RF Exposure Evaluation declaration

Product Name : Notebook

Model No. : TCM380

FCC ID FKGTCM380

Applicant : Twinhead International Corp.

Address : 10F, 550 Rueiguang Road Neihu, Taipei, Taiwan 114, R.O.C.

Date of Receipt : Apr. 21, 2008

Date of Declaration : Jun. 10, 2008

Report No. : 084331R-RF-US-RFEXP

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	30
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 is 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: 23℃and 58％ RH.

1.3. Test Result of RF Exposure Evaluation

Product : Notebook
Test Item : RF Exposure Evaluation
Test Site : N/A

Antenna Gain

The peak gain of the antenna for GSM 850:
824.2MHz is -0.96 dBi,
836.4MHz is -1.19 dBi,
848.8MHz is -0.32 dBi
The peak gain of the antenna for PCS1900:
1850.2MHz is -1.25 dBi,
1880 MHz is -0.18 dBi,
1909.8MHz is 1.04 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance

Band 850 / GPRS

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
824.2	1288.2496	0.3587	0.55	PASS
836.4	1267.6519	0.3997	0.55	PASS
848.8	1258.9254	0.3505	0.55	PASS

Band 1900 / GPRS

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
1850.2	605.3409	0.1686	1	PASS
1880	572.7960	0.1806	1	PASS
1909.8	559.7576	0.1559	1	PASS

Band 850 / EGPRS

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
824.2	434.5102	0.1210	0.55	PASS
836.4	426.5795	0.1345	0.55	PASS
848.8	426.5795	0.1188	0.55	PASS

Band 1900 / EGPRS

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
1850.2	334.1950	0.0931	1	PASS
1880	317.6874	0.1002	1	PASS
1909.8	318.4198	0.0887	1	PASS

WCDMA BAND V

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
826.4	197.2423	0.0549	0.55	PASS
836.6	196.3360	0.0619	0.55	PASS
846.6	189.2344	0.0527	0.55	PASS

WCDMA BAND II

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
1852.4	211.3489	0.0588	1	PASS
1880	189.6706	0.0598	1	PASS
1907.6	175.7924	0.0489	1	PASS

WCDMA BAND V HSDPA

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
826.4	185.7804	0.0517	0.55	PASS
836.6	191.8669	0.0605	0.55	PASS
846.6	190.5461	0.0531	0.55	PASS

WCDMA BAND II HSDPA

Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Result
1852.4	190.5461	0.0531	1	PASS
1880	167.1091	0.0527	1	PASS
1907.6	158.8547	0.0442	1	PASS