

RF Exposure Evaluation declaration

Product Name	802.11 n/b/g WLAN PCI-e Card
Model No.	WN7600R-MV, WN7600R-A, WN7600R-N
FCC ID	PPQ-WN7600R

Applicant	Lite-On TECHNOLOGY CORP.
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Date of Receipt	Mar. 20, 2008
Date of Declaration	Apr. 18, 2008
Report No.	083298R-RFUSP05V01

The declaration results relate only to the samples calculated.

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

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². 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 : 802.11 n/b/g WLAN PCI-e Card
Test Item : RF Exposure Evaluation
Test Site : No.3 OATS

External Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.32 dBi in logarithm scale.

802.11b

Output Power Into Antenna & RF Exposure Evaluation Distance (2.32 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	119.6741	0.0406
6	2437.00	119.6741	0.0406
11	2462.00	118.8502	0.0403

802.11g

Output Power Into Antenna & RF Exposure Evaluation Distance (2.32 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	258.2260	0.0876
6	2437.00	258.2260	0.0876
11	2462.00	270.3958	0.0918

802.11n – 20MBW

Output Power Into Antenna & RF Exposure Evaluation Distance (2.32 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	327.3407	0.1111
6	2437.00	351.5604	0.1193
11	2462.00	448.7454	0.1523

802.11n – 40MBW

Output Power Into Antenna & RF Exposure Evaluation Distance (2.32 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2422.00	171.7908	0.0583
4	2437.00	242.1029	0.0822
7	2452.00	269.7739	0.0916

The distance r (4th column) calculated from the Friis transmission formula is far shorter than 20 cm separation requirement.

Internal Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.33dBi in logarithm scale.

802.11b

Output Power Into Antenna & RF Exposure Evaluation Distance (2.33 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	91.4113	0.0311
6	2437.00	88.9201	0.0303
11	2462.00	74.1310	0.0252

802.11g

Output Power Into Antenna & RF Exposure Evaluation Distance (2.33 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	247.7422	0.0843
6	2437.00	258.2260	0.0878
11	2462.00	206.5380	0.0703

802.11n – 20MBW

Output Power Into Antenna & RF Exposure Evaluation Distance (2.33 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	258.8213	0.0881
6	2437.00	259.4179	0.0883
11	2462.00	304.0885	0.1035

802.11n – 40MBW

Output Power Into Antenna & RF Exposure Evaluation Distance (2.33 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2422.00	233.3458	0.0794
4	2437.00	228.0342	0.0776
7	2452.00	250.0345	0.0851

The distance r (4th column) calculated from the Fries transmission formula is far shorter than 20 cm separation requirement.