

SDR-Mobile Control for ICOM Radios

by Mark Gooding ZL2UFI <mark@foxtrot.co.nz>

Background

One of the many issues owning any Apple device whether that be an iPhone, iPad or iMac is the general lack of apps for use on these platforms for the amateur. In the Windows world there are plenty, or apps only designed for use in the Windows environment. This also includes Android phones where there are many apps simply not available for the iPhone, again for the amateur. Many years ago, I finally brought my first smart phone, an iPhone 4S and never looked back from the point. Slowly over time I moved away from the Windows operating systems as it seemed that everyday someone was sending you a virus laden message, some virus was doing the rounds in some software you just downloaded. The continued software updates to remain that one step ahead of the virus programmers was a constant battle.

About ten years ago I finally gave up on Windows and brought in the Apple world with a Mac Mini, and since then a M1 iMac and later an iPad M1 Air. So, yes, I have brought into the Apple architecture although I'm not an Apple Fan Boy.

SDR Control

A few years ago, while clearing out a Silent Keys' amateur equipment I first came across the author of this reviewed software, which was software to drive a Flexradio Maestro head unit for a Flexradio 6500. After getting the Maestro head unit battery charged, I updated the SmartSDR software to the latest version prior to sale. Having sampled this software defined radio (SDR) written by Marcus Roskosch DL8MRE <<https://roskosch.de>>, when he produced apps for the Apple world I thought finally, someone has produced something for us non-Windows types.

Of course, using various software programmes in the MacOS such as VMWare or Parallels you can emulate Windows without much difficulty to have native apps running is an easier and more elegant solution in my opinion.

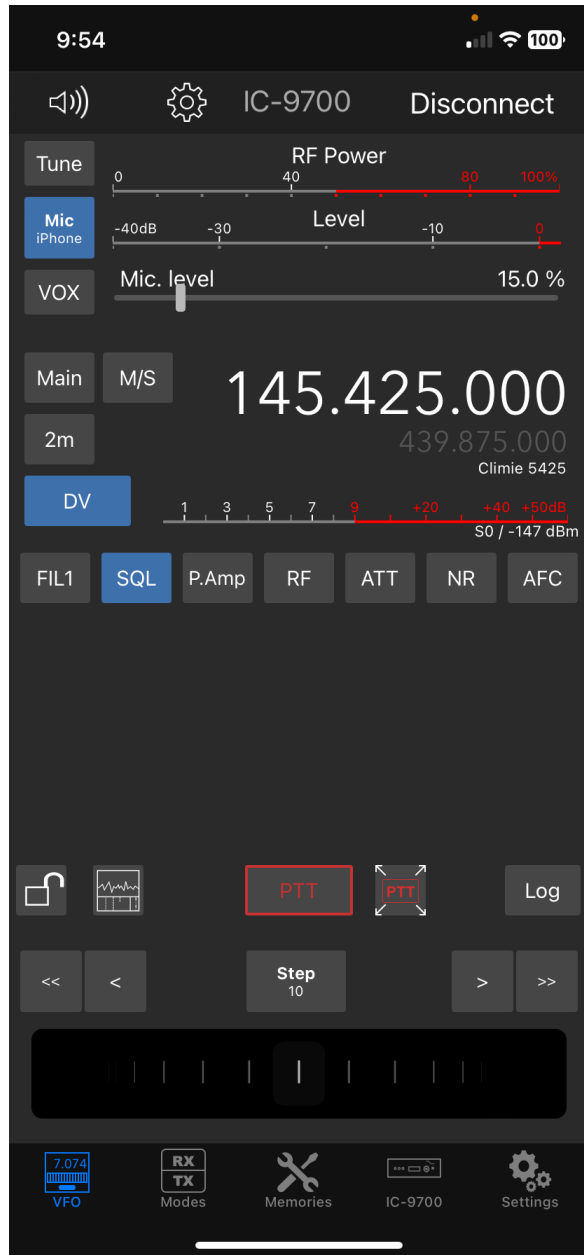


Figure 1- SDR-Mobile Control on the iPhone XR. Displays local D-STAR repeater on Mt Climie 145.425 MHz.

Remote Transceiver Control

Over the years, the ability to remote control radio transceiver sited at one location and controlled remotely while achievable always has a compromise somewhere. As the Internet has become ubiquitous; amateur radio transceivers seemed be one of

those products holding out, not wishing to become part of it, or as many would say *that's not real radio.*

ICOM

ICOM has pressed ahead in the digital world from the mid 2000's with the D-STAR protocol in its radios plus internet linked repeaters (although the internet is not a requirement as they operate as RF only repeaters as well) as part of its product range. Over almost twenty years now this process has brought radio and the internet closer together. Today with the latest ICOM radio's very much capable of not only RF based communications but also through internet connectivity, the ability to communicate using the same radio to use the internet instead of RF to get somewhere is yet another step forward.

Not only has ICOM introduced, as have many manufacturers in SDR radio's the ability to do much more than the traditional modes of CW or SSB, but to offer more than what was thought possible even just a few years ago.

So on to the review

SDR-Control Mobile for your iPhone

The following introduction has been taken directly from Marcus's web site:

Software Defined Radio Client for ICOM Transceivers and your iPhone. SDR-Control is a full featured iPhone App to operate your ICOM Transceiver at home or from around the world without additional Hardware or Software. It has never been easier to operate your ICOM Rig.

Many fully integrated features – not just remote control. Works with your ICOM IC-705, IC-7610, IC-9700 and IC-R8600.

Requirements:

SDR Control Mobile can be used for the following ICOM Radios:

IC-705

IC-9700

IC-7610

IC-R8600

USB Connections or other Transceivers are not supported.

The App runs on any iPhone from iPhone SE to any iPhone Max Pro model that is running the newest iOS release. The App also strives to maintain backward compatibility with older iOS versions wherever possible. If your iPhone isn't updated to the latest iOS version, please verify the App's compatibility on the App Store. There is no other relevant requirement. This App is no catalyst App, and it was developed and designed specifically for the iPhone.

To access your Radio from the Internet from a remote location, certain settings in your Router (explained in the Manual) are necessary for Data passing to and from the Transceiver.

If you have purchased the App once from the AppStore (thank you!) you can run, it on several additional iPhones with any number of ICOM Transceivers you own. No additional purchase is necessary. You only have to use one and the same Apple ID on all your iPhones.

My current iPhone XR is about 4-5 years old, running the latest iOS version 17.3.1, so fits well within the minimum requirements. The download is simple via the Apple App Store with payment required prior to download, there is no free option or trial period or in App purchases. The cost of the app is NZD\$69.99. The Mac version is NZD\$199.99 (same price as the Flexradio Smart-SDR software). The iPad version is NZD\$99.99.

The excellent online manual or help file is well written and easily followed. If followed before long you have connected remotely within your home networks Wi-Fi to the ICOM radios supported above, for me an ICOM IC-9700. Once I had this connection working, I was then able to follow through to remotely access the radio from outside the home network from the cellular network. This remote access from anywhere was what I was really looking for. The ability to remotely connect and control my IC-9700 was a function, in the Apple world I have been after as watched with envy those in the Android world.

There is no limit to the modes operated from the usual FM and D-STAR, to CW, SSB and FT8. The total is: LSB, USB, AM, CW, FM, RTTY, CW-R, RTTY-R, DV, DD, and DATA.

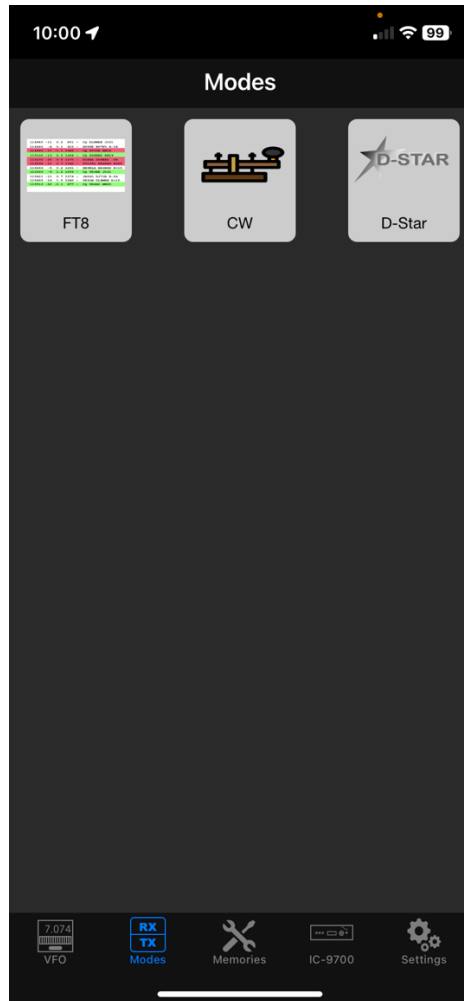


Figure 2 – FT8, CW and D-STAR modes.

FT8

The App only supports FT4 and FT8. Also, no Contest or DX-Pedition mode is supported. It just supports standard QSO's which are about 95% of all FT4 and FT8 QSOs.

The App can automatically generate answer messages based on received messages. It also supports complete Auto Logging without even prompting to log a QSO. Worked before Calls will be marked to prevent working them again. You can operate as a hound to work DXpeditions (the fox) with this app.

I have yet to try this mode.

CW

This CW Mode Tool can be used to work in CW along with a CW Decoder.

Pryme Buttons

This tool enables users to use a physical button to trigger PTT or other features of the Radio.

The supported buttons are available from a company called Pryme which can be found using the following link: [<https://www.pryme.com>](https://www.pryme.com).

All Pryme buttons with a -Z or -ZU in their name are supported like the BT-PTT-Z, BT-PTT-ZU, BT-PTT-ZU-STRAP, or another similar. I purchased the fob and strap buttons for USD\$35.00 each, arriving about a week after order from the USA. These buttons allow you to assign a single function at time to the button. I have used the PTT toggle, so I don't need to physically hold the iPhone and press the PTT button on the screen. A simple press of the button in this mode holds the PTT on until I press a second time to turn the PTT off. So, if driving you could Velcro the button to the dashboard or other place within easy reach and drive your car, using the phones Bluetooth connection to the car stereo to use the built-in handsfree microphone and audio. It works great in this mode.

Note: This tool requires at least iOS 16. It is not available when running on older iOS versions.

Tools

The Tools menu gives you access to: Band Plan, CW macros, DX-Cluster, POTA (parks on the Air), PSK-Reporter, Pryme Buttons, Logbook, Network Stats (Status), Call lookup via QRZ, VFO/Memories and Scanning (Memories).



Figure 3 – Tools menu.

Remote Access

To access the ICOM transceiver from outside your home network, you will need to log into your home router. For this, you need to let three ports pass your Router to the internet or in other words you need to open three ports in your Router. This is a general overview of the process as each router is different. In summary you need to know the IP address of the radio, open three ports internally and externally, then sign up to a service to track your home routers external IP address to the internet.

The ports in question are the three ports found in your Radio settings under “Control Port (UDP)”, which usually is 50001, “Serial Port (UDP)”, which usually is 50002 and “Audio Port (UDP)” which usually is 50003. These are the default port settings on the ICOM radios, they can be changed but may wish to use them if you only have one radio you intend to remotely access.

Now you need to access your Router’s configuration by logging onto the router and look for a possibility to open ports in your Router.

Here, you need to open these three ports (50001,50002,50003) to the IP Address of your ICOM transceiver. If your router wants to know for which protocol these ports should be opened, it only necessary to open these ports for the UDP protocol. If your router wants to know which ports should be used for the inside and which for the outside, you can use the same ports (50001,50002,50003) for the inside and outside. Sometimes you can enter a complete port range like 50001-50003. In some router you must open each port individually.

Once this is done, you will already be able to connect your transceiver from elsewhere, but you need to know the public IP address that now needs to be entered when you add your radio to the App's radio chooser.

The IP Address you need is the public IP Address for your network allocated by your Internet Service Provider (ISP). You can find out this IP address in your router or by visiting one of the whatismyip websites.

However, most likely, this IP Address will change from one day to another. To address this problem, you can use services like [<https://dyn.com>](https://dyn.com) but most likely, your router also supports additional services. Any of those services will provide you with a unique way to access your Public IP Address which always remains the same. Such an address may look like [<xxxxx.dyndns.org>](https://www.dyndns.org). Once you have setup everything, you can enter this unique address for setting up your remote transceiver instead of the IP-Address.

For your convenience, just add another Radio to the “Available Radio” list by using the Add button again. Use a name that differentiates the new entry from your regular local access Radio (e.g. 705 remote), use the aforementioned IP Address and for the other values the same as for your local Radio.

Usage

I can now access my IC-9700 from anywhere on my home network if I am within Wi-Fi range. If outside of this and if I have decent cellular signal strength, I can access the IC-9700 from anywhere. So, the need for a radio hotspot or handheld is no longer required in the home setup. On the road, the need to have a mobile transceiver and antenna is not required. One caveat is that you are using your home QTH location in the case of IC-9700, only the local repeaters I can get into via RF are those that I can use. If I used an IC-705 then I can use HF as well and talk locally or DX to anywhere for example.

Feature comparison

This table gives an excellent example of the different software versions and transceivers features. Since this table was produced by the author additional functions have been added to the apps and will continued to be added.

Feature	SDR-Control Mobile	SDR-Control for iPad	SDR-Control for Mac
Waterfall		Yes	Yes
Supported Radios	IC-705, -9700, -7610, R8600	IC-705, -9700, -7610, R8600	IC-705, -9700, -7610, R8600, IC-7300 (via USB)
USB Support			Yes
LAN / WiFi Support	Yes	Yes	Yes
Band Plan	Yes	Yes	Yes
DX Cluster	Yes	Yes	Yes
PSK Reporter	Yes	Yes	Yes
MIDI Controller		Yes	Yes
RC-28 Controller			Yes
Logbook	Yes	Yes	Yes
Call Lookup	Yes	Yes	Yes
Memories	Yes	Yes	Yes
Frequency List			Yes
Alerts			Yes
HF-Fax			Yes
RTTY			Yes
PSK			Yes
Scanning		Yes	Yes
FT8	Yes	Yes	Yes
CW Decoder	Yes	Yes	Yes
D-Star	Yes	Yes	Yes
App Manual	Yes	Yes	Yes
SAT-Mode		Yes	Yes
Full-Duplex			Yes

Figure 4 – Feature comparison for iPhone, iPad, and iMac.

Summary

Is this money well spent, I think so. The ability to get that extra bit of usage out of your radios is well worth the effort, rather having them just sit there underutilised.

References:

1. Marcus Roskosch DL8MRE <<https://roskosch.de>>
2. SDR-Control iOS <<https://roskosch.de/sdr-control-mobile/>>
3. SDR-Control iOS Manual <<https://documents.roskosch.de/sdr-control-mobile/>>