RF Exposure Evaluation Declaration

Product Name ： Wireless-N300 Cloud Router
Model No. ： RT-N14U
FCC ID. ： MSQ-RTN14U

Applicant : ASUSTeK COMPUTER INC.
Address ： 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt : 2012/11/19
Date of Declaration : 2013/04/22
Report No. : 12B298R-RF-US-Exp
Report Version : V1.0

Testing Laboratory
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1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

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

Pd id the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18℃ and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	Wireless-N300 Cloud Router
Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Antenna Gain

The maximum Gain measured in fully anechoic chamber are 2.85dBi (1.93) and 2.96dBi(1.98) in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11b			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
1	2412	75.1623	0.02886
6	2437	72.7780	0.02794
11	2462	91.8333	0.03526

IEEE 802.11g			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
1	2412	122.4616	0.04702
6	2437	429.5364	0.16492
11	2462	94.4061	0.03625

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

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Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Antenna Gain

The maximum Gain measured in fully anechoic chamber are 2.85dBi (1.93) and 2.96dBi(1.98) in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) ANT 0+1			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
1	2412	202.7692	0.07987
6	2437	922.5714	0.36341
11	2462	187.9317	0.07403

IEEE 802.11n (40MHz) ANT 0+1			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
3	2422	145.8814	0.05746
6	2437	847.2274	0.33373
9	2452	169.0441	0.05314

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.