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: refer to FCC test report for detail measurement date.

Power measurement:

BDR Mode

Frequency (MHz)	Peak Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
Low	3.15	0.00	3.15	0.00207	1
Mid	3.95	0.00	3.95	0.00248	1
High	3.67	0.00	3.67	0.00233	1

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:	3.95	(dBm)
Maximum output power at antenna input terminal:	2.483133105	(mW)
Tune-Up power Tolerance:	1	dB
Duty cycle:	100	(%)
Maximum Pav :	3.126079367	(mW)
Antenna gain (typical):	0.77	(dBi)
Maximum antenna gain:	1.193988104	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0007429	(mW/cm^2)

Measurement Result:

The predicted power density level at 20 cm is 0.0007429 mW/cm^2.. This is below the uncontrolled exposure limit of 1 mW/cm^2.

International Standards Laboratory

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:

802.11g

Cable loss = 0	Output Power		Limit (dBm)
CH	Detector		
	PK (dBm)	AV (dBm)	
Low	22.39	15.12	30.00
Mid	22.01	14.67	
High	21.46	14.22	

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:	22.39	(dBm)
Maximum output power at antenna input terminal:	173.3803998	(mW)
Tune-Up power Tolerance:	1	dB
Duty cycle:	100	(%)
Maximum Pav :	218.2729912	(mW)
Antenna gain (typical):	2.49	(dBi)
Maximum antenna gain:	1.774189481	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0770815	(mW/cm^2)

Measurement Result:

The predicted power density level at 20 cm is 0.0770815 mW/cm^2.. This is below the uncontrolled exposure limit of 1 mW/cm^2..

International Standards Laboratory

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)	Output Chain (dBm)		Combine Output Power (dBm)	Limit (dBm)	Result
		Chain A	chain B			
N HT20	5180	13.79	13.81	16.81	23.97	Pass
	5260	13	13.01	16.02	23.97	Pass
	5320	13.07	13.15	16.12	23.97	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:	16.81	(dBm)
Maximum output power at antenna input terminal:	47.97334486	(mW)
Tune-Up power Tolerance:	1	dB
Duty cycle:	100	(%)
Maximum Pav :	60.39486294	(mW)
Antenna gain (typical):	4.61	(dBi)
Maximum antenna gain:	2.890679882	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0347496	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0347496 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)	Output Chain (dBm)		Combine Output Power (dBm)	Limit (dBm)	Result
		Chain A	chain B			
N HT20	5500	12	12.03	15.03	23.97	Pass
	5600	11.89	12.09	15.00	23.97	Pass
	5700	11.87	12.04	14.97	23.97	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:	15.03	(dBm)
Maximum output power at antenna input terminal:	31.84197522	(mW)
Tune-Up power Tolerance:	1	dB
Duty cycle:	100	(%)
Maximum Pav :	40.08667176	(mW)
Antenna gain (typical):	4.61	(dBi)
Maximum antenna gain:	2.890679882	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0230648	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0230648mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

5470MHz – 5725MHz Mode:

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

Power measurement:

Mode	Freq(MHz)	Output Chain (dBm)		Combine Output Power (dBm)	Limit (dBm)	Result
		Chain A	chain B			
N HT20	5745	11.73	12.1	14.93	30	Pass
	5785	11.8	11.8	14.81	30	Pass
	5825	11.94	12.11	15.04	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:	15.04	(dBm)
Maximum output power at antenna input terminal:	31.91537855	(mW)
Tune-Up power Tolerance:	1	dB
Duty cycle:	100	(%)
Maximum Pav :	40.17908108	(mW)
Antenna gain (typical):	4.61	(dBi)
Maximum antenna gain:	2.890679882	(numeric)
Prediction distance:	20	(cm)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)
Power density at predication frequency at 20 (cm)	0.0231180	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0231180mW/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)	0.0770815	(mW/cm^2)

Prediction frequency:	5	(GHz)
Power density at predication frequency at 20 (cm)	0.0347496	(mW/cm^2)
2.4GHz + 5GHz Power density at predication frequency at 20 (cm) distance	0.1118311	(mW/cm^2)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)

The predicted power density level at 20 cm is 0.1118311mW/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)	0.0770815	(mW/cm^2)

Prediction frequency:	5	(GHz)
Power density at predication frequency at 20 (cm)	0.0230648	(mW/cm^2)
2.4GHz + 5GHz Power density at predication frequency at 20 (cm) distance	0.1001463	(mW/cm^2)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)

The predicted power density level at 20 cm is 0.1001463 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

Simultaneous transmission mode

2.4GHz mode + (5470MHz – 5725MHz) Mode:

Prediction frequency:	2.4	(GHz)
Power density at predication frequency at 20 (cm)	0.0770815	(mW/cm^2)

Prediction frequency:	5	(GHz)
Power density at predication frequency at 20 (cm)	0.0231180	(mW/cm^2)
2.4GHz + 5GHz Power density at predication frequency at 20 (cm) distance	0.1001995	(mW/cm^2)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm^2)

The predicted power density level at 20 cm is 0.1001995 mW/cm^2. This is below the uncontrolled exposure limit of 1 mW/cm^2.

~ End of Report ~