

RF Exposure Evaluation declaration

Product Name : Wireless 802.11b/g/n 2T3R mini-PCI card

Model No. : MS-6893

FCC ID : I4L-MS6893

Applicant : MICRO-STAR INT'L Co., LTD.

Address : No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.

Date of Receipt : May. 29, 2008

Date of Declaration : June. 26, 2008

Report No. : 086079R-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°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
 Test Item : RF Exposure Evaluation
 Test Site : No.3 OATS

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 5.0dBi in logarithm scale.

802.11b

Output Power Into Antenna & RF Exposure Evaluation Distance (5.0dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	94.8418	0.059666
6	2437.00	98.6279	0.062048
11	2462.00	92.6830	0.058308

802.11g

Output Power Into Antenna & RF Exposure Evaluation Distance (5.0dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	184.0772	0.115806
6	2437.00	196.7886	0.123803
11	2462.00	159.5879	0.100399

802.11n – 20MBW

Output Power Into Antenna & RF Exposure Evaluation Distance (5.0dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	295.8012	0.186093
6	2437.00	302.6913	0.190428
11	2462.00	334.1950	0.210247

802.11n – 40MBW

Output Power Into Antenna & RF Exposure Evaluation Distance (5.0dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2422.00	185.3532	0.116609
4	2437.00	192.7525	0.121264
7	2452.00	203.2357	0.127859

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