MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

Maximum Permissible Exposure (MPE) Evaluation:

802.11b Main								
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit			RESULT
1	2412	1	**18.14**	**65.16**	1 Watt =	30.00	dBm	PASS
6	2437	1	17.71	59.02	1 Watt =	30.00	dBm	PASS
11	2462	1	17.91	61.80	1 Watt =	30.00	dBm	PASS
802.11b Main								
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (dBm)	Limit			RESULT
1	2412	1	**15.53**	**35.70**	1 Watt =	30.00	dBm	PASS
6	2437	1	15.51	35.54	1 Watt =	30.00	dBm	PASS
11	2462	1	15.52	35.62	1 Watt =	30.00	dBm	PASS

MPE Prediction (802.11b 2412~2462)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Max. output power including tune-up tolerancel:	15.53	(dBm)
Max. output power including tune-up tolerancel:	35.727284	(mW)
Duty cycle:	48.34	(%)
Maximum Pav :	17.270569	(mW)
Peak Antenna gain (Maximum):	0.4	(dBi)
Peak Antenna gain (linear):	1.0964782	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.004	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.004 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2412MHz.

802.11g Main								
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit			RESULT
1	2412	6	**24.1**	**257.04**	1 Watt =	30.00	dBm	PASS
6	2437	6	24.06	254.68	1 Watt =	30.00	dBm	PASS
11	2462	6	23.85	242.66	1 Watt =	30.00	dBm	PASS
802.11g Main								
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (dBm)	Limit			RESULT
1	2412	6	**14.89**	**30.84**	1 Watt =	30.00	dBm	PASS
6	2437	6	14.86	30.63	1 Watt =	30.00	dBm	PASS
11	2462	6	14.65	29.19	1 Watt =	30.00	dBm	PASS

MPE Prediction (802.11g 2412~2462)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Max. output power including tune-up tolerancel:	14.89	(dBm)
Max. output power including tune-up tolerancel:	30.83188	(mW)
Duty cycle:	37.83	(%)
Maximum Pav :	11.6637	(mW)
Peak Antenna gain (Maximum):	0.4	(dBi)
Peak Antenna gain (linear):	1.0964782	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.003	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.003 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2412MHz.

MPE Prediction (802.11n20 2412~2462)

802.11n_HT20M Main								
CH	Frequency (MHz)	Data Rate	Peak Output Power (dBm)	Peak Output Power (mW)	Limit			RESULT
1	2412	MCS0	23.49	223.36	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	23.64	231.21	1 Watt =	30.00	dBm	PASS
11	2462	MCS0	**23.65**	**231.74**	1 Watt =	30.00	dBm	PASS
802.11n_HT20M Main								
CH	Frequency (MHz)	Data Rate	Avg. Output Power (dBm)	Avg. Output Power (dBm)	Limit			RESULT
1	2412	MCS0	14.54	28.44	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	14.58	28.71	1 Watt =	30.00	dBm	PASS
11	2462	MCS0	**14.59**	**28.77**	1 Watt =	30.00	dBm	PASS

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Max. output power including tune-up tolerance:	14.59	(dBm)
Max. output power including tune-up tolerancel:	28.773984	(mW)
Duty cycle:	44.62	(%)
Maximum Pav :	12.838952	(mW)
Peak Antenna gain (Maximum):	0.4	(dBi)
Peak Antenna gain (linear):	1.0964782	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.003	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.003 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462MHz.

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