

## 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
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Report No.	096355R-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 <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 : 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 Friis transmission formula is far shorter than 20 cm separation requirement.