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)

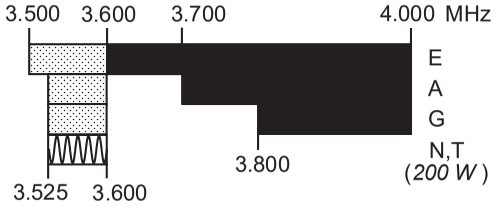
630 Meters (472 kHz)

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

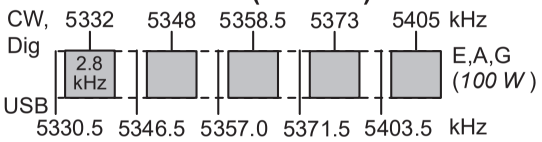
160 Meters (1.8 MHz)

Avoid interference to radiolocation operations from 1.900 to 2.000 MHz

80 Meters (3.5 MHz)

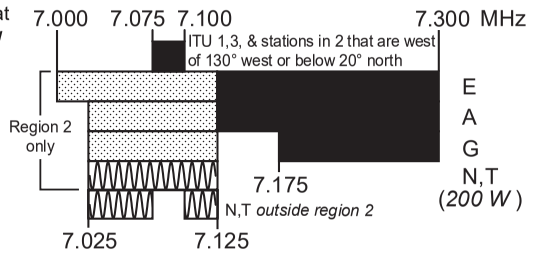


60 Meters (5.3 MHz)



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)

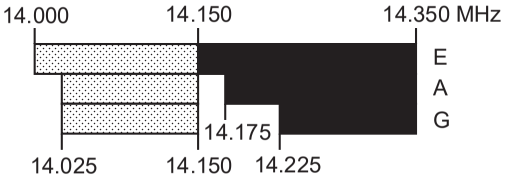


See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.

30 Meters (10.1 MHz)

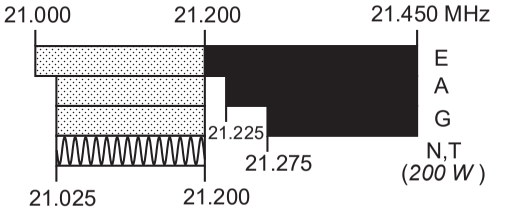
Avoid interference to fixed services outside the US.

20 Meters (14 MHz)



17 Meters (18 MHz)

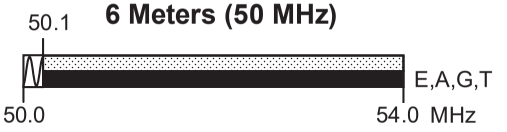
15 Meters (21 MHz)



12 Meters (24 MHz)

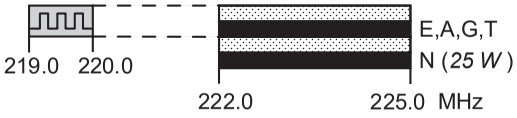
10 Meters (28 MHz)

6 Meters (50 MHz)



2 Meters (144 MHz)

1.25 Meters (222 MHz)

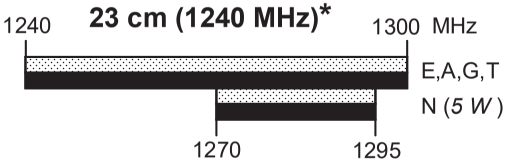


*Geographical and power restrictions may apply to all bands above 420 MHz. See FCC Part 97.303 for information about your area.

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

- = RTTY and data
- = phone and image
- = CW *only*
- = SSB phone
- = USB 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

Exams: 860-594-0300 email: vec@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		

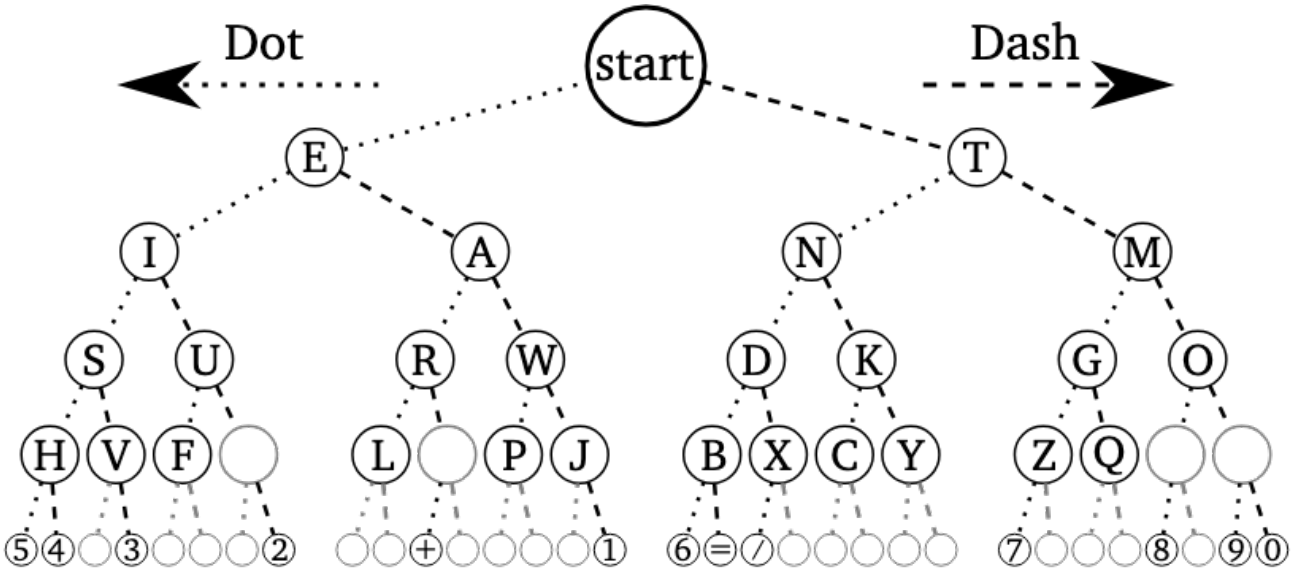
Q Codes

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: “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”)

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 ––··	?	··––··		


Dot
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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*)

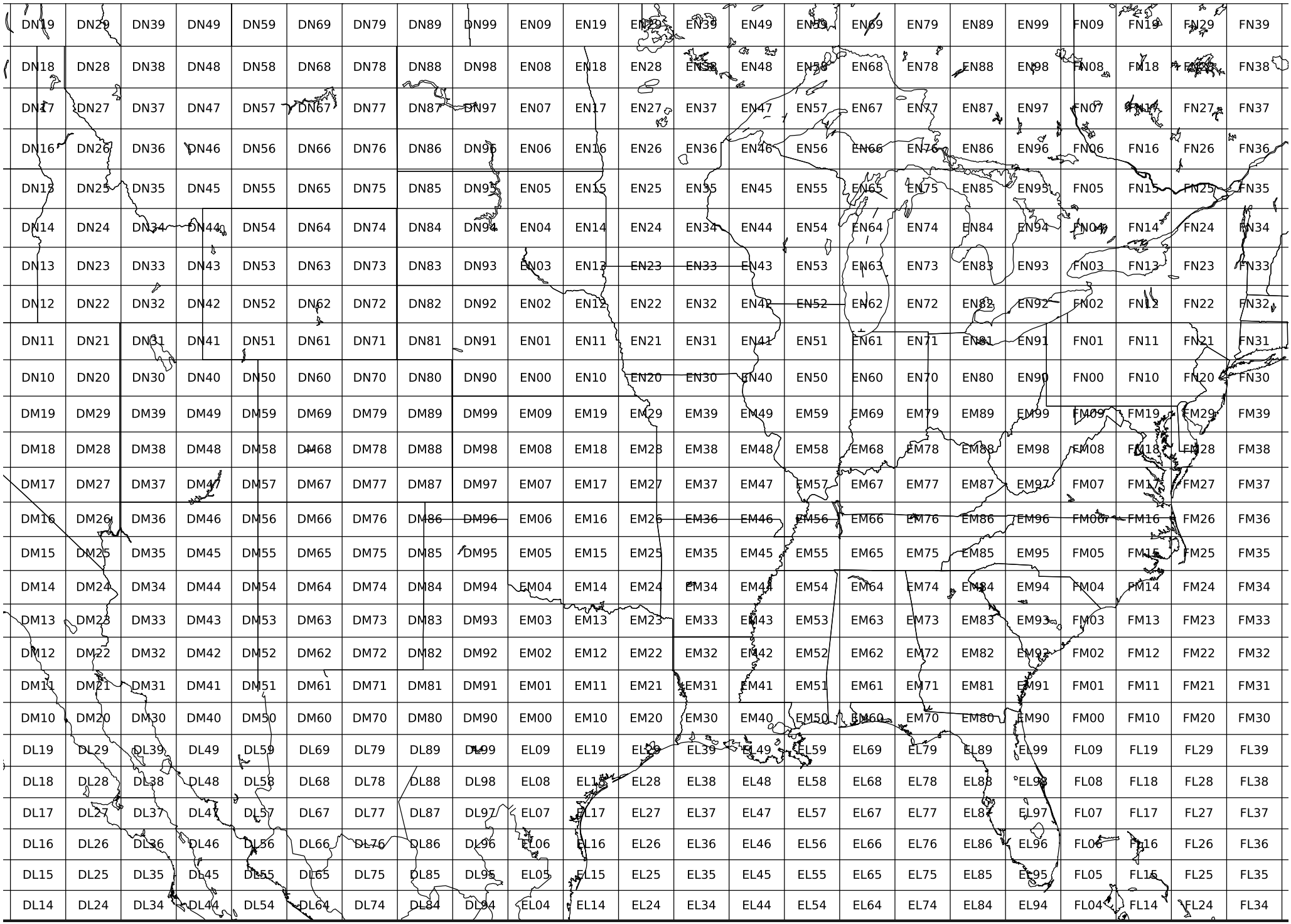
A: “W2XYZ DE K1ABC UR 599 IN MA. NAME JOHN. HW? W2XYZ DE K1ABC K”
(*You're 599 in Massachusetts. My name is John. How do you copy?*)

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.*)

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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DN19 DN29 DN39 DN49 DN59 DN69 DN79 DN89 DN99 EN09 EN19 EN29 EN39 EN49 EN59 EN69 EN79 EN89 EN99 FN09 FN19 FN29 FN39
DN18 DN28 DN38 DN48 DN58 DN68 DN78 DN88 DN98 EN08 EN18 EN28 EN38 EN48 EN58 EN68 EN78 EN88 EN98 FN08 FN18 FN28 FN38
DN17 DN27 DN37 DN47 DN57 DN67 DN77 DN87 DN97 EN07 EN17 EN27 EN37 EN47 EN57 EN67 EN77 EN87 EN97 FN07 FN17 FN27 FN37
DN16 DN26 DN36 DN46 DN56 DN66 DN76 DN86 DN96 EN06 EN16 EN26 EN36 EN46 EN56 EN66 EN76 EN86 EN96 FN06 FN16 FN26 FN36
DN15 DN25 DN35 DN45 DN55 DN65 DN75 DN85 DN95 EN05 EN15 EN25 EN35 EN45 EN55 EN65 EN75 EN85 EN95 FN05 FN15 FN25 FN35
DN14 DN24 DN34 DN44 DN54 DN64 DN74 DN84 DN94 EN04 EN14 EN24 EN34 EN44 EN54 EN64 EN74 EN84 EN94 FN04 FN14 FN24 FN34
DN13 DN23 DN33 DN43 DN53 DN63 DN73 DN83 DN93 EN03 EN13 EN23 EN33 EN43 EN53 EN63 EN73 EN83 EN93 FN03 FN13 FN23 FN33
DN12 DN22 DN32 DN42 DN52 DN62 DN72 DN82 DN92 EN02 EN12 EN22 EN32 EN42 EN52 EN62 EN72 EN82 EN92 FN02 FN12 FN22 FN32
DN11 DN21 DN31 DN41 DN51 DN61 DN71 DN81 DN91 EN01 EN11 EN21 EN31 EN41 EN51 EN61 EN71 EN81 EN91 FN01 FN11 FN21 FN31
DN10 DN20 DN30 DN40 DN50 DN60 DN70 DN80 DN90 EN00 EN10 EN20 EN30 EN40 EN50 EN60 EN70 EN80 EN90 FN00 FN10 FN20 FN30
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DL16 DL26 DL36 DL46 DL56 DL66 DL76 DL86 DL96 EL06 EL16 EL26 EL36 EL46 EL56 EL66 EL76 EL86 EL96 FL06 FL16 FL26 FL36
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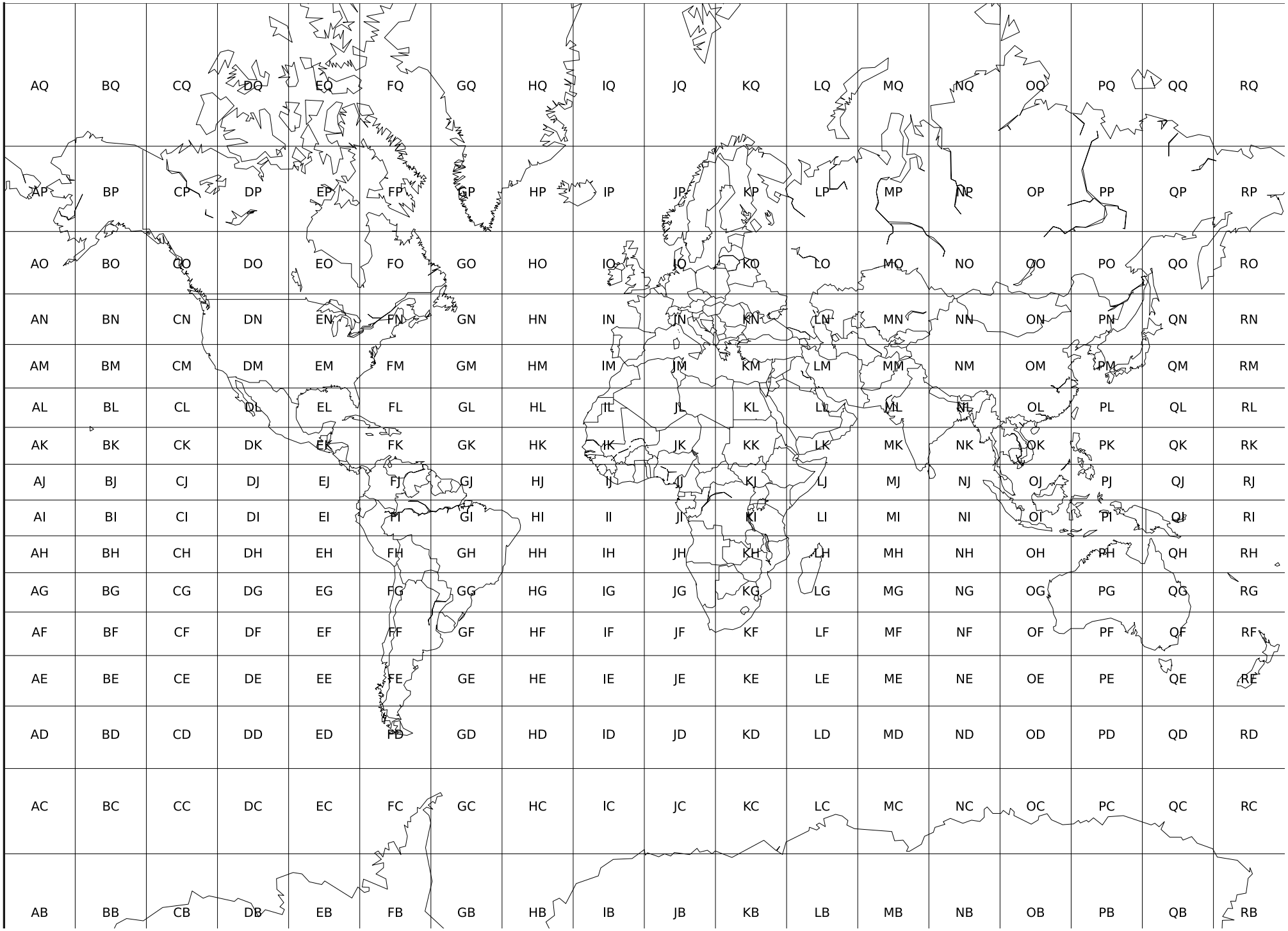
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AP BP CP DP EP FP GP HP IP JP KP LP MP NP OP PP QP RP
AO BO CO DO EO FO GO HO IO JO KO LO MO NO OO PO QO RO
AN BN CN DN EN FN GN HN IN JN KN LN MN NN ON PN QN RN
AM BM CM DM EM FM GM HM IM JM KM LM MM NM OM PM QM RM
AL BL CL DL EL FL GL HL IL JL KL LL ML NL OL PL QL RL
AK BK CK DK EK FK GK HK IK JK KK LK MK NK OK PK QK RK
AJ BJ CJ DJ EJ FJ GJ HJ IJ JJ KJ LJ MJ NJ OJ PJ QJ RJ
AI BI CI DI EI FI GI HI II JI KI LI MI NI OI PI QI RI
AH BH CH DH EH FH GH HH IH JH KH LH MH NH OH PH QH RH
AG BG CG DG EG FG GG HG IG JG KG LG MG NG OG PG QG RG
AF BF CF DF EF FF GF HF IF JF KF LF MF NF OF PF QF RF
AE BE CE DE EE FE GE HE IE JE KE LE ME NE OE PE QE RE
AD BD CD DD ED FD GD HD ID JD KD LD MD ND OD PD QD RD
AC BC CC DC EC FC GC HC IC JC KC LC MC NC OC PC QC RC
AB BB CB DB EB FB GB HB IB JB KB LB MB NB OB PB QB RB

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