

**AMATEUR
RADIO**



**POCKET
REF**

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.

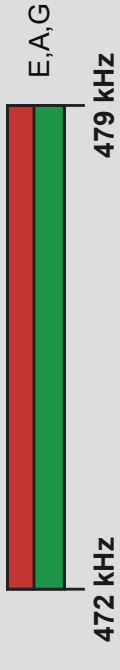
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/plc-database-amateur-notification-process/> You need only register once for each band.

2,200 Meters (135 kHz)



630 Meters (472 kHz)

5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.

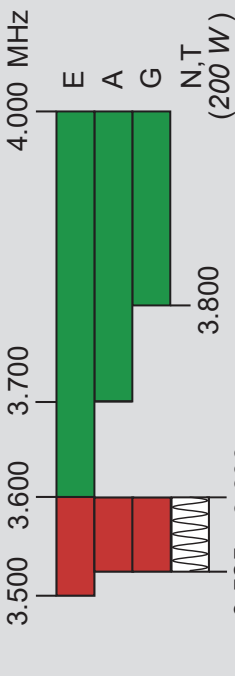


160 Meters (1.8 MHz)

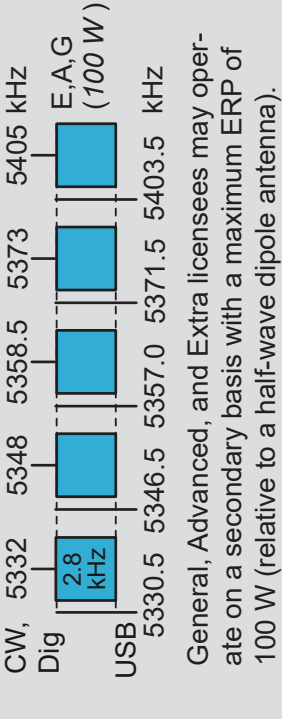
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz



80 Meters (3.5 MHz)

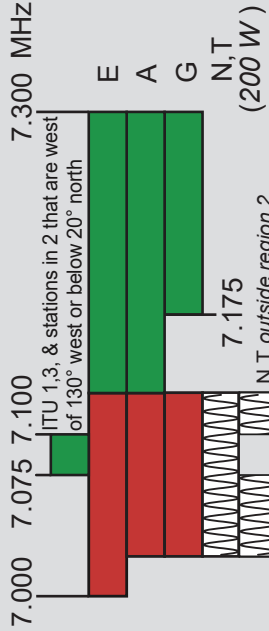


60 Meters (5.3 MHz)



General, Advanced, and Extra licensees may operate on a secondary basis with a maximum ERP of 100 W (relative to a half-wave dipole antenna).

40 Meters (7 MHz)



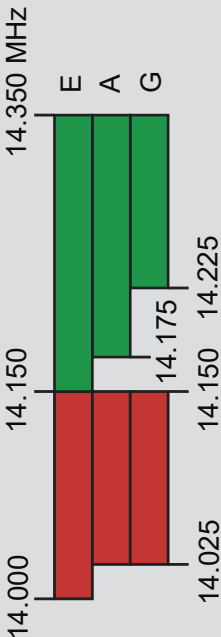
See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.

30 Meters (10.1 MHz)

Avoid interference to fixed services outside the US.



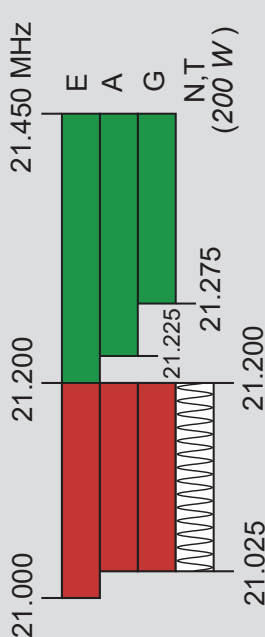
20 Meters (14 MHz)



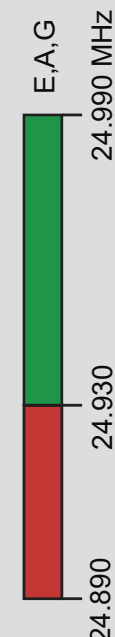
17 Meters (18 MHz)



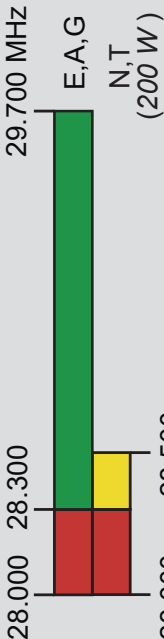
15 Meters (21 MHz)



12 Meters (24 MHz)



10 Meters (28 MHz)



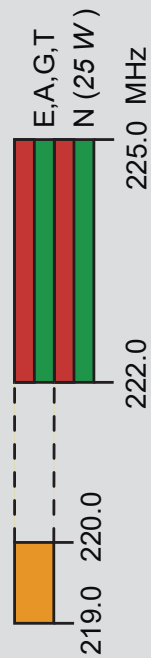
6 Meters (50 MHz)



2 Meters (144 MHz)



1.25 Meters (222 MHz)



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

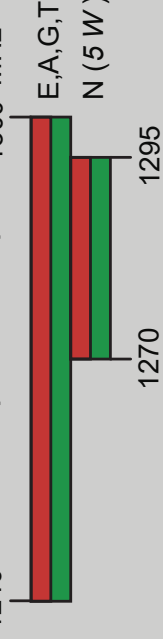
70 cm (420 MHz)*



33 cm (902 MHz)*



23 cm (1240 MHz)*



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

2300-2310 MHz	10.0-10.5 GHz ‡	122.25-123.0 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



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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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		

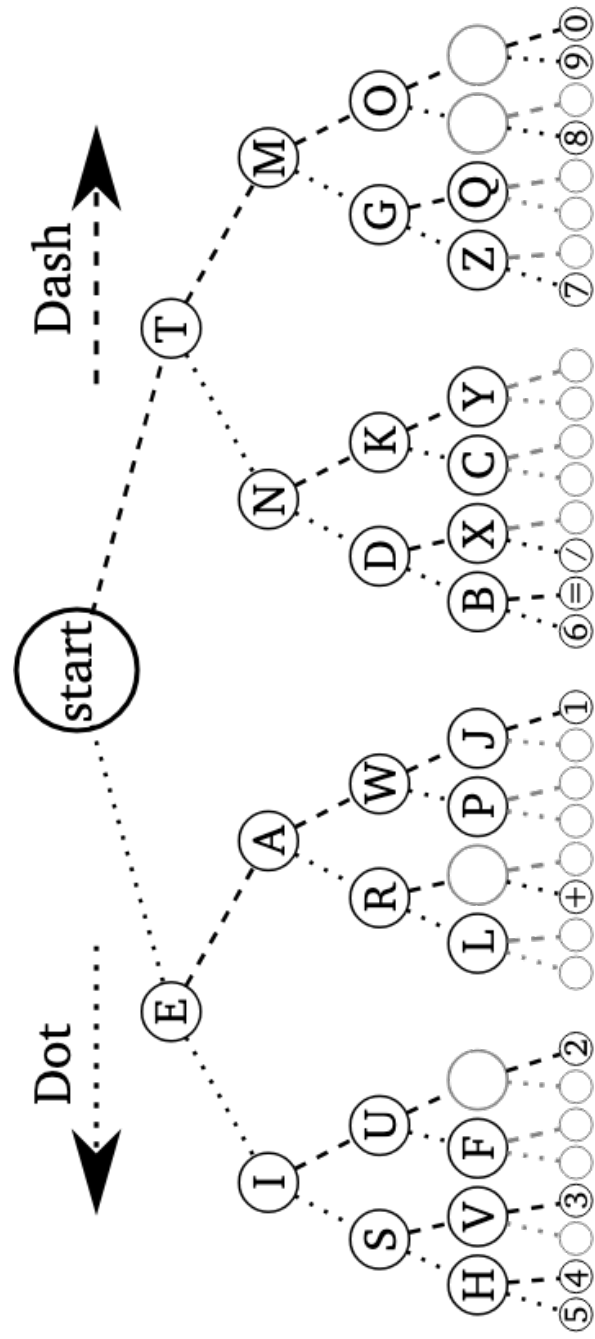
Q Codes

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?
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-di-dah”)
CL	Closing down	Used when signing off the air permanently or for the day
CQ	Calling any station	General call: “dah-di-dah-di” 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”)

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 Uniform ..—	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 US-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)

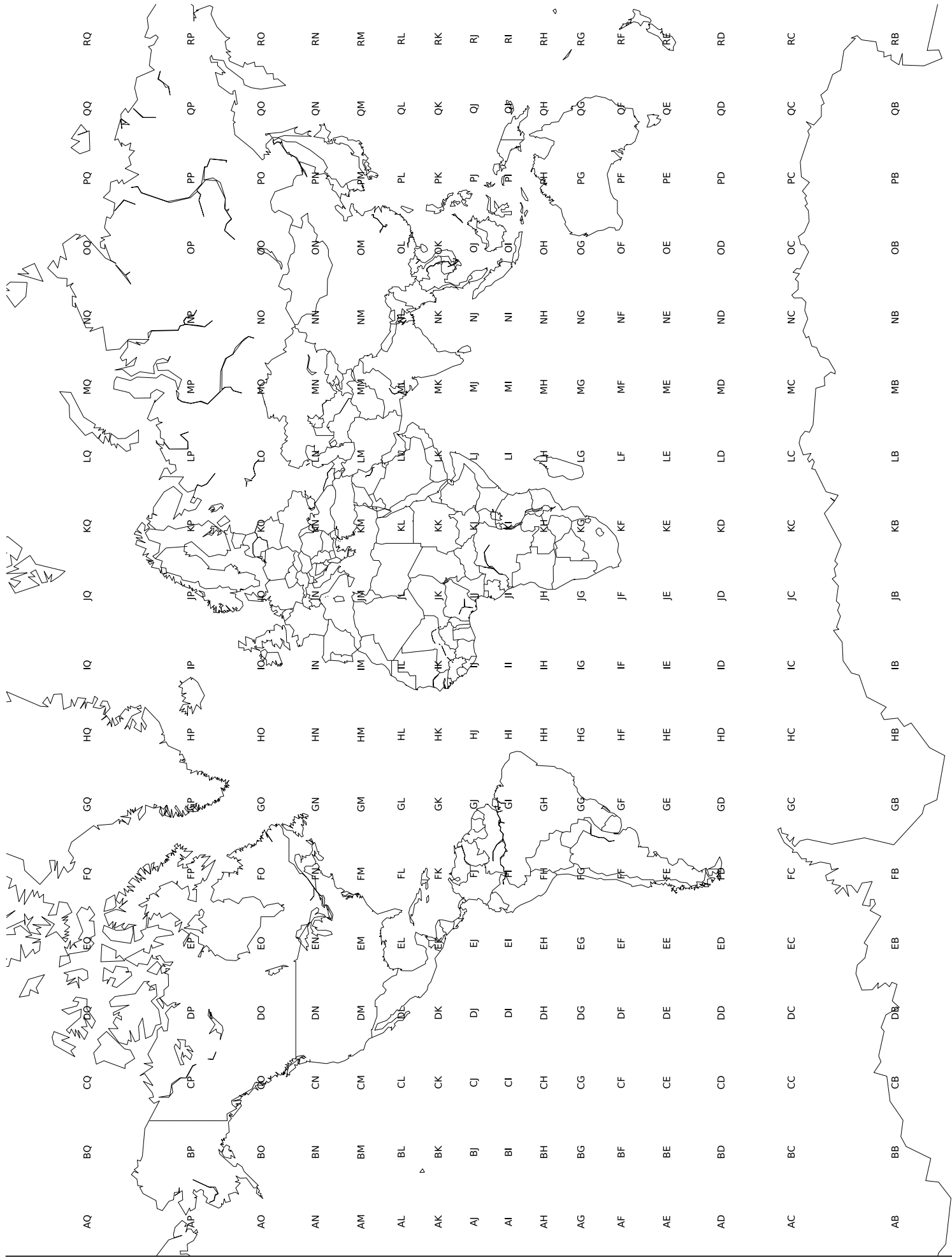
A: “W2XYZ DE K1ABC UR 599 IN MA = NAME JOHN = HW? W2XYZ DE K1ABC K”
(You're 599 in Massachusetts. My name is John. How do you copy?)

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.)

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		



CN79	CN89	CN99	DN19	DN29	DN39	DN49	DN59	DN69	DN79	DN89	DN99	EN09	EN19	EN29	EN39	EN49	EN59	EN69	EN79	EN89	EN99	FO09	FO19	FO29	FO39	FO49	FO59	FO69	FO79
CN78	CN88	CN98	DN18	DN28	DN38	DN48	DN58	DN68	DN78	DN88	DN98	EN08	EN18	EN28	EN38	EN48	EN58	EN68	EN78	EN88	EN98	FO08	FO18	FO28	FO38	FO48	FO58	FO68	FO78
CN77	CN87	CN97	DN17	DN27	DN37	DN47	DN57	DN67	DN77	DN87	DN97	EN07	EN17	EN27	EN37	EN47	EN57	EN67	EN77	EN87	EN97	FO07	FO17	FO27	FO37	FO47	FO57	FO67	FO77
CN76	CN86	CN96	DN16	DN26	DN36	DN46	DN56	DN66	DN76	DN86	DN96	EN06	EN16	EN26	EN36	EN46	EN56	EN66	EN76	EN86	EN96	FO06	FO16	FO26	FO36	FO46	FO56	FO66	FO76
CN75	CN85	CN95	DN15	DN25	DN35	DN45	DN55	DN65	DN75	DN85	DN95	EN05	EN15	EN25	EN35	EN45	EN55	EN65	EN75	EN85	EN95	FO05	FO15	FO25	FO35	FO45	FO55	FO65	FO75
CN74	CN84	CN94	DN14	DN24	DN34	DN44	DN54	DN64	DN74	DN84	DN94	EN04	EN14	EN24	EN34	EN44	EN54	EN64	EN74	EN84	EN94	FO04	FO14	FO24	FO34	FO44	FO54	FO64	FO74
CN73	CN83	CN93	DN13	DN23	DN33	DN43	DN53	DN63	DN73	DN83	DN93	EN03	EN13	EN23	EN33	EN43	EN53	EN63	EN73	EN83	EN93	FO03	FO13	FO23	FO33	FO43	FO53	FO63	FO73
CN72	CN82	CN92	DN12	DN22	DN32	DN42	DN52	DN62	DN72	DN82	DN92	EN02	EN12	EN22	EN32	EN42	EN52	EN62	EN72	EN82	EN92	FO02	FO12	FO22	FO32	FO42	FO52	FO62	FO72
CN71	CN81	CN91	DN11	DN21	DN31	DN41	DN51	DN61	DN71	DN81	DN91	EN01	EN11	EN21	EN31	EN41	EN51	EN61	EN71	EN81	EN91	FO01	FO11	FO21	FO31	FO41	FO51	FO61	FO71
CN70	CN80	CN90	DN10	DN20	DN30	DN40	DN50	DN60	DN70	DN80	DN90	EN00	EN10	EN20	EN30	EN40	EN50	EN60	EN70	EN80	EN90	FO00	FO10	FO20	FO30	FO40	FO50	FO60	FO70
CM79	CM89	CM99	DM19	DM29	DM39	DM49	DM59	DM69	DM79	DM89	DM99	EM09	EM19	EM29	EM39	EM49	EM59	EM69	EM79	EM89	EM99	FM09	FM19	FM29	FM39	FM49	FM59	FM69	FM79
CM78	CM88	CM98	DM18	DM28	DM38	DM48	DM58	DM68	DM78	DM88	DM98	EM08	EM18	EM28	EM38	EM48	EM58	EM68	EM78	EM88	EM98	FM08	FM18	FM28	FM38	FM48	FM58	FM68	FM78
CM77	CM87	CM97	DM17	DM27	DM37	DM47	DM57	DM67	DM77	DM87	DM97	EM07	EM17	EM27	EM37	EM47	EM57	EM67	EM77	EM87	EM97	FM07	FM17	FM27	FM37	FM47	FM57	FM67	FM77
CM76	CM86	CM96	DM16	DM26	DM36	DM46	DM56	DM66	DM76	DM86	DM96	EM06	EM16	EM26	EM36	EM46	EM56	EM66	EM76	EM86	EM96	FM06	FM16	FM26	FM36	FM46	FM56	FM66	FM76
CM75	CM85	CM95	DM15	DM25	DM35	DM45	DM55	DM65	DM75	DM85	DM95	EM05	EM15	EM25	EM35	EM45	EM55	EM65	EM75	EM85	EM95	FM05	FM15	FM25	FM35	FM45	FM55	FM65	FM75
CM74	CM84	CM94	DM14	DM24	DM34	DM44	DM54	DM64	DM74	DM84	DM94	EM04	EM14	EM24	EM34	EM44	EM54	EM64	EM74	EM84	EM94	FM04	FM14	FM24	FM34	FM44	FM54	FM64	FM74
CM73	CM83	CM93	DM13	DM23	DM33	DM43	DM53	DM63	DM73	DM83	DM93	EM03	EM13	EM23	EM33	EM43	EM53	EM63	EM73	EM83	EM93	FM03	FM13	FM23	FM33	FM43	FM53	FM63	FM73
CM72	CM82	CM92	DM12	DM22	DM32	DM42	DM52	DM62	DM72	DM82	DM92	EM02	EM12	EM22	EM32	EM42	EM52	EM62	EM72	EM82	EM92	FM02	FM12	FM22	FM32	FM42	FM52	FM62	FM72
CM71	CM81	CM91	DM11	DM21	DM31	DM41	DM51	DM61	DM71	DM81	DM91	EM01	EM11	EM21	EM31	EM41	EM51	EM61	EM71	EM81	EM91	FM01	FM11	FM21	FM31	FM41	FM51	FM61	FM71
CM70	CM80	CM90	DM10	DM20	DM30	DM40	DM50	DM60	DM70	DM80	DM90	EM00	EM10	EM20	EM30	EM40	EM50	EM60	EM70	EM80	EM90	FM00	FM10	FM20	FM30	FM40	FM50	FM60	FM70
CL79	CL89	CL99	DL19	DL29	DL39	DL49	DL59	DL69	DL79	DL89	DL99	EL09	EL19	EL29	EL39	EL49	EL59	EL69	EL79	EL89	EL99	FL09	FL19	FL29	FL39	FL49	FL59	FL69	FL79
CL78	CL88	CL98	DL18	DL28	DL38	DL48	DL58	DL68	DL78	DL88	DL98	EL08	EL18	EL28	EL38	EL48	EL58	EL68	EL78	EL88	EL98	FL08	FL18	FL28	FL38	FL48	FL58	FL68	FL78
CL77	CL87	CL97	DL17	DL27	DL37	DL47	DL57	DL67	DL77	DL87	DL97	EL07	EL17	EL27	EL37	EL47	EL57	EL67	EL77	EL87	EL97	FL07	FL17	FL27	FL37	FL47	FL57	FL67	FL77
CL76	CL86	CL96	DL16	DL26	DL36	DL46	DL56	DL66	DL76	DL86	DL96	EL06	EL16	EL26	EL36	EL46	EL56	EL66	EL76	EL86	EL96	FL06	FL16	FL26	FL36	FL46	FL56	FL66	FL76
CL75	CL85	CL95	DL15	DL25	DL35	DL45	DL55	DL65	DL75	DL85	DL95	EL05	EL15	EL25	EL35	EL45	EL55	EL65	EL75	EL85	EL95	FL05	FL15	FL25	FL35	FL45	FL55	FL65	FL75
CL74	CL84	CL94	DL14	DL24	DL34	DL44	DL54	DL64	DL74	DL84	DL94	EL04	EL14	EL24	EL34	EL44	EL54	EL64	EL74	EL84	EL94	FL04	FL14	FL24	FL34	FL44	FL54	FL64	FL74

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>