RF Exposure Evaluation declaration

Product Name : ROS Video DMA

Model No.   : ROS-1000

FCC ID   : BJM-ROS1000

Applicant : TATUNG CO.

Address   : 22, Chungshan N. Rd., 3rd Sec. Taipei, Taiwan, 104, R.O.C.

Date of Receipt   :   Aug. 01, 2008

Date of Declaration :   Aug. 13, 2008

Report No.   :   088064R-RFUSP05V01

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   :   ROS Video DMA
Test Item   :   RF Exposure Evaluation
Test Site   :   CTR1

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.84dBi (2.4GHz band) and 1.15dBi (5GHz band) in logarithm scale.

802.11b (2412~2462MHz)

Output Power Into Antenna & RF Exposure Evaluation Distance (2.84dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	75.5092	0.028889
6	2437.00	81.2831	0.031098
11	2462.00	94.6237	0.036202

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

802.11g (2412~2462MHz)

Output Power Into Antenna & RF Exposure Evaluation Distance (2.84dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	82.2243	0.031458
6	2437.00	99.5405	0.038083
11	2462.00	100.0000	0.038259

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

802.11a (5180~5240MHz)

Output Power Into Antenna & RF Exposure Evaluation Distance (1.15dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	5180.00	44.8745	0.011634
3	5220.00	42.4620	0.011009
4	5240.00	40.1791	0.010417

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

802.11a (5745~5825MHz)

Output Power Into Antenna & RF Exposure Evaluation Distance (1.15dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	5745.00	56.3638	0.014613
3	5785.00	45.4988	0.011796
5	5825.00	60.9537	0.015803

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

802.11n – 20BW (5180~5240MHz) -Antenna A+B

Output Power Into Antenna & RF Exposure Evaluation Distance (1.15dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	5180.00	41.1150	0.010659
3	5220.00	27.3527	0.007091
4	5240.00	33.1131	0.008585

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

802.11n – 40BW (5190~5230MHz) -Antenna A+B

Output Power Into Antenna & RF Exposure Evaluation Distance (1.15dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	5190.00	42.4620	0.011009
2	5230.00	41.9759	0.010883

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

802.11n - 20BW (2412~2462MHz) - Antenna A+B

Output Power Into Antenna & RF Exposure Evaluation Distance (2.84dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	94.4061	0.036119
6	2437.00	93.7562	0.035870
11	2462.00	98.4011	0.037647

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

802.11n - 40BW (2422~2452MHz) - Antenna A+B

Output Power Into Antenna & RF Exposure Evaluation Distance (2.84dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2422.00	83.1764	0.031822
4	2437.00	98.6279	0.037734
7	2452.00	86.6962	0.033169

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

802.11n - 20BW (5745~5825MHz) - Antenna A+B

Output Power Into Antenna & RF Exposure Evaluation Distance (1.15dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	5745.00	41.6869	0.010808
3	5785.00	33.9625	0.008805
5	5825.00	53.7032	0.013923

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

802.11n - 40BW (5755~5795MHz) - Antenna A+B

Output Power Into Antenna & RF Exposure Evaluation Distance (1.15dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	5755.00	56.4937	0.014646
2	5795.00	55.9758	0.014512

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