

# RF Exposure Evaluation declaration

Product Name	ThereGate
Model No.	TG800Z
FCC ID	X35-TG800Z

Applicant	There Corporation Oy
Address	Rantakatu 2A Vaasa 65100 Finland

Date of Receipt	June 23, 2009
Date of Declaration	Jan. 19, 2010
Report No.	096355R-RFUSP05V01

The declaration results relate only to the samples calculated.

The declaration shall not be reproduced except in full without the written approval of QuieTek Corporation.  
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

## 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  $\text{mW/cm}^2$

$P_{out}$  = 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,  $1 \text{ mW/cm}^2$ . 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:  $18^\circ\text{C}$  and 78% RH.

### 1.3. Test Result of RF Exposure Evaluation

Product : ThereGate  
Test Item : RF Exposure Evaluation  
Test Site : No.3 OATS

#### Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.7 dBi in logarithm scale.

#### 802.11b

##### Output Power Into Antenna & RF Exposure Evaluation Distance (2.7 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412.00	62.6614	0.0232
6	2437.00	194.0886	0.0719
11	2462.00	102.0939	0.0378

#### 802.11g

##### Output Power Into Antenna & RF Exposure Evaluation Distance (2.7 dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412.00	160.6941	0.0595
6	2437.00	331.1311	0.1227
11	2462.00	148.2518	0.0549

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

**802.11n-20M (ANT 1)**
**Output Power Into Antenna & RF Exposure Evaluation Distance (2.7 dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412.00	153.4617	0.0569
6	2437.00	345.9394	0.1282
11	2462.00	149.6236	0.0554

**802.11n-20M (ANT 1+2)**
**Output Power Into Antenna & RF Exposure Evaluation Distance (2.7 dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412.00	134.8963	0.0500
6	2437.00	341.9794	0.1267
11	2462.00	153.1087	0.0567

**802.11n-40M (ANT 1)**
**Output Power Into Antenna & RF Exposure Evaluation Distance (2.7 dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2422.00	94.1890	0.0349
4	2437.00	193.1968	0.0716
7	2452.00	94.4061	0.0350

**802.11n-40M (ANT 1+2)**
**Output Power Into Antenna & RF Exposure Evaluation Distance (2.7 dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2422.00	139.6368	0.0517
4	2437.00	425.5984	0.1577
7	2452.00	170.2159	0.0631

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