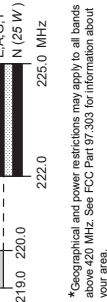
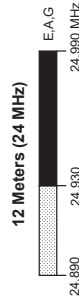
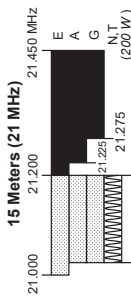
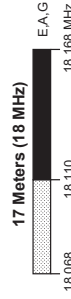
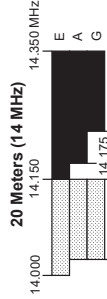
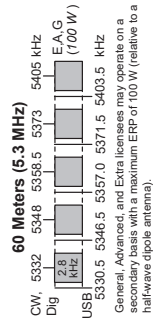
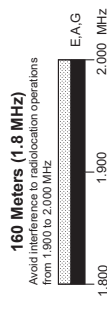
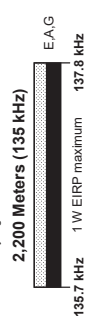


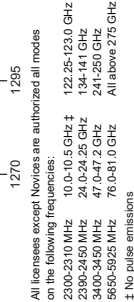
US Amateur Radio Bands

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.

Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/pic-database-amateur-notification-process/>. You need only register once for each band.



*Geographical and power restrictions may apply to all bands above 420 MHz. See FCC Part 97.303 for information about your area.



All licensees except Novices are authorized all modes on the following frequencies:

| Frequency | 10.0-10.5 GHz ‡ | 12.2-12.3 GHz |
|---------------|-----------------|-------------------|
| 2300-2310 MHz | 10.0-10.5 GHz ‡ | 12.2-12.3 GHz |
| 2390-2450 MHz | 24.0-24.25 GHz | 134-141 GHz |
| 3400-3450 MHz | 47.0-47.2 GHz | 241-250 GHz |
| 5650-5925 MHz | 76.0-81.0 GHz | All above 275 GHz |

‡ No pulse emissions



KEY

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

See www.arrl.org/band-plan for detailed band plans.

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email: newham@arrl.org
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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 | | |

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

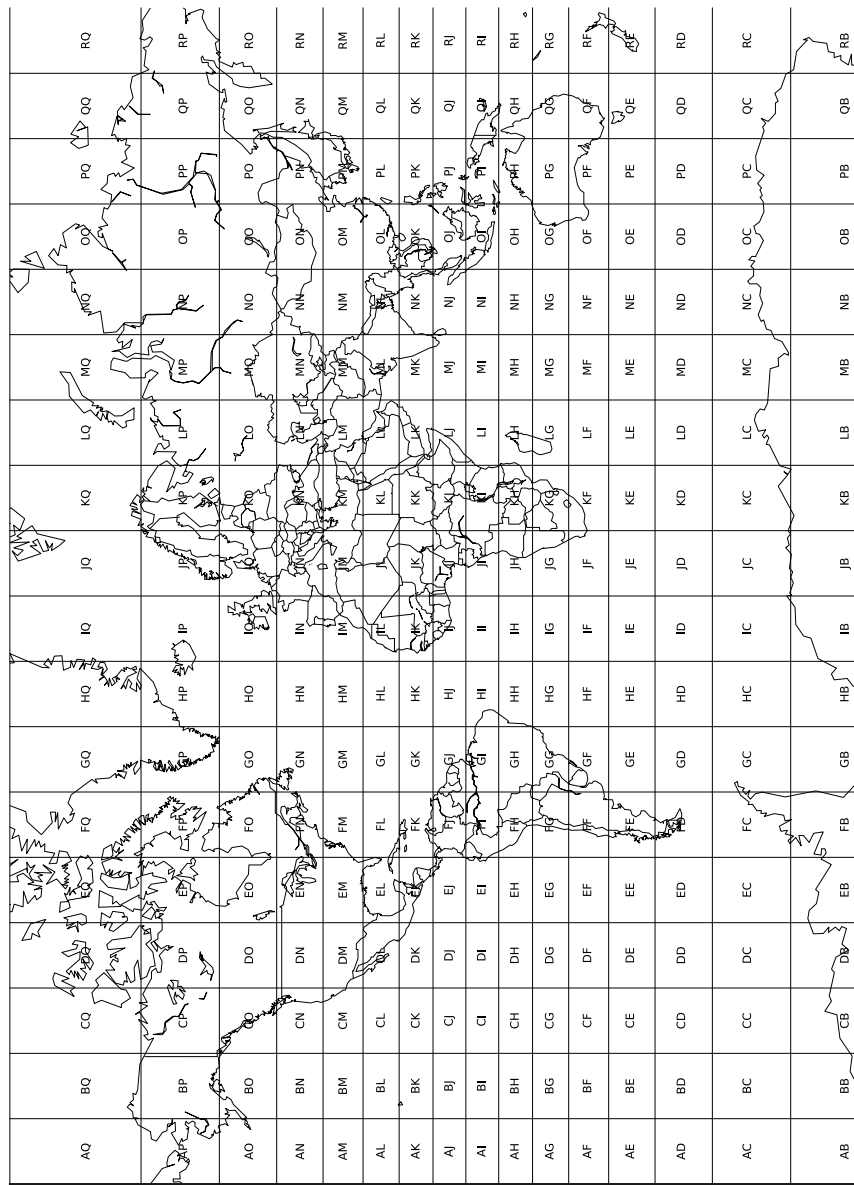
<https://www.arrl.org/files/file/Get%20on%20the%20Air/Comm%20w%20Other%20Hams-Q%20Signals.pdf>

Icom US Grid Square Map

https://www.icomamerica.com/lineup/amateur/Band_Plan_Map/

Icom Common Prefixes of Countries

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



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? |
| QRN | 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? |
| QRZ | 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? |
| QSL | I am acknowledging receipt. | Can you acknowledge receipt? |
| QSO | 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? |
| QTH | My location is ___. | What is your location? |
| QTR | The time is ___. | What is the correct time? |

Prosigns

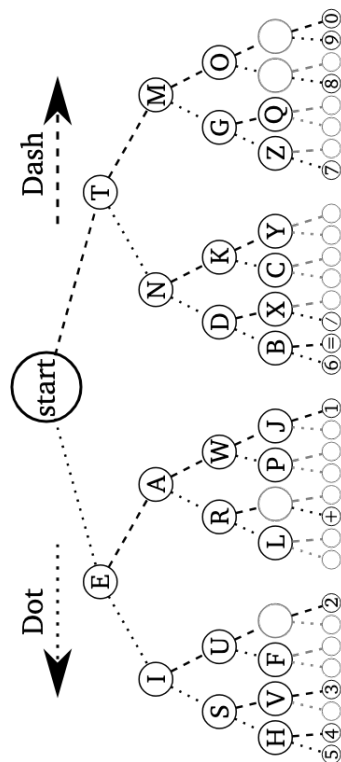
| | | |
|----|------------------------------|--|
| AR | End of message | Often sent as “di-dah-di-dah-dit” (•---•) |
| AS | Stand by | “di-dah-di-di-dit”; used to ask someone to wait |
| BK | Break | Used to invite the other station to transmit immediately |
| BT | Separator | Break between thoughts or paragraphs (“dah-di-di-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”) |

| | | | | | | | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|
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| DN19 | DN29 | DN39 | DN49 | DN59 | DN69 | DN79 | DN89 | DN99 | EN19 | EN29 | EN39 | EN49 | EN59 | FN69 | FN79 | FN89 | FN99 | FN09 | FN19 | FN29 | FN39 |
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| DN15 | DN25 | DN35 | DN45 | DN55 | DN65 | DN75 | DN85 | DN95 | EN15 | EN25 | EN352 | | | | | | | | | | |

Callsign Country Prefixes

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

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



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.)