

# Overview to Radio Communication using Morse Code

CW

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# CW Training

- **What is CW**
  - International Morse Code
  - Graphical Representation
  - Complete Morse Alphabet for Hams
- **Receiving CW**
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  - Copying CW
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  - Practice files
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  - Tune Your Signal
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  - QST
- **CW Frequencies**
- **Graphical Frequencies Chart**
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  - Plain Language
  - Q Code for CW

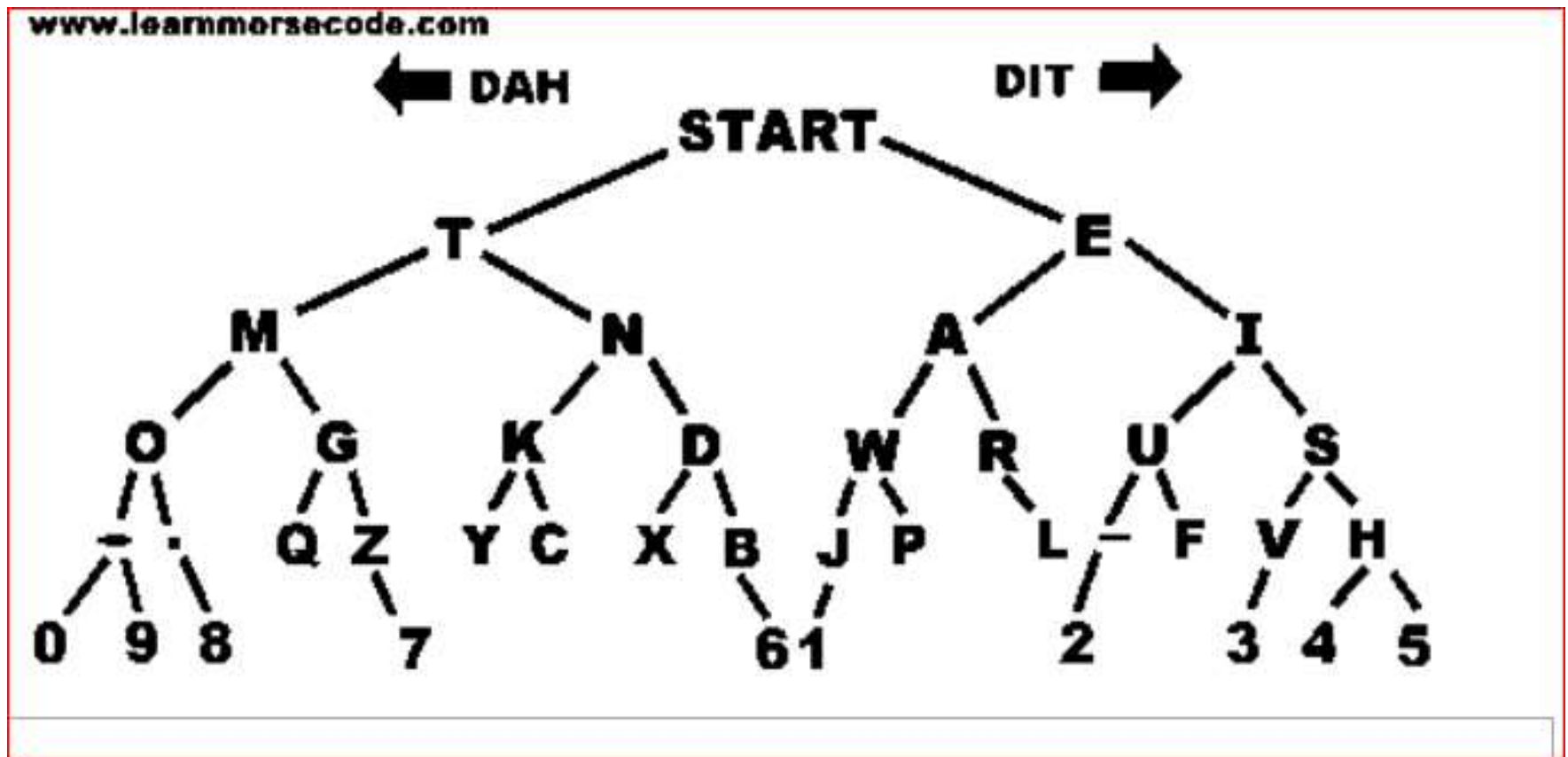
# What is CW

- In Amateur radio, Morse code is referred as CW.
- CW stands for "**continuous wave**" transmissions.
- **Morse code** is a method of transmitting text information as a series of on-off tones, lights, or clicks that can be directly understood by a skilled listener or observer without special equipment.
- In Amateur Radio standardized sequences of short and long signals are called "dots" and "dashes", or "**dits**" and "**dahs**".
- There are two types of Morse codes: American and International
- [https://en.wikipedia.org/wiki/Electrical\\_telegraph](https://en.wikipedia.org/wiki/Electrical_telegraph)

# International Morse Code

- Morse Code is truly a language
- Hams use the International Morse Code
- The **dit** duration is the basic unit of time measurement in code transmission.
- The duration of a **dah** is three times the duration of a **dit**.
- Each **dit** or **dah** is followed by a short silence, equal to the **dit** duration.
- The letters of a word are separated by a space equal to three **dits** (one dah)
- The words are separated by a space equal to seven **dits**.
- The length of each character in Morse is approximately inverse to its frequency of occurrence in English
- The most common letter in English, the letter "E", has the shortest code, a single **dit**.

# Graphical Representation



# Morse Alphabet for Hams

[www.learnmorsecode.com](http://www.learnmorsecode.com)

<b>A</b> · —	<b>I</b> · ·	<b>Q</b> — · — · —	<b>Y</b> — — — —
<b>B</b> — · · ·	<b>J</b> · — — —	<b>R</b> · — ·	<b>Z</b> — — · ·
<b>C</b> — · · · ·	<b>K</b> — · —	<b>S</b> · · ·	<b>Period</b> · — · — · —
<b>D</b> — · ·	<b>L</b> · — · ·	<b>T</b> —	<b>Comma</b> — — · — · —
<b>E</b> ·	<b>M</b> — —	<b>U</b> · · —	<b>?</b> · · — · · ·
<b>F</b> · · · ·	<b>N</b> — ·	<b>V</b> · · · —	<b>/</b> — · · · ·
<b>G</b> — · ·	<b>O</b> — — —	<b>W</b> · — —	<b>@</b> · — · — · ·
<b>H</b> · · · ·	<b>P</b> · — · — ·	<b>X</b> — · — ·	

<b>1</b> · — — — —
<b>2</b> · · — — —
<b>3</b> · · · — —
<b>4</b> · · · · —
<b>5</b> · · · · ·
<b>6</b> — · · · ·
<b>7</b> — — · · ·
<b>8</b> — — — · ·
<b>9</b> — — — · ·
<b>0</b> — — — — —

Copying CW

# Practicing Listening CW

- Training tools
- Copying CW
- Morse Code Character Sounds
- On the Web
  - ARRL Sources
  - ARRL Exercises W1AW Operating Schedule
- Online Applications
- Practice files
- Practice Copying CW



# Training tools

- At least 10 minutes daily
- Your ears, earphones or a device to copy signals clearly.
- Broadband Internet access
- Computing device (desktop, laptop)
- Keyer paddle (single lever or dual lever) keyboard on your computer.
- Keyer with sidetone or radio with built-in keyer and sidetone
- IPOD or ITUNES to download and play previously recorded files.
- For Android
  - There are also training tools for Android devices to download Morse Code training programs
- Commercial pre-recorded CDs
- Transceiver

# Training CW Academy CWops

- **CW Academy**
- <https://cwops.org/cw-academy-2/>
- **CW ACADEMY OPTIONS**
  - Eight-weeks long and held three times per year (Jan-Feb, Apr-May and Sep-Oct).
  - Twice weekly sessions are held on Mondays and Thursdays, each week,
  - Typically starting at 7 PM in
  - PST, CST and EST time zones.
  - Students in MST may be included in PST or CST groups.
- **Needed**
  - Broadband Internet access
  - Computing device (desktop, laptop)
  - Webcam (camera, microphone) either built-in or USB add-on
  - Keyer paddle (single lever or dual lever)
  - Keyer with sidetone or radio with built-in keyer and sidetone
- **CW Academy training and mentoring**
  - for Beginners and experienced needing help
  - Offered three times a year, in two-month increments: Jan-Feb; Apr-May; Sep-Oct

# Copying CW

- Practice listening and understanding Amateur Radio Calls
- Listen to the Words
- Source of bulletins in Morse and text
  - <http://www.arrl.org/code-practice-files>
- Sample
  - This bulletin comes with an accompanied text file:  
[http://www.arrl.org/files/file/Morse/Archive/5%20WPM/180103\\_05WPM.mp3](http://www.arrl.org/files/file/Morse/Archive/5%20WPM/180103_05WPM.mp3)

```
% NOW 5 WPM % TEXT IS FROM JANUARY 2017 QST PAGE 56 %  
  
PROPAGATION CAUSED BY METEOR SCATTER MOST METEORS ARE USUALLY VERY SMALL,  
AND THEIR ION TRAILS GET LOST IN ALL THE OTHER EVENTS DURING THE DAY. AT  
NIGHT, WHEN THE BANDS ARE QUIET, A METEORITE TRAIL CAN CAUSE SOME  
f QST DE W1AW %  
PROPAGATION. THIS PARTICULAR EVENT, SHOWN IN FIGURE 11, HAPPENED AT 240 AM  
LOCAL TIME. IT STARTS OUT BY INCREASING PROPAGATION ON 40 AND 30 METERS.  
% END OF 5 WPM TEXT % QST DE W1AW f
```

- Here is the location of the text files that have contesting call signs.
  - <https://www.supercheckpartial.com/>

# Morse Code Character Sounds

- MORSE sound in MP3 format. <http://www.arrl.org/code-characters>

<u>A</u>	<u>J</u>	<u>S</u>	<u>1</u>	<u>Period</u>
<u>B</u>	<u>K</u>	<u>T</u>	<u>2</u>	<u>Comma</u>
<u>C</u>	<u>L</u>	<u>U</u>	<u>3</u>	<u>Question Mark</u>
<u>D</u>	<u>M</u>	<u>V</u>	<u>4</u>	<u>Slant</u>
<u>E</u>	<u>N</u>	<u>W</u>	<u>5</u>	<u>Dash</u>
<u>F</u>	<u>O</u>	<u>X</u>	<u>6</u>	
<u>G</u>	<u>P</u>	<u>Y</u>	<u>7</u>	
<u>H</u>	<u>Q</u>	<u>Z</u>	<u>8</u>	
<u>I</u>	<u>R</u>		<u>9</u>	

## ARRL Sources

- Look up schedules and frequencies in the QST magazine in the ARRL.org website.
  - <http://www.arrl.org/learning-morse-code>
  - <http://www.arrl.org/w1aw-operating-schedule>
  - <http://www.arrl.org/code-characters>
- Morse Code Character Sounds
  - <http://www.arrl.org/code-practice-qst-source>
- The ARRL transmits Morse code practice on all bands on a specific schedule and specific level of listening proficiency.
- W1AW Code Practice MP3 Files
  - <http://www.arrl.org/code-practice-files>
  - Location of the W1AW code practice transmissions for the dates and speeds indicated. The files are in MP3 format, playable using *Windows Media Player*, *RealPlayer* or your favorite MP3 player.





# W1AW Operating Schedule, 2018

Updated March 12, 2018

UTC	Cent	Mon	Tue	Wed	Thu	Fri
1300z	8 am		Fast Code	Slow Code	Fast Code	Slow Code
1400z to 1600z 1700z to 1945z	9 - 11 am Noon - 2:45 pm	<b>Visiting Operator Time</b> (Station closed from 1700z to 1800z - 12 PM to 1 PM ET)				
2000z	3 pm	Fast Code	Slow Code	Fast Code	Slow Code	Fast Code
2100z	4 pm	<a href="#">Code Bulletin</a>				
2200z	5 pm	<a href="#">Digital Bulletin</a>				
2300z	6 pm	Slow Code	Fast Code	Slow Code	Fast Code	Slow Code
0000z	7 pm	Code Bulletin				
0100z	8 pm	Digital Bulletin				
0145z	8:45 pm	<a href="#">Voice Bulletin</a>				
0200z	9 pm	Fast Code	Slow Code	Fast Code	Slow Code	Fast Code
0300z	10 pm	Code Bulletin				

# Morse Code String of Characters Sounds

- <http://www.arrl.org/code-practice-files>

<a href="#">5 WPM files</a>	  180103_05.txt	<a href="#">20 WPM files</a>	
<a href="#">7.5 WPM files</a>		<a href="#">25 WPM files</a>	
<a href="#">10 WPM Files</a>		<a href="#">30 WPM files</a>	
<a href="#">13 WPM Files</a>		<a href="#">35 WPM files</a>	
<a href="#">15 WPM Files</a>		<a href="#">40 WPM files</a>	  180828_40.txt
<a href="#">18 WPM files</a>			

# Online Applications

- There are a number of free/shareware and commercial software for learning Morse
- <http://www.g4fon.net/>
- Run this program from your browser <https://lcwo.net/>
  - upload the text files that are in the following place
  - <https://www.supercheckpartial.com/>
- the **text files** that have contesting call signs.
  - ARRL infoserwer archive, W1.. Mac radio pages, etc
- You can BUY code quick at <http://www.cq2k.com> for around \$30

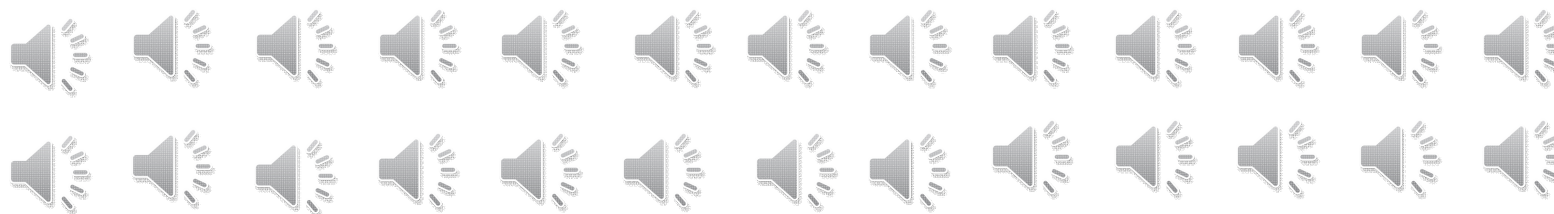


# Practice files and Applications

- Where to find samples of code.
  - <http://www.learnmorsecode.com/>
  - Go to DOWNLOADS page for hours of MP3 code practice
  - The key to learning the code is hearing it and comprehending it while you hear it.
  - The only way to get there is to practice at least 10 minutes a day.
- For Android
- IZ2UUF Morse code trainer from Google playstore
- CW Morse code trainer Apps for Android
  - KG9E ANDROID APP CODE TRAINER
  - KG9E ANDROID APP PRACTICE
  - GOOGLE PLAY
  - AMAZON

# Morse Practice

- A to Z



- 1 to 0



- Slow, Fast and Symbols

A to Z Slow

A to Z 0 to 9 25 Min

A to Z 0 to 9 25 Min  
Punctuation, Text

A to Z 0 to 9 26 Min  
Signs, Text



- Conversation Files



# Audio Practice

- FREE MP3 CODE PRACTICE AUDIO FILES BELOW  
The content of this practice is the same as the content on the now defunct FCC exams. We used to need to learn to copy these words to pass the FCC exam.
- IF YOU ALREADY KNOW MORSE CODE AND YOU WANT HIGH SPEED CODE PRACTICE THAT IS THE HIGH SPEED THAT HAMS CONTEST AT THEN [GO HERE and pick up some fast code at the ARRL](#)
- - [1 DOWNLOAD 25 minutes of code practice](#)
  - [2 DOWNLOAD 28 minutes of code practice](#)
  - [3 DOWNLOAD 23 minutes of code practice](#)
  - [4 DOWNLOAD 28 minutes of code practice](#)
  - [5 DOWNLOAD 32 minutes of code practice](#)
- Practice Contesting
- programs for practice contest exchanges.  
download and run on PC
  - Rufz <http://www.rufzxp.net/>
  - Morse runner - <http://www.dxatlas.com/MorseRunner/> QRM, QRN, LIDS - Variable number of stations calling - you can even interface it with N1MM to get a true contest simulation

# Morse Practice

- Known applications and CDs available to practice and learn
  - <http://www.g4fon.net/>
    - [C:\Program Files \(x86\)\G4FON Software\Koch Morse Trainer\KochMorseTrainer.exe](C:\Program Files (x86)\G4FON Software\Koch Morse Trainer\KochMorseTrainer.exe)
- You can BUY code quick at <http://www.cq2k.com> for around \$30
- text files that have contesting call signs  
<https://www.supercheckpartial.com/> that can be used from your browser on <https://lcwo.net/>
- Practice online
  - The ARRL transmits Morse code practice on all bands on a specific schedule and specific level of listening proficiency. Find the information in the QST magazine.

Transmitting CW

# Transmitting CW

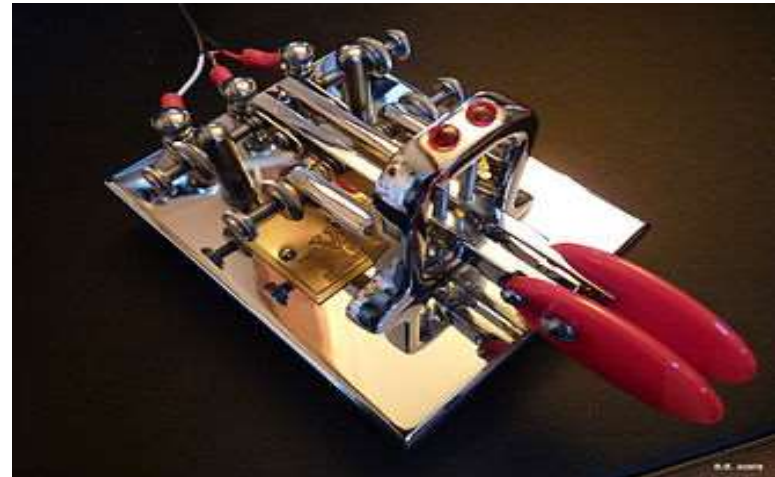
- Before sending code on the air, practice first without a transceiver.
  - On your browser <https://lcwo.net/>
  - LCWO Free account (or use username "test", password "test" to play around) and start learning or improving your CW today
- CW Academy Options – CWOps
- <https://cwops.org/cw-academy-2/cw-academy/>
- Choose a key or a way to transmit.
  - Get familiar with the rhythm and sound of the characters of your transmission. Transmit clearly using the following suggestions.
- Practical Suggestions To Transmit Clearly.
  - The length of a dot is one unit.
  - The length of a dah is three units.
  - The space between parts of the same letter is one unit.
  - The space between letters is three units.
  - The space between words is seven units.
- Learn the frequencies where Digital transmissions are found.

# Morse Code Keys

- Straight Key



- Iambic Key



# Communication using CW

- Common Courtesy
  - Wait for your turn to send.
  - Practice Listening.
  - Be sure you got the call sign correct before answering a call
- Practice Sending
  - Before you venture on the air, practice your ability to send Morse code.
  - There are many ways to send.
  - Straight key,
  - Iambic key,
  - keyboard and others
- Contests
  - Contesting stations transmit at a high speed. Most of the calling stations have experience in contesting and sending Morse at a high speed. (above 20wpm)



# What to Expect On The Air

- **Pile Ups**
  - Pile ups occur at DXpeditions, WW contests, and when a legitimate DX station is calling CQ.
  - Mind the stations nearby, many times the originating station can hear a station that you can't.
  - Listen to the caller instructions. The caller may have a system to answer calls.
  - Listen very carefully to the call sign
  - Be ready to send your call sign once or twice and
  - wait for instructions from the calling station
- **When band is Busy**
  - When propagation is favorable, you may hear many signals close to each other.
  - Adjust your sending frequency to be as close as you can to the caller.

# Courtesy On The Air

- The Considerate Operator's Frequency Guide recognized frequencies for certain modes or activities during normal conditions.
- Always check to see if the frequency is in use - QRL?
- Expect high level of activity during these events
  - Emergency response
  - DXpeditions
  - Contest
- Nothing in the rules recognizes a net's, group's or any individual's special privilege to any specific frequency.
- If you are there first on a frequency, other operators should make an effort to protect you from interference to the extent possible
- 100% interference-free operation is an unrealistic expectation in today's congested bands.

# Contesting in CW

- Learn the rules of the contest.
- Select a CW signal to communicate during a contest
- Signals for a WW contest are found on the bottom 25Khz of each band which is the extra class band used in DX
- State QSO Parties publish their frequencies.
- Look for the DX Window.
  - 3.500-3.510 CW is the DX window
- DXPeditions transmit between the bottom 20Khz and 25Khz Working split
- **Contesting is Permitted on** 160, 80, 40, 20, 15, and 10 Meters.
- **No contest QSOS** may be made on 12, 17, 30 or 60 Meters.
- Give your call sign clearly and efficiently and wait for instructions.
- For QSO Parties, the instructions will publish a frequency for the contests.

# Programs For Practice Contest Exchanges

- Download and run on PC
  - RUFZ
    - <http://www.rufzxp.net/>
  - Morse Runner
    - <http://www.dxatlas.com/MorseRunner/>
    - QRM, QRN, LIDS -  
Variable number of stations calling - you can even interface it with N1MM to get a true contest simulation
- LCWO
  - Run this program from your browser <https://lcwo.net/>
  - Upload the text files that are in the following place
  - <https://www.supercheckpartial.com/>

# Frequencies

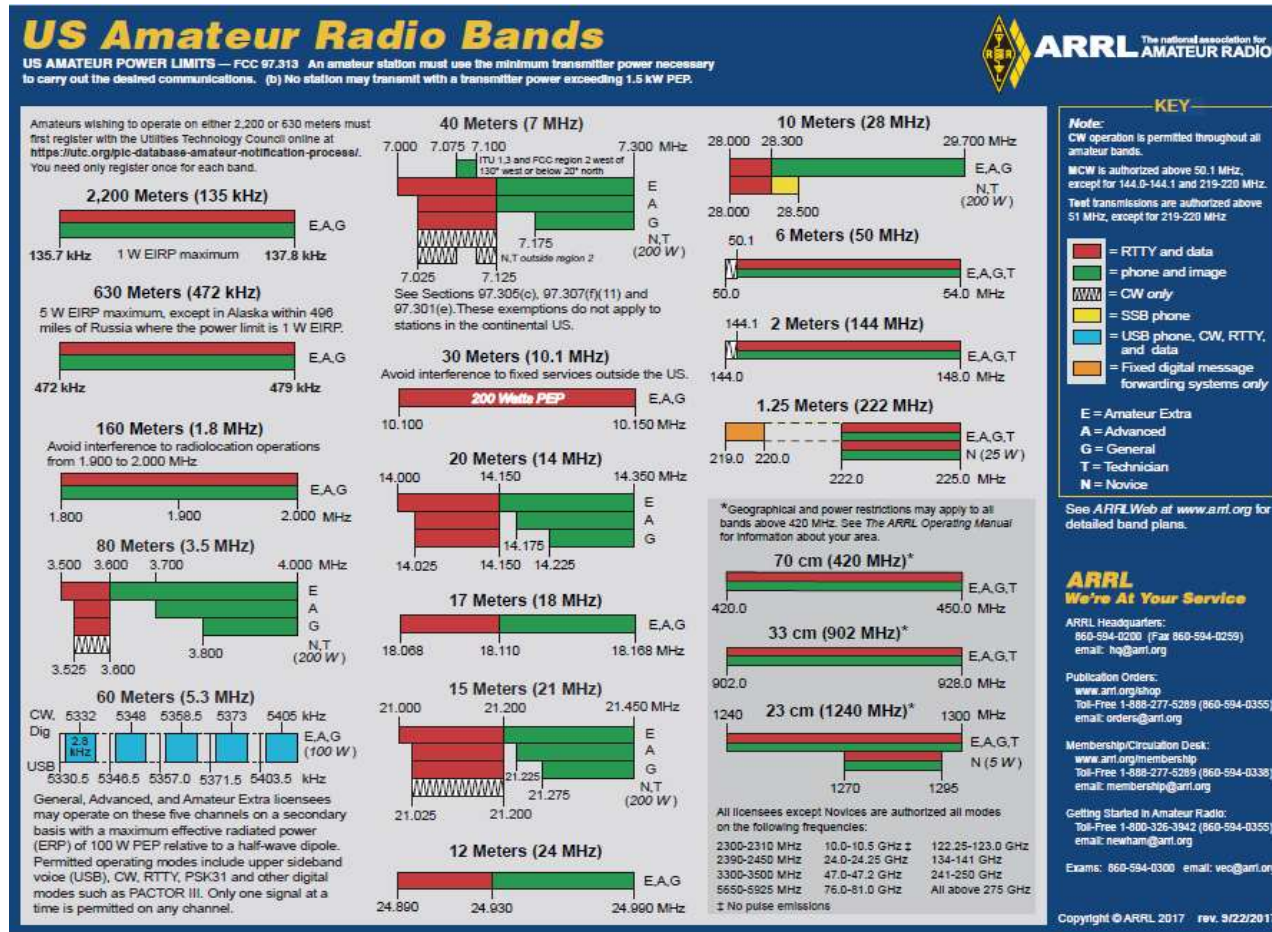
- HF Frequencies
  - The ARRL publishes a band chart useful for recognizing modes, power and class of operator privileges.
- A current color chart pdf file can be found in the ARRL website

# Common HF US Amateur Radio Bands for CW

## Where to find a CW signal.

- **160 Meters**  
1.800-2.000 MHz: CW, Phone, Image, RTTY/Data
- **80 Meters (3.5 MHz)**  
3.500-3.600 MHz: CW, RTTY/Data  
3.600-4.000 MHz: CW, Phone, Image
- **40 Meters (7 MHz)**  
7.000-7.125 MHz : CW, RTTY/Data  
7.125-7.300 MHz:: CW, Phone, Image
- **30 Meters (10.1 MHz)**  
10.100-10.150 MHz: CW, RTTY/Data
- **20 Meters (14 MHz)**  
14.000 - 14.150 MHz CW, RTTY/Data  
14.150 -14.350 MHz: CW, Phone, Image
- **15 Meters (21 MHz)**  
21.200-21.450 MHz: CW, Phone, Image
- **10 Meters (28 MHz)**
  - 28.000-28.300 MHz: CW, RTTY/Data
  - 28.300-29.700 MHz: CW, Phone, Image
- **6 Meters (144 MHz)**  
50.0-50.1 MHz: CW Only  
50.1-54.0 MHz: CW, Phone, Image, MCW, RTTY/Data

# US Amateur Radio Bands Chart published by the ARRL



# Abbreviations



# Commonly used Abbreviations

- List of word abbreviations from the AARRL Amateur Radio Manual
- Common Language abbreviations
- <https://www.qsl.net/w5www/abbr.html>
- List of Q Code used frequently in CW transmissions

## Transmission Tips From The Amateur Radio Manual Containing Simple Word Abbreviations

Go ahead	K	Used after calling CQ, or at the end of a transmission, to indicate any station is invited to transmit.
<b>Over</b>	AR	Used after a call to a specific station, before the contact has been established.
	KN	Used at the end of any transmission when only the specific station contacted is invited to answer.
<b>Stand by or wait</b>	AS	A temporary interruption of the contact.
<b>Roger</b>	R	Indicates a transmission has been received correctly and in full.
<b>Clear</b>	SK	End of contact. SK is sent before the final identification.
<b>Leaving the air or closing the station</b>	CL	Indicates that a station is going off the air, and will not listen or answer any further calls. CL is sent after the final identification.

# Common Language Abbreviations

73--Best Regards  
88--Hugs and Kisses  
ABT--About  
AGN--Again  
ANT--Antenna  
ARND--Around  
B4--Before  
BCNU--Be Seeing You  
BK--Break, Back ("I'm back now" or "Back to you")  
BN--Been  
BTR--Better  
BUX--Dollars  
CLDY--Cloudy  
CLR--Clear (usually a description of the weather)  
CNTCT--Contact  
CONDX--Conditions  
CPY,CPI--Copy  
CU--See you  
CUD--Could  
CUL--See You Later  
CUZ--Because  
DR--Dear (often used by foreign/DX operators in front of the other operator's name)  
ES--And  
FB--Fine Business (good, excellent, OK)  
FER--For  
FT--Feet  
GA--Good Afternoon, Go Ahead  
GB--Good Bye, God Bless  
GE--Good Evening

GL--Good Luck  
GM--Good Morning  
GUD--Good  
HI--Telegraphic Laughing  
HPE--Hope  
HR--Here, Hear  
HV--Have  
HW--How (or "How copy?")  
LIL--Little  
MNI--Many  
NR--Near, Number  
NW--Now  
O 0--(usually used when stating transmitter output of 100 Watts. If using a straight key it is also OK to use a very long dah to represent 0.)  
OM--Old Man  
OP--Operator (Sometimes used instead of "name" when introducing oneself.)  
PSE--Please  
PWR--Power  
R--are  
RCVR--Receiver  
SIGS--Signals  
SN--Soon  
SRI--Sorry  
TMW--Tomorrow  
TNX, TKS--Thanks  
TU--Thank You (usually used at end of contact, meaning "Thanks for the contact".)  
TX--Transmit  
U--You  
UR--Your, You Are

URS--Yours  
VY--Very  
WID--With  
WL--Well, will, we'll  
WTS--Watts  
WUD--Would  
WX--Weather  
XCVR--Transceiver  
XMTR--Transmitter  
XYL--Wife  
YL--Girlfriend ("Young Lady")  
YRS--(Years)

## Common Language Abbreviations

<b>73</b>	<b>Best Regards</b>
<b>88</b>	<b>Hugs and Kisses</b>
<b>ABT</b>	<b>About</b>
<b>AGN</b>	<b>Again</b>
<b>ANT</b>	<b>Antenna</b>
<b>ARND</b>	<b>Around</b>
<b>B4</b>	<b>Before</b>
<b>BCNU</b>	<b>Be Seeing You</b>
<b>BK</b>	<b>Break, Back ("I'm back now" or "Back to you")</b>
<b>BN</b>	<b>Been</b>
<b>BTR</b>	<b>Better</b>
<b>BUX</b>	<b>Dollars</b>
<b>CLDY</b>	<b>Cloudy</b>
<b>CLR</b>	<b>Clear (usually a description of the weather)</b>
<b>CNTCT</b>	<b>Contact</b>
<b>CONDX</b>	<b>Conditions</b>
<b>CPY,CPI</b>	<b>Copy</b>
<b>CU</b>	<b>See you</b>
<b>CUD</b>	<b>Could</b>
<b>CUL</b>	<b>See You Later</b>
<b>CUZ</b>	<b>Because</b>

## Common Language Abbreviations

<b>DR</b>	<b>Dear (often used by foreign/DX operators in front of the other operator's name)</b>
<b>ES</b>	<b>And</b>
<b>FB</b>	<b>Fine Business (good, excellent, OK)</b>
<b>FER</b>	<b>For</b>
<b>FT</b>	<b>Feet</b>
<b>GA</b>	<b>Good Afternoon, Go Ahead</b>
<b>GB</b>	<b>Good Bye, God Bless</b>
<b>LIL</b>	<b>Little</b>
<b>MNI</b>	<b>Many</b>
<b>NR</b>	<b>Near, Number</b>
<b>NW</b>	<b>Now</b>
<b>O 0</b>	<b>(usually used when stating transmitter output of 100 Watts. If using a straight key it is also OK to use a very long dah to represent 0.)</b>
<b>OM</b>	<b>Old Man</b>
<b>OP</b>	<b>Operator (Sometimes used insted of "name" when introducing oneself.)</b>
<b>PSE</b>	<b>Please</b>
<b>PWR</b>	<b>Power</b>
<b>R</b>	<b>are</b>
<b>RCVR</b>	<b>Receiver</b>

# Common Language Abbreviations

<b>SIGS</b>	<b>Signals</b>
<b>SN</b>	<b>Soon</b>
<b>SRI</b>	<b>Sorry</b>
<b>TMW</b>	<b>Tomorrow</b>
<b>TNX, TKS</b>	<b>Thanks</b>
<b>TU</b>	<b>Thank You (usually used at end of contact, meaning "Thanks for the contact".)</b>
<b>TX</b>	<b>Transmit</b>
<b>U</b>	<b>You</b>
<b>UR</b>	<b>Your, You Are</b>
<b>URS</b>	<b>Yours</b>
<b>VY</b>	<b>Very</b>
<b>WID</b>	<b>With</b>
<b>WL</b>	<b>Well, will, we'll</b>
<b>WTS</b>	<b>Watts</b>
<b>WUD</b>	<b>Would</b>
<b>WX</b>	<b>Weather</b>
<b>XCVR</b>	<b>Transceiver</b>
<b>XMTR</b>	<b>Transmitter</b>
<b>XYL</b>	<b>Wife</b>
<b>YL</b>	<b>Girlfriend ("Young Lady")</b>
<b>YRS</b>	<b>(Years)</b>

# The Amateur Radio Q-Code

- ALL Q Codes
  - These codes were found on the inside cover of a 1965 ARRL Amateur Radio Station Log Book.
- Common Q-Codes used by radio amateurs in CW
  - <https://www.qsl.net/w5www/qcode.html>
  - Q Codes marked with an " \* " are the most commonly used today.
  - A question is indicated by the use of the interrogation sign, " ? ", after the Q signal.

# CW Q Codes

Signal	Question	Answer, Advice or Order
QRG	Will you indicate my exact frequency in kilocycles?	Your frequency is ... kc.
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? Are my signals weak?	I cannot receive you. Your signals are too weak.
QRK	What is the legibility of my signals (1 to 5)?	The legibility of your signals is ... (1 to 5).
QRL *	Are you busy?	I am busy (or busy with....). Please do not interfere.
QRM *	Are you being interfered with?	I am being interfered with.
QRN *	Are you troubled by static?	I am troubled by static.
QRO *	Must I increase power?	Increase power.
QRP *	Must I decrease power?	Decrease power.
QRQ *	Must I send faster?	Send faster ... (words per min.).
QRS *	Must I send more slowly?	Transmit more slowly ... (w.p.m.).
QRT *	Must I stop transmission?	Stop transmission.
QRU *	Have you anything for me?	I have nothing for you.



# CW Q Codes

Signal	Question	Answer, Advice or Order
QRV *	Are you ready?	I am ready.
QRW	Must I advise ... that you are calling him on ... kc?	Please advise ... that I am calling him on ... kc.
QRX *	When will you call again?	I will call you again at ... hours (on ... kc.).
QRZ *	By whom am I being called?	You are being called by ...
QSA	What is the strength of my signals (1 to 5)?	The strength of your signals is ... (1 to 5).
QSB *	Does the strength of my signals vary?	The strength of your signals varies.
QSD	Is my keying correct? Are my signals distinct?	Your keying is incorrect; your signals are bad.
QSG	Must I transmit ... telegrams (or one telegram) at a time?	Transmit ... telegrams (or one telegram) at a time.
QSK *	Shall I continue the transmission of all my traffic?	I can hear you between my signals. Continue: I shall interrupt you if necessary.
QSL *	Can you acknowledge receipt?	I am acknowledging receipt.
QSM	Shall I repeat the last telegram I sent you?	Repeat the last telegram you sent me.
QSO *	Can you communicate with ... directly (or through...)?	I can communicate with ... direct (or through...).

# CW Q Codes

Signal	Question	Answer, Advice or Order
QSP	Will you relay to ...?	I will relay to ... free of charge.
QSV	Shall I send a series of VVV....?	Send a series of VVV.
QSX	Will you listen for ... (call sign) on ... kcs?	I am listening for ... on ... kcs.
QSY *	Shall I change to ... kilocycles without changing the type of wave?	Change to ... kc. without changing type of wave.
QSZ	Shall I send each word or group twice?	Send each word or group twice.
QTA	Shall I cancel nr ... as if it had not been sent?	Cancel nr ... as if it had not been sent.
QTB	Do you agree with my word count?	I do not agree with your word count; I shall repeat the first letter of each word and the first figure of each number.
QTC	How many telegrams have you to send?	I have ... telegrams for you or for ....
QTH *	What is your position (location)?	My position (location) is ....
QTR	What is the exact time?	The exact time is ....
QST *		General call preceeding a message address to all amateurs and A.R.R.L. Members. This is in effect "CQ ARRL".
QRRR		Official A.R.R.L. "land SOS." A distress call for emergency use only.

## Most Used CW Q Codes

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QRO *	Must I increase power?	Increase power.
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QRS *	Must I send more slowly?	Transmit more slowly ... (w.p.m.).
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QRU *	Have you anything for me?	I have nothing for you.
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QSL *	Can you acknowledge receipt?	I am acknowledging receipt.
QSO *	Can you communicate with ... directly (or through...)?	I can communicate with ... direct (or through...).
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## Additional Resources

- [The Art and Skill of Radio Telegraphy](#) by William G. Pierpont, N0HFF.
  - excellent 240+ page PDF on all aspects of Morse Code.
- [The Beginners Guide to making CW Contacts](#) by Jack Wagoner, WB8FSV
- [Wikipedia article on Morse Code](#) Broad introduction to CW, covers history, learning the code and more.
- ebook2CW <http://freshmeat.sourceforge.net/projects/ebook2cw>
  - Command line program that converts a plain text file (like an eBook) to Morse code (CW) MP3 or OGG files.
- Morse Runner <http://www.dxatlas.com/morserunner/>
- Pileup Runner and Pileup simulator <http://www.dxatlas.com/pileuprunner/>
- Straight Key Century Club <https://www.skccgroup.com/>
  - group of straight-key Morse code enthusiasts
- SKCC.org <http://www.learnmorsecode.com/index2.html>
- ARRL <http://www.arrl.org/learning-morse-code>

# Questions?

- Practice