

17. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

17.1 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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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17.2 Maximum Permissible Exposure (MPE) Evaluation**802.11a 5150~5250****Power Table**

Frequency (MHz)	Reading Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)
5180.00	14.94	14.94	0.03119	1
5220.00	15.06	15.06	0.03206	1
5240.00	14.99	14.99	0.03155	1

MPE Prediction (802.11a 5150~5250)

Prediction of MPE limit at a given distance

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

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

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 peak output power at antenna input terminal:	15.06	(dBm)
Maximum peak output power at antenna input terminal:	32.06269325	(mW)
Duty cycle:	100	(%)
Maximum Pav :	32.06269325	(mW)
Antenna gain (typical):	3.92	(dBi)
Maximum antenna gain:	2.466039337	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5220	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.015738	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.015738mW/cm². This is below the uncontrolled exposure limit of 1mW/cm² at 5220MHz.

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802.11a 5250~5350 Power Table

Frequency (MHz)	Reading Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)
5260.00	15.27	15.27	0.03365	1
5300.00	14.86	14.86	0.03062	1
5320.00	14.57	14.57	0.02864	1

MPE Prediction (802.11a 5250~5350)

Prediction of MPE limit at a given distance

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

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

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 peak output power at antenna input terminal:	15.27	(dBm)
Maximum peak output power at antenna input terminal:	33.65115694	(mW)
Duty cycle:	100	(%)
Maximum Pav :	33.65115694	(mW)
Antenna gain (typical):	3.92	(dBi)
Maximum antenna gain:	2.466039337	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5260	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.016518	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.016518mW/cm². This is below the uncontrolled exposure limit of 1mW/cm² at 5260MHz.

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802.11a 5470~5725**Power Table**

Frequency (MHz)	Reading Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)
5500.00	14.19	14.19	0.02624	1
5580.00	14.91	14.91	0.03097	1
5700.00	15.08	15.08	0.03221	1

MPE Prediction (802.11a 5470~5725)

Prediction of MPE limit at a given distance

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

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

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 peak output power at antenna input terminal:	15.08	(dBm)
Maximum peak output power at antenna input terminal:	32.21068791	(mW)
Duty cycle:	100	(%)
Maximum Pav :	32.21068791	(mW)
Antenna gain (typical):	4.97	(dBi)
Maximum antenna gain:	3.140508694	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5700	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.020135	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.020135mW/cm². This is below the uncontrolled exposure limit of 1mW/cm² at 5700MHz.

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