

The ARRL Operating Manual  
*Seventh Edition*



# HAM DESKTOP REFERENCE

Published By:  
ARRL—The national association for  
AMATEUR RADIO

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# The "Considerate Operator's Frequency Guide"

The following frequencies are generally recognized for certain modes or activities (all frequencies are in MHz).

Nothing in the rules recognizes a net's, group's or any individual's special privilege to any specific frequency. Section 97.101(b) of the Rules states that "Each station licensee and each control operator must cooperate in selecting transmitting channels and in making the most effective use of the amateur service frequencies.

No frequency will be assigned for the exclusive use of any station." No one "owns" a frequency.

It's good practice—and plain old common sense—for any operator, regardless of mode, to check to see if the frequency is in use prior to engaging operation. If you are there first, other operators should make an effort to protect you from interference to the extent possible, given that 100% interference-free operation is an unrealistic expectation in today's congested bands.

1.800-1.830	CW, data and other narrowband modes	14.100	NCDXF/IARU beacons
1.810	QRP CW calling frequency	14.1005-14.112	Automatically controlled data stations
1.830-1.840	CW, data and other narrowband modes, intercontinental QSOs only	14.230	SSTV
1.840-1.850	CW; SSB, SSTV and other wideband modes; intercontinental QSOs only	14.285	QRP SSB calling frequency
1.850-2.000	CW; phone, SSTV and other wideband modes	14.286	AM calling frequency
3.560	QRP CW calling frequency	18.100-18.105	Data
3.590	RTTY DX	18.105-18.110	Automatically controlled data stations
3.580-3.620	Data	21.060	QRP CW calling frequency
3.620-3.635	Automatically controlled data stations	21.070-21.100	Data
3.710	QRP Novice/Technician CW calling frequency	21.090-21.100	Automatically controlled data stations
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	Data
3.985	QRP SSB calling frequency	24.925-24.930	Automatically controlled data stations
7.040	RTTY DX	28.060	QRP CW calling frequency
	QRP CW calling frequency	28.070-28.120	Data
7.080-7.100	Data	28.120-28.189	Automatically controlled data stations
7.100-7.105	Automatically controlled data stations	28.190-28.225	Beacons
7.110	QRP Novice/Technician CW calling frequency	28.385	QRP SSB calling frequency
7.171	SSTV	28.680	SSTV
7.285	QRP SSB calling frequency	29.000-29.200	AM
7.290	AM calling frequency	29.300-29.510	Satellite downlinks
10.106	QRP CW calling frequency	29.520-29.580	Repeater inputs
10.130-10.140	Data	29.600	FM simplex
10.140-10.150	Automatically controlled data stations	29.620-29.680	Repeater outputs
14.060	QRP CW calling frequency		
14.070-14.095	Data		
14.095-14.0995	Automatically controlled data stations		

## Notes:

ARRL band plans for frequencies above 28.300 MHz are shown in *The ARRL Repeater Directory* and *The FCC Rule Book*. For detailed packet frequencies, see *QST*, September 1987, page 54, and March 1988, page 51.

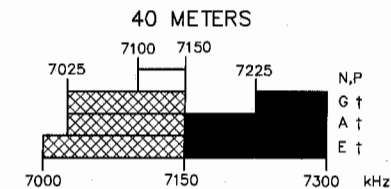
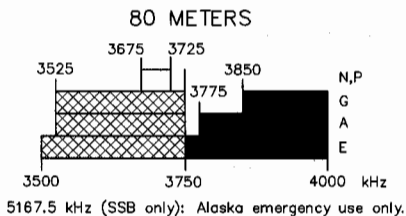
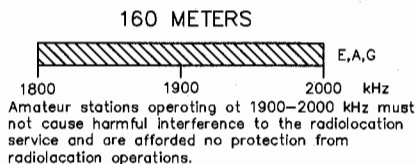
NCDXF/IARU beacons operate on 14.100, 18.110, 21.150, 24.930 and 28.200 MHz.

# US Amateur Bands

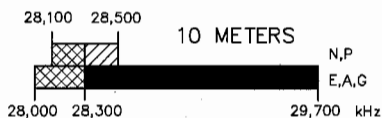
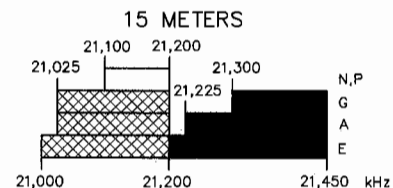
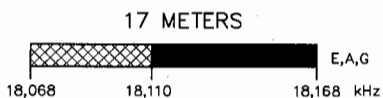
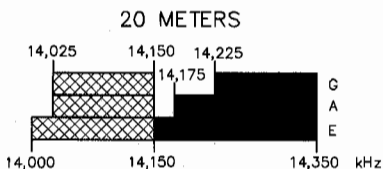
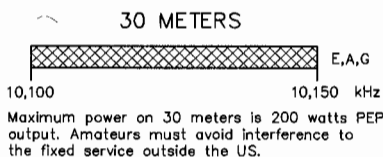
April 15, 2000

## Novice, Advanced and Technician Plus Allocations

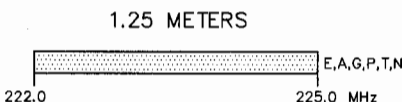
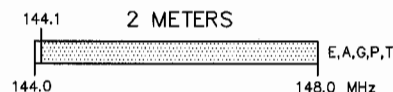
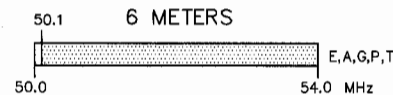
New Novice, Advanced and Technician Plus licenses will not be issued after April 15, 2000. However, the FCC has allowed the frequency allocations for these license classes to remain in effect. They will continue to renew existing licenses for those classes.



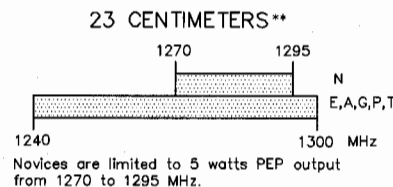
† Phone and Image modes are permitted between 7075 and 7100 kHz for FCC licensed stations in ITU Regions 1 and 3 and by FCC licensed stations in ITU Region 2 West of 130 degrees West longitude or South of 20 degrees North latitude. See Sections 97.305(c) and 97.307(f)(11). Novice and Technician Plus licensees outside ITU Region 2 may use CW only between 7050 and 7075 kHz. See Section 97.301(e). These exemptions do not apply to stations in the continental US.



Novices and Technician Plus licensees are limited to 200 watts PEP output on 10 meters.



Novices are limited to 25 watts PEP output from 222 to 225 MHz.



## US AMATEUR POWER LIMITS

At all times, transmitter power should be kept down to that necessary to carry out the desired communications. Power is noted in watts PEP output. Unless otherwise stated, the maximum power output is 1500 W. Power for all license classes is limited to 200 W in the 10,100-10,150 kHz band and in all Novice subbands below 28,100 kHz. Novices and Technicians with Morse code credit are restricted to 200 W in the 28,100-28,500 kHz subbands. In addition, Novices are restricted to 25 W in the 222-225 MHz band and 5 W in the 1270-1295 MHz subband.

Operators with Technician class licenses and above may operate on all bands above 50 MHz. For more detailed information see *The FCC Rule Book*.

## KEY

- = CW, RTTY and data
- = CW, RTTY, data, MCW, test, phone and image
- = CW, phone and image
- = CW and SSB phone
- = CW, RTTY, data, phone, and image
- = CW only

- E = EXTRA CLASS
- A = ADVANCED
- G = GENERAL
- P = TECHNICIAN PLUS
- T = TECHNICIAN
- N = NOVICE

\* Effective April 15, 2000, Technicians possessing the Morse code exam will gain HF Novice privileges, although they still hold a Technician license.

\*\* Geographical and power restrictions apply to these bands. See *The FCC Rule Book* for more information about your area.

## Above 23 Centimeters:

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

- 2300-2310 MHz
- 2390-2450 MHz
- 3300-3500 MHz
- 5650-5925 MHz
- 10.0-10.5 GHz
- 24.0-24.25 GHz
- 47.0-47.2 GHz
- 75.5-81.0 GHz
- 119.98-120.02 GHz
- 142-149 GHz
- 241-250 GHz
- All above 300 GHz



For band plans and sharing arrangements, see *The FCC Rule Book*.

## ARRL/IARU Band Plans

This information is for quick reference only—refer to the band plan listings in *The FCC Rule Book* or *The ARRL Repeater Directory* for full details. For sharing arrangements, see Section 97.303 of the FCC Rules. For detailed packet frequencies, see *QST*, September 1987, page 54 and March 1988, page 51.

### 160 Meters (1.8-2.0 MHz):

1.800-1.830	CW, RTTY and other narrowband modes
1.830-1.840	CW, RTTY and other narrowband modes, Intercontinental QSOs only
1.840-1.850	CW, SSB, SSTV, other wideband modes, Intercontinental QSOs only
1.850-2.000	CW, phone, SSTV and other wideband modes

### 80 Meters (3.5-4.0 MHz):

3.590	Data DX
3.580-3.620	Data
3.620-3.635	Packet
3.635-3.750	CW
3.790-3.800	Phone DX window
3.845	SSTV
3.885	AM calling frequency

### 40 Meters (7.0-7.3 MHz):

7.040	Data DX/QRP calling
7.080-7.100	Data
7.171	SSTV
7.290	AM calling frequency

### 30 Meters (10.1-10.15 MHz):

10.130-10.140	Data
10.140-10.150	Packet

### 20 Meters (14.0-14.35 MHz):

14.070-14.095	Data
14.095-14.0995	Packet
14.100	NCDXF/IARU Beacons
14.1005-14.112	Packet/SSB
14.230	SSTV
14.286	AM calling frequency

### 17 Meters (18.068-18.168 MHz):

18.100-18.105	Data
18.105-18.110	Packet

### 15 Meters (21.0-21.45 MHz):

21.070-21.090	Data
21.090-21.125	Packet
21.340	SSTV

### 12 Meters (24.89-24.99 MHz):

24.920	24.925	Data
24.925	24.930	Packet

### 10 Meters (28-29.7 MHz):

28.000-28.070	CW
28.070-28.120	Data
28.120-28.189	Packet
28.150-28.190	CW
28.200-28.300	Beacons
28.300-29.300	Phone
28.680	SSTV
29.000-29.200	AM
29.300-29.510	Satellite Downlinks
29.520-29.590	Repeater Inputs
29.600	FM Simplex
29.610-29.700	Repeater Outputs

### 6 Meters (50-54 MHz):

50.0-50.1	CW, beacons
50.060-50.080	Beacon subband
50.1-50.3	SSB, CW
50.10-50.125	DX window
50.125	SSB calling
50.3-50.6	All modes
50.6-50.8	Nonvoice communications
50.62	Digital (packet) calling
50.8-51.0	Radio remote control (20-kHz channels)
51.0-51.1	Pacific DX window
51.5-51.6	Simplex (6 channels)
51.12-51.48	Repeater inputs (19 channels)
51.12-51.18	Digital repeater inputs
51.62-51.98	Repeater outputs (19 channels)
51.62-51.68	Digital repeater outputs
52.0-52.48	Repeater inputs (except as noted; 23 channels)
52.02, 52.04	FM simplex
52.2	TEST PAIR (input)
52.5-52.98	Repeater output (except as noted; 23 channels)
52.525	Primary FM simplex
52.54	Secondary FM simplex

## VHF/UHF/EHF Calling Frequencies

Band (MHz)	Calling Frequency	Mode
52.7	TEST PAIR (output)	
53.0-53.48	Repeater inputs (except as noted; 19 channels)	
53.0	Remote base FM simplex	
53.02	Simplex	
53.1, 53.2, 53.3, 53.4	Radio remote control	
53.5-53.98	Repeater outputs (except as noted; 19 channels)	
53.5, 53.6, 53.7, 53.8	Radio remote control	
53.52-53.9	Simplex	
<b>2 Meters (144-148 MHz):</b>		
144.00-144.05	EME (CW)	
144.05-144.10	General CW and weak signals	
144.10-144.20	EME and weak-signal SSB	
144.200	SSB calling frequency	
144.200-144.275	General SSB operation	
144.275-144.300	Propagation beacons	
144.30-144.50	New OSCAR subband	
144.50-144.60	Linear translator inputs	
144.60-144.90	FM repeater inputs	
144.90-145.10	Weak signal and FM simplex (145.01,03,05,07,09 are widely used for packet)	
145.10-145.20	Linear translator outputs	
145.20-145.50	FM repeater outputs	
145.50-145.80	Miscellaneous and experimental modes	
145.80-146.00	OSCAR subband	
146.01-146.37	Repeater inputs	
146.40-146.58	Simplex	
146.52	National simplex calling frequency	
146.61-147.39	Repeater outputs	
147.42-147.57	Simplex	
147.60-147.99	Repeater inputs	

Note: The frequency 146.40 MHz is used in some areas as a repeater input. This band plan has been proposed by the ARRL VHF-UHF Advisory Committee.

## VHF/UHF Activity Nights

Some areas do not have enough VHF/UHF activity to support contacts at all times. This schedule is intended to help VHF/UHF operators make contact. This is only a starting point; check with others in your area to see if local hams have a different schedule.

Band (MHz)	Day	Local Time
50	Sunday	6 PM
144	Monday	7 PM
222	Tuesday	8 PM
432	Wednesday	9 PM
902	Friday	9 PM
1296	Thursday	10 PM

# Active Amateur Satellites: Frequencies and Modes

Satellite	Uplink (MHz)	Downlink (MHz)
<b>SSB/CW</b>		
AMSAT-OSCAR 10	435.030 - 435.180	145.825 - 145.975
Fuji-OSCAR 20	145.900 - 146.000	435.800 - 435.900
RS-13	21.260 - 21.300	29.460 - 29.500
	145.960 - 146.00	29.458 (CW beacon)
RS-15	145.858 - 145.898	29.354 - 29.394

## Packet — 1200 bit/s

(FM FSK uplink, PSK downlink except as noted)

AMSAT-OSCAR 16	145.90, .92, .94, .96	437.0513
Fuji-OSCAR 29	145.85, .87, .89, .91	435.910

(available biweekly)

## Packet — 9600 bit/s

(FM FSK uplink and downlink.)

UoSAT-OSCAR 22	145.900, .975	435.120
KITSAT-OSCAR 25	145.98	436.50
TMSAT-OSCAR 31	145.925	436.925
UoSAT-OSCAR 36	145.960	437.400

## FM Voice Repeaters

AMRAD-OSCAR 27	145.850	436.790
SunSat-OSCAR 35	436.290	145.825
UoSAT-OSCAR 14	145.975	435.070

# Phase 3D Frequencies

**Note:** These are *inverting* transponders. For example, if you transmit *upper* sideband in the *lower* portion of the uplink passband, the satellite repeats in *lower* sideband in the *upper* portion of the downlink passband.

## Uplinks

Band	Digital (MHz)	Analog (MHz)
15 meters	—	21.210—21.250
12 meters	—	24.920—24.960
2 meters	145.800—145.840	145.840—145.990
70 cm	435.300—435.550	435.550—435.800
23 cm(1)	1269.000—1269.250	1269.250—1269.500
23 cm(2)	1268.075—1268.325	1268.325—1268.575
13 cm(1)	2400.100—2400.350	2400.350—2400.600
13 cm(2)	2446.200—2446.450	2446.450—2446.700
6 cm	5668.300—5668.550	5668.550—5668.800

## Beacons

Band	Beacon-1 (MHz)	Beacon-2 (MHz)
70 cm	435.450	435.850
13 cm	2400.200	2400.600
3 cm	10451.000	10451.400
1.5 cm	24048.000	24048.400

## Downlinks

Band	Digital (MHz)	Analog (MHz)
2 meters	145.955—145.990	145.805—145.955
70 cm	435.900—436.200	435.475—435.725
13 cm(1)	2400.650—2400.950	2400.225—2400.475
13 cm(2)	2401.650—2401.950	2401.225—2401.475
3 cm	10451.450—10451.750	10451.025—10451.275
1.5 cm	24048.450—24048.750	24048.025—24048.275

# Latitude and Longitude of Various US/Canadian Cities and DX Locations with Bearing from East, Central and Western USA

Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA	Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA
VE1	New Brunswick, St. John	45.3N	66.1W	58.0	62.6	64.8							
	Nova Scotia, Halifax	44.6N	63.6W	63.8	64.5	65.4							
VE2	Quebec, Montreal	45.5N	73.6W	38.4	59.7	65.7							
	Quebec City	46.8N	71.2W	40.3	57.3	63.0							
VE3	Ontario, London	43.0N	81.3W	342.3	63.2	71.9							
	Ottawa	45.4N	75.7W	28.9	58.8	66.1							
	Sudbury	46.5N	81.0W	353.9	50.4	63.9							
	Toronto	43.7N	79.4W	6.9	62.0	70.1							
VE4	Manitoba, Winnipeg	49.9N	97.1W	315.1	2.8	47.0							
VE5	Saskatchewan, Regina	50.5N	104.6W	309.6	341.5	33.5							
	Saskatoon	52.1N	106.7W	312.4	339.5	24.8							
VE6	Alberta, Calgary	51.0N	114.1W	306.4	324.0	6.2							
	Edmonton	53.5N	113.5W	312.1	330.5	6.3							
VE7	British Columbia,	53.9N	122.8W	310.4	321.2	344.0							
	Prince George												
	Prince Rupert	54.3N	130.3W	310.4	317.2	330.9							
	Vancouver	49.3N	123.1W	301.7	310.2	333.9							
VE8	Northwest Terr., Yellowknife	62.5N	114.4W	329.0	343.0	1.9							
	Resolute	74.7N	95.0W	353.2	1.3	9.3							
YY1	Yukon, Whitehorse	60.7N	135.1W	320.6	326.6	336.6							
YY2	Prince Edward Island,												
	Charlottetown	46.2N	63.1W	57.7	61.0	62.7							
VO1	Newfoundland, St. John's	47.6N	52.7W	59.7	58.8	58.4							
VO2	Labrador, Goose Bay	53.3N	60.4W	38.5	47.0	51.2							
W1	Connecticut, Hartford	41.8N	72.7W	69.6	70.9	72.4							
	Maine, Bangor	44.8N	68.8W	56.2	63.3	66.2							
	Portland	43.7N	70.3W	59.7	65.9	68.4							
	Massachusetts, Boston	42.4N	71.1W	67.4	69.3	70.9							
	New Hampshire, Concord	43.2N	71.5W	60.5	67.0	69.6							
	Rhode Island, Providence	41.8N	71.4W	71.7	71.0	72.1							
	Vermont, Montpelier	44.3N	72.6W	49.5	63.6	67.8							
W2	New Jersey, Atlantic City	39.4N	74.4W	96.1	78.3	77.4							
	New York, Albany	42.7N	73.8W	57.9	68.0	71.0							
	Buffalo	42.9N	78.9W	15.6	65.3	71.7							
	New York City	40.8N	74.0W	78.1	73.9	74.7							
	Syracuse	43.1N	76.2W	41.3	65.9	70.8							
W3	Delaware, Wilmington	39.7N	75.5W	93.5	77.4	77.2							
	Dist. of Columbia, Washington	38.9N	77.0W	114.4	80.3	79.3							
	Maryland, Baltimore	39.3N	76.6W	103.9	78.9	78.4							
	Pennsylvania, Harrisburg	40.3N	76.9W	81.8	75.4	76.6							
	Philadelphia	39.9N	75.2W	90.0	76.7	76.7							
	Pittsburgh	40.4N	80.0W	15.4	74.6	77.3							
	Scranton	41.4N	75.7W	65.4	71.8	74.0							
W4	Alabama, Montgomery	32.4N	86.3W	215.7	116.9	98.3							
	Florida, Jacksonville	30.3N	81.7W	188.7	114.9	98.4							
	Miami	25.8N	80.2W	180.9	123.9	104.5							
	Pensacola	30.4N	87.2W	213.7	127.2	103.3							
	Georgia, Atlanta	33.8N	84.4W	210.9	106.8	93.8							
	Savannah	32.1N	81.1W	186.8	108.1	94.7							
	Kentucky, Lexington	38.0N	84.5W	241.7	85.8	84.5							
	Louisville	38.2N	85.8W	250.1	85.0	84.6							
	North Carolina, Charlotte	35.2N	80.8W	187.9	96.2	88.5							
	Raleigh	35.8N	78.6W	164.8	92.1	86.1							
	Wilmington	34.2N	77.9W	163.2	97.1	88.6							
	South Carolina, Columbia	34.0N	81.0W	188.0	101.1	91.0							
	Tennessee, Knoxville	36.0N	83.9W	218.8	95.8	88.7							
	Memphis	35.1N	90.1W	241.7	112.2	95.2							
	Nashville	36.2N	86.8W	236.8	98.0	90.1							
	Virginia, Norfolk	36.9N	76.3W	135.7	87.0	82.8							
	Richmond	37.5N	77.4W	140.1	85.4	82.2							
W5	Arkansas, Little Rock	34.7N	92.3W	245.4	124.0	98.2							
	Louisiana, New Orleans	29.9N	90.1W	222.4	138.7	107.5							
	Shreveport	32.5N	93.7W	240.0	146.2	105.7							
	Mississippi, Jackson	32.3N	90.2W	230.0	129.5	102.2							
	New Mexico, Albuquerque	35.1N	106.7W	265.4	250.1	120.7							
	Oklahoma, Oklahoma City	35.5N	97.5W	257.5	170.5	101.3							
	Texas, Abilene	32.5N	99.7W	250.8	194.7	114.7							
	Amarillo	35.2N	101.8W	261.4	228.6	108.6							
	Dallas	32.8N	96.8W	247.2	168.9	109.0							
	El Paso	31.8N	106.5W	257.3	230.9	133.9							
	San Antonio	29.4N	98.5W	240.7	183.0	121.1							
W6	California, Los Angeles	34.1N	118.2W	271.3	262.7	197.3							
	San Francisco	37.8N	122.4W	280.1	277.0	248.2							
W7	Arizona, Flagstaff	35.2N	111.7W	269.3	259.9	143.3							
	Phoenix	33.5N	112.1W	266.0	252.8	153.1							
	Idaho, Boise	43.6N	116.2W	289.6	297.9	357.2							
	Pocatello	42.9N	112.5W	287.5	298.5	41.0							
	Montana, Billings	45.8N	108.5W	295.0	318.4	40.9							
	Butte	46.0N	112.5W	295.1	311.3	21.9							
	Great Falls	47.5N	111.3W	298.9	318.6	22.8							
	Nevada, Las Vegas	36.2N	115.1W	273.5	267.7	169.0							
	Reno	39.5N	119.8W	282.1	281.9	261.5							
	Oregon, Portland	45.5N	122.7W	294.4	300.1	320.4							
	Utah, Salt Lake City	40.8N	111.9W	282.3	289.0	74.3							
	Washington, Seattle	47.6N	122.3W	298.4	306.3	331.2							
	Spokane	47.7N	117.4W	298.6	310.7	353.0							
	Wyoming, Cheyenne	41.1N	104.8W	281.4	302.7	79.0							
	Sheridan	44.8N	107.0W	292.5	318.1	51.2							
W8	Michigan, Detroit	42.3N	83.0W	316.5	64.7	73.8							
	Grand Rapids	43.0N	85.7W	307.0	58.0	72.5							
	Sault Ste. Marie	46.5N	84.4W	335.2	45.4	63.6							
	Traverse City	44.8N	85.6W	321.1	49.8	67.8							
	Ohio, Cincinnati	39.1N	84.5W	256.9	79.9	81.9							
	Cleveland	41.5N	81.7W	319.8	69.3	75.4							
	Columbus	40.0N	83.0W	271.0	75.6	79.2							
	West Virginia, Charleston	38.4N	81.6W	218.4	83.1	82.3							
W9	Illinois, Chicago	41.9N	87.6W	290.8	60.7	75.6							
	Indiana, Indianapolis	39.8N	86.2W	269.6	75.2	80.8							
	Wisconsin, Green Bay	44.5N	88.0W	309.9	45.9	68.5							
	Milwaukee	43.0N	87.9W	299.5	53.7	72.6							
W0	Colorado, Denver	39.7N	105.0W	277.2	289.5	88.5							
	Grand Junction	39.1N	108.6W	276.9	280.8	96.6							
	Iowa, Des Moines	41.6N	93.6W	283.2	41.8	77.3							
	Kansas, Pratt	37.7N	98.7W	267.0	242.1	94.2							
	Wichita	37.7N	97.3W	265.8	117.9	93.0							
	Minnesota, Duluth	46.8N	92.1W	311.8	24.4	60.6							
	Minneapolis	45.0N	93.3W	301.4	25.2	65.8							
	Missouri, Columbia	39.0N	92.3W	267.9	75.6	85.5							
	Kansas City	39.1N	94.6W	270.1	66.5	86.2							
	St. Louis	38.6N	90.2W	263.2	82.0	85.7							
	Nebraska, North Platte	41.1N	100.8W	280									

Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA	Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA
3Y	Peter I Is.	68.8S	90.6W	184.0	177.2	170.5	C3	Andorra	42.5N	1.5E	58.5	50.1	41.6
4J, 4K	Azerbaijan, Baku	40.4N	49.9E	35.8	24.0	10.8	C5	The Gambia, Banjul	13.5N	16.7W	96.7	84.4	73.7
4L	Georgia, Tbilisi	41.7N	44.8E	38.0	26.9	14.3	C6	Bahamas, Nassau	25.1N	77.4W	170.9	120.5	103.0
4S	Sri Lanka, Colombo	7.0N	79.9E	26.2	2.9	339.0	C9	Mozambique, Maputo	26.0S	32.6E	97.8	88.8	71.4
4U	ITU Geneva	46.2N	6.2E	52.8	44.9	36.6			15.1S	40.7E	82.0	69.3	45.9
4U	United Nations Hq.	40.8N	74.0W	78.1	73.9	74.7	CE	Chile, Santiago	33.5S	70.8W	172.0	156.9	143.5
4X, 4Z	Israel, Jerusalem	31.8N	35.2E	50.4	38.7	24.9	CE0Y	Eastër Island	27.1S	109.4W	207.3	191.1	173.6
5A	Libya, Tripoli	32.5N	12.5E	62.7	52.5	41.4	CE0Z	Juan Fernandez	33.6S	78.1W	179.0	163.4	149.4
	Benghazi	32.1N	20.0E	59.0	48.4	36.4	CE0X	San Felix	26.3S	80.1W	180.1	162.5	146.9
5B	Cyprus, Nicosia	35.2N	33.4E	49.1	37.9	25.0	CM, CO	Cuba, Havana	23.1N	82.4W	187.6	133.7	110.7
5H	Tanzania, Dar es Salaam	7.0S	39.5E	75.7	62.1	40.2	CN	Morocco, Casablanca	33.6N	7.5W	71.7	62.1	53.1
5N	Nigeria, Lagos	6.5N	3.4E	89.2	77.8	65.2	CP	Bolivia, La Paz	16.5S	68.4W	166.8	147.3	131.8
5R	Madagascar, Antananarivo	18.9S	47.5E	80.8	87.2	38.7	CT	Portugal, Lisbon	38.7N	9.2W	66.9	58.3	50.1
5T	Mauritania, Nouakchott	18.1N	16.0W	92.0	80.2	69.8	CT3	Madeira Islands, Funchal	32.6N	16.9W	77.4	67.5	59.1
5U	Niger, Niamey	13.5N	2.0E	84.6	73.3	61.2	CX	Azores, Ponta Delgada	37.7N	25.7W	75.0	66.1	59.2
5V	Togo, Lome	5.8N	1.2E	91.2	79.8	67.3	CU	Uruguay, Montevideo	34.9S	56.2W	160.2	146.5	134.8
5W	Western Samoa, Apia	13.5S	171.8W	260.7	249.4	236.6	CY0	Sable Is.	43.8N	60.0W	69.1	66.3	65.7
5X	Uganda, Kampala	0.3N	32.5E	74.9	62.0	43.6	CY2	St. Paul Is.	47.2N	60.1W	56.8	59.3	60.6
5Z	Kenya, Nairobi	1.3S	37.8E	86.6	75.2	60.3	D2	Angola, Luanda	8.8S	13.2E	94.7	83.8	69.6
6W	Senegal, Dakar	14.7N	17.5W	96.2	83.9	73.3	D4	Cape Verde, Praia	14.9N	23.5W	100.3	87.3	76.9
6Y	Jamaica, Kingston	18.0N	76.8W	171.9	131.3	111.5	D6	Comoros, Moroni	11.8S	43.7E	76.7	62.8	38.1
7O	Yemen, Aden	12.8N	45.0E	56.5	41.9	22.6	DA-DL	Fed. Rep. of Germany, Bonn	50.7N	7.0E	47.9	40.7	33.1
	Sanaa	15.4N	44.2E	55.3	41.1	22.5		Berlin	52.5N	13.4E	43.9	36.6	28.8
7P	Lesotho, Maseru	29.3S	27.5E	103.9	95.9	81.7	DU	Philippines, Manila	14.6N	121.0E	335.9	317.4	303.2
7Q	Malawi, Lilongwe	14.0S	33.8E	85.7	74.0	54.1	E3	Eritrea, Asmara	15.3N	38.9E	59.3	45.8	28.2
	Blantyre	15.8S	35.0E	86.5	74.9	54.5	E4	Palestinian Authority, Gaza City	31.5N	34.5E	51.0	39.4	25.6
7X	Algeria, Algiers	36.7N	3.0E	63.6	54.3	44.7	EA	Spain, Madrid	40.4N	3.7W	62.8	54.3	45.9
8P	Barbados, Bridgetown	13.1N	59.6W	140.6	115.7	102.0	EA6	Baleares Is., Palma	39.5N	2.6E	61.0	52.2	43.1
8Q	Maldives Is.	4.4N	73.4E	35.2	12.6	346.7	EA8	Canary Is., Las Palmas	28.4N	14.3W	80.7	70.2	60.9
8R	Guyana, Georgetown	6.8N	58.2W	143.7	120.6	106.5	EA9	Canary Is., Las Palmas	35.9N	5.3W	68.2	59.0	50.1
9A	Croatia, Zagreb	45.8N	16.0E	49.3	40.7	31.4		Melilla	35.3N	3.0W	67.8	58.5	49.2
9G	Ghana, Accra	5.5N	0.2W	92.3	80.9	68.6	EI	Ireland, Dublin	53.3N	6.3W	48.6	42.9	37.1
9H	Malta	36.0N	14.4E	58.7	48.9	38.0	EK	Armenia, Yerevan	40.3N	44.5E	39.1	27.8	14.9
9J	Zambia, Lusaka	15.4S	28.3E	90.6	79.6	61.9	EL	Liberia, Monrovia	6.3N	10.8W	98.7	86.7	75.3
9K	Kuwait	29.5N	47.8E	43.7	30.5	14.9	EP	Iran, Tehran	35.8N	51.8E	37.2	24.6	10.1
9L	Sierra Leone, Freetown	8.5N	13.2W	98.6	86.4	75.2	ER	Moldova, Kishinev	47.0N	28.8E	42.6	33.4	23.2
9M2	West Malaysia, Kuala Lumpur	3.2N	101.6E	357.7	331.7	312.1	ES	Estonia, Tallinn	59.4N	24.8E	33.5	26.8	19.4
9M6, 8E	East Malaysia, Sabah, Sandakan (9M6)	5.8N	118.1E	335.7	314.4	299.3	ET	Ethiopia, Addis Ababa	9.0N	38.7E	63.9	50.1	31.3
	Sarawak, Kuching (9M8)	1.6N	110.3E	344.7	320.0	302.8	EU	Belarus, Minsk	53.9N	27.6E	37.4	29.5	20.7
9N	Nepal, Kathmandu	27.7N	85.3E	13.9	356.8	340.1	EV, EW						
9Q	Zaire, Kinshasa	4.3S	15.3E	89.9	78.7	64.0	EX	Kyrgyzstan, Bishkek	42.9N	74.6E	18.4	5.5	352.2
	Kisangani	0.5N	25.2E	79.7	67.7	51.0	EY	Tajikistan, Samarkand	39.7N	66.8E	25.0	11.9	357.8
	Lubumbashi	11.7S	27.5E	87.9	76.6	59.0		Dushanbe	39.1N	68.8E	23.8	10.4	356.2
9U	Burundi, Bujumbura	3.3S	29.3E	79.9	67.6	49.6	EZ	Turkmenistan, Ashkhabad	38.0N	58.4E	31.6	18.7	4.5
9V	Singapore	1.3N	103.8E	354.3	327.8	308.6	F	France, Paris	48.8N	2.3E	51.5	44.2	36.7
9X	Rwanda, Kigali	2.0S	30.1E	78.3	65.9	47.7	FG	Guadeloupe	16.0N	61.7W	141.2	114.5	100.8
9Y	Trinidad & Tobago, Port of Spain	10.5N	61.3W	145.5	120.2	105.7	FH, FS	St. Martin	18.1N	63.1W	141.4	113.4	99.8
A2	Botswana, Gaborone	24.8S	25.9E	100.5	91.4	76.2	FJ	Mayotte	13.0S	45.3E	76.6	62.5	36.6
A3	Tonga, Nukualofa	21.1S	175.2W	256.6	245.7	234.0	FK	New Caledonia, Noumea	22.3S	166.5E	266.4	255.1	245.1
A4	Oman, Masqat	23.6N	58.6E	39.0	23.6	5.5	FM	Martinique	14.6N	61.0W	141.4	115.5	101.7
A5	Bhutan, Thimpu	27.3N	89.4E	10.2	352.8	336.3	FO	Clipperton Is.	10.3N	109.2W	229.1	202.9	166.7
A6	United Arab Emirates, Abu Dhabi	24.5N	54.2E	41.9	27.3	9.8	FO	Fr. Polynesia, Tahiti Rurutu, (Austral Is.)	22.5S	151.3E	276.2	263.4	254.0
A7	Qatar, Ad-Dawah	25.3N	51.5E	43.5	29.3	12.3		Hiva Oa, (Marquesas Is.)	9.9S	139.0W	241.5	227.5	208.3
A9	Bahrain, Al-Manamah	26.2N	50.6E	43.7	29.7	13.0	FP	St. Pierre & Miquelon, St. Pierre	46.7N	56.0W	61.0	60.5	60.4
AP	Pakistan, Karachi	24.9N	67.1E	31.2	15.0	356.9	FR/G	Glorioso	11.5S	47.3E	73.6	58.7	32.0
	Islamabad	33.7N	73.2E	22.6	7.7	352.1	FR/JE	Juan de Nova Europa	17.0S	42.8E	82.3	69.5	44.7
BS7H	Scarborough Reef	15.1N	117.8E	339.5	320.6	306.0		Europa	22.3S	40.4E	89.3	78.3	55.5
BV	Taiwan, Taipei	25.1N	121.5E	339.0	323.0	309.9	FR	Reunion	21.1S	55.6E	76.8	60.9	23.2
BV9P	Pratas Is.	20.7N	116.7E	342.4	324.7	310.5	FR/T	Tromelin	15.9S	54.4E	72.0	55.3	21.9
BY	Peoples Rep. of China, Beijing	40.0N	116.4E	347.4	334.2	322.6	FT5W	Crozet	46.0S	52.0E	116.0	119.5	128.4
	Harbin	45.8N	126.7E	341.7	330.6	320.6	FT5X	Kerguelen	49.3S	69.2E	123.5	144.9	199.9
	Shanghai	31.2N	121.5E	341.0	326.3	313.8	FT5Y	Antarctica, Dumont D'Urville	66.6S	140.0E	206.7	209.6	211.0
	Fuzhou	26.1N	119.3E	341.4	325.3	312.0	FT5Z	Amsterdam & St. Paul Is., Amsterdam	37.7S	77.6E	89.7	86.4	277.9
	Xian	34.3N	108.9E	352.4	337.4	324.2	FW	Wallis & Futuna Is., Wallis	13.3S	176.3W	263.7	252.4	240.1
	Chongqing	29.8N	106.5E	354.0	337.7	323.5	FY	Fr. Guiana, Cayenne	4.9N	52.3W	137.3	116.9	103.7
	Chengdu	30.7N	104.1E	356.3	340.1	325.8	G	England, London	51.5N	0.1W	49.2	42.6	35.9
	Lhasa	29.7N	91.2E	8.1	351.4	335.6	GD	Isle of Man	54.3N	4.5W	46.9	41.3	35.6
	Urumqi	43.8N	87.6E	9.0	355.9	343.2	GI	Northern Ireland, Belfast	54.6N	5.9W	46.8	41.5	35.9
	Kashi	39.5N	76.0E	18.5	4.7	350.6	GJ	Jersey	49.3N	2.2W	52.3	45.5	38.5
C2	Nauru	0.5S	166.9E	284.9	272.8	261.2	GM	Scotland, Glasgow Aberdeen	55.8N	4.3W	45.0	39.8	34.2
									57.2N	2.1W	42.9	37.7	32.2



Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA	Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA
GU	Guernsey	49.5N	2.7W	52.2	45.5	38.6	LZ	Bulgaria, Sofia	42.7N	23.3E	48.7	39.2	28.6
GW	Wales, Cardiff	51.5N	3.2W	50.0	43.7	37.3	OA	Peru, Lima	12.1S	77.1W	176.4	154.4	136.6
H4	Solomon Islands, Honiara	9.4S	160.0E	282.7	269.9	259.0	OD	Lebanon, Beirut	33.9N	35.5E	48.8	37.3	23.8
H40	Temotu Province	10.7S	165.8E	277.4	265.3	254.2	OE	Austria, Vienna	48.2N	16.3E	47.0	38.8	29.8
HA	Hungary, Budapest	47.5N	19.1E	48.5	38.0	28.7	OH	Finland, Helsinki	60.2N	25.0E	32.7	26.1	18.9
HB	Switzerland, Bern	47.0N	7.5E	51.5	43.7	35.3	OH0	Aland Is.	60.2N	20.0E	34.2	27.9	21.1
HB0	Liechtenstein	47.2N	9.6E	50.6	42.6	34.1	OJ0	Market Reef	60.3N	19.0E	34.4	28.2	21.5
HC	Ecuador, Quito	0.2S	78.0W	176.9	149.5	129.6	OK,OLC	Czech Rep., Prague	50.1N	14.4E	45.9	38.1	29.7
HC8	Galapagos Is.	0.5S	90.5W	195.9	168.1	143.7	OM	Slovak Rep., Bratislava	48.0N	17.0E	46.9	38.6	29.6
HH	Haiti, Port-Au-Prince	18.5N	72.3W	160.6	123.9	106.8	ON	Belgium, Brussels	50.9N	4.4E	48.5	41.6	34.2
HI	Dominican Republic, Santo Domingo	18.5N	70.0W	155.3	120.8	104.8	OX	Greenland, Godthaab	64.2N	51.7W	25.0	31.0	34.6
HK	Colombia, Bogota	4.6N	74.1W	169.9	141.0	122.0		Thule	76.6N	68.8W	4.3	10.0	14.8
HK0	Malpelo Is.	4.0N	81.1W	181.9	151.4	129.8	OY	Faroe Islands, Torshavn	62.0N	6.8W	37.3	33.8	29.8
HK0	San Adreas	12.5N	81.7W	183.6	146.0	122.7	OZ	Denmark, Copenhagen	55.7N	12.6E	40.9	34.3	27.1
HL	Korea, Seoul	37.5N	127.0E	338.6	325.8	314.6	P2	Papua New Guinea, Madang Port Moresby	5.2S	145.6E	298.0	282.7	114.4
HP	Panama, Panama	9.0N	79.5W	179.0	145.3	123.6	P4	Aruba, Oranjestad	9.4S	147.1E	293.0	278.1	267.1
HR	Honduras, Tegucigalpa	14.1N	87.2W	195.7	155.3	127.6	P5	North Korea, Pyongyang	12.6N	70.1W	159.6	128.2	111.0
HS	Thailand, Bangkok	13.8N	100.5E	359.4	337.8	319.8	PA-PI	Netherlands, Amsterdam	39.0N	125.8E	340.1	327.4	316.4
HV	Vatican City	41.9N	12.5E	54.4	45.4	35.7	PJ,2	Netherlands Antilles, 4,9 Willemstad	52.4N	4.9E	46.7	40.0	32.9
HZ, ZS	Saudi Arabia, Dharan Mecca	26.3N	50.0E	44.1	30.2	13.6	PJ5-8	St. Maarten and Saba, St. Maarten	12.1N	68.9W	157.6	127.2	110.5
I	Italy, Rome Trieste	21.5N	39.8E	54.4	41.2	24.8		Rio De Janeiro	17.7N	63.2W	142.1	114.0	100.3
IS	Sardinia, Cagliari	24.6N	46.7E	47.5	33.8	17.1	PY	Brazil, Brasilia	15.8S	47.9W	145.1	128.8	116.2
J2	Djibouti, Djibouti	41.9N	12.5E	54.4	45.4	35.7		Natal	23.0S	43.2W	144.5	130.2	118.3
J3	Grenada	37.5N	14.0E	57.6	48.0	37.4		Manaus	6.0S	35.2W	127.3	112.3	100.5
J5	Guinea-Bissau, Bissau	39.2N	9.1E	58.4	49.2	39.4		Porto Alegre	3.1S	60.2W	152.3	130.8	116.0
J6	St. Lucia	11.6N	43.2E	58.7	44.3	25.1	PY0	Fernando De Noronha	30.1S	51.2W	154.4	140.3	128.4
J7	Dominica	12.0N	61.8W	145.1	119.1	104.7	PY0	St. Peter & St. Paul Rocks	3.9S	32.4W	123.3	108.7	97.1
J8	St. Vincent	11.9N	15.6W	97.3	85.1	74.2	PY0	Trindade & Martin Vaz Is., Trindade	1.0N	29.4W	117.1	102.8	91.4
JA-JS	Japan, Tokyo Nagasaki Sapporo	13.9N	61.0W	142.1	116.2	102.3	PZ	Suriname, Paramaribo	20.5S	29.3W	131.9	119.1	107.9
JD1	Minami Torishima	15.5N	61.3W	141.0	114.7	101.0		R1FJ	5.8N	55.2W	140.3	118.7	105.1
JD1	Ogasawara, Kagan Is.	35.7N	139.8E	328.5	316.6	306.1	R1M	Mal'y Vysotskij Is.	80.0N	53.0E	8.7	5.5	2.2
JT	Mongolia, Ulan Bator	32.8N	129.9E	334.6	321.1	309.6	S0	Western Sahara, Smara	60.6N	28.6E	31.2	24.5	17.1
JW	Svalbard, Spitsbergen	43.1N	141.4E	331.1	320.7	311.3	S2	Bangladesh, Dacca	26.4N	11.4W	81.1	70.4	60.7
JX	Jan Mayen	24.3N	154.0E	311.8	299.9	289.1	S5	Slovenia, Ljubljana	23.7N	90.4E	9.8	351.3	334.0
JY	Jordan, Amman	27.5N	141.0E	323.4	310.3	299.1	S7	Seychelles, Victoria	46.0N	14.5E	49.8	41.3	32.1
KC4	Antarctica, Byrd Station McMurdo Sound Palmer Station	47.9N	106.9E	355.4	343.6	332.7	S9	Sao Tome	4.6S	55.5E	60.5	42.5	14.4
KC6	Belau, Yap Koror	78.8N	16.0E	14.2	12.2	9.8	SM	Sweden, Stockholm	0.3N	6.7E	91.9	80.6	67.3
KG4	Guantanamo Bay	71.0N	8.3W	25.1	23.6	21.5	SP	Poland, Krakow Warsaw	59.3N	18.1E	35.6	29.3	22.5
KH0	Mariana Is., Saipan	32.0N	35.9E	49.8	38.1	24.2	ST	Sudan, Khartoum	50.0N	20.0E	43.9	35.7	26.8
KH1	Baker, Howland Is.	80.0S	120.0W	187.6	184.2	180.8	ST0	Southern Sudan, Juba	52.2N	21.0E	41.5	33.6	25.1
KH2	Guam, Agana	77.7S	166.7E	195.7	195.6	194.9	SU	Egypt, Cairo	15.6N	32.5E	63.5	50.8	34.4
KH3	Johnston Is.	64.8S	64.0W	173.0	165.6	158.7	SV/A	Mount Athos	5.0N	31.6E	71.9	59.1	41.3
KH4	Midway Is.	9.5N	138.2E	315.7	299.7	287.5	SV5	Dodecanese, Rhodes	30.0N	31.4E	54.0	42.4	28.7
KH5	Palmyra Is.	7.3N	134.5E	317.9	300.9	288.4	SV9	Crete	38.0N	23.7E	52.3	42.2	30.7
KH5K	Kingman Reef	19.9N	75.2W	167.0	126.1	107.8	T2	Tuvalu, Funafuti	40.2N	24.3E	50.2	40.4	29.2
KH6	Hawaii, Hilo Honolulu	15.2N	145.8E	312.5	298.4	286.9	T30	West Kiribati, Bonriki	36.4N	28.2E	51.1	40.5	28.3
KH7	Kure Is.	0.5N	176.0W	274.2	262.9	250.0	T31	Central Kiribati, Kanton	35.4N	25.2E	53.5	43.0	30.9
KH8	American Samoa, Pago Pago	13.5N	144.8E	312.2	297.9	286.2	T32	East Kiribati, Christmas Is.	8.7S	178.6E	270.6	259.1	247.1
KH9	Waka Is.	17.0N	168.5W	282.3	272.2	258.8	T33	Banaba Is.	1.4N	173.2E	282.1	270.4	258.5
KL7	Alaska, Adak Anchorage Fairbanks Juneau Nome	28.2N	177.4W	296.5	287.5	276.7	T5	Somalia, Mogadishu	2.8S	171.7W	268.9	257.6	244.2
KP1	Navassa Is.	5.9N	162.1W	269.5	258.2	243.0	T7	San Marino	1.9N	157.4W	263.3	251.5	235.3
KP2	Virgin Islands, Charlotte Amalie	7.5N	162.8W	271.2	260.1	245.0	T9	Bosnia-Herzegovina, Sarajevo	0.5S	169.4E	283.2	271.2	259.6
KP4	Puerto Rico, San Juan	19.7N	155.1W	276.4	266.4	250.4	TA	Turkey, Ankara Istanbul	2.1N	45.4E	63.8	48.7	26.6
KP5	Desecheo Is.	21.3N	157.9W	279.5	269.9	254.9	TF	Iceland, Reykjavik	43.9N	18.4E	50.0	41.0	31.0
LA-LJ	Norway, Oslo	28.4N	178.4W	297.2	288.2	277.5	TG	Guatemala, Guatemala City	39.9N	32.9E	46.0	35.4	23.4
LU	Argentina, Buenos Aires	14.3S	170.8W	259.4	248.2	235.3	TI	Costa Rica, San Jose	41.2N	29.0E	47.1	37.0	25.6
LX	Luxembourg	19.3N	166.6E	299.7	288.5	277.5	TI9	Cocos Is.	64.1N	22.0W	34.4	33.4	31.6
LY	Lithuania, Vilna	51.8N	176.6W	316.5	311.9	307.1	TJ	Cameroon, Yaounde	14.6N	90.5W	202.9	162.1	131.5
		61.2N	150.0W	321.3	323.2	327.0	TK	Corsica	9.9N	84.0W	187.8	152.3	127.8
		64.8N	147.9W	326.2	329.1	334.0	TL	Central African Rep., Bangui	5.6N	87.0W	192.2	160.1	135.1
		58.3N	134.4W	316.8	322.7	333.4	TN	Congo, Brazzaville	3.9N	11.5E	86.0	74.6	60.8
		64.5N	165.4W	327.3	326.9	327.4	TR	Gabon, Libreville	42.0N	9.0E	55.8	47.1	37.7
		18.4N	75.0W	167.3	127.9	109.3	TT	Chad, N'Djamena	4.4N	18.6E	81.1	69.4	54.4
							TU	Ivory Coast, Abidjan	4.3S	15.3E	89.9	78.7	64.0
							TY	Benin, Porto Novo	0.4N	9.5E	90.0	78.7	65.1
							TZ	Mali, Bamako	12.1N	15.0E	77.5	66.0	52.2
									5.3N	4.0W	95.0	83.4	71.4
									6.5N	2.6E	89.7	78.3	65.8
									12.7N	8.0W	91.6	79.9	68.7

Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA	Prefix	State/Province/Country/City	Lat	Long	fm E USA	fm C USA	fm W USA
UA	Russia, European, St Petersburg (UA1)	59.9N	30.3E	31.3	24.3	16.6	VR6	Pitcairn Is.	25.1S	130.1W	224.9	210.8	193.9
	Archangel (UA1)	64.6N	40.5E	24.0	17.4	10.3	VU	India, Bombay	19.0N	72.8E	28.7	10.3	350.3
	Murmansk (UA1)	69.0N	33.1E	22.3	17.1	11.4		Calcutta	22.6N	88.4E	12.0	363.2	335.4
	Moscow (UA3)	55.8N	37.6E	31.9	23.6	14.6		New Delhi	28.6N	77.2E	21.0	4.6	347.7
	Samara (UA4)	53.2N	50.1E	28.0	18.5	8.3		Bangalore	13.0N	77.6E	26.3	5.5	343.7
	Rostov (UA6)	47.5N	39.5E	37.1	27.2	16.3	VU	Andaman Islands, Port Blair	11.7N	92.8E	8.9	346.3	326.3
UA2	Kaliningrad	55.0N	20.5E	39.1	31.8	23.8	VU	Laccadive Is.	10.0N	73.0E	32.7	11.8	348.5
UA9,0	Russia, Asiatic, Novosibirsk (UA9)	55.0N	82.9E	9.8	359.5	349.2	XE	Mexico, Mexico City (XE1)	19.4N	99.1W	224.1	183.3	139.9
	Parm (UA9)	58.0N	56.3E	22.2	13.4	4.1		Chihuahua (XE2)	28.7N	106.0W	250.1	218.0	140.9
	Omsk (UA9)	55.0N	73.4E	15.0	4.9	354.6		Merida (XE3)	21.0N	89.7W	206.4	154.8	122.5
	Norilsk (UA0)	69.3N	88.1E	4.4	357.7	351.1	XF4	Revilla Gigedo	19.0N	111.5W	241.4	215.5	168.2
	Irkutsk (UA0)	52.3N	104.3E	357.4	346.6	336.4	XT	Burkina Faso, Ouagadougou	12.4N	1.6W	87.7	76.3	64.5
	Vladivostok (UA0)	43.2N	131.9E	337.3	326.1	316.1	XU	Cambodia, Phnom Penh	11.7N	104.8E	354.0	332.1	314.6
	Petrovlovsk (UA0)	53.0N	158.7E	327.7	320.7	314.0	XW	Laos, Vientiane	18.0N	102.6E	357.1	337.1	320.3
	Khabarovsk (UA0)	48.5N	135.1E	337.6	327.6	318.6	XX9	Macao	22.2N	113.6E	345.9	328.2	313.8
	Krasnoyarsk (UA0)	56.0N	92.8E	4.0	354.0	344.2	XZ	Myanmar, Yangon	16.8N	96.0E	4.6	343.8	325.7
	Yakutsk (UA0)	62.0N	129.7E	346.1	338.7	331.9	YA	Afghanistan, Kandahar	31.0N	65.8E	29.5	14.7	358.4
	Wrangel Island (UA0)	71.0N	179.5W	337.1	335.8	335.2		Kabul	34.4N	69.2E	25.4	11.0	355.6
	Kyzyl (UA0Y)	51.7N	94.5E	3.4	352.3	341.6	YB-YD	Indonesia, Jakarta	6.2S	106.8E	348.0	318.5	299.8
UJ-UM	Uzbekistan, Bukhoro	39.8N	64.4E	26.6	13.7	359.7		Medan	3.6N	98.7E	1.9	335.8	315.4
UR-UQ	Kazakhstan, Alma-Ata	43.3N	76.9E	16.6	3.8	350.6		Pontianak	0.0	109.3E	345.7	320.0	302.5
UR-UZ	Ukraine, Kiev	50.4N	30.5E	39.1	30.4	20.7		Jayapura	2.6S	140.7E	304.8	288.4	276.6
EM-EO							YI	Iraq, Baghdad	33.0N	44.5E	43.7	31.3	16.8
V2	Antigua & Barbuda, St. Johns	17.1N	61.8W	140.2	113.3	99.8	YJ	Vanuatu, Port Vila	17.7S	168.3E	269.6	258.0	247.4
V3	Belize, Belmopan	17.3N	88.8W	201.1	156.2	128.1	YK	Syria, Damascus	33.5N	36.3E	48.5	36.9	23.4
V4	St. Kitts & Nevis	17.3N	62.6W	141.4	113.9	100.2	YL	Latvia, Riga	57.0N	24.1E	36.0	28.8	21.0
V5	Namibia, Windhoek	22.6S	17.1E	103.6	94.2	80.6	YN	Nicaragua, Managua	12.0N	86.0W	192.4	154.4	128.2
V6	Micronesia, Ponape	6.9N	158.3E	296.8	283.9	272.6	YO	Romania, Bucharest	44.4N	26.1E	46.0	36.6	26.0
V7	Marshall Islands, Kwajalein	9.1N	167.3E	291.9	280.1	268.5	YS	El Salvador, San Salvador	13.7N	89.2W	199.7	159.8	130.6
V8	Brunei, Bandar Seri Begawan	4.9N	114.9E	339.5	317.1	301.3	YU	Yugoslavia, Belgrade	44.9N	20.5E	48.2	39.2	29.2
VK	Australia, Canberra (VK1)	35.3S	149.1E	260.9	250.9	243.9	YV	Venezuela, Caracas	10.5N	67.0W	155.1	126.5	110.3
	Sydney (VK2)	33.9S	151.2E	261.8	251.6	244.2	YV0	Aves Is.	15.7N	63.7W	145.1	117.0	102.7
	Melbourne (VK3)	37.8S	145.0E	258.8	249.6	243.4	Z2	Zimbabwe, Harare	17.8S	31.0E	91.0	80.2	61.7
	Brisbane (VK4)	27.5S	153.0E	269.1	257.5	248.8	Z3	Macedonia, (ex Yugoslav), Skopje	42.0N	21.4E	50.2	40.7	30.2
	Adelaide (VK5)	34.9S	138.6E	267.1	255.8	249.3	ZA	Albania, Tirane	41.3N	19.8E	51.6	42.1	31.6
	Perth (VK6)	31.9S	115.8E	297.5	272.2	264.2	ZB2	Gibraltar	36.1N	5.4W	68.1	58.9	50.0
	Hobart, Tasmania (VK7)	42.9S	147.3E	249.4	242.4	237.3	ZC4	British Cyprus	34.6N	33.0E	49.7	38.5	25.5
	Darwin (VK8)	12.5S	130.9E	306.6	287.0	275.1	ZD7	St. Helena	16.0S	5.9W	112.4	101.5	89.9
VK0	Heard Is.	53.0S	73.4E	134.6	161.1	203.1	ZD8	Ascension Is.	8.0S	14.4W	112.3	100.2	88.7
VK0	Macquarie Is.	54.7S	158.8E	228.8	225.0	221.3	ZD9	Tristan da Cunha	37.1S	12.3W	131.7	122.8	113.7
VK9C	Cocos-Keeling Is.	12.2S	96.8E	6.7	329.0	304.7	ZF	Cayman Is.	19.5N	81.2W	183.2	137.0	114.2
VK9L	Lord Howe Is.	31.6S	159.1E	260.7	250.4	242.1	ZK1	No. Cook Is., Manihiki	10.4S	161.0W	256.3	244.5	229.9
VK9M	Mellish Reef	17.6S	155.8E	278.1	265.3	255.2	ZK1	So. Cook Is., Rarotonga	21.2S	159.8W	247.3	235.9	222.3
VK9N	Norfolk Is.	29.0S	168.0E	258.8	248.5	239.1	ZK2	Niue	19.0S	168.9W	254.6	243.4	230.8
VK9W	Willis Is.	16.3S	149.5E	284.3	270.3	260.1	ZK3	Tokelau, Atafu	8.4S	172.7W	265.3	253.9	240.9
VK9X	Christmas Is.	10.5S	105.7E	348.7	316.1	296.9	ZL	New Zealand, Auckland (ZL1)	36.9S	174.8E	247.2	238.1	229.3
VP2E	Anguilla	18.3N	63.1W	141.2	113.1	99.6		Wellington (ZL2)	41.3S	174.8E	242.4	234.1	226.0
VP2M	Montserrat	16.7N	62.2W	141.3	114.2	100.5		Christchurch (ZL3)	43.5S	172.6E	240.7	233.0	225.5
VP2V	British Virgin Is., Tortola	18.4N	64.6W	144.0	114.6	100.6		Dunedin (ZL4)	45.9S	170.5E	238.6	231.4	224.6
VP5	Turks & Caicos Islands, Grand Turk	21.4N	71.2W	155.5	118.1	102.5	ZL5	Antarctica, Scott Base	77.9S	166.4E	195.4	195.4	194.7
VP8	Falkland Islands, Stanley	51.7S	57.9W	166.5	156.3	147.0	ZL7	Chatham Is.	44.0S	176.5W	236.1	228.0	219.5
VP8	So. Georgia Is.	54.3S	36.8W	156.0	147.8	140.4	ZL8	Kermadec Is.	29.3S	177.9W	251.0	240.8	230.3
VP8	So. Orkney Is.	60.6S	45.5W	163.3	155.9	149.1	ZL9	Auckland & Campbell Is., Auckland	50.7S	166.5E	233.5	227.8	222.2
VP8	So. Sandwich Islands, Saunders Is.	57.8S	26.7W	153.4	146.8	140.8		Campbell Is.	52.5S	169.1E	230.5	225.1	219.6
VP8	So. Shetland Is., King George Is.	62.0S	58.3W	169.7	161.9	154.7	ZP	Paraguay, Asuncion	25.3S	57.7W	158.4	142.5	129.4
VP9	Bermuda	32.3N	64.7W	117.2	91.7	84.0	ZS	South Africa, Cape Town (ZS1)	33.9S	18.4E	113.0	105.9	95.2
VQ9	Chagos, Diego Garcia	7.3S	72.4E	44.5	18.2	344.8		Port Elizabeth (ZS2)	34.0S	25.7E	109.6	102.9	91.1
VR2	Hong Kong	22.3N	114.3E	345.2	327.6	313.3		Bloemfontein (ZS4)	29.2S	26.1E	104.6	96.6	82.7
VS6								Durban (ZS5)	29.9S	30.9E	102.7	94.9	79.8
								Johannesburg (ZS6)	26.2S	28.1E	100.6	91.8	76.2
							ZS8	Prince Edward & Marion Is., Marion Is.	46.8S	37.8E	120.3	119.7	118.4

# Allocation of International Call Signs

<i>Call Sign Series</i>	<i>Allocated to</i>	<i>Call Sign Series</i>	<i>Allocated to</i>	<i>Call Sign Series</i>	<i>Allocated to</i>
AAA-ALZ	United States of America	FAA-FZZ	France	NAA-NZZ	United States of America
AMA-AOZ	Spain	GAA-GZZ	United Kingdom of Great Britain and Northern Ireland	OAA-OCZ	Peru
APA-ASZ	Pakistan			ODA-ODZ	Lebanon
ATA-AWZ	India	HAA-HAZ	Hungary	OEA-OEZ	Austria
AXA-AXZ	Australia	HBA-HBZ	Switzerland	OFA-OJZ	Finland
AYA-AZZ	Argentina	HCA-HDZ	Ecuador	OKA-OLZ	Czech Republic
A2A-A2Z	Botswana	HEA-HEZ	Switzerland	OMA-OMZ	Slovak Republic
A3A-A3Z	Tonga	HFA-HFZ	Poland	ONA-OTZ	Belgium
A4A-A4Z	Oman	HGA-HGZ	Hungary	OUA-OZZ	Denmark
A5A-A5Z	Bhutan	HHA-HHZ	Haiti	PAA-PIZ	Netherlands
A6A-A6Z	United Arab Emirates	HIA-HIZ	Dominican Republic	PJA-PJZ	Netherlands Antilles
A7A-A7Z	Qatar	HJA-HKZ	Colombia	PKA-POZ	Indonesia
A8A-A8Z	Liberia	HLA-HLZ	South Korea	PPA-PYZ	Brazil
A9A-A9Z	Bahrain	HMA-HMZ	North Korea	PZA-PZZ	Suriname
BAA-BZZ	China	HNA-HNZ	Iraq	P2A-P2Z	Papua New Guinea
CAA-CEZ	Chile	HOA-HPZ	Panama	P3A-P3Z	Cyprus
CFA-CKZ	Canada	HQA-HRZ	Honduras	P4A-P4Z	Aruba
CLA-CMZ	Cuba	HSA-HSZ	Thailand	P5A-P9Z	North Korea
CNA-CNZ	Morocco	HTA-HTZ	Nicaragua	RAA-RZZ	Russian Federation
COA-COZ	Cuba	HUA-HUZ	El Salvador	SAA-SMZ	Sweden
CPA-CPZ	Bolivia	HVA-HVZ	Vatican City	SNA-SRZ	Poland
CQA-CUZ	Portugal	HWA-HYZ	France	•SSA-SSM	Egypt
CVA-CXZ	Uruguay	HZA-HZZ	Saudi Arabia	•SSN-STZ	Sudan
CYA-CZZ	Canada	H2A-H2Z	Cyprus	SUA-SUZ	Egypt
C2A-C2Z	Nauru	H3A-H3Z	Panama	SVA-SZZ	Greece
C3A-C3Z	Andorra	H4A-H4Z	Solomon Islands	S2A-S3Z	Bangladesh
C4A-C4Z	Cyprus	H6A-H7Z	Nicaragua	S5A-S5Z	Slovenia
C5A-C5Z	Gambia	H8A-H9Z	Panama	S6A-S6Z	Singapore
C6A-C6Z	Bahamas	IAA-IZZ	Italy	S7A-S7Z	Seychelles
*C7A-C7Z	World Meteorological Organization	JAA-JSZ	Japan	S8A-S8Z	South Africa
C8A-C9Z	Mozambique	JTA-JVZ	Mongolia	S9A-S9Z	Sao Tome and Principe
DAA-DRZ	Germany	JWA-JXZ	Norway	TAA-TCZ	Turkey
DSA-DTZ	South Korea	JYA-JYZ	Jordan	TDA-TDZ	Guatemala
DUA-DZZ	Philippines	JZA-JZZ	Indonesia	TEA-TEZ	Costa Rica
D2A-D3Z	Angola	J2A-J2Z	Djibouti	TFA-TFZ	Iceland
D4A-D4Z	Cape Verde	J3A-J3Z	Grenada	TGA-TGZ	Guatemala
D5A-D5Z	Liberia	J4A-J4Z	Greece	THA-THZ	France
D6A-D6Z	Comoros	J5A-J5Z	Guinea-Bissau	TIA-TIZ	Costa Rica
D7A-D9Z	South Korea	J6A-J6Z	Saint Lucia	TJA-TJZ	Cameroon
EAA-EHZ	Spain	J7A-J7Z	Dominica	TKA-TKZ	France
EIA-EJZ	Ireland	J8A-J8Z	St. Vincent and the Grenadines	TLA-TLZ	Central African Rep
EKA-EKZ	Armenia	KA A-KZZ	United States of America	TMA-TMZ	France
ELA-ELZ	Liberia	LAA-LNZ	Norway	TNA-TNZ	Congo
EMA-EOZ	Ukraine	LOA-LWZ	Argentina	TOA-TQZ	France
EPA-EQZ	Iran	LXA-LXZ	Luxembourg	TRA-TRZ	Gabon
ERA-ERZ	Moldova	LYA-LYZ	Lithuania	TSA-TSZ	Tunisia
ESA-ESZ	Estonia	LZA-LZZ	Bulgaria	TTA-TTZ	Chad
ETA-ETZ	Ethiopia	L2A-L9Z	Argentina	TUA-TUZ	Ivory Coast
EUA-EWZ	Belarus	MAA-MZZ	United Kingdom of Great Britain and Northern Ireland	TVA-TXZ	France
EXA-EXZ	Kyrgyzstan			TYA-TYZ	Benin
EYA-EYZ	Tajikistan			TZA-TZZ	Mali
EZA-EZZ	Turkmenistan			T2A-T2Z	Tuvalu
E2A-E2Z	Thailand			T3A-T3Z	Kiribati
E3A-E3Z	Eritrea			T4A-T4Z	Cuba
†E4A-E4Z	Palestine			T5A-T5Z	Somalia

Call Sign Series	Allocated to	Call Sign Series	Allocated to	Call Sign Series	Allocated to
T6A-T6Z	Afghanistan	ZAA-ZAZ	Albania	5TA-5TZ	Mauritania
T7A-T7Z	San Marino	ZBA-ZJZ	United Kingdom of Great Britain and Northern Ireland	5UA-5UZ	Niger
T8A-T8Z	Palau			5VA-5VZ	Togo
T9A-T9Z	Bosnia and Herzegovina	ZKA-ZMZ	New Zealand	5WA-5WZ	Western Samoa
UAA-UIZ	Russian Federation	ZNA-ZOZ	United Kingdom of Great Britain and Northern Ireland	5XA-5XZ	Uganda
UJA-UMZ	Uzbekistan			5YA-5ZZ	Kenya
UNA-UQZ	Kazakhstan	ZPA-ZPZ	Paraguay	6AA-6BZ	Egypt
URA-UZZ	Ukraine	ZQA-ZQZ	United Kingdom of Great Britain and Northern Ireland	6CA-6CZ	Syria
VAA-VGZ	Canada			6DA-6JZ	Mexico
VHA-VNZ	Australia	ZRA-ZUZ	South Africa	6KA-6NZ	South Korea
VOA-VOZ	Canada	ZVA-ZZZ	Brazil	6OA-6OZ	Somalia
VPA-VQZ	United Kingdom of Great Britain and Northern Ireland	Z2A-Z2Z	Zimbabwe	6PA-6SZ	Pakistan
		Z3A-Z3Z	Macedonia (Former Yugoslav Republic)	6TA-6UZ	Sudan
†VRA-VRZ	China (Hong Kong)			6VA-6WZ	Senegal
VSA-VSZ	United Kingdom of Great Britain and Northern Ireland	2AA-2ZZ	United Kingdom of Great Britain and Northern Ireland	6XA-6XZ	Madagascar
				6YA-6YZ	Jamaica
VTA-VWZ	India	3AA-3AZ	Monaco	6ZA-6ZZ	Liberia
VXA-VYZ	Canada	3BA-3BZ	Mauritius	7AA-7IZ	Indonesia
VZA-VZZ	Australia	3CA-3CZ	Equatorial Guinea	7JA-7NZ	Japan
V2A-V2Z	Antigua and Barbuda	*3DA-3DM	Swaziland	7OA-7OZ	Yemen
V3A-V3Z	Belize	*3DN-3DZ	Fiji	7PA-7PZ	Lesotho
V4A-V4Z	Saint Kitts and Nevis	3EA-3FZ	Panama	7QA-7QZ	Malawi
V5A-V5Z	Namibia	3GA-3GZ	Chile	7RA-7RZ	Algeria
V6A-V6Z	Micronesia	3HA-3UZ	China	7SA-7SZ	Sweden
V7A-V7Z	Marshall Islands	3VA-3VZ	Tunisia	7TA-7YZ	Algeria
V8A-V8Z	Brunei	3WA-3WZ	Viet Nam	7ZA-7ZZ	Saudi Arabia
WAA-WZZ	United States of America	3XA-3XZ	Guinea	8AA-8IZ	Indonesia
XAA-XIZ	Mexico	3YA-3YZ	Norway	8JA-8NZ	Japan
XJA-XOZ	Canada	3ZA-3ZZ	Poland	8OA-8OZ	Botswana
XPA-XPZ	Denmark	4AA-4CZ	Mexico	8PA-8PZ	Barbados
XQA-XRZ	Chile	4DA-4IZ	Philippines	8QA-8QZ	Maldives
XSA-XSZ	China	4JA-4KZ	Azerbaijan	8RA-8RZ	Guyana
XTA-XTZ	Burkina Faso	4LA-4LZ	Georgia	8SA-8SZ	Sweden
XUA-XUZ	Cambodia	4MA-4MZ	Venezuela	8TA-8YZ	India
XVA-XVZ	Viet Nam	4NA-4OZ	Yugoslavia	8ZA-8ZZ	Saudi Arabia
XWA-XWZ	Laos	4PA-4SZ	Sri Lanka	9AA-9AZ	Croatia
XXA-XXZ	Portugal	4TA-4TZ	Peru	9BA-9DZ	Iran
XYA-XZZ	Myanmar	*4UA-4UZ	United Nations	9EA-9FZ	Ethiopia
YAA-YAZ	Afghanistan	4VA-4VZ	Haiti	9GA-9GZ	Ghana
YBA-YHZ	Indonesia	4WA-4WZ	UNTAET (E. Timor)	9HA-9HZ	Malta
YIA-YIZ	Iraq	4XA-4XZ	Israel	9IA-9JZ	Zambia
YJA-YJZ	Vanuatu	*4YA-4YZ	International Civil Aviation Organization	9KA-9KZ	Kuwait
YKA-YKZ	Syria			9LA-9LZ	Sierra Leone
YLA-YLZ	Latvia	4ZA-4ZZ	Israel	9MA-9MZ	Malaysia
YMA-YMZ	Turkey	5AA-5AZ	Libya	9NA-9NZ	Nepal
YNA-YNZ	Nicaragua	5BA-5BZ	Cyprus	9OA-9TZ	Congo Rep
YOA-YRZ	Romania	5CA-5GZ	Morocco	9UA-9UZ	Burundi
YSA-YSZ	El Salvador	5HA-5IZ	Tanzania	9VA-9VZ	Singapore
YTA-YUZ	Yugoslavia	5JA-5KZ	Colombia	9WA-9WZ	Malaysia
YVA-YYZ	Venezuela	5LA-5MZ	Liberia	9XA-9XZ	Rwanda
YZA-YZZ	Yugoslavia	5NA-5OZ	Nigeria	9YZ-9ZZ	Trinidad and Tobago
Y2A-Y9Z	Germany	5PA-5QZ	Denmark		
		5RA-5SZ	Madagascar		

\* Half series

\* Series allocated to an international organization

† Provisional allocation in accordance with S19.33

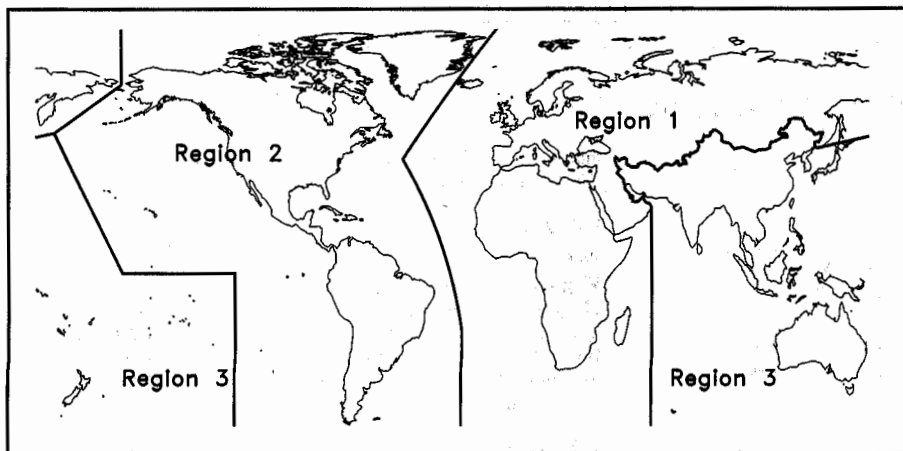
# FCC-Allocated Prefixes for Areas Outside the Continental US

## Prefix

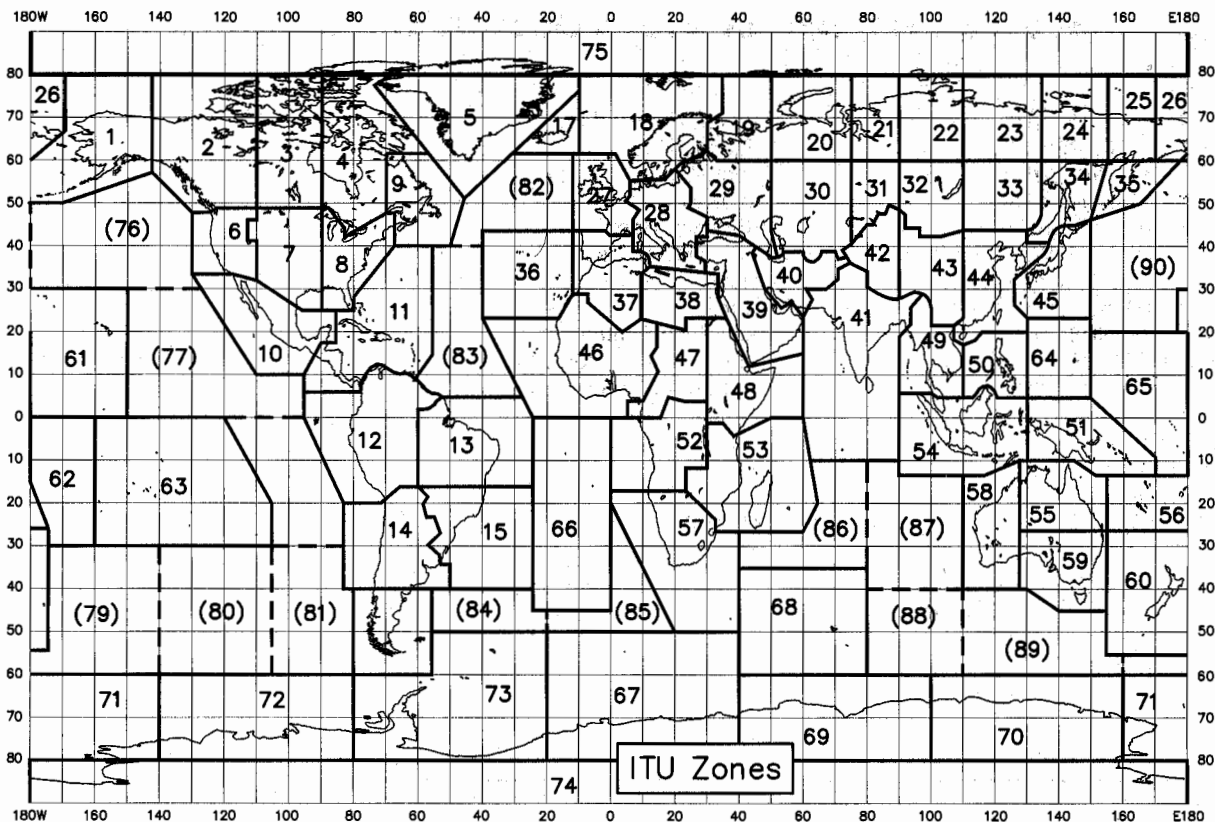
AH1, KH1, NH1, WH1  
AH2, KH2, NH2, WH2  
AH3, KH3, NH3, WH3  
AH4, KH4, NH4, WH4  
AH5K, KH5K, NH5K, WH5K  
AH5, KH5, NH5, WH5 (except K suffix)  
AH6-7, KH6-7, NH6-7, WH6-7  
AH7K, KH7K, NH7K, WH7K  
AH8, KH8, NH8, WH8  
AH9, KH9, NH9, WH9  
AH0, KH0, NH0, WH0  
AL, KL, NL, WL  
KP1, NP1, WP1  
KP2, NP2, WP2  
KP3-4, NP3-4, WP3-4  
KP5, NP5, WP5

## Location

Baker, Howland Is  
Guam  
Johnston I  
Midway I  
Kingman Reef  
Palmyra, Jarvis Is  
Hawaii  
Kure I  
American Samoa  
Wake, Wilkes, Peale Is  
Northern Mariana Is  
Alaska  
Navassa  
Virgin Is  
Puerto Rico  
Desecheo



The International Telecommunication Union divides the world into three regions. Geographic details appear in *The FCC Rule Book*.



## ITU Zones for US and Canada

### ITU Zone 1

KL7 Alaska (West of 141 Deg. W.)

### ITU Zone 2

KL7 Alaska (East of 141 Deg. W.) VE6, 7, VY1 Canada (South of 80 Deg. N. and West of 110 Deg. W.)

### ITU Zone 3

VE3, 4, 5, 8 Canada (South of 80 Deg. N. and between 90 Deg. and 110 Deg. W.)

### ITU Zone 4

VE2, 3, 4, 8 Canada (South of 80 Deg. N. and between 70 Deg. and 90 Deg. W. including Baffin Isl.)

### ITU Zone 6

W-K-N-A U.S.A. (Washington, Oregon, California, Nevada, Idaho & that part of Montana, Utah & Arizona west of 110 Deg. W.)

### ITU Zone 7

W-K-N-A U.S.A. (N. Dakota, S. Dakota, Nebraska, Wyoming, Colorado, New Mexico, Texas, Oklahoma, Kansas, Iowa, Minnesota, that part of Utah, Arizona & Montana East of 110 Deg. W., &

that part of Michigan, Illinois, Missouri, Arkansas, Mississippi, Tennessee, Louisiana & Wisconsin West of 90 Deg. W.)

### ITU Zone 8

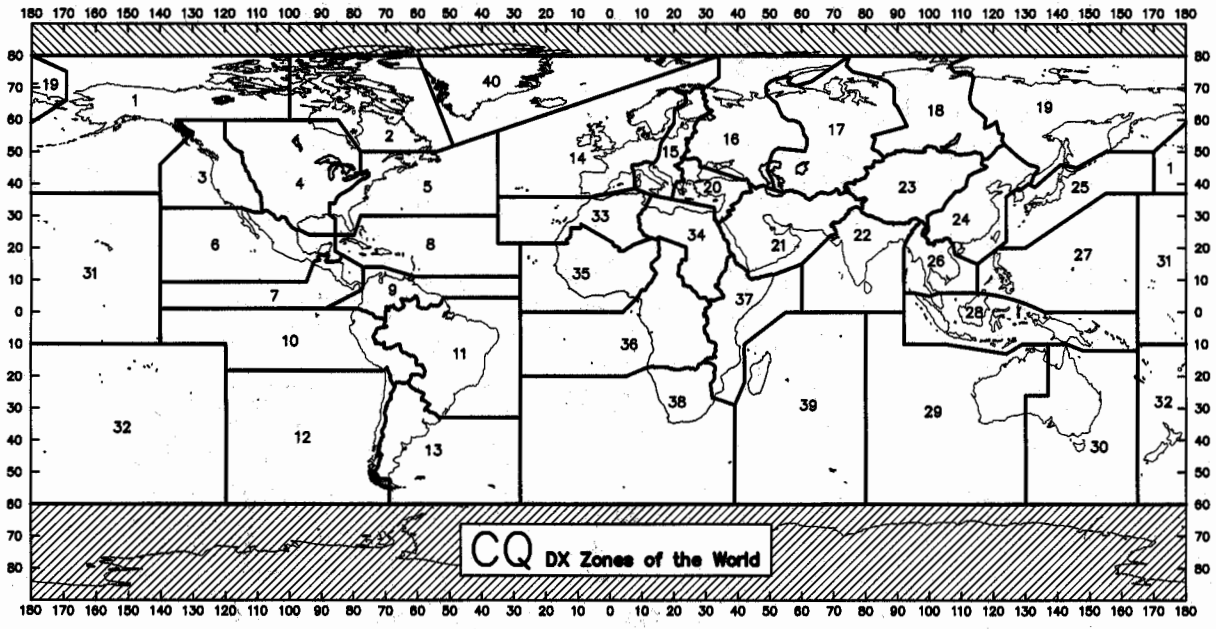
W-K-N-A U.S.A. (Indiana, Alabama, Georgia, Florida, Virginia, Kentucky, N. Carolina, S. Carolina, West Virginia, Maryland, Delaware, Ohio, Pennsylvania, New Jersey, New York, Maine, Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont & that part of Michigan, Illinois, Missouri, Arkansas, Mississippi, Tennessee, Louisiana & Wisconsin east of 90 Deg. W.)

### ITU Zone 9

VE1, 2, 8, VY2, VO2 Canada (South of 80 Deg. N. & East of 70 Deg. W., including Labrador, Newfoundland, Nova Scotia, but excluding Baffin Isl.)

### ITU Zone 61

KH1 Baker & Howland Isl.  
 KH3 Johnston Isl.  
 KH4 Midway Isl.  
 KH5 Palmyra Isl.  
 KH6 Hawaiian Isl.  
 KH7 Kure Isl.







## International Third-Party Traffic

Occasionally, DX stations may ask you to pass a third-party message to a friend or relative in the States. This is all right as long as the US has signed an official third-party traffic agreement with that particular country, or the third party is a licensed amateur. The traffic must be noncommercial and

of a personal, unimportant nature. During an emergency, the US State Department will often work out a special temporary agreement with the country involved. But in normal times, never handle traffic without first making sure it is legally permitted.

### US Amateurs May Handle Third-Party Traffic With:

C5	The Gambia	J7	Dominica	VE	Canada
CE	Chile	J8	St Vincent and the Grenadines	VK	Australia
CO	Cuba	JY	Jordan	VR6**	Pitcairn Island
CP	Bolivia	LU	Argentina	XE	Mexico
CX	Uruguay	OA	Peru	YN	Nicaragua
D6	Federal Islamic Republic of the Comoros	PY	Brazil	YS	El Salvador
DU	Philippines	TA	Turkey	YV	Venezuela
EL	Liberia	TG	Guatemala	ZP	Paraguay
GB*	United Kingdom	TI	Costa Rica	ZS	South Africa
HC	Ecuador	T9	Bosnia-Herzegovina	3DA	Swaziland
HH	Haiti	V2	Antigua and Barbuda	4U1TU	ITU Geneva
HI	Dominican Republic	V3	Belize	4U1VIC	VIC, Vienna
HK	Colombia	V4	St Christopher and Nevis	4X	Israel
HP	Panama	V6	Federated States of Micronesia	6Y	Jamaica
HR	Honduras	V7	Marshall Islands	8R	Guyana
J3	Grenada			9G	Ghana
J6	St Lucia			9L	Sierra Leone
				9Y	Trinidad and Tobago

### Notes

\* Third-party traffic permitted between US amateurs and special-events stations in the United Kingdom having the prefix GB only, with the exception that GB3 stations are not included in this agreement.

\*\* Since 1970, there has been an informal agreement between the United Kingdom and the US, permitting Pitcairn and US amateurs to exchange messages concerning medical emergencies, urgent need for equipment or supplies, and private or personal matters of island residents.

US licensed amateurs may operate in the following US territories under their FCC license:

The Northern Marianas Islands, Guam, Johnston Island, Midway Island, Kure Island, American Samoa, Wake Island, Wilkes Island, Peale Island, The Commonwealth of Puerto Rico and the US Virgin Islands.

Please note that the Region 2 Division of the International Amateur Radio Union (IARU) has recommended that international traffic on the 20 and 15-meter bands be conducted on the following frequencies:

14.100-14.150 MHz  
14.250-14.350 MHz  
21.150-21.200 MHz  
21.300-21.450 MHz

The IARU is the alliance of Amateur Radio societies from around the world; Region 2 comprises member-societies in North, South and Central America, and the Caribbean.

**Note:** At the end of an exchange of third-party traffic with a station located in a foreign country, an FCC-licensed amateur must transmit the call sign of the foreign station as well as his own call sign.

## ARRL Procedural Signals

In general, the CW prosigns are used on all data modes as well, although word abbreviations may be spelled out. That is, "CLEAR" might be used rather than "CL" on radioteletype. Additional radioteletype conventions appear at the end of the table.

### Situation

check for a clear frequency  
seek contact with any station  
after a call to a specific named station or to indicate the end of a message  
invite any station to transmit  
invite a specific named station to transmit  
invite receiving station to transmit  
all received correctly  
please stand by  
end of contact (sent before call sign)  
going off the air

### CW

QRL?  
CQ  
AR

### Voice

Is the frequency in use?  
CQ  
over, end of message

### K

go

### KN

go only

### BK

back to you

### R

received

### AS

wait, stand by

### SK

clear

### CL

closing station

### Additional RTTY prosigns

SK QRZ—Ending contact, but listening on frequency.

SK KN—Ending contact, but listening for one last transmission from the other station.

SK SZ—Signing off and listening on the frequency for any other calls.

## The RST System

### Readability

- 1—Unreadable.
- 2—Barely readable, occasional words distinguishable.
- 3—Readable with considerable difficulty.
- 4—Readable with practically no difficulty.
- 5—Perfectly readable.

### Signal Strength

- 1—Faint signals, barely perceptible.
- 2—Very weak signals.
- 3—Weak signals.
- 4—Fair signals.
- 5—Fairly good signals.
- 6—Good signals.
- 7—Moderately strong signals.
- 8—Strong signals.
- 9—Extremely strong signals.

### Tone

- 1—Sixty-cycle ac or less, very rough and broad.
- 2—Very rough ac, very harsh and broad.
- 3—Rough ac tone, rectified but not filtered.
- 4—Rough note, some trace of filtering.
- 5—Filtered rectified ac but strongly ripple-modulated.
- 6—Filtered tone, definite trace of ripple modulation.
- 7—Near pure tone, trace of ripple modulation.
- 8—Near perfect tone, slight trace of modulation.
- 9—Perfect tone, no trace of ripple of modulation of any kind.

If the signal has the characteristic steadiness of crystal control, add the letter X to the RST report. If there is a chirp, add the letter C. Similarly for a click, add K. (See FCC Regulations §97.307, Emissions Standards.) The above reporting system is used on both CW and voice; leave out the "tone" report on voice.

## Q Signals

These Q signals most often need to be expressed with brevity and clarity in amateur work. (Q abbreviations take the form of questions only when each is sent followed by a question mark.)

- QRA What is the name of your station? The name of your station is \_\_\_\_\_.
- QRG Will you tell me my exact frequency (or that of \_\_\_\_\_)? Your exact frequency (or that of \_\_\_\_\_) is \_\_\_\_\_ kHz.
- QRH Does my frequency vary? Your frequency varies.
- QRI How is the tone of my transmission? The tone of your transmission is \_\_\_\_\_ (1. Good; 2. Variable; 3. Bad).
- QRJ Are you receiving me badly? I cannot receive you. Your signals are too weak.
- QRK What is the intelligibility of my signals (or those of \_\_\_\_\_)? The intelligibility of your signals (or those of \_\_\_\_\_) is \_\_\_\_\_ (1. Bad; 2. Poor; 3. Fair; 4. Good; 5. Excellent).
- QRL Are you busy? I am busy (or I am busy with \_\_\_\_\_). Please do not interfere.
- QRM Is my transmission being interfered with? Your transmission is being interfered with (1. Nil; 2. Slightly; 3. Moderately; 4. Severely; 5. Extremely).
- QRN Are you troubled by static? I am troubled by static \_\_\_\_\_ (1-5 as under QRM).
- QRO Shall I increase power? Increase power.
- QRP Shall I decrease power? Decrease power.
- QRQ Shall I send faster? Send faster (\_\_\_\_\_ WPM).
- QRS Shall I send more slowly? Send more slowly (\_\_\_\_\_ WPM).
- QRT Shall I stop sending? Stop sending.
- QRU Have you anything for me? I have nothing for you.
- QRV Are you ready? I am ready.
- QRW Shall I inform \_\_\_\_\_ that you are calling on \_\_\_\_\_ kHz? Please inform \_\_\_\_\_ that I am calling on \_\_\_\_\_ kHz.
- QRX When will you call me again? I will call you again at \_\_\_\_\_ hours (on \_\_\_\_\_ kHz).
- QRY What is my turn? Your turn is numbered \_\_\_\_\_.
- QRZ Who is calling me? You are being called by \_\_\_\_\_ (on \_\_\_\_\_ kHz).
- QSA What is the strength of my signals (or those of \_\_\_\_\_)? The strength of your signals (or those of \_\_\_\_\_) is \_\_\_\_\_ (1. Scarcely perceptible; 2. Weak; 3. Fairly good; 4. Good; 5. Very good).

- QSB Are my signals fading? Your signals are fading.
- QSD Is my keying defective? Your keying is defective.
- QSG Shall I send \_\_\_\_\_ messages at a time? Send \_\_\_\_\_ messages at a time.
- QSK Can you hear me between your signals and if so can I break in on your transmission? I can hear you between my signals; break in on my transmission.
- QSL Can you acknowledge receipt? I am acknowledging receipt.
- QSM Shall I repeat the last message which I sent you, or some previous message? Repeat the last message which you sent me [or message(s) number(s) \_\_\_\_\_].
- QSN Did you hear me (or \_\_\_\_\_) on \_\_\_\_\_ kHz? I did hear you (or \_\_\_\_\_) on \_\_\_\_\_ kHz.
- QSO Can you communicate with \_\_\_\_\_ direct or by relay? I can communicate with \_\_\_\_\_ direct (or by relay through \_\_\_\_\_).
- QSP Will you relay to \_\_\_\_\_? I will relay to \_\_\_\_\_.
- QST General call preceding a message addressed to all amateurs and ARRL members. This is in effect "CQ ARRL."
- QSU Shall I send or reply on this frequency (or on \_\_\_\_\_ kHz)? Send or reply on this frequency (or \_\_\_\_\_ kHz).
- QSV Shall I send a series of Vs on this frequency (or on \_\_\_\_\_ kHz)? Send a series of Vs on this frequency (or on \_\_\_\_\_ kHz).
- QSW Will you send on this frequency (or on \_\_\_\_\_ kHz)? I am going to send on this frequency (or on \_\_\_\_\_ kHz).
- QSX Will you listen to \_\_\_\_\_ on \_\_\_\_\_ kHz? I am listening to \_\_\_\_\_ on \_\_\_\_\_ kHz.
- QSY Shall I change to transmission on another frequency? Change to transmission on another frequency (or on \_\_\_\_\_ kHz).
- QSZ Shall I send each word or group more than once? Send each word or group twice (or \_\_\_\_\_ times).
- QTA Shall I cancel message number \_\_\_\_\_? Cancel message number \_\_\_\_\_.
- QTB Do you agree with my counting of words? I do not agree with your counting of words. I will repeat the first letter or digit of each word or group.
- QTC How many messages have you to send? I have \_\_\_\_\_ messages for you (or for \_\_\_\_\_).

QTH What is your location? My location is \_\_\_\_\_.  
QTR What is the correct time? The correct time is \_\_\_\_\_.  
QTV Shall I stand guard for you? Stand guard for me.  
QTX Will you keep your station open for further communication with me? Keep your station open for me.  
QUA Have you news of \_\_\_\_\_? I have news of \_\_\_\_\_.

### ARRL QN Signals

QNA\* Answer in prearranged order.  
QNB Act as relay between \_\_\_\_\_ and \_\_\_\_\_.  
QNC All net stations copy. I have a message for all net stations.  
QND\* Net is Directed (Controlled by net control station.)  
QNE\* Entire net stand by.  
QNF Net is Free (not controlled).  
QNG Take over as net control station  
QNH Your net frequency is High.  
QNI Net stations report in. I am reporting into the net. (Follow with a list of traffic or QRU.)  
QNJ Can you copy me?  
QNK\* Transmit messages for \_\_\_\_\_ to \_\_\_\_\_.  
QNL Your net frequency is Low.  
QNM\* You are QRMing the net. Stand by.  
QNN Net control station is \_\_\_\_\_. What station has net control?

QNO Station is leaving the net.  
QNP Unable to copy you. Unable to copy \_\_\_\_\_.  
QNQ\* Move frequency to \_\_\_\_\_ and wait for \_\_\_\_\_ to finish handling traffic. Then send him traffic for \_\_\_\_\_.  
QNR\* Answer \_\_\_\_\_ and Receive traffic.  
QNS Following Stations are in the net.\* (follow with list.) Request list of stations in the net.  
QNT I request permission to leave the net for \_\_\_\_\_ minutes.  
QNU\* The net has traffic for you. Stand by.  
QNV\* Establish contact with \_\_\_\_\_ on this frequency. If successful, move to \_\_\_\_\_ and send him traffic for \_\_\_\_\_.  
QNW How do I route messages for \_\_\_\_\_?  
QNX You are excused from the net.\*  
QNY\* Shift to another frequency (or to \_\_\_\_\_ kHz) to clear traffic with \_\_\_\_\_.  
QNZ Zero beat your signal with mine.

### Notes:

\*For use only by the Net Control Station.

### Notes on Use of QN Signals:

These QN signals are special ARRL signals for use in amateur CW nets *only*. They are not for use in casual amateur conversation. Other meanings that may be used in other services do not apply. Do not use QN signals on phone nets. *Say it with words*. QN signals need not be followed by a question mark, even though the meaning may be interrogatory.

## Message Handling Instructions

HXA—(Followed by number.) Collect landline delivery authorized by addressee within \_\_ miles. (If no number, authorization is unlimited.)  
HXB—(Followed by number.) Cancel message if not delivered within \_\_ hours of filing time; service originating station.  
HXC—Report date and time of delivery (TOD) to originating station.  
HXD—Report to originating station the identity of station from which received, plus date, time and method of delivery.  
HXE—Delivering station get reply from addressee, originate message back.

HXF—(Followed by number.) Hold delivery until \_\_\_\_ (date).

HXG—Delivery by mail or landline toll call not required. If toll or other expense involved, cancel message and service originating station.

An HX prosign (when used) will be inserted in the message preamble before the station of origin, thus: NR 207 R HXA50 W1AW 12. . . (etc). If more than one HX prosign is used, they can be combined if no numbers are to be inserted; otherwise the HX should be repeated, thus: NR 207 R HXAC W1AW. . . (etc), but: NR 207 R HXA50 HXC W1AW. . . (etc). On phone, use phonetics for the letter or letters following the HX, to insure accuracy.

# ARRL Numbered Radiograms

The letters ARL are inserted in the preamble in the check and in the text before spelled out numbers, which represent texts from this list. Note that some ARL texts include insertion of numerals. *Example:* NR 1 R W1AW ARL 5 NEWINGTON CONN DEC 25 DONALD R SMITH AA 164 EAST SIXTH AVE AA NORTH RIVER CITY MO AA PHONE 733 3968 BT ARL FIFTY ARL SIXTY ONE BT DIANA AR. For additional information about traffic handling, see Chapter 7.

## Group One—For Possible "Relief Emergency" Use

- ONE Everyone safe here. Please don't worry.
- TWO Coming home as soon as possible.
- THREE Am in \_\_\_\_\_ hospital. Receiving excellent care and recovering fine.
- FOUR Only slight property damage here. Do not be concerned about disaster reports.
- FIVE Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated.
- SIX Will contact you as soon as possible.
- SEVEN Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.
- EIGHT Need additional \_\_\_\_\_ mobile or portable equipment for immediate emergency use.
- NINE Additional \_\_\_\_\_ radio operators needed to assist with emergency at this location.
- TEN Please contact \_\_\_\_\_. Advise to standby and provide further emergency information, instructions or assistance.
- ELEVEN Establish Amateur Radio emergency communications with \_\_\_\_\_ on \_\_\_\_\_ MHz.
- TWELVE Anxious to hear from you. No word in some time. Please contact me as soon as possible.
- THIRTEEN Medical emergency situation exists here.
- FOURTEEN Situation here becoming critical. Losses and damage from \_\_\_\_\_ increasing.
- FIFTEEN Please advise your condition and what help is needed.
- SIXTEEN Property damage very severe in this area.
- SEVENTEEN REACT communications services also available. Establish REACT communications with \_\_\_\_\_ on channel \_\_\_\_\_.

- EIGHTEEN Please contact me as soon as possible at \_\_\_\_\_.
- NINETEEN Request health and welfare report on \_\_\_\_\_. (State name, address and telephone number.)
- TWENTY Temporarily stranded. Will need some assistance. Please contact me at \_\_\_\_\_.
- TWENTY ONE Search and Rescue assistance is needed by local authorities here. Advise availability.
- TWENTY TWO Need accurate information on the extent and type of conditions now existing at your location. Please furnish this information and reply without delay.
- TWENTY THREE Report at once the accessibility and best way to reach your location.
- TWENTY FOUR Evacuation of residents from this area urgently needed. Advise plans for help.
- TWENTY FIVE Furnish as soon as possible the weather conditions at your location.
- TWENTY SIX Help and care for evacuation of sick and injured from this location needed at once.

Emergency/priority messages originating from official sources must carry the signature of the originating official.

## Group Two—Routine messages

- FORTY SIX Greetings on your birthday and best wishes for many more to come.
- FIFTY Greetings by Amateur Radio.
- FIFTY ONE Greetings by Amateur Radio. This message is sent as a free public service by ham radio operators here at \_\_\_\_\_. Am having a wonderful time.
- FIFTY TWO Really enjoyed being with you. Looking forward to getting together again.
- FIFTY THREE Received your \_\_\_\_\_. It's appreciated; many thanks.
- FIFTY FOUR Many thanks for your good wishes.
- FIFTY FIVE Good news is always welcome. Very delighted to hear about yours.

- FIFTY SIX Congratulations on your \_\_\_\_\_, a most worthy and deserved achievement.
- FIFTY SEVEN Wish we could be together.
- FIFTY EIGHT Have a wonderful time. Let us know when you return.
- FIFTY NINE Congratulations on the new arrival. Hope mother and child are well.
- \*SIXTY Wishing you the best of everything on \_\_\_\_\_.
- SIXTY ONE Wishing you a very merry Christmas and a happy New Year.
- \*SIXTY TWO Greetings and best wishes to you for a pleasant \_\_\_\_\_ holiday season.
- SIXTY THREE Victory or defeat, our best wishes are with you. Hope you win.
- SIXTY FOUR Arrived safely at \_\_\_\_\_.

- SIXTY FIVE Arriving \_\_\_\_\_ on \_\_\_\_\_. Please arrange to meet me there.
- SIXTY SIX DX QSLs are on hand for you at the \_\_\_\_\_ QSL Bureau. Send \_\_\_\_\_ self-addressed envelopes.
- SIXTY SEVEN Your message number \_\_\_\_\_ undeliverable because of \_\_\_\_\_. Please advise.
- SIXTY EIGHT Sorry to hear you are ill. Best wishes for a speedy recovery.
- SIXTY NINE Welcome to the \_\_\_\_\_. We are glad to have you with us and hope you will enjoy the fun and fellowship of the organization.

\* Can be used for all holidays.

Note: ARL numbers should be spelled out at all times.

## Time Conversion Chart

UTC	EDT/AST	CDT/EST	MDT/CST	PDT/MST	PST
0000*	2000	1900	1800	1700	1600
0100	2100	2000	1900	1800	1700
0200	2200	2100	2000	1900	1800
0300	2300	2200	2100	2000	1900
0400	0000*	2300	2200	2100	2000
0500	0100	0000*	2300	2200	2100
0600	0200	0100	0000*	2300	2200
0700	0300	0200	0100	0000*	2300
0800	0400	0300	0200	0100	0000*
0900	0500	0400	0300	0200	0100
1000	0600	0500	0400	0300	0200
1100	0700	0600	0500	0400	0300
1200	0800	0700	0600	0500	0400
1300	0900	0800	0700	0600	0500
1400	1000	0900	0800	0700	0600
1500	1100	1000	0900	0800	0700
1600	1200	1100	1000	0900	0800
1700	1300	1200	1100	1000	0900
1800	1400	1300	1200	1100	1000
1900	1500	1400	1300	1200	1100
2000	1600	1500	1400	1300	1200
2100	1700	1600	1500	1400	1300
2200	1800	1700	1600	1500	1400
2300	1900	1800	1700	1600	1500
2400	2000	1900	1800	1700	1600

Coordinated Universal Time (UTC) is the time at the zero or reference meridian. Time changes one hour with each change of 15° in longitude. The five time zones in the U.S. proper and Canada roughly follow these lines.

\*0000 and 2400 are interchangeable. 2400 is associated with the date of the day ending, 0000 with the day just starting.

## Phonetic Alphabet

A	— Alfa ( <b>AL FAH</b> )
B	— Bravo ( <b>BRAH VOH</b> )
C	— Charlie ( <b>CHAR LEE</b> or <b>SHAR LEE</b> )
D	— Delta ( <b>DELL TAH</b> )
E	— Echo ( <b>ECK OH</b> )
F	— Foxtrot ( <b>FOKS TROT</b> )
G	— Golf ( <b>GOLF</b> )
H	— Hotel ( <b>HOH TELL</b> )
I	— India ( <b>IN DEE AH</b> )
J	— Juliet ( <b>JEW LEE ETT</b> )
K	— Kilo ( <b>KEY LOH</b> )
L	— Lima ( <b>LEE MAH</b> )
M	— Mike ( <b>MIKE</b> )
N	— November ( <b>NO VEM BER</b> )
O	— Oscar ( <b>OSS CAH</b> )
P	— Papa ( <b>PAH PAH</b> )
Q	— Quebec ( <b>KEH BECK</b> )
R	— Romeo ( <b>ROW ME OH</b> )
S	— Sierra ( <b>SEE AIR RAH</b> )
T	— Tango ( <b>TANG GO</b> )
U	— Uniform ( <b>YOU NEE FORM</b> or <b>OO NEE FORM</b> )
V	— Victor ( <b>VIK TAH</b> )
W	— Whiskey ( <b>WISS KEY</b> )
X	— X-Ray ( <b>ECKS RAY</b> )
Y	— Yankee ( <b>YANG KEY</b> )
Z	— Zulu ( <b>ZOO LOO</b> )

Note: The **Boldfaced** syllables are emphasized. The pronunciations shown in the table were designed for speakers from all international languages. The pronunciations given for "Oscar" and "Victor" may seem awkward to English-speaking people in the U.S.

# CW Abbreviations

Although abbreviations help to cut down unnecessary transmission, make it a rule not to abbreviate unnecessarily when working an operator of unknown experience.

AA All after  
 AB All before  
 AB About  
 ADR Address  
 AGN Again  
 ANT Antenna  
 BCI Broadcast interference  
 BCL Broadcast listener  
 BK Break; break me; break in  
 BN All between; been  
 BUG Semi-automatic key  
 B4 Before  
 C Yes  
 CFM Confirm; I confirm  
 CK Check  
 CL I am closing my station; call  
 CLD-CLG Called; calling  
 CQ Calling any station  
 CUD Could  
 CUL See you later  
 CW Continuous wave (i.e., radiotelegraph)  
 DE From  
 DLD-DLVD Delivered  
 DR Dear  
 DX Distance, foreign countries  
 ES And, &  
 FB Fine business, excellent  
 FM Frequency modulation  
 GA Go ahead (or resume sending)  
 GB Good-by  
 GBA Give better address

GE Good evening  
 GG Going  
 GM Good morning  
 GN Good night  
 GND Ground  
 GUD Good  
 HI The telegraphic laugh; high  
 HR Here, hear  
 HV Have  
 HW How  
 LID A poor operator  
 MA, MILS Milliamperes  
 MSG Message; prefix to radiogram  
 N No  
 NCS Net control station  
 ND Nothing doing  
 NIL Nothing; I have nothing for you  
 NM No more  
 NR Number  
 NW Now; I resume transmission  
 OB Old boy  
 OC Old chap  
 OM Old man  
 OP-OPR Operator  
 OT Old timer; old top  
 PBL Preamble  
 PSE Please  
 PWR Power  
 PX Press  
 R Received as transmitted; are  
 RCD Received  
 RCVR (RX) Receiver  
 REF Refer to; referring to; reference  
 RFI Radio Frequency Interference  
 RIG Station equipment

RPT Repeat; I repeat; report  
 RTTY Radioteletype  
 RX Receiver  
 SASE Self-addressed, stamped envelope  
 SED Said  
 SIG Signature; signal  
 SINE Operator's personal initials or nickname  
 SKED Schedule  
 SRI Sorry  
 SSB Single sideband  
 SVC Service; prefix to service message  
 T Zero  
 TFC Traffic  
 TMW Tomorrow  
 TNX-TKS Thanks  
 TT That  
 TU Thank you  
 TVI Television interference  
 TX Transmitter  
 TXT Text  
 UR-URS Your; you're; yours  
 VFO Variable-frequency oscillator  
 VY Very  
 WA Word after  
 WB Word before  
 WD-WDS Word; words  
 WKD-WKG Worked; working  
 WL Well; will  
 WUD Would  
 WX Weather  
 XCVR Transceiver  
 XMTR (TX) Transmitter  
 XTAL Crystal  
 XYL (YF) Wife  
 YL Young lady  
 73 Best regards  
 88 Love and Kisses

# W1AW SCHEDULE

Pacific	Mtn	Cent	East	Mon	Tue	Wed	Thu	Fri
8 AM	7 AM	8 AM	9 AM		Fast Code	Slow Code	Fast Code	Slow Code
7 AM-1 PM	6 AM-2 PM	9 AM-3 PM	10 AM-4 PM	Visiting Operator Time (12 PM - 1 PM closed for lunch)				
1 PM	2 PM	3 PM	4 PM	Fast Code	Slow Code	Fast Code	Slow Code	Fast Code
2 PM	3 PM	4 PM	5 PM	Code Bulletin				
3 PM	4 PM	5 PM	6 PM	Teleprinter Bulletin				
4 PM	5 PM	6 PM	7 PM	Slow Code	Fast Code	Slow Code	Fast Code	Slow Code
5 PM	6 PM	7 PM	8 PM	Code Bulletin				
6 PM	7 PM	8 PM	9 PM	Teleprinter Bulletin				
6 <sup>45</sup> PM	7 <sup>45</sup> PM	8 <sup>45</sup> PM	9 <sup>45</sup> PM	Voice Bulletin				
7 PM	8 PM	9 PM	10 PM	Fast Code	Slow Code	Fast Code	Slow Code	Fast Code
8 PM	9 PM	10 PM	11 PM	Code Bulletin				

W1AW's schedule is at the same local time throughout the year. The schedule according to your local time will change if your local time does not have seasonal adjustments that are made at the same time as North American time changes between standard time and daylight time. From the first Sunday in April to the last Sunday in October, UTC = Eastern Time + 4 hours. For the rest of the year, UTC = Eastern Time + 5 hours.

## ◆ Morse code transmissions:

Frequencies are 1.818, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675, 28.0675 and 147.555 MHz.

Slow Code = practice sent at 5, 7<sup>1/2</sup>, 10, 13 and 15 wpm.

Fast Code = practice sent at 35, 30, 25, 20, 15, 13 and 10 wpm.

Code practice text is from the pages of *QST*. The source is given at the beginning of each practice session and alternate speeds within each session. For example, "Text is from July 1992 *QST*, pages 9 and 81," indicates that the plain text is from the article on page 9 and mixed number/letter groups are from page 81.

Code bulletins are sent at 18 wpm.

W1AW qualifying runs are sent on the same frequencies as the Morse code transmissions. West Coast qualifying runs are transmitted on approximately 3.590 MHz by W6OWB, with K6YR as an alternate. At the beginning of each code practice session, the schedule for the next qualifying run is presented. Underline one minute of the highest speed you copied, certify that your copy was made without aid, and send it to ARRL for grading. Please include your name, call sign (if any) and complete mailing address. Send a 9x12-inch SASE for a certificate, or a business-size SASE for an endorsement.

## ◆ Teleprinter transmissions:

Frequencies are 3.625, 7.095, 14.095, 18.1025, 21.095, 28.095 and 147.555 MHz.

Bulletins are sent at 45.45-baud Baudot and 100-baud AMTOR, FEC Mode B. 110-baud ASCII will be sent only as time allows.

On Tuesdays and Fridays at 6:30 PM Eastern Time, Keplerian elements for many amateur satellites are sent on the regular teleprinter frequencies.

## ◆ Voice transmissions:

Frequencies are 1.855, 3.99, 7.29, 14.29, 18.16, 21.39, 28.59 and 147.555 MHz.

## ◆ Miscellaneous:

On Fridays, UTC, a DX bulletin replaces the regular bulletins.

W1AW is open to visitors from 10 AM until noon and from 1 PM until 3:45 PM on Monday through Friday. FCC licensed amateurs may operate the station during that time. Be sure to bring your current FCC amateur license or a photocopy.

In a communication emergency, monitor W1AW for special bulletins as follows: voice on the hour, teleprinter at 15 minutes past the hour, and CW on the half hour.

Headquarters and W1AW are closed on New Year's Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving and the following Friday, and Christmas Day.



## We're At Your Service

ARRL Headquarters is open from 8 AM to 5 PM Eastern Time, Monday through Friday, except holidays. Our address is: 225 Main St, Newington, CT 06111-1494. You can call us at 860-594-0200, or fax us at 860-594-0259.

If you have a question, try one of these Headquarters departments . . .

	Telephone	Electronic Mail
Joining ARRL	888-277-5289	circulation@arrl.org
QST Delivery	860-594-0338	circulation@arrl.org
Publication Orders	888-277-5289	pubsales@arrl.org
M-F Only, 8 AM to 8 PM Eastern Time	(toll free)	
Regulatory Info	860-594-0236	reginfo@arrl.org
Exams	860-594-0300	vec@arrl.org
Educational	860-594-0301	ead@arrl.org
Materials		
Contests	860-594-0232	n1nd@arrl.org
Technical Questions	860-594-0214	tls@arrl.org
Awards	860-594-0288	awards@arrl.org
DXCC/VUCC	860-594-0234	dxcc@arrl.org
Advertising	860-594-0207	ads@arrl.org
Media Relations	860-594-0328	newsmedia@arrl.org
QSL Service	860-594-0274	buro@arrl.org
Scholarships	860-594-0230	foundation@arrl.org
Emergency Comm	860-594-0265	wv1x@arrl.org
Clubs	860-594-0267	clubs@arrl.org
Hamfests	860-594-0262	hamfests@arrl.org

You can send e-mail to any ARRL Headquarters employee if you know his or her name or call sign. The second half of every Headquarters e-mail address is @arrl.org. To create the first half, simply use the person's call sign. If you don't know their call sign, use the first letter of their first name, followed by their complete last name. For example, to send a message to John Hennessee, N1KB, Regulatory Information Specialist, you could address it to [jhennessee@arrl.org](mailto:jhennessee@arrl.org) or [N1KB@arrl.org](mailto:N1KB@arrl.org).

If all else fails, send e-mail to [hq@arrl.org](mailto:hq@arrl.org) and it will be routed to the right people or departments.

### Technical Information Server

If you have Internet e-mail capability, you can tap into the ARRL Technical Information Server, otherwise known as the *Info Server*. To have user instructions and a handy index sent to you automatically, simply address an e-mail message to: [Info@arrl.org](mailto:Info@arrl.org)

Subject: Info Request

In the body of your message enter:

HELP  
SEND INDEX  
QUIT

### ARRL on the World Wide Web

You'll also find the ARRL on the World Wide Web at:

<http://www.arrl.org/>

At the ARRL Web page you'll find the latest W1AW bulletins, a hamfest calendar, exam schedules, an on-line ARRL

Publications Catalog and much more. We're always adding new features to our Web page, so check it often!

### Members-Only Web Site

As an ARRL member you enjoy exclusive access to our Members-Only Web site. Just point your browser to <http://www.arrl.org/members/> and you'll open the door to benefits that you won't find anywhere else.

- Our on-line Web magazine, the *ARRL Web Extra* with colorful news and features you won't see in *QST*.
- *QST* Product Review Archive. Get copies of *QST* product reviews from 1980 to the present.
- *QST/QEX* searchable index (find that article you were looking for!)
- Previews of contest results and product reviews. See them here before they appear in *QST*!
- Access to your information in the ARRL membership database. Enter corrections or updates on line!

### Stopping by for a visit?

We offer tours of Headquarters and W1AW at 9, 10 and 11 AM, and at 1, 2 and 3 PM, Monday to Friday (except holidays). Special tour times may be arranged in advance. Bring your license and you can operate W1AW anytime between 10 AM and noon, and 1 to 3:45 PM!

### Would you like to write for QST?

We're always looking for new material of interest to hams. Send a self-addressed, stamped envelope (2 units of First Class postage) and ask for a copy of the *Author's Guide*. (It's also available via the ARRL Info Server, and via the World Wide Web at <http://www.arrl.org/qst/aguide/>.) The guide contains all the information you'll need to craft an article to meet our requirements. Send article ideas or manuscripts to the attention of the *QST* Editor (e-mail [qst@arrl.org](mailto:qst@arrl.org)).

### Press Releases and New Products/Books

Send your press releases and new book announcements to the attention of the *QST* Editor (e-mail [qst@arrl.org](mailto:qst@arrl.org)). New product announcements should be sent to the Product Review Editor (e-mail [reviews@arrl.org](mailto:reviews@arrl.org)).

### Strays and Up Front

Send your Strays and Up Front materials to the *QST* Features Editor (e-mail [upfront@arrl.org](mailto:upfront@arrl.org)). Be sure to include your name, address and daytime telephone number.

### Interested in Becoming a Ham?

Just pick up the telephone and call toll free 1-800-326-3942, or send e-mail to [newham@arrl.org](mailto:newham@arrl.org). We'll provide helpful advice on obtaining your Amateur Radio license, and we'll be happy to send you our informative Prospective Ham Package.

### ARRL Audio News

The best way to keep up with fast-moving events in the ham community is to listen to the ARRL Audio News. It's as close as your telephone at 860-594-0384, or on the Web at <http://www.arrl.org/arrlletter/audio/>



## Your ARRL Membership Benefits

*QST*, our monthly membership journal, is simply **THE SOURCE** for news and information on any topic that's part of, or relates to, Amateur Radio. Whether you're interested in contesting, DXing, or radios, accessories and antennas that you can build at home, *QST* covers them all. And there's more: New trends and the latest technology, fiction, humor, news, club activities, rules and regulations, special events, packet radio, and much more.

In addition, you'll have access to our: Technical Information Service, Ham Radio Equipment Insurance Program, Outgoing QSL Service, ARRL Field Organization and Operating Awards programs.

Lastly, your ARRL membership helps fund the following invaluable services. You may use one or two of these services during your membership, or you might take advantage of them all. As an ARRL member you insure their existence and continuation.

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>•Representation of your interests in Washington</li><li>•Regulatory Information Department, providing information on:<ul style="list-style-type: none"><li>FCC/regulatory questions</li><li>Antenna/tower/zoning restriction problems</li><li>Reciprocal licensing procedures</li><li>Volunteer Counsel Program</li></ul></li></ul> | <ul style="list-style-type: none"><li>•Volunteer Examiner Coordinator program</li><li>•Amateur Radio Emergency Service</li><li>•Registered Amateur Radio Instructor program</li><li>•WIAW code practice, bulletins and code proficiency sessions</li><li>•ARRL sponsored contests</li></ul> |
|---|---|

## About The ARRL

The seed for Amateur Radio was planted in the 1890s, when Guglielmo Marconi began his experiments in wireless telegraphy. Soon he was joined by dozens, then hundreds, of others who were enthusiastic about sending and receiving messages through the air—some with a commercial interest, but others solely out of a love for this new communications medium. The United States government began licensing Amateur Radio operators in 1912.

By 1914, there were thousands of Amateur Radio operators—hams—in the United States. Hiram Percy Maxim, a leading Hartford, Connecticut, inventor and industrialist, saw the need for an organization to band together this fledgling group of radio experimenters. In May 1914 he founded the American Radio Relay League (ARRL) to meet that need.

Today ARRL, with approximately 170,000 members, is the largest organization of radio amateurs in the United States. The ARRL is a not-for-profit organization that:

- promotes interest in Amateur Radio communications and experimentation
- represents US radio amateurs in legislative matters, and
- maintains fraternalism and a high standard of conduct among Amateur Radio operators.

At ARRL headquarters in the Hartford suburb of Newington, the staff helps serve the needs of members. ARRL is also International Secretariat for the International Amateur Radio Union, which is made up of similar societies in 150 countries around the world.

ARRL publishes the monthly journal *QST*, as well as newsletters and many publications covering all aspects of Amateur Radio. Its headquarters station, W1AW, transmits bulletins of interest to radio amateurs and Morse code practice sessions. The ARRL also coordinates an extensive field organization, which includes volunteers who provide technical informa-

tion and other support for radio amateurs as well as communications for public-service activities. ARRL also represents US amateurs with the Federal Communications Commission and other government agencies in the US and abroad.

Membership in ARRL means much more than receiving *QST* each month. In addition to the services already described, ARRL offers membership services on a personal level, such as the ARRL Volunteer Examiner Coordinator Program and a QSL bureau.

Full ARRL membership (available only to licensed radio amateurs) gives you a voice in how the affairs of the organization are governed. ARRL policy is set by a Board of Directors (one from each of 15 Divisions). Each year, one-third of the ARRL Board of Directors stands for election by the full members they represent. The day-to-day operation of ARRL HQ is managed by an Executive Vice President and a Chief Financial Officer.

No matter what aspect of Amateur Radio attracts you, ARRL membership is relevant and important. There would be no Amateur Radio as we know it today were it not for the ARRL. We would be happy to welcome you as a member! (An Amateur Radio license is not required for Associate Membership.) For more information about ARRL and answers to any questions you may have about Amateur Radio, write or call:

ARRL—The national association for Amateur Radio  
225 Main Street  
Newington CT 06111-1494  
(860) 594-0200

Prospective new amateurs call:

**800-32-NEW HAM** (800-326-3942)

You can also contact us via e-mail at

**newham@arri.org** or check out *ARRLWeb* at <http://www.arri.org/>



## **The Amateur's Code**

### **The Radio Amateur Is:**

#### **CONSIDERATE . . .**

never knowingly operates in such a way as to lessen the pleasure of others.

#### **LOYAL . . .**

offers loyalty, encouragement and support to other amateurs, local clubs, and the ARRL, through which Amateur Radio in the United States is represented nationally and internationally.

#### **PROGRESSIVE . . .**

with knowledge abreast of science, a well-built and efficient station and operation above reproach.

#### **FRIENDLY . . .**

slow and patient operating when requested; friendly advice and counsel to the beginner; kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

#### **BALANCED . . .**

radio is an avocation, never interfering with duties owed to family, job, school, or community.

#### **PATRIOTIC . . .**

station and skill always ready for service to country and community.

*The original Amateur's Code was written by Paul M. Segal, W9EEA, in 1928.*