1	Complies

EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N MODE-40MHz /CH03, CH06, CH09 - ANT 2		

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
5.0	3.1623	24.2800	267.9168	0.16863603	1	Complies
5.0	3.1623	24.2600	266.6859	0.16786122	1	Complies
5.0	3.1623	24.2100	263.6331	0.16593973	1	Complies



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EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N MODE-20MHz /CH01, CH06, CH11 - ANT 1+ ANT 2		

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
8.0	6.3096	27.3200	539.5106	0.67756407	1	Complies
8.0	6.3096	27.3000	537.0318	0.67445095	1	Complies
8.0	6.3096	27.3300	540.7543	0.67912602	1	Complies

EUT:	300N Wireless LAN High Power Broadband Router	Model Name :	BR-6428HPN
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N MODE-40MHz /CH03, CH06, CH09 - ANT 1+ ANT 2		

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
8.0	6.3096	27.2800	534.5644	0.67135213	1	Complies
8.0	6.3096	27.2800	534.5644	0.67135213	1	Complies
8.0	6.3096	27.2400	529.6634	0.66519713	1	Complies