RF Exposure Evaluation declaration

Product Name	802.11 b/g/n, 2.4G 1T1R, Wireless USB Module
Model No.	WN4605B
FCC ID	ARS-B4319-L-WL

Applicant	Top Victory Electronics (Taiwan) Co Ltd
Address	10F., No.230, Liancheng Rd. Zhonghe City, Taipei County

Date of Receipt	Dec. 09, 2010
Date of Declaration	Dec. 13, 2010
Report No.	10C186R-RFUSP42V01

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

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 : 802.11 b/g/n, 2.4G 1T1R, Wireless USB Module
Test Item : RF Exposure Evaluation
Test Site : No.3 OATS

External Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.98 dBi in logarithm scale.

802.11b

Output Power Into Antenna & RF Exposure Evaluation Distance (1.98 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	199.5262	0.062623
6	2437.00	177.8279	0.055812
11	2462.00	163.6817	0.051372

802.11g

Output Power Into Antenna & RF Exposure Evaluation Distance (1.98 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	164.0590	0.051491
6	2437.00	159.5879	0.050088
11	2462.00	107.6465	0.033786

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

802.11n-20M

Output Power Into Antenna & RF Exposure Evaluation Distance (1.98 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	130.3167	0.040901
6	2437.00	103.9920	0.032639
11	2462.00	115.3453	0.036202

802.11n-40M

Output Power Into Antenna & RF Exposure Evaluation Distance (1.98 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2422.00	144.2115	0.045262
3	2437.00	127.3503	0.039970
7	2452.00	116.6810	0.036621

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