

Table 4

Estimated distances from transmitting antennas necessary to meet FCC power-density limits for Maximum Permissible Exposure (MPE) for either occupational/controlled exposures ("Con") or general-population/uncontrolled exposures ("Unc"). The estimates are based on typical amateur antennas and assuming a 100% duty cycle and typical ground reflection. (The figures shown in this table generally represent worst-case values, primarily in the main beam of the antenna.) The compliance distances apply to average exposure and average power, but can be used with PEP for a conservative estimate.

Frequency (MHz)	Gain (dBi)	Distance from antenna (feet)							
		100 W		500 W		1000 W		1500 W	
		Con	Unc	Con	Unc	Con	Unc	Con	Unc
2	0	0.5	0.7	1.0	1.6	1.5	2.2	1.8	2.7
	3	0.7	1.0	1.5	2.2	2.1	3.1	2.6	3.8
4	0	0.6	1.4	1.4	3.1	2.0	4.4	2.4	5.4
	3	0.9	2.0	2.0	4.4	2.8	6.2	3.4	7.6
7.3	0	1.1	2.5	2.5	5.7	3.6	8.1	4.4	9.9
	3	1.6	3.6	3.6	8.0	5.1	11.4	6.2	13.9
10.15	6	2.3	5.1	5.1	11.4	7.2	16.1	8.8	19.7
	0	1.6	3.5	3.5	7.9	5.0	11.2	6.1	13.7
14.35	3	2.2	5.0	5.0	11.2	7.1	15.8	8.7	19.4
	6	3.2	7.1	7.1	15.8	10.0	22.4	12.2	27.4
	0	2.2	5.0	5.0	11.2	7.1	15.8	8.7	19.4
18.168	3	3.2	7.1	7.1	15.8	10.0	22.4	12.3	27.4
	6	4.5	10.0	10.0	22.3	14.1	31.6	17.3	38.7
	9	6.3	14.1	14.1	31.6	20.0	44.6	24.4	54.7
	0	2.8	6.3	6.3	14.2	9.0	20.1	11.0	24.6
21.45	3	4.0	9.0	9.0	20.0	12.7	28.3	15.5	34.7
	6	5.7	12.7	12.7	28.3	17.9	40.0	21.9	49.0
	9	8.0	17.9	17.9	40.0	25.3	56.5	31.0	69.2
	0	3.3	7.5	7.5	16.7	10.6	23.7	13.0	29.0
24.99	3	4.7	10.6	10.6	23.6	15.0	33.4	18.3	41.0
	6	6.7	14.9	14.9	33.4	21.1	47.2	25.9	57.9
	9	9.4	21.1	21.1	47.2	29.8	66.7	36.5	81.7
	0	3.9	8.7	8.7	19.5	12.3	27.6	15.1	33.8
29.7	3	5.5	12.3	12.3	27.5	17.4	39.0	21.3	47.7
	6	7.8	17.4	17.4	38.9	24.6	55.0	30.1	67.4
	9	11.0	24.6	24.6	55.0	34.8	77.7	42.6	95.2
	0	4.6	10.4	10.4	23.2	14.7	32.8	18.0	40.1
50, 144, 222	3	6.5	14.6	14.6	32.7	20.7	46.3	25.4	56.7
	6	9.2	20.7	20.7	46.2	29.3	65.4	35.8	80.1
	9	13.1	29.2	29.2	65.3	41.3	92.4	50.6	113.2
		50 W		100 W		500 W		1000 W	
		Con	Unc	Con	Unc	Con	Unc	Con	Unc
50, 144, 222	0	3.3	7.4	4.7	10.5	10.5	23.4	14.8	33.1
	3	4.7	10.5	6.6	14.8	14.8	33.1	20.9	46.8
	6	6.6	14.8	9.3	20.9	20.9	46.7	29.5	66.1

420	9	9.3	20.9	13.2	29.5	29.5	66.0	41.7	93.3
	12	13.2	29.5	18.6	41.7	41.7	93.2	59.0	131.8
	15	18.6	41.6	26.3	58.9	58.9	131.7	83.3	186.2
	20	33.1	74.0	46.8	104.7	104.7	234.1	148.1	331.1
	0	2.8	6.3	4.0	8.8	8.8	19.8	12.5	28.0
	3	4.0	8.8	5.6	12.5	12.5	28.0	17.7	39.5
	6	5.6	12.5	7.9	17.7	17.7	39.5	25.0	55.8
1240	9	7.9	17.6	11.2	24.9	24.9	55.8	35.3	78.9
	12	11.1	24.9	15.8	35.2	35.2	78.8	49.8	111.4
	15	15.7	35.2	22.3	49.8	49.8	111.3	70.4	157.4
	0	1.6	3.6	2.3	5.2	5.2	11.5	7.3	16.3
	3	2.3	5.1	3.3	7.3	7.3	16.3	10.3	23.0
	6	3.2	7.3	4.6	10.3	10.3	23.0	14.5	32.5
	9	4.6	10.3	6.5	14.5	14.5	32.5	20.5	45.9
	12	6.5	14.5	9.2	20.5	20.5	45.8	29.0	64.8
	15	9.2	20.5	13.0	29.0	29.0	64.8	41.0	91.6

Table 5

Estimated distances (in feet) to meet RF power density guidelines in the main beam of a typical three-element "triband" (20-15-10 meter) Yagi antenna assuming surface (ground) reflection. Distances are shown for controlled (con) and uncontrolled (unc) environments.

	<i>14 MHz, 6.5 dBi</i>		<i>21 MHz, 7 dBi</i>		<i>28 MHz, 8 dBi</i>	
	con	unc	con	unc	con	unc
100	4.7	10.4	7.4	16.5	11.0	24.6
500	10.4	23.1	16.5	36.8	24.6	54.9
1000	14.7	32.7	23.3	51.9	34.8	77.7
1500	17.9	40.1	28.5	63.6	42.6	95.1

Table 6

Estimated distances (in feet) to meet RF power density guidelines with a typical three-element "triband" (20-15-10 meter) Yagi antenna operating on a frequency of 29.7 MHz at a height of 30 feet above ground. Distances are shown for controlled (con) and uncontrolled (unc) environments.

<i>Power (W)</i>	<i>Height above ground where exposure occurs (feet)</i>							
	<i>6.0</i>		<i>12.0</i>		<i>20.0</i>		<i>30.0</i>	
	con	unc	con	unc	con	unc	con	unc
50	0	0	0	0	0	0	8.6	13.2
100	0	0	0	0	0	0	9.9	18.1
150	0	0	0	0	0	15.5	11.2	21.7
250	0	0	0	0	0	24.6	13.2	26.9
500	0	0	0	47.0	0	49.2	18.1	36.1
750	0	35.2	0	59.1	15.1	70.9	21.4	45.0
1000	0	46.0	0	68.0	21.0	83.0	24.0	60.1
1500	0	57.1	0	79.1	27.9	100.1	28.9	103.0

Table 7

Estimated distances (in feet) to meet RF power density guidelines with a typical three-element "triband" (20-15-10 meter) Yagi antenna operating on a frequency of 29.7 MHz at a height of 60 feet above

ground. Distances are shown for controlled (con) and uncontrolled (unc) environments.

Note: The 68.9-foot distance shown in the 12.0-foot column is not a typo! NEC4 modeling indicates that at this distance the E field just exceeds the MPE at 1500 W continuous power.

Power (W)	<i>Height above ground where exposure occurs (feet)</i>							
	6.0		12.0		20.0		60.0	
	con	unc	con	unc	con	unc	con	unc
50	0	0	0	0	0	0	8.6	13.2
100	0	0	0	0	0	0	9.9	18.1
150	0	0	0	0	0	0	11.2	22.0
250	0	0	0	0	0	0	13.2	27.9
500	0	0	0	0	0	0	18.1	42.0
750	0	0	0	0	0	0	22.0	51.9
1000	0	0	0	0	0	0	25.0	57.8
1500	0	0	0	68.9	0	0	30.9	66.0