RF Exposure Evaluation declaration

Product Name : IEEE 802.11b/g/n USB Wireless moduleModel No.: DAW-NU109HFCC ID: KA2AWNU109HA1

Applicant : D-Link Corporation

Address : 17595 Mt. Herrmann, Fountain Valley, California, United States.

Date of Receipt:Jul. 19, 2010Date of Declaration :Jul. 30, 2010Report No.:107272R-RFUSP28V01

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	Electric Field	Magnetic Field	Power Density	Average Time
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm^2)	(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°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	IEEE 802.11b/g/n USB Wireless module
Test Item	:	RF Exposure Evaluation
Test Site	:	No.3 OATS

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.35 dBi in logarithm scale.

802.11b - 1Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (3.35 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at $R = 20$ cm (mW/cm2)
01	2412.00	72.4436	0.031170
06	2437.00	71.1214	0.030601
11	2462.00	65.0130	0.027972

802.11g - 6Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (3.35 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at $R = 20 \text{ cm}$ (mW/cm2)
01	2412.00	232.8091	0.100168
06	2437.00	229.0868	0.098567
11	2462.00	213.7962	0.091988

802.11n - 20BW

Output Power Into Antenna & RF Exposure Evaluation Distance (3.35 dBi):

Channel	Frequency (MHz)	Output Power to Antenna	Power Density at $R = 20$ cm (mW/cm2)
		(111 VV)	
01	2412.00	155.9553	0.067101
06	2437.00	154.8817	0.066639
11	2462.00	151.3561	0.065122

802.11n - 40BW

Output Power Into Antenna & RF Exposure Evaluation Distance (3.35 dBi):

Channel	Frequency (MHz)	Output Power to Antenna	Power Density at $R = 20$ cm
		(mW)	(mW/cm2)
01	2422	177.8279	0.076512
04	2437	178.2379	0.076689
07	2452	177.0109	0.076161