

## References

### CW Parse Tree

<https://commons.wikimedia.org/wiki/File:Morse-code-tree.svg>

### World Maidenhead Grid Map

<https://www.dxengineering.com/techarticles/dxegeneralnews/download-a-free-worldwide-grid-square-map-from-dx-engineering>

### ARRL Frequency Allocation Chart

<https://www.arrl.org/graphical-frequency-allocations>

### ARRL Considerate Operator's Frequency Guide

<https://www.arrl.org/considerate-operator>

### ARRL Communicating with Other Hams

<https://www.arrl.org/files/file/Get%20on%20the%20Air/Comm%20w%20Other%20Hams-Q%20Signals.pdf>

### Icom US Grid Square Map

[https://www.icomamerica.com/lineup/amateur/Band\\_Plan\\_Map/](https://www.icomamerica.com/lineup/amateur/Band_Plan_Map/)

### Icom Common Prefixes of Countries

<https://www.hamqsl.com/bandchar.pdf>



# US Amateur Radio Bands

US AMATEUR POWER LIMITS — FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.



**KEY**

**Note:** CW operation is permitted throughout all amateur bands.

MW is authorized above 50.1 MHz, except for 144.0-144.1 and 219.220 MHz. Test transmissions are authorized above 51 MHz, except for 219.220 MHz.

= RTTY and data

= phone and image

= CW only

= SSB phone, CW, RTTY, and data.

= Fixed digital message forwarding systems only

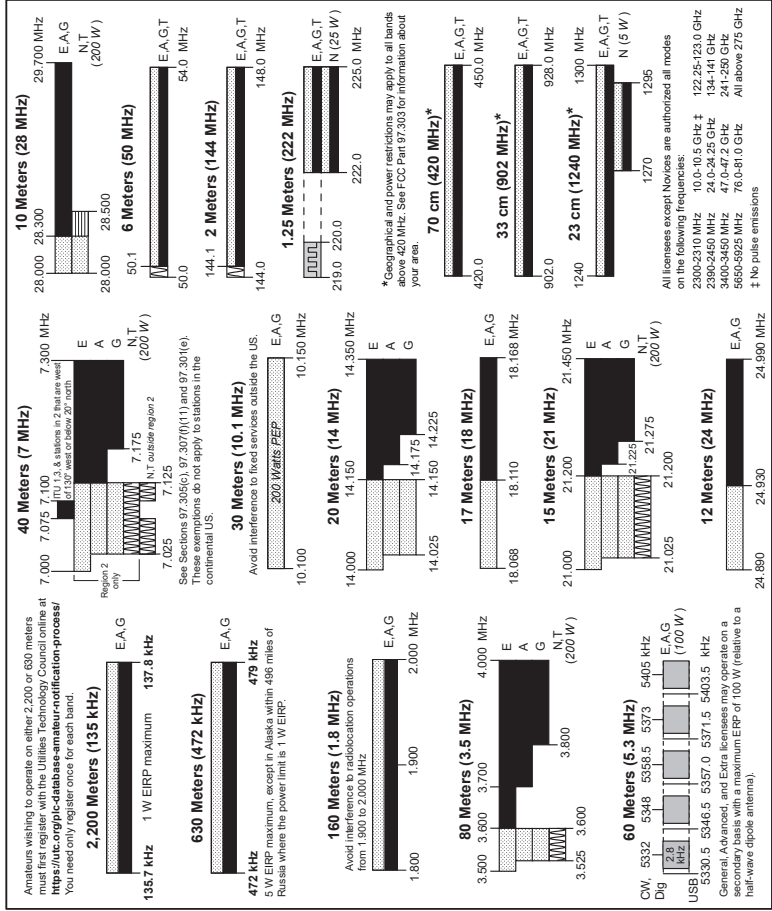
**E** = Amateur Extra

**A** = Advanced

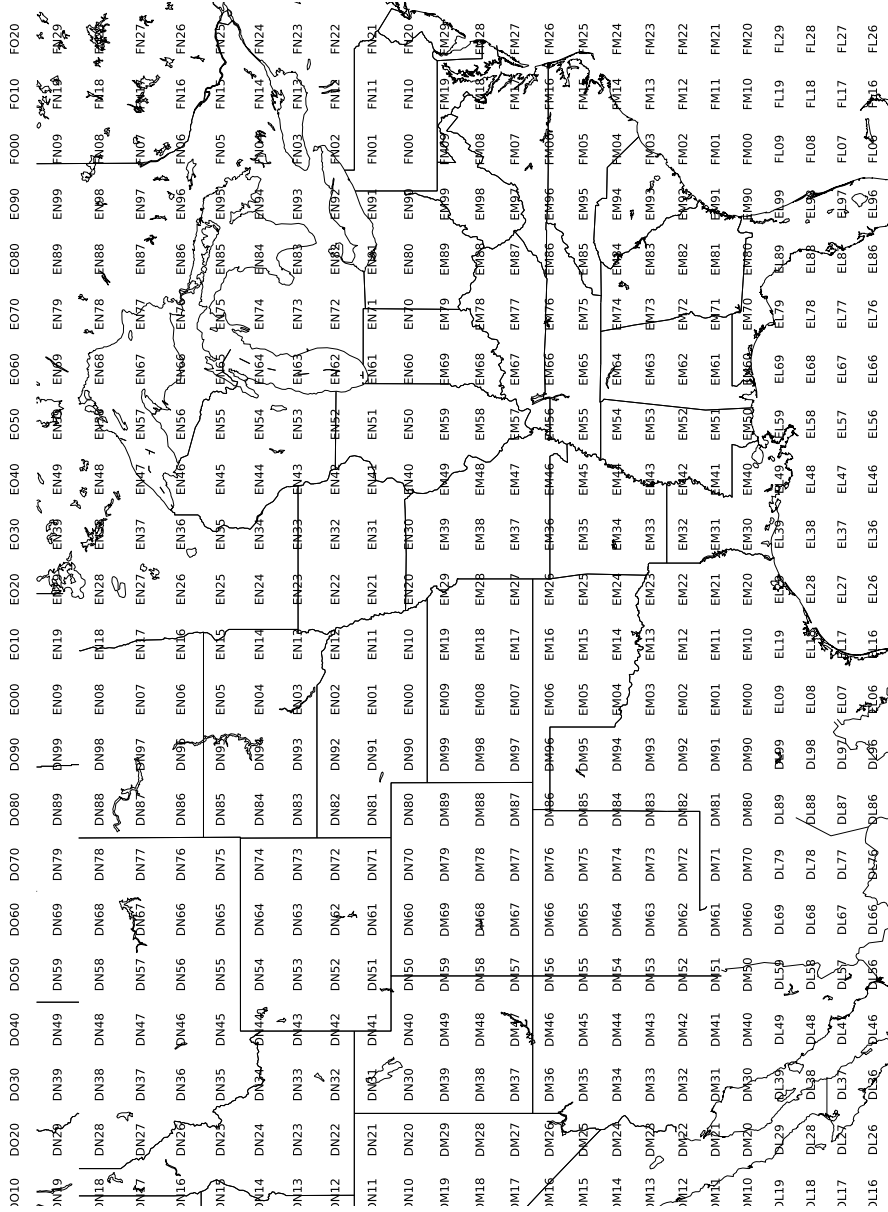
**G** = General

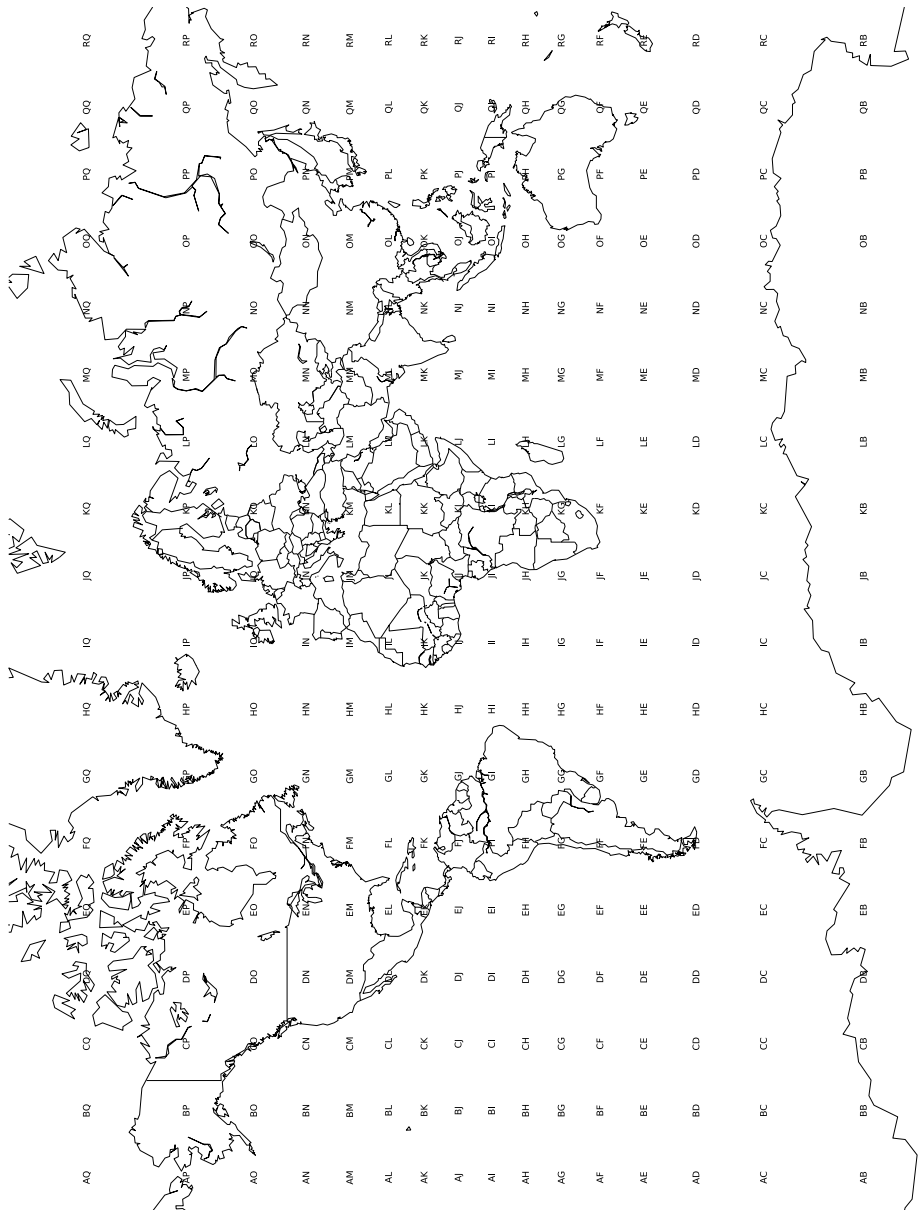
**T** = Technician

**N** = Novice



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## Considerate Frequency Usage

|                |  |               |  |
|----------------|--|---------------|--|
| 1.800–2.000    | CW                                     | 14.233        | D-SSTV                                 |
| 1.800–1.810    | Digital Modes                          | 14.236        | Digital Voice                          |
| 1.810          | CW QRP calling frequency               | 14.285        | QRP SSB calling frequency              |
| 1.843–2.000    | SSB, SSTV and other wideband modes     | 14.286        | AM calling frequency                   |
| 1.910          | SSB QRP                                | 18.100–18.105 | RTTY/Data                              |
| 1.995–2.000    | Experimental                           | 18.105–18.110 | Automatically controlled data stations |
| 1.999–2.000    | Beacons                                | 18.110        | IBP/NCDXF beacons                      |
| 3.500–3.510    | CW DX window                           | 18.162.5      | Digital Voice                          |
| 3.560          | QRP CW calling frequency               | 21.060        | QRP CW calling frequency               |
| 3.570–3.600    | RTTY/Data                              | 21.070–21.110 | RTTY/Data                              |
| 3.585–3.600    | Automatically controlled data stations | 21.090–21.100 | Automatically controlled data stations |
| 3.590          | RTTY/Data DX                           | 21.150        | IBP/NCDXF beacons                      |
| 3.790–3.800    | DX window                              | 21.340        | SSTV                                   |
| 3.845          | SSTV                                   | 21.385        | QRP SSB calling frequency              |
| 3.885          | AM calling frequency                   | 24.920–24.925 | RTTY/Data                              |
| 3.985          | QRP SSB calling frequency              | 24.925–24.930 | Automatically controlled data stations |
| 7.030          | QRP CW calling frequency               | 24.930        | IBP/NCDXF beacons                      |
| 7.040          | RTTY/Data DX                           | 28.060        | QRP CW calling frequency               |
| 7.070–7.125    | RTTY/Data                              | 28.070–28.120 | RTTY/Data                              |
| 7.100–7.105    | Automatically controlled data stations | 28.120–28.189 | Automatically controlled data stations |
| 7.171          | SSTV                                   | 28.190–28.225 | Beacons                                |
| 7.173          | D-SSTV                                 | 28.200        | IBP/NCDXF beacons                      |
| 7.285          | QRP SSB calling frequency              | 28.385        | QRP SSB calling frequency              |
| 7.290          | AM calling frequency                   | 28.680        | SSTV                                   |
| 10.130–10.140  | RTTY/Data                              | 29.000–29.200 | AM                                     |
| 10.140–10.150  | Automatically controlled data stations | 29.300–29.510 | Satellite downlinks                    |
| 14.060         | QRP CW calling frequency               | 29.520–29.580 | Repeater inputs                        |
| 14.070–14.095  | RTTY/Data                              | 29.600        | FM simplex                             |
| 14.095–14.0995 | Automatically controlled data stations | 29.620–29.680 | Repeater outputs                       |
| 14.100         | IBP/NCDXF beacons                      |               |  |
| 14.1005–14.112 | Automatically controlled data stations |               |  |
| 14.230         | SSTV                                   |               |  |

## Q Codes

|            |   |   |
|------------|---|---|
| QRG        | Your exact frequency (or that of ___) is ___ kHz.     | Will you tell me my exact frequency (or that of ___)? |
| QRL        | I am busy (or busy with ___).                         | Are you busy? (Used to ask if frequency is in use)    |
| QRM        | Your transmission is being interfered with ___ (1–5). | Is my transmission being interfered with?             |
| <b>QRN</b> | I am troubled by static ___ (1–5).                    | Are you troubled by static?                           |
| QRO        | Increase power.                                       | Shall I increase power?                               |
| QRP        | Decrease power.                                       | Shall I decrease power?                               |
| QRQ        | Send faster (___ wpm).                                | Shall I send faster?                                  |
| QRS        | Send more slowly (___ wpm).                           | Shall I send more slowly?                             |
| QRT        | Stop sending.   | Shall I stop sending?                                 |
| QRU        | I have nothing for you.                               | Have you anything for me?                             |
| QRV        | I am ready.   | Are you ready?  |
| QRX        | I will call you again at ___ (on ___ kHz).            | When will you call me again?                          |
| <b>QRZ</b> | You are being called by ___ (on ___ kHz).             | Who is calling me?                                    |
| QSB        | Your signals are fading.                              | Are my signals fading?                                |
| QSK        | I can hear you between signals.                       | Can I break in on your transmission?                  |
| <b>QSL</b> | I am acknowledging receipt.                           | Can you acknowledge receipt?                          |
| <b>QSO</b> | I can communicate with ___ direct (or via ___).       | Can you communicate with ___ direct or by relay?      |
| QSP        | I will relay to ___.                                  | Will you relay to ___?                                |
| QST        | General call to all amateurs (CQ ARRL).               | –   |
| QSX        | I am listening to ___ on ___ kHz.                     | Will you listen to ___ on ___ kHz?                    |
| QSY        | Change to another frequency (or ___ kHz).             | Shall I change to another frequency?                  |
| QTC        | I have ___ messages for you (or for ___).             | How many messages have you to send?                   |
| <b>QTH</b> | <b>My location is ___.</b>                            | <b>What is your location?</b>                         |
| QTR        | The time is ___.                                      | What is the correct time?                             |

## Callsign Country Prefixes

|                   |                |                   |                      |
|-------------------|----------------|-------------------|----------------------|
| <b>K, N, W</b>    | United States  | <b>CT</b>         | Portugal             |
| <b>AA–AL</b>      | United States  | <b>LU</b>         | Argentina            |
| <b>VE</b>         | Canada         | <b>PY</b>         | Brazil               |
| <b>VA, VO, VY</b> | Canada         | <b>CX</b>         | Uruguay              |
| <b>ZL</b>         | New Zealand    | <b>YV</b>         | Venezuela            |
| <b>VK</b>         | Australia      | <b>XE</b>         | Mexico               |
| <b>JA, JE, JH</b> | Japan          | <b>TI</b>         | Costa Rica           |
| <b>G, M</b>       | United Kingdom | <b>OA</b>         | Peru                 |
| <b>F</b>          | France         | <b>CE</b>         | Chile                |
| <b>DL</b>         | Germany        | <b>HL</b>         | South Korea          |
| <b>I</b>          | Italy          | <b>BY, BG, BH</b> | China                |
| <b>ON</b>         | Belgium        | <b>HS</b>         | Thailand             |
| <b>PA</b>         | Netherlands    | <b>9V</b>         | Singapore            |
| <b>SM, SA</b>     | Sweden         | <b>VU</b>         | India                |
| <b>OH</b>         | Finland        | <b>4X, 4Z</b>     | Israel               |
| <b>LA, LB</b>     | Norway         | <b>ZS</b>         | South Africa         |
| <b>OE</b>         | Austria        | <b>SU</b>         | Egypt                |
| <b>OK</b>         | Czech Republic | <b>A6</b>         | United Arab Emirates |
| <b>SP</b>         | Poland         | <b>A7</b>         | Qatar                |
| <b>HA</b>         | Hungary        | <b>A9</b>         | Bahrain              |
| <b>YU</b>         | Serbia         | <b>9K</b>         | Kuwait               |
| <b>EA</b>         | Spain          |                   |                      |

SSB

**A (Calling CQ):** “CQ CQ CQ, this is K1ABC, Kilo One Alpha Bravo Charlie, calling CQ and standing by.”

**B (Responding):** “K1ABC, this is W2XYZ, Whiskey Two X-ray Yankee Zulu.”

**A:** “W2XYZ, good afternoon, you’re 59 here in Boston, Massachusetts. Name is John, Juliet Oscar Hotel November. Back to you, W2XYZ from K1ABC.”

**B:** “Thanks John, you’re 59 as well in New Jersey. Name is Mike, Mike India Kilo Echo. Nice to meet you, John. K1ABC, this is W2XYZ.”

**A:** “Very good Mike, thanks for the QSO. 73 and have a great day. K1ABC is now clear.”

SSB Contest

**Activator (A) calling:** “CQ POTA, CQ Parks on the Air, this is K1ABC, Kilo One Alpha Bravo Charlie, calling CQ POTA and standing by.”

**Hunter (B) responds:** “K1ABC, this is W2XYZ.”

**Activator (A):** “W2XYZ, you’re 59 into park K-1234.”

**Hunter (B):** “Thanks for the 59. You’re 57 in New Jersey. 73!”

**Activator (A):** “Copy the 57 New Jersey. Thanks for hunting! QRZ, this is K1ABC, park K-1234.”

CW

**A (Calling CQ):** “CQ CQ CQ DE K1ABC K1ABC K1ABC K”  
(Calling any station, this is K1ABC, standing by)

**B (Responding):** “K1ABC DE W2XYZ W2XYZ K”  
(K1ABC, this is W2XYZ, over)

**A:** “W2XYZ DE K1ABC UR 599 IN MA. NAME JOHN. HW? W2XYZ DE K1ABC K”  
(You’re 599 in Massachusetts. My name is John. How do you copy?)

**B:** “K1ABC DE W2XYZ R UR 589 IN NJ. NAME MIKE. RIG KX3, 10W. WX SUNNY. K1ABC DE W2XYZ K”  
(Roger, you’re 589 in New Jersey. My name is Mike. My rig is a KX3 running 10 watts. Weather is sunny.)

**A:** “R TNX MIKE. 73 ES HPE CUAGN. W2XYZ DE K1ABC SK”  
(Roger, thanks Mike. Best regards and hope to see you again. Signing off.)

Prosigns

|    |                              |  |
|----|------------------------------|--|
| AR | End of message               | Often sent as “di-dah-di-dah-dit” (↔↔↔)                          |
| AS | Stand by                     | “di-dah-di-di-dit”; used to ask someone to wait                  |
| BK | Break                        | Used to invite the other station to transmit immediately         |
| BT | Separator                    | Break between thoughts or paragraphs (“dah-di-di-di-dah”)        |
| CL | Closing down                 | Used when signing off the air permanently or for the day         |
| CQ | Calling any station          | General call: “di-dah-di-dah” then “dah-dah-di-dah”              |
| CT | Start of message             | Used to begin formal traffic messages                            |
| EE | Error                        | Correcting a mistake; usually sent as “di-di-di-di” rapidly      |
| K  | Go ahead                     | Invitation for the other station to transmit                     |
| KN | Go ahead, named station only | Stronger version of K—only the called station should respond     |
| R  | Roger (message received)     | Confirms receipt of last transmission                            |
| SK | End of contact               | “Silent Key”; final sign-off (di-di-di-dah-di-dah)               |
| SN | Understood                   | Used in formal message handling (equivalent to “QSL” or “Roger”) |

|                           |                          |                |                    |
|---------------------------|--------------------------|----------------|--------------------|
| <b>A</b> Alpha<br>.-      | <b>N</b> November<br>--  | <b>0</b> ----- | <b>'</b> -----     |
| <b>B</b> Bravo<br>-...    | <b>O</b> Oscar<br>----   | <b>1</b> ----- | <b>!</b> -----     |
| <b>C</b> Charlie<br>-.-.  | <b>P</b> Papa<br>-.-.    | <b>2</b> ----  | <b>/</b> ----.     |
| <b>D</b> Delta<br>--      | <b>Q</b> Quebec<br>----  | <b>3</b> ----  | <b>(</b> ----.     |
| <b>E</b> Echo<br>.        | <b>R</b> Romeo<br>-.     | <b>4</b> ----  | <b>)</b> -----     |
| <b>F</b> Foxtrot<br>...-  | <b>S</b> Sierra<br>...   | <b>5</b> ----  | <b>&amp;</b> ----. |
| <b>G</b> Golf<br>---      | <b>T</b> Tango<br>-      | <b>6</b> ----  | <b>:</b> -----     |
| <b>H</b> Hotel<br>....    | <b>U</b> Umbrella<br>--- | <b>7</b> ----  | <b>;</b> -----     |
| <b>I</b> India<br>..      | <b>V</b> Victor<br>....  | <b>8</b> ----- | <b>=</b> ----      |
| <b>J</b> Juliet<br>.-.-.- | <b>W</b> Whiskey<br>.-.- | <b>9</b> ----- | <b>+</b> -.-.      |
| <b>K</b> Kilo<br>-.-      | <b>X</b> X-ray<br>-.-.   | <b>.</b> ----- | <b>-</b> -----     |
| <b>L</b> Lima<br>-...     | <b>Y</b> Yankee<br>-.-.- | <b>,</b> ----- | <b>_</b> -----     |
| <b>M</b> Mike<br>--       | <b>Z</b> Zulu<br>--..    | <b>?</b> ----- |                    |

