

## Table NT0-1. RF Exposure Limits

*Section A. Estimated distances to meet RF power density guidelines in the main beam of a typical 3-element triband Yagi for the 14, 21, and 28 Mhz amateur radio bands. Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 14MHz Antenna gain: 6.5 dbi  
 Controlled limit: 4.59 mw/cm<sup>2</sup>  
 Uncontrolled limit: .92 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	4.6'	10.3'
500	10.3'	23.1'
1000	14.6'	32.7'
1500	17.9'	40'

Frequency: 21MHz Antenna gain: 7 dbi  
 Controlled limit: 2.04 mw/cm<sup>2</sup>  
 Uncontrolled limit: .408 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	7.3'	16.4'
500	16.4'	36.7'
1000	23.2'	51.9'
1500	28.4'	63.6'

Frequency: 28 MHz Antenna gain: 8 dbi  
 Controlled limit: 1.15 mw/cm<sup>2</sup>  
 Uncontrolled limit: .23 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	7.3'	16.4'
500	16.4'	36.7'
1000	23.2'	51.9'
1500	28.4'	63.6'

Frequency 28 MHz: Antenna gain 8 dbi  
 Controlled limit, 1.15 mw/cm<sup>2</sup>  
 Uncontrolled limit .23 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	7.3'	16.4'
500	16.4'	36.7'
1000	23.2'	51.9'
1500	28.4'	63.6'

100	11'	24.5'
500	24.5'	54.9'
1000	34.7'	77.6'
1500	42.3'	95.1'

*Section B. Estimated distances to meet RF power density guidelines with an omnidirectional HF quarter-wave vertical or ground plane antenna (estimated gain, 1 dbi). Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 3.5 MHz

Controlled limit: 73.5 mw/cm<sup>2</sup>

Uncontrolled limit: 14.7 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	0.6'	1.4'
500	1.4'	3.1'
1000	1.9'	4.3'
1500	2.4'	5.3'

Frequency: 7 MHz

Controlled limit: 18.37 mw/cm<sup>2</sup>

Uncontrolled limit: 3.67 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	1.2'	2.7'
500	2.7'	6.1'
1000	3.9'	8.7'
1500	4.7'	10.6'

Frequency: 14 MHz

Controlled limit: 4.59 mw/cm<sup>2</sup>

Uncontrolled limit: 0.918 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	2.5'	5.5'
500	15.5'	12.3'
1000	7.8'	17.3'
1500	9.5'	21.2'

Frequency: 21 MHz

Controlled limit: 2.04 mw/cm<sup>2</sup>

Uncontrolled limit: .408 mw/cm2

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	3.7'	8.2'
500	8.2'	18.4'
1000	11.6'	26'
1500	14.2'	31.9'

Frequency: 28 MHz

Controlled limit: 1.15 mw/cm2

Uncontrolled limit: 0.23 mw/cm2

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	4.9'	11'
500	11'	24.5'
1000	15.5'	34.7'
1500	19'	42.5'

*Section C. Estimated distances to meet RF power density guidelines with a horizontal half-wave dipole antenna (estimated gain, 2dbi). Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 3.5 MHz

Controlled limit: 73.5 mw/cm2

Uncontrolled limit: 14.7 mw/cm2

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	0.7'	1.5'
500	1.5'	3.4'
1000	2.2'	4.9'
1500	2.7'	6'

Frequency: 7 MHz

Controlled limit: 18.37 mw/cm2

Uncontrolled limit: 3.67 mw/cm2

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	1.4'	3.1'
500	3.1'	6.9'
1000	4.3'	9.7'
1500	5.3'	11.9'

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Frequency: 14 MHz  
 Controlled limit: 4.59mw/cm2  
 Uncontrolled limit: 0.918 mw/cm2

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Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	2.8'	6.2'
500	6.2'	13.8'
1000	8.7'	19.5'
1500	10.7'	23.8'

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Frequency: 21 MHz  
 Controlled limit: 2.04 mw/cm2  
 Uncontrolled limit: 0.408 mw/cm2

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Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	4.1'	9.2'
500	9.2'	20.6'
1000	13'	29.2'
1500	16'	35.7'

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Frequency: 28 MHz  
 Controlled limit: 1.15 mw/cm2  
 Uncontrolled limit: .23 mw/cm2

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Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
100	5.5	12.3'
500	12.3'	27.5'
1000	17.4'	38.9'
1500	21.3'	47.7'

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*Section D. Estimated distances to meet RF power density guidelines with a VHF quarter-wave ground plane or mobile whip antenna (estimated gain, 1 dbi). Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 146 MHz  
 Controlled limit: 4.59mw/cm2  
 Uncontrolled limit: .92 mw/cm2

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Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
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10	1.7'	3.7'
50	1.7'	8.3'
150	6.4'	14.4'

*Section E. Estimated distances to meet RF power density guidelines in the main beam of a UHF 5/8 ground-plane or whip antenna (estimated gain, 4 dbi). Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 446 MHz  
 Controlled limit: 1.49 mw/cm<sup>2</sup>  
 Uncontrolled limit: 0.3 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
10	1.9'	4.3'
50	4.3'	9.6'
150	7.5'	16.7'

*Section F. Estimated distances to meet RF power density guidelines in the main beam of a 17-element Yagi on a five-wavelength boom designed for weak signal communications on the 144 Mhz amateur radio band (estimated gain, 16.8 dbi). Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 144 MHz  
 Controlled limit: 1 mw/cm<sup>2</sup>  
 Uncontrolled limit: 2 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
10	10.2'	22.9'
100	32.4'	72.4'
500	72.4'	162'
1500	125.5'	280.6'

*Section G. Estimated distances to meet RF power density guidelines in the main beam of an array of eight 17-element Yagis with five-wavelength booms designed for earth-moon-earth (moon-bounce) communications on the 144 Mhz amateur radio band (estimated gain, 24 dbi). Calculations include the EPA ground reflection factor of 2.56.*

Frequency: 144 MHz  
 Controlled limit: 1 mw/cm<sup>2</sup>  
 Uncontrolled limit: 2 mw/cm<sup>2</sup>

Transmitter power (watts)	Distance to controlled limit	Distance to uncontrolled limit
150	90.9'	203.3'

500	166'	371.1'
1500	287.4'	642.7'
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