

RF Exposure Evaluation declaration

Product Name : WIRELESS G ADSL2+ MODEM ROUTER
Model No. : DSL-2740R, DSL-2741R
FCC ID. : KA2SL2740RA1

Applicant : D-Link Corporation
Address : No.289, Sinhu 3rd Rd., Neihu District,
Taipei City 114, Taiwan, R.O.C.

Date of Receipt : 2008/06/11
Date of Declaration : 2008/07/23
Report No. : 086255R-RF-US-Exp
Version : V1.0

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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°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	WIRELESS G ADSL2+ MODEM ROUTER
Test Mode	Mode 1: Transmit
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.8dBi or 1.51 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	72.1107	0.0217
6	2437	73.6207	0.0222
11	2462	69.9842	0.0211

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	82.6038	0.0249
6	2437	84.9180	0.0256
11	2462	81.8465	0.0246

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/cm².

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Test Mode	Mode 1: Transmit
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Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.8dBi or 1.51 in linear scale. IEEE 802.11n (ANT A (20M))

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Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (ANT A (20MHz))			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	68.2339	0.0205
6	2437	63.3870	0.0191
11	2462	67.6083	0.0204

IEEE 802.11n (ANT B (20MHz))			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	55.2077	0.0166
6	2437	59.8412	0.0180
11	2462	62.3735	0.0188

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Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (ANT A (40M))			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
3	2422	43.6516	0.0131
6	2437	45.2898	0.0136
9	2452	48.9779	0.0147

IEEE 802.11n (ANT B (40M))			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
3	2422	44.0555	0.0133
6	2437	46.9894	0.0141
9	2452	48.0839	0.0145

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/cm².