1. 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 §2.1091 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

2.4GHz mode:

The worst case of Average power: refer to FCC test report for detail measurement date.

Power measurement:

Channel		Frequency (MHz)	Output Chain (dBm)		Combine Output Power (dBm)	Limit(dBm)	Result
			Chain A	chain B			
AN HT20	1	2412	13.32	13.6	16.47	30	Pass
	6	2437	13.42	13.49	16.47	30	Pass
	11	2462	13.21	13.24	16.24	30	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

Maximum output power at antenna input terminal:	16.47	(dBm)
Maximum output power at antenna input terminal:	44.36086439	(mW)
Tune-Up power Tolerance:	2	dB
Duty cycle:	100	(%)
Maximum Pav :	70.30723199	(mW)
Antenna gain (typical):	5.65	(dBi)
Maximum antenna gain:	3.672823005	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0513985	(mW/cm^2)

Measurement Result:

The predicted power density level at 20 cm is 0.0514 mW/cm^2.. This is below the uncontrolled exposure limit of 1 mW/cm^2..

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5150MHz – 5250MHz Mode:

The worst case of Average power a mode: refer to FCC test report for detail measurement date.

Power measurement:

Mode	Freq(MHz)	channel	power (dBm)	limit(dBm)	result
802.11a	5180	36	14.61	30	pass
	5200	40	14.66	30	pass
	5240	48	14.70	30	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

Maximum output power at antenna input terminal:	14.7	(dBm)
Maximum output power at antenna input terminal:	29.51209227	(mW)
Tune-Up power Tolerance:	2	dB
Duty cycle:	100	(%)
Maximum Pav :	46.77351413	(mW)
Antenna gain (typical):	4.68	(dBi)
Maximum antenna gain:	2.937649652	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0273496	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0273 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

5725MHz – 5850MHz Mode:

The worst case of Average power a mode: refer to FCC test report for detail measurement date.

Power measurement:

Mode	Freq(MHz)	channel	Power (dBm)	limit(dBm)	result
802.11a	5745	149	15.82	30	pass
	5785	157	15.74	30	pass
	5825	165	15.68	30	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

Maximum output power at antenna input terminal:	15.82	(dBm)
Maximum output power at antenna input terminal:	38.19442708	(mW)
Tune-Up power Tolerance:	2	dB
Duty cycle:	100	(%)
Maximum Pav :	60.53408748	(mW)
Antenna gain (typical):	4.68	(dBi)
Maximum antenna gain:	2.937649652	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0353957	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0353mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

Simultaneous transmission mode

2.4GHz mode + (5150MHz – 5250MHz) Mode:

Prediction frequency:	2.4	(GHz)
Power density at predication frequency at 20 (cm)	0.0514000	(mW/cm^2)

Prediction frequency:	5	(GHz)
Power density at predication frequency at 20 (cm)	0.0273490	(mW/cm^2)
2.4GHz + 5GHz Power density at predication frequency at 20 (cm) distance	0.0787490	(mW/cm^2)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)

The predicted power density level at 20 cm is 0.07875mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

Simultaneous transmission mode

2.4GHz mode + (5725MHz – 5850MHz) Mode:

Prediction frequency:	2.4	(GHz)
Power density at predication frequency at 20 (cm)	0.0514000	(mW/cm^2)

Prediction frequency:	5	(GHz)
Power density at predication frequency at 20 (cm)	0.0354000	(mW/cm^2)
2.4GHz + 5GHz Power density at predication frequency at 20 (cm) distance	0.0868000	(mW/cm^2)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)

The predicted power density level at 20 cm is 0.0868 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

~ End of Report ~