RF Exposure Evaluation declaration

Product Name : Notebook

Model No. : MS-1243, NS-1241

FCC ID : I4L-1243-E7306891

Applicant : MICRO-STAR INT'L Co., LTD.

Address : No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.

Date of Receipt : Aug. 25, 2009

Date of Declaration : Nov. 30, 2009

Report No. : 098447R-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

GSM 850 GPRS-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
824.2	31.53	1/8	177.8	0.0827	0.55	Pass
836.4	31.42	1/8	173.3	0.0807	0.55	Pass
848.8	31.40	1/8	172.5	0.0803	0.55	Pass

GSM 850 EGPRS-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
824.2	25.64	1/8	45.8	0.0213	0.55	Pass
836.4	25.63	1/8	45.7	0.0213	0.55	Pass
848.8	25.54	1/8	44.8	0.0208	0.55	Pass

PCS 1900 GPRS-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1850.2	28.66	1/8	91.8	0.0427	1	Pass
1880	28.70	1/8	92.7	0.0431	1	Pass
1909.8	28.61	1/8	90.8	0.0422	1	Pass

PCS 1900 EGPRS-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1850.2	24.23	1/8	33.1	0.0154	1	Pass
1880	24.24	1/8	33.2	0.0154	1	Pass
1909.8	24.20	1/8	32.9	0.0153	1	Pass

WCDMA V-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
826.4	21.18	1	131.2	0.0611	0.55	Pass
836.6	21.30	1	134.9	0.0628	0.55	Pass
846.6	21.16	1	130.6	0.0608	0.55	Pass

WCDMA V HSDPA-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
826.4	21.28	1	134.3	0.0625	0.55	Pass
836.6	21.25	1	133.4	0.0620	0.55	Pass
846.6	21.15	1	130.3	0.0606	0.55	Pass

WCDMA II -Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1852.4	21.32	1	135.5	0.0631	1	Pass
1880	20.53	1	113.0	0.0526	1	Pass
1907.6	20.63	1	115.6	0.0538	1	Pass

WCDMA II HSDPA-Peak Gain: 3.69dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
1852.4	21.75	1	149.6	0.0696	1	Pass
1880	21.24	1	133.0	0.0619	1	Pass
1907.6	21.17	1	130.9	0.0609	1	Pass

802.11n(40M)-Peak Gain: 1.76dBi

Frequency (MHz)	Conducted Power (dBm)	Duty Cycle	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
2422	21.21	1	132.1	0.0394	1	Pass
2437	22.11	1	162.6	0.0485	1	Pass
2452	20.98	1	125.3	0.0374	1	Pass

Note: The conducted output power is refer to report No.: 098447R-HPUSP07V01, 098447R-RFUSP28V01 from the QuieTek.