Radio Astronomy Frequency Allocations

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Certain frequencies are *protected* for radio astronomy purposes in the USA by Federal Communications Commission (FCC) regulations: Title 47, Part 2, *Frequency allocations and radio treaty matters; general rules and regulations*. These frequencies are coordinated with other countries by various international regulatory treaties through the International Telecommunications Union (ITU).

Protected frequencies are those for which the FCC has regulatory framework to prevent radio frequency interference. FCC will not grant an authorization to transmit at frequencies allocated for radio astronomy, and any transmitter in the USA operating on those frequencies is doing so illegally. However, some frequencies are shared with certain other radio services. Presumably interference is assumed to be negligible. All this does not mean you will never receive a carrier or emission on allocated frequencies because

- Not all countries observe the same limitations and regulations
- Long distance propagation is possible especially in the high frequency band (decameter wavelengths)
- Spill-over from adjacent bands may occur due to malfunctioning transmitters (this is called adjacent channel interference and is more of a problem in all radio services than commonly thought)
- Over-the-horizon radars (OTHR) and ionospheric sounders operating at HF may sweep through allocated frequency bands

Frequency	Wavelength	Remarks
13.36 ~ 13.41 MHz	22 m	
25.55 ~ 25.67	12	
37.50 ~ 38.25	8	Shared
73.00 ~ 74.60	4	
406.1 ~ 410.0	70 cm	Shared
608.0 ~ 614.0	50	Shared
1400.0 ~ 1427.0	21	
1610.6 ~1613.8	19	Shared
1660.5 ~ 1670.0	18	Shared
2655.0 ~ 2700.0	11	
4990.0 ~ 5000.0	60 mm	
10.68 ~ 10.70 GHz	28	
15.35 ~ 15.40	20	
22.21 ~ 22.50	14	Shared
23.6 ~ 24.0	13	
31.3 ~ 31.8	10	
42.5 ~ 43.5	7	Shared
76.0 ~ 81.0	4	Shared
81.0 ~ 94.0	340 μm	Shared
94.1 ~ 100.	300	Shared
100.0 ~ 116.0	280	Shared
123.0 ~ 134.0	230	Shared
134.0 ~ 141.0	220	Shared
141.0 ~ 158.5	200	Shared
164.0 ~ 167.0	180	Shared
182.0 ~ 185.0	160	Shared
200.0 ~ 231.5	140	Shared
241.0 ~ 275.0	120	Shared

In addition, there always is the possibility of emissions from household electronic devices in your vicinity. The normal operation of switch-mode power supplies, light dimmers, computers and other modern electronic equipment can easily cover some the frequency bands of interest. Although emissions from these devices are limited by FCC regulation: Part 15, *Radio frequency devices*, that does not mean they will not interfere with a radio astronomy receiver. Finding the interfering device, whether nearby or somewhere else, almost always is problematic.

All FCC regulations can be obtained here: http://wireless.fcc.gov/index.htm?job=rules_and_regulations. Other ITU member countries very likely have similar regulations.

The table (left) lists current frequency allocations in the USA and mid-band wavelengths. The information in this table was taken from FCC regulations Part 2, §2.106.