

RF Exposure Cheat Sheet

Purpose

The purpose of this sheet is to provide pre-computed examples of minimum safe antenna distances with regard to the FCC's RF exposure rules.

Sources

- FCC Regulatory Information:
https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65b.pdf
- ARRL's *RF Exposure And You* document:
<http://www.arrl.org/files/file/Technology/RFsafetyCommittee/RF%20Exposure%20and%20You.pdf>
- Calculators:
 - <http://www.lakewashingtonhamclub.org/resources/rf-exposure-calculator/>
 - http://hintlink.com/power_density.htm

Definitions

- “Controlled Exposure”: Hams and those in their immediate households that have control of their RF exposure from amateur radio sources.
- “Uncontrolled Exposure”: Neighbors / members of the general public who are exposed to amateur radio RF outside of their control.

Assumptions

- Antenna: Dipole or equivalent with a gain of ≤ 2.2 dbi. If using a higher gain antenna, these charts must be ignored. Please visit one of the calculators in the sources section to make calculations.
- Modes:
 - CW: Assumed rag-chewing 5 minutes on / 5 minutes off
 - SSB: Assumed rag-chewing 5 minutes on / 5 minutes off
 - SSB (Processed): Dxing/contesting 1 minutes on / 1 minute off
 - Digital: 50% duty-cycle, 1 minute on / 1 minute off. Works for FT8/FT4/JT65. If transmit times are in excess of 1 minute, new computations must be made.
 - AM/FM: Assumed rag-chewing 5 minutes on / 5 minutes off

Minimum Safe Antenna Distance (100 Watts)

Distances are in feet: controlled (uncontrolled)

Band (m)	CW	SSB	SSB (Processed)	Digital	AM/FM
160	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
80	1 (1)	1 (1)	1 (1)	1 (2)	1 (1)
60	1 (2)	1 (1)	1 (2)	1 (2)	1 (2)
40	1 (2)	1 (2)	1 (2)	2 (3)	2 (3)
30	2 (3)	1 (2)	2 (3)	2 (4)	2 (4)
20	2 (3)	2 (3)	2 (4)	3 (5)	3 (5)
17	3 (4)	2 (3)	2 (5)	3 (6)	4 (6)
15	3 (5)	2 (4)	3 (5)	4 (7)	4 (7)
12	3 (5)	3 (4)	3 (6)	4 (8)	5 (8)
10	4 (6)	3 (5)	3 (7)	5 (10)	6 (10)
6	4 (6)	3 (5)	4 (7)	5 (10)	6 (10)
2	4 (6)	3 (5)	4 (7)	5 (10)	6 (10)
1.25	4 (6)	3 (5)	4 (7)	5 (10)	6 (10)
0.70	3 (5)	2 (4)	3 (6)	4 (8)	5 (8)

Minimum Safe Antenna Distance (500 Watts)

Distances are in feet: controlled (uncontrolled)

Band (m)	CW	SSB	SSB (Processed)	Digital	AM/FM
160	1 (1)	1 (1)	1 (1)	1 (2)	2 (2)
80	2 (2)	1 (2)	1 (2)	2 (3)	2 (3)
60	2 (3)	1 (2)	2 (3)	2 (4)	3 (4)
40	2 (4)	2 (3)	2 (4)	3 (6)	3 (6)
30	3 (5)	2 (4)	3 (6)	4 (8)	5 (8)
20	4 (7)	3 (5)	4 (8)	5 (11)	6 (11)
17	5 (9)	4 (6)	5 (10)	6 (13)	8 (13)
15	6 (10)	4 (7)	5 (11)	7 (16)	9 (16)
12	7 (12)	5 (8)	6 (13)	8 (18)	11 (18)
10	8 (14)	6 (10)	7 (15)	10 (22)	13 (22)
6	8 (14)	6 (10)	7 (16)	10 (22)	13 (22)
2	8 (14)	6 (10)	7 (16)	10 (22)	13 (22)
1.25	8 (14)	6 (10)	7 (16)	10 (22)	13 (22)
0.70	7 (12)	5 (8)	6 (13)	8 (18)	11 (18)