

# Fast Simple QSO (FSQ) – A New Protocol

Idaho Falls Bishops' Storehouse On-Air Training

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Welcome to tonight's training. I appreciate each of you for your desire to expand your knowledge of emergency communication. Some of you are probably thinking that you've already learned everything there is to know about amateur radio. Well, tonight I'd like to talk to you about something new.

## Brief "what-is-it" overview

I'd like to introduce you to FSQ (foxtrot sierra quebec). It stands for Fast Simple QSO. It is a new type of chat protocol. How new is it? It is so new that there isn't even a Wikipedia article about it yet! This protocol is so new it was just published in April of this year. FSQ has a low error rate and supports image and file transfers. It was designed for simple chat operation, but with public service and emergency communication operations in mind.

FSQ is a mode for medium- and high-frequencies. It works well under NVIS and sunrise/sunset conditions on the lower bands, and also works well for short skip on higher bands. It can also be used on VHF FM, and clearly has a much wider useful range of operating conditions than other more conventional digital modes.

## History

FSQ was developed by Con Wassilieff ZL2AFP with the assistance of Murray Greenman ZL1BPU. The first QSO took place between these two on November 28, 2014, and the first full-package public release was by Bob NW8L on April 29, 2015. A version of FLDigi with FSQ support was released by Dave W1HKJ on July 16, 2015, and includes support for Linux and Mac platforms.

## How it works / features

FSQ uses a multi-frequency shift keying system of 33 tones operating at a maximum 6 baud or about 60 words per minute. However, typical transmissions are generally at 4.5 baud. The overall signal bandwidth is 300 hertz.

There are 33 tones but the data is actually determined by the difference in the tones. So there are actually 32 differences. 29 of these tone differences are used for the lower case letters and the most common punctuation. The remaining differences are used to define additional code pages, such as upper case letters, less common punctuation, and special command sequences. I'll mention more about these in a minute.

FSQ operates in a Carrier Sense Multiple Access (CSMA) mode that uses the receiver squelch function to lock out transmissions if the channel is busy.

Once the software is installed, operation is VERY simple. Basically you just type the sentence or information you want to transmit and then hit the ENTER key.

FSQ provides a very simple method of station identification. Essentially, every transmission is automatically preceded by your call sign. There is no need to remember to ID every 10 minutes.

There is a set of special commands. For example, if you send a remote station's call sign followed by the at symbol, the remote station will automatically reply with its location. Sending a call sign followed by an exclamation point and some text will cause the receiving station to retransmit the text—this is a simple relay operation, but it can be done unattended. If you send a call sign followed by the dollar sign, the receiving station will automatically respond with a list of stations it has heard.

## Benefits to us

So what is the big deal with FSQ? The question on each of your tongues: "What's in it for me?" Well, I'm glad you asked.

FSQ has the option of operating in Directed Mode. Directed mode allows the system to direct a message to a specific call sign, or to several call signs, or to everyone on the channel. FSQ refers to this (everyone on the channel) as ALLCALL. Most messages will be simple sentences, but some will be commands that initiate automated functions at the receiving station. Some even initiate automated replies, as I mentioned previously.

FSQ Directed Mode was designed specifically for public service events (such as sports, parades, and races), and for emergency service training exercises and operation with any HF SSB or VHF FM radio. Directed Mode provides text messaging to a specific station, a specific list of stations, or to all stations. It can be used for orders, messages, alerts, schedule arrangements, sending pictures and small files, and so on.

Directed Mode provides an ad hoc mesh network with forwarding, relaying, and message handling capability. Participants do not need pre-registration with a central organization or any special pre-programmed equipment since the Directed Messaging works on call sign alone. While in operation, the software builds a list of active stations, and logs their every transmission.

You can send pictures over FSQ, but be aware that low-resolution pictures take 48 seconds to send and hi-res images take a little over 3 minutes. You can also send what's called a FSQ-FAX and they take over 4 minutes to transmit.

## Pros

- Information can be requested and automatically received from receiving stations. For example, in a net situation, stations can be instructed to download a specific file from net control. Alternately, net control can send the file to all listening stations.
- Directed mode allows for "private" conversations. You can monitor all transmissions, even private ones, but only *allcall* or directed message will appear on your main display. A separate monitor window records all received signals.
- You can set the call sign field to a tactical identifier and messages can be directed to the stations using those tactical identifiers. (In this mode, it would be necessary for the operators to periodically manually identify themselves with their FCC call signs according to regulations.)

## Cons

- FSQCall software provides simple macros for your location and a simple message, but otherwise there are no programmable macros for long transmission such as net scripts and check-in reports.
- FSQCall software may not run well on low-spec netbook type computers or older single core Pentium systems as the processing power required for reception is high.

I'm certain if you compared FSQ directly to other protocols, you could develop a lengthy list of pros and cons, but in my opinion this protocol has some potential for use in our operations. There are currently no plans to incorporate this protocol into our Storehouse nets, but there are definitely some advantages (and disadvantages) over other protocols. I would encourage you to review its usability and consider testing and playing with it within your regions. FSQ is one more tool we can add to our tool belt.

## What do you need

You'll need one of the following software packages to send and receive FSQ:

- FSQCall software
- FLDigi version 3.22.13

FLDigi is a common and familiar interface used for many other digital modes and many of you, like me, may have a tendency to gravitate to it. Be aware that FLDigi supports the basic features found in the FSQ software, but I was unable to get any of the remote commands to work. FLDigi would not automatically respond to requests from sending stations. Only using FSQCall was I able to enjoy all of the features of this new protocol.

To download FSQCall, search the web for FSQCall. The first link in the search results should provide you with download links and additional information about FSQ. I found the help files located within the software menus to be very good, also.

I propose we gather some evening and dabble with the features a bit. Are there any operators that would be interested in such an experience? I'll listen for up to 10 call signs. Please call now.

~~tomorrow night at 8:00 pm local time on 144.100 MHz FM simplex and play with it for an hour. [Repeat time and frequency.]~~

[Optional] It will work very well if we have participants from each region. We should be able to pass messages up and down the valley by using each other's stations as relays.

If you only have a handheld radio, you can still participate. Configure the FSQCall software to use your computer's microphone as the input and the computer's speakers as the output. Type your desired message into FSQCall, but don't hit the ENTER key. Push and hold the PTT button on your handheld and then hit the ENTER key on your computer. When the computer is done transmitting your message, release the PTT on your handheld. You may have to adjust the volume on both the computer and the handheld. I did some testing in this way and it worked quite well. Tomorrow night, 8:00 pm, 144.100 MHz FM simplex.

Are there any questions or comments? Please come now with your call sign, phonetically if you would please.

This concludes tonight's training. This is N7TMS. Back to net control.