The Standard International Phonetic Alphabet

To make your call sign better understood when using voice transmission, you should use the Standard International Phonetics for each letter:

Alpha	**F**oxtrot	**K**ilo	**P**apa	**U**niform	**Z**ulu
Bravo	**G**olf	**L**ima	**Q**uebec	**V**ictor	
Charlie	**H**otel	**N**ovember	**R**omeo	**W**hisky	
Delta	**I**ndia	**M**ike	**S**ierra	**X**-Ray	
Echo	**J**uliet	**O**scar	**T**ango	**Y**anky	

Q-Code

“The Q code is a standardized collection of three-letter codes all of which start with the letter “Q”. It is a brevity code initially developed for commercial radiotelegraph communication and later adopted by other radio services, especially amateur radio.”[1)]

There are a lot of them, but here are the ones you'll need to memorize:

Code	Question	Answer or Statement	Other Usage
QRL	Is this frequency in use?	This frequency is in use. Please do not interfere.	
QRM	Do you have interference from other stations?	I have interference form other stations.	
QRN	Are you troubled by static?	I am troubled by static.	
QRP	Shall I decrease power?	Decrease power.	I'm using low power
QRS	Shall I send more slowly?	Send more slowly	
QRT	Shall I cease or suspend operation?	I am suspending operation / shutting off the radio	
QRU	Have you anything for me?	I have nothing for you.	No traffic
QRX	Shall I standby / When will you call me again?	Please standby / I will call you again	
QRZ	Who is calling me?	You are being called by	
QSB	Are my signals fading?	Your signals are fading.	
QSL	Can you acknowledge receipt?	I am acknowledging receipt.	Same as “Roger”
QSO	Can you communicate with ... direct or by relay?	I can communicate with ... direct (or by relay through ...).	A conversation
QSY	Shall I change to on another frequency?	Change to on another frequency.	
QTH	What is your location?	My location is	

Signal Report

A short way to tell another station how well you receive them is to use the “RST” (**R**eadability, **S**ignal Strength, **T**one) code. From Wikipedia:

> **Readability** is a qualitative assessment of how easy or difficult it is to correctly copy the information being sent during the transmission. In a Morse code telegraphy transmission, readability refers to how easy or difficult it is to distinguish each of the characters in the text of the message being sent; in a voice transmission, readability refers to how easy or difficult it is for each spoken word to be understood correctly. Readability is measured on a scale of 1 to 5.
>
> 1. Unreadable
> 2. Barely readable, occasional words distinguishable
> 3. Readable with considerable difficulty
> 4. Readable with practically no difficulty
> 5. Perfectly readable
>
> **Strength** is an assessment of how powerful the received signal is at the receiving location. Although an accurate signal strength meter can determine a quantitative value for signal strength, in practice this portion of the RST code is a qualitative assessment, often made based on the S meter of the radio receiver at the location of signal reception. “Strength” is measured on a scale of 1 to 9.
>
> 1. Faint signal, barely perceptible
> 2. Very weak
> 3. Weak
> 4. Fair
> 5. Fairly good
> 6. Good
> 7. Moderately strong
> 8. Strong
> 9. Very strong signals
>
> For a quantitative assessment, quality HF receivers are calibrated so that S9 on the S-meter corresponds to a signal of 50 μV at the antenna standard terminal impedance 50 ohms. One “S” difference should correspond to 6 dB at signal strength (2x voltage = 4x power). On VHF and UHF receivers used for weak signal communications, S9 often corresponds to 5 μV at the antenna terminal 50 ohms. Amateur radio (ham) operators may also use a signal strength of “20 to 60 over 9”, or “+20 to +60 over 9.” This is in reference to a signal that exceeds S9 on a signal meter on a HF receiver.

The strength assessment is a bit tricky when using a repeater because every station using the repeater would appear to your S-metre to have the same strength since you're listening to the repeater, not the individual station. In that case, you have to use a *qualitative* assessment based on readability more than strength since the other station wants to know how well the repeater is receiving them, not how well you receive the repeater. More on repeaters in the next section.

> **Tone** is only used in Morse code and digital transmissions and is therefore omitted during voice operations. With modern transmitter technology, imperfections in the quality of the transmitter modulation that can be detected by humans are rare. Tone is measured on a scale of 1 to 9.
>
> 1. Sixty cycle a.c or less, very rough and broad
> 2. Very rough a.c., very harsh and broad
> 3. Rough a.c. tone, rectified but not filtered
> 4. Rough note, some trace of filtering
> 5. Filtered rectified a.c. 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 or modulation of any kind

Examples

- “Your signal is 5 7” = “Your signal is readable and moderately strong”
- “Your signal report is 3 3” = “Your signal is readable with considerable difficulty and weak in strength”
- “Your are 5 9 plus 20 dB” = “You are perfectly readable with a signal strength of 20 decibels greater than S9”
- “Your signal report is 1 1” = “Your signal is unreadable, and barely perceptible”
- “RST 579” in Morse Code = “Your signal is perfectly readable, moderately strong, and with perfect tone”
- “RST 459” in Morse Code = “Your signal is quite readable, fair strength, and with perfect tone”

On HF radio, each unit on the S-meter represent a four-fold increase in power, which is 6 dB[2)]. But after S9, the meter shows a dB scale.

For example: “20 over S9” means

- 20 dB over S9, which is 10^{2} = 100 times more powerful than a signal at S9, or
- 26 dB over S8, which is $10^{2.6}$ = 400 times more powerful than a signal at S8, or
- 32 dB over S7, which is $10^{3.2}$ = 1600 times more powerful than a signal at S7, or

So if a station gives you a 20 over 9 signal report when you transmit with 100W, they would still receive you at S9 if you transmitted at 1W. What a power saving!

Here are a few more examples. How many times stronger is station A than station B if:

- Station A is S9 + 40 and Station B is S9 + 10?
  - The difference is 30 dB
  - Which means station B is 10^{3} = 1000 times stronger
- Station A is S9 and Station B is S6
  - Each S unit is 4 times more powerful than the previous S unit
  - 3 x 4 = 12 times stronger
- Station A is S7 and station B is S9 + 20
  - From S9 to S9 + 20 is a difference of 20 dB, which is 10^{2} = 100 times stronger.
  - From S7 to S9 is 2 x 4 = 8 times stronger.
  - So from S7 to S9 + 20 is 8 x 100 = 800 times stronger.

Questions

- B-002-002-001 → B-002-002-011
- B-002-006-001 → B-002-007-011

1)

See Q code

2)

For more information about decibels (dB), see the Math Basic page