

## RF Exposure Evaluation declaration

Product Name	Notebook
Model No.	MS-N011, MS-N811, HSG1059
FCC ID	I4L-MSN011

Applicant	MICRO-STAR INT'L Co., LTD.
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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 <sup>2</sup> )	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/cm<sup>2</sup>

$P_{out}$  = 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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. 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 : Notebook  
 Test Item : RF Exposure Evaluation  
 Test Site : No.3 OATS

#### Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is  $-0.54$  dBi in logarithm scale.

#### 1Mbps (GFSK) Output Power Into Antenna & RF Exposure Evaluation Distance ( $-0.54$ dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 2.5 cm (mW/cm <sup>2</sup> )
00	2402.00	1.3062	0.0147
39	2441.00	1.5885	0.0179
78	2480.00	1.8365	0.0206

The distance  $r$  (4<sup>th</sup> column) calculated from the Friis transmission formula is far shorter than 2.5 cm separation requirement.

#### 3Mbps (8DPSK) Output Power Into Antenna & RF Exposure Evaluation Distance ( $-0.54$ dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 2.5 cm (mW/cm <sup>2</sup> )
00	2402.00	1.3677	0.0154
39	2441.00	1.4555	0.0164
78	2480.00	1.5417	0.0173

The distance  $r$  (4<sup>th</sup> column) calculated from the Friis transmission formula is far shorter than 2.5 cm separation requirement.