

## RF Exposure Evaluation declaration

Product Name : Bluetooth 2.0+ EDR Module  
Model No. : MM300-C  
FCC ID. : N89-MM300C

Applicant : CyberTAN Technology, Inc.

Address : 99 Park Avenue 3, Science Park Hsinchu 308,  
Taiwan, R.O.C.

Date of Receipt : 2008/01/06  
Date of Declaration : 2008/02/26  
Report No. : 081090R-RFUSP06V01-Exp-1  
Version : V1.0

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:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

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	Bluetooth 2.0+ EDR Module
Test Mode	Mode 1: Transmit
Test Condition	RF Exposure Evaluation

#### Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.51dBi or 1.782 in linear scale.

#### Output Power into Antenna & RF Exposure Evaluation Distance:

1M-GFSK Modulation, PRBS Packet Type			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2402.00	2.4889	0.00088
6	2441.00	2.1478	0.00076
11	2480.00	2.1232	0.00075

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/cm<sup>2</sup>.

Product	Bluetooth 2.0+ EDR Module
Test Mode	Mode 1: Transmit
Test Condition	RF Exposure Evaluation

### Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.51dBi or 1.782 in linear scale.

### Output Power into Antenna & RF Exposure Evaluation Distance:

2M-pi/4 Modulation, PRBS Packet Type			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2402.00	1.4723	0.00052
6	2441.00	1.4355	0.00051
11	2480.00	1.2618	0.00045

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/cm<sup>2</sup>.

Product	Bluetooth 2.0+ EDR Module
Test Mode	Mode 1: Transmit
Test Condition	RF Exposure Evaluation

### Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.51dBi or 1.782 in linear scale.

### Output Power into Antenna & RF Exposure Evaluation Distance:

3M-8DPSK Modulation, PRBS Packet Type			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2402.00	1.4125	0.00050
6	2441.00	1.4421	0.00051
11	2480.00	1.2647	0.00045

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/cm<sup>2</sup>.