FIVE AND NINE PLUS

THE OFFICIAL NEWSLETTER OF THE APPLEDORE AND DISTRICT AMATEUR RADIO CLUB

Club Callsigns: G2FKO and GX2FKO
Web Site : www.adarc.co.uk

CLUB'S OFFICERS			
President	Terry Adams	G4CHD	
Chairman	John Lovell	G3JKL	
Vice Chairman	Steve Smith	G6SQX	
Secretary	Alan Fisher	2E0EUZ	secretary@adarc.co.uk
Treasurer	Ray Hunter	M0TLO	
Committee	Dave Cottle	G4XWQ	
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	Graham Bailey	G1ZTJ	
	Keith Luxton	G0AYM	
QSL Manager	John Lovell	G3JKL	
Web Master	John Lovell	G3JKL	
Exam Secretary	John Lovell	G3JKL	
Editor	Terry Adams	G4CHD	terrywho35@gmail.com

June 2020

EDITORIAL

Welcome to another Newsletter during this difficult time.
There have been 3 virtual presentations so far using Zoom which have been well supported. However, we are aware that not everybody can utilise this useful mode and hence recordings **where possible** will be placed for members to view on our Club website.
Our next virtual presentation will be on **Monday, June 8th** starting at **7.30pm** and will be given by **Mike (G4KXQ)** who will talk about the **Mini VNA.** Knowing Mike's attention to detail and in depth preparation, this will be one certainly worth watching. As always, **PLEASE** check into the 'Waiting Room' **BEFORE** the start of the meeting and ensure your displayed name gives preferably your name and callsign/SWL. These measures are to prevent uninvited 'guests' breaking into the Meeting and causing havoc.
It is hoped to add further Zoom Meetings if members feel they are of use (feedback please) which it is hoped can be at fortnightly intervals for the time being until we know the extent of the 'lockdown'.
Our **postponed AGM will take place via Zoom on June 22nd** which will be an interesting experience and perhaps one to be able to say that you were part of in the future!!
A final plea from your Treasurer, Ray - please can members who have yet to **pay this year's subscription (£13)** get in touch with Ray - cheque/direct transfer accepted (please add your name/callsign and 2020).
Keep safe and keep healthy

Terry (G4CHD)

CLUB MEETINGS

Due to the present Covid 19 pandemic, ALL meetings scheduled to be held at the Appledore Football Social Club have been CANCELLED until further notice

Until such a time that the above Meetings are reinstated a programme of 'virtual meetings' has been arranged :-

Date	Start Time	Meeting
June 8th	7.30 pm	**Mini VNA** Zoom Talk by Mike (G4KXQ)
June 15th		TBA
June 22nd	7.30 pm	**Virtual AGM** via Zoom

It is hoped to add further virtual Meetings so if anyone wants to give a Talk, please contact a Committee member.

GENEROUS DONATION TO CLUB

We have just been given a most generous donation of £1761.25 by the family of Ian (G4RVG) -SK from the sale of his radio gear which John (G8BXO) very kindly dealt with.
John (G3JKL) our Chairman will write a thank you letter to Ian's family expressing the Club's gratitude.
Ian was a regular attendee at our Club Meetings and a great supporter of the Club.

LOCAL NETS

Zepp FM Net:	**Mon/Tues/Thurs/Fri : 145.450MHz - 4pm - 5pm Wed via GB3DN - 4pm - 5pm**
2m Elevenses FM Net:	**Mon/Tues/Wed/Thurs/Fri : 11 - 12.00 noon Mon/Tues/Thurs 145.475MHz Wed via GB3DN Fri start 145.475MHz & then qsy to another band**
Friday Night 2m Net:	**Friday : 145.450 FM, 8 - 9pm**
2m SSB Nets:	**Wed: 8 - 9pm 144.260MHz USB SSB**
	Sun: approx 10.30am (follows Top Band Net) 144.260MHz USB SSB (Vertical polarised)
Top Band Net:	**Sunday 1.860 Mhz 9.30 - 10.15am (LSB - 32W pep max)**

LOCAL REPEATERS

2m Stibb Cross Repeater (GB3DN)
http://www.g0rql.co.uk/gb3dn.htm
User: Listen 145.6375 MHz - Transmit 145.0375 MHz.
Access 1750 Hz Tone or 77 Hz CTCSS
Repeater keeper is Tony (G1BHM)

70cm Twitchen (nr South Molton) Analogue Repeater (GB3SF)
User: Listen 430.9375 MHz - Transmit 438.5375 MHz
Access 77Hz CTCSS
Repeater keeper is Steve (G6SQX)

APRS Digipeater (MB7VE)
Frequency 144.800 MHz
Repeater keeper is Steve (G6SQX)

Members will now be aware that at 8am on June 1st the **70cm Repeater GB3ND** was closed down after providing a wonderful service since August 2002 to amateurs here in North Devon. On behalf of all members, the Club would like to sincerely thank Jeff (G4SOF) for all his hard work and generosity over the years and we look forward to Jeff perhaps giving us a talk on GB3ND sometime in the future.

CROSSWORD

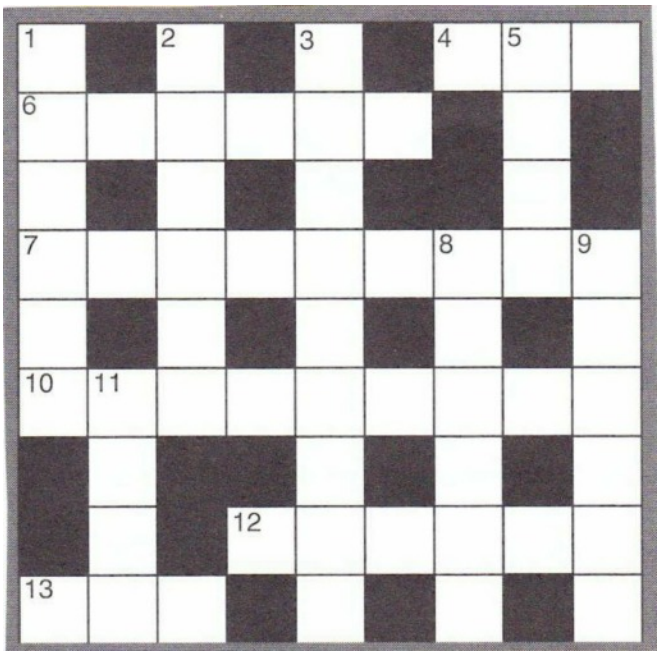
Many thanks to Stuart (M1FWD) for this month's Crossword.
The answers are in next month's Newsletter. Good luck !

CLUES ACROSS

1) Low-frequency signal output (4)
4) Videotelephony and online chat facility (4)
7) Unintelligible or meaningless speech (9)
8) The highest railway station in England (4)
10) Vessel for containing electrodes within an electrolyte for current generation (4)
12) Exaggerated statement (9)
13) Regulation (4)
14) British radio and TV manufacturing company, 1924- 1960 (4)

CLUES DOWN

2) Not dead (5)
3) A wooden-soled shoe (5)
5) A binary compound of oxygen (5)
6) Taj ?, mausoleum in Agra, Victor Uniform (VU) land (5)
8) An administrative region of Sierra Two (S2) land (5)
9) Nine November (9N) land (5)
10) Insulated transmission wire (5)
11) Shrub of the genus Syringa (5)



Last month's answers :-

ANSWERS ACROSS: 4) end 6) heifer 7) interview 10) Kerguelen 12) Blythe 13) ode

ANSWERS DOWN: 1) shrink 2) filter 3) fearfully 5) nine 8) inlets 9) Wankel 11) Enid

ICOM IC-7300 SYSTEM - Part 2

To complement the series of virtual talks, the second and concluding article describing in more detail the steps taken in setting up the software follows on from page 4.

SUDOKU PUZZLE

The aim is to enter a number into each cell so that **any column, or any row, or any block of cells contains all numbers from 1 to 9**

4			5	3				6
			7	6				
5		2						
	5	3					1	
6	4						7	2
	2					9	4	
						4		3
				9	3			
7				4	8			1

Terry (G4CHD

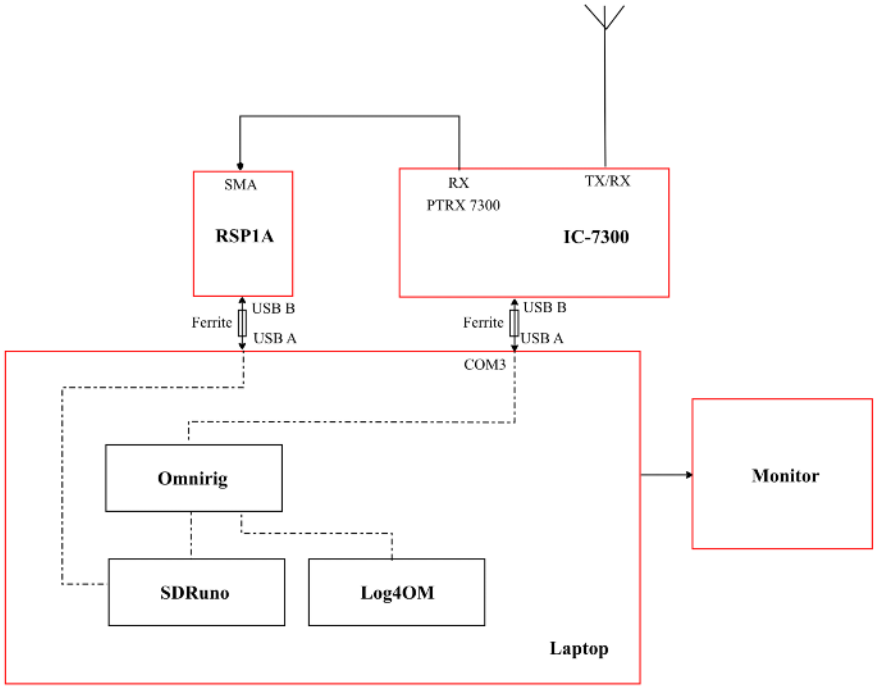
So that's it for this month

Stay safe and stay healthy Terry (G4CHD)

ICOM IC-7300 SYSTEM - Part 2

by Terry (G4CHD)

In **Part 1** the installation of driver and virtual soundcard for the IC-7300 was described. In addition the installation of a driver and the program SDRuno for the RSP1A SDR was described together with the use of Omnirig as a means of sharing the virtual COM Port connected to the IC-7300. Finally the installation of the logger Log4OM was described to give the following schematic of the final system :-



In **Part 2**, the final part, Win4Icom will be added to the system to give a graphical interface to the various RX and TX settings of the IC-7300 and then finally the digital mode programs Fldigi and WSJT-X will be added to complete the system.

INSTALLATION & SETUP OF WIN4ICOMSUITE

Go to :-

https://icom.va2fsq.com/download-and-buy/

Select the appropriate version (ie x64 or x32) and click 'Download Trial'. Then download the Client Server followed by the Manual at :-

https://icom.va2fsq.com/wp-content/uploads/2018/05/Win4IcomSuite-Manual.pdf

Follow the instructions for a Quick Install (the IC-7300 driver has already been installed in Part 1) as described in the Manual.

You will see in the Manual that Win4Icom needs sole access to the virtual COM port (COM3 in my case and will be referred to throughout the remainder of this article) and cannot be fed via any 'splitting' software. It is therefore necessary to 'disconnect' Omnirig from COM3 and we will see later that it will be fed from one of the 6 Aux/COM Ports provided by Win4Icom via a virtual null-modem cable.

Win4Icom recommends Com0Com to generate such virtual cables and hence now is a good time to download this program.

COM0COM INSTALLATION

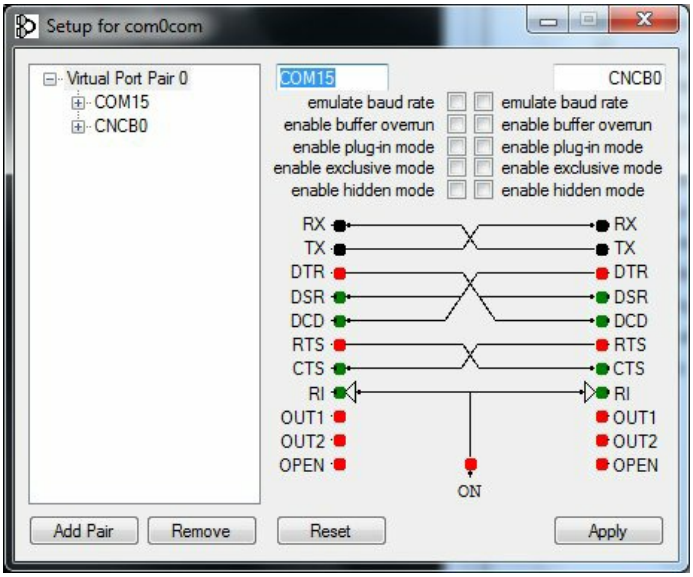
Go to :- https://sourceforge.net/projects/com0com/

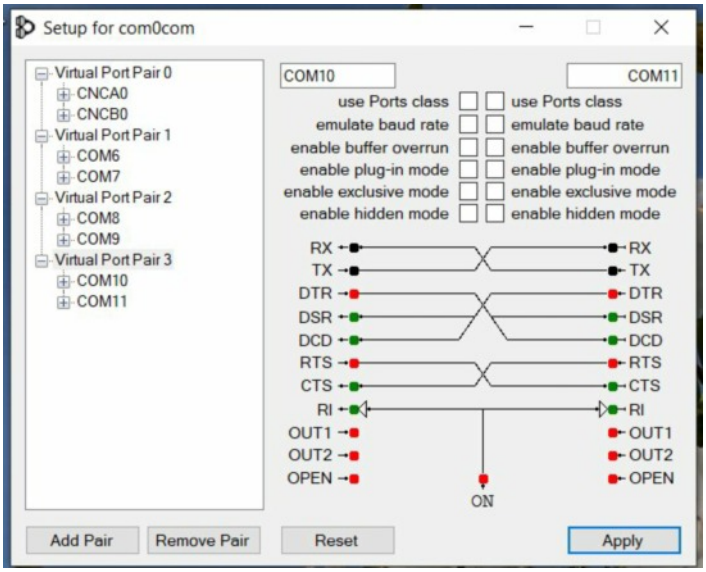
Download and run the program and the following window will appear showing that a virtual cable (Pair 0) has been generated COM ports at each end. Rather odd numbering is adopted by default eg CNCA0 and

CNCB0 which can be edited later.

Click on either port number and they appear in the boxes at the upper right where they can be edited - CNCA0 has been edited to COM15 as shown opposite. Click Apply.

Click on the ‘Add Pair’ button and new virtual cables (port pairs) are generated which can be edited to more conventional numbering - the only requirement is that COM numbers chosen have not already been used. Suggest adding 3 cables - Pair 1,2 and 3 - see diagram below.

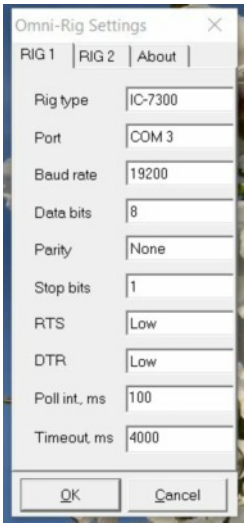




DISCONNECT OMNIRIG FROM COM3 AND CONNECT TO VIRTUAL CABLE (PAIR 1)

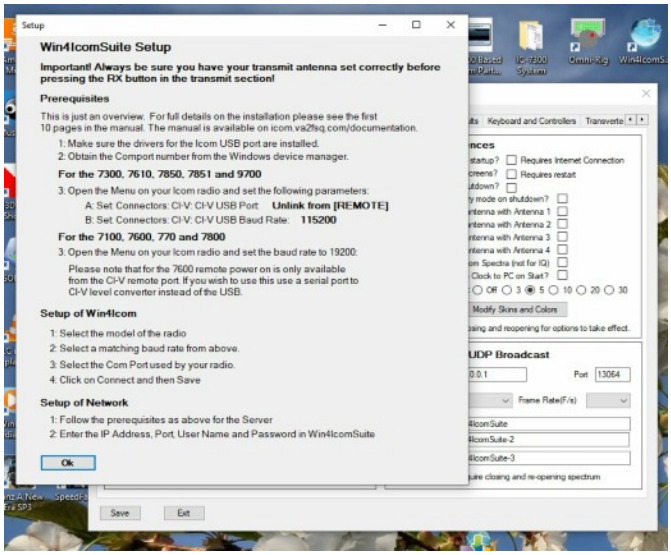
Open Omnirig and click on COM3 box and from drop down list select one end of virtual cable 1 eg COM6.

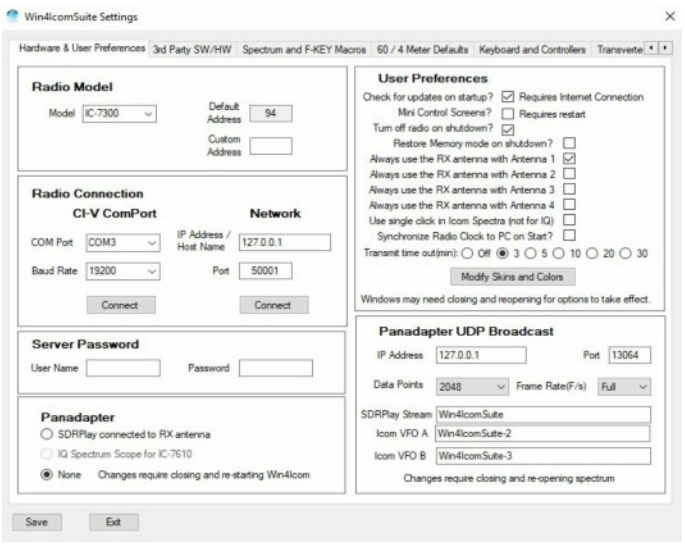
This releases COM3 for use by Win4Icom



CONTINUED SETUP OF WIN4ICOM

Run Win4Icom and being the first time and not yet setup, an advisory window will appear. Read it and then click OK. The Settings window behind will be revealed with the 1st Tab selected - Hardware & User Preferences :-



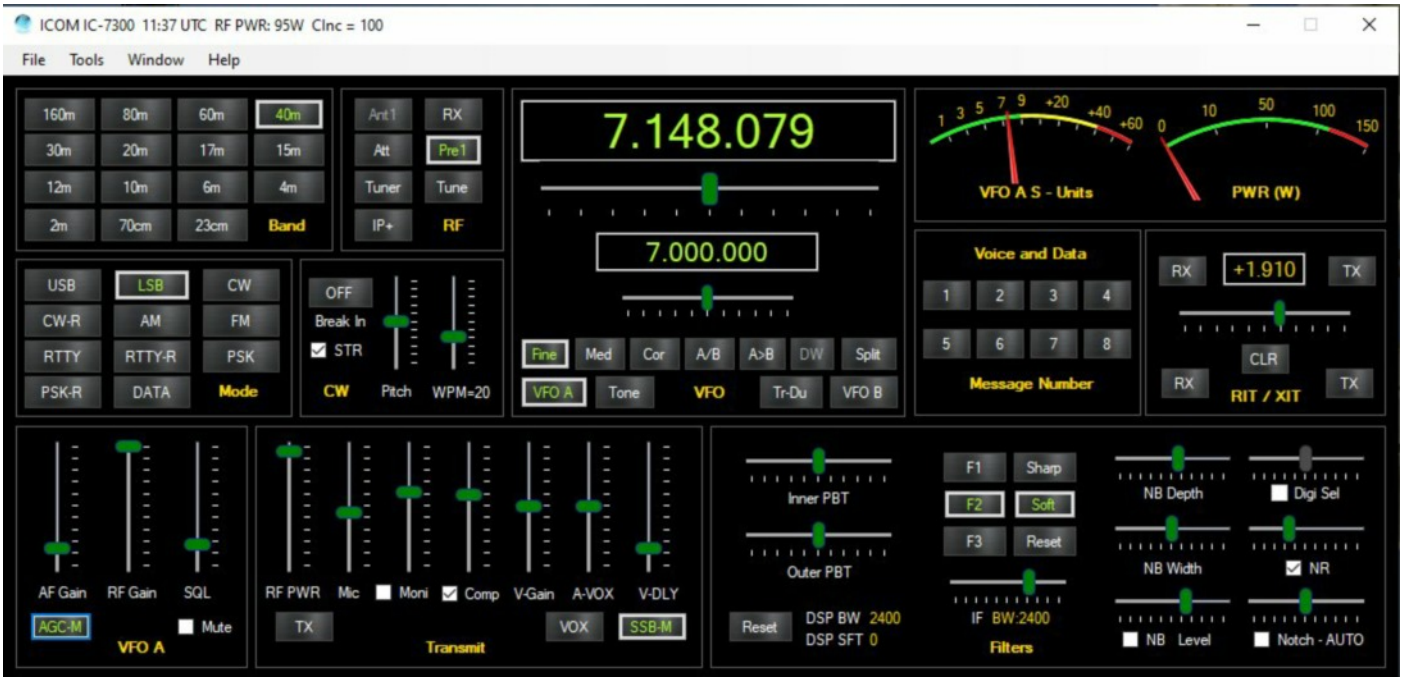


Select IC-7300 for the Radio Model, COM3 for the Radio Connection COM Port and 19,200bps for the Baud rate and click on Connect (under the Baud rate) which should change to Disconnect if all is well.

Select ‘None’ for the Panadaptor setting (for the time being). Finally select any User Preferences such as ‘Check for updates on start up’ etc.

Note :- no need to change any other settings.

Finally click on Save and the Win4Icom Control Window will appear :-

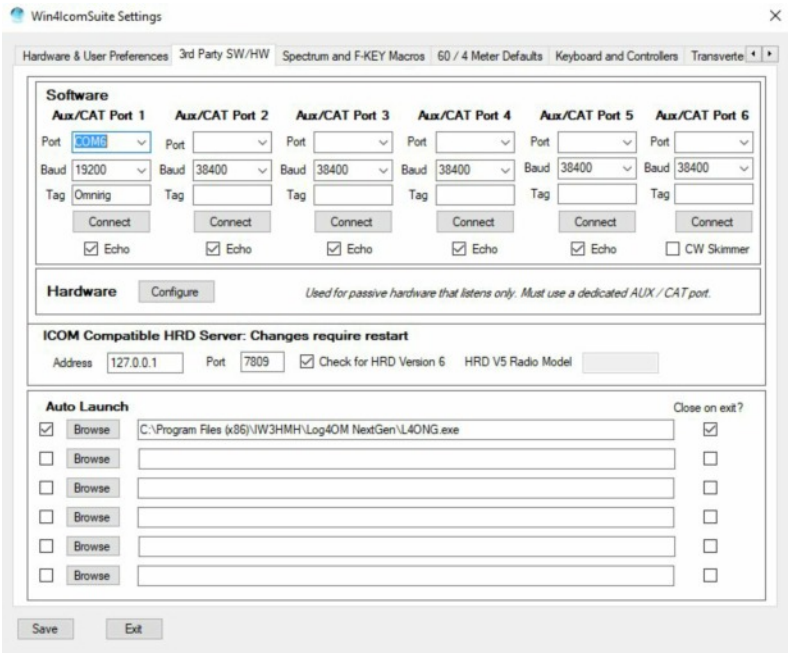


Check that turning the IC-7300 tuning knob produces an identical frequency reading in the Control Window indicating that the IC-7300 and Win4Icom are intercommunicating.

Press Tools/Settings to return to the Settings window and change the Panadaptor setting from ‘None’ to ‘SDRPlay connected to RX antenna’ and click Save. The following Spectrum Display should also appear :-

If it does not - simply click on Window on the Menu bar and from the drop down menu select ‘IQ Spectrum Scope’ and the lower window as shown above should now appear. It should not be necessary to make this selection again.

Double left click anywhere within the Spectrum Display signal or waterfall areas and check that the frequency in both the Control Window and the IC-7300 changes and mirror each other.



We must now connect Omnirig to one of the six Aux/CAT ports in Win4Icom. Return to the Settings window using Tools/Settings but now select the 2nd Tab - '3rd Party SW/HW'.

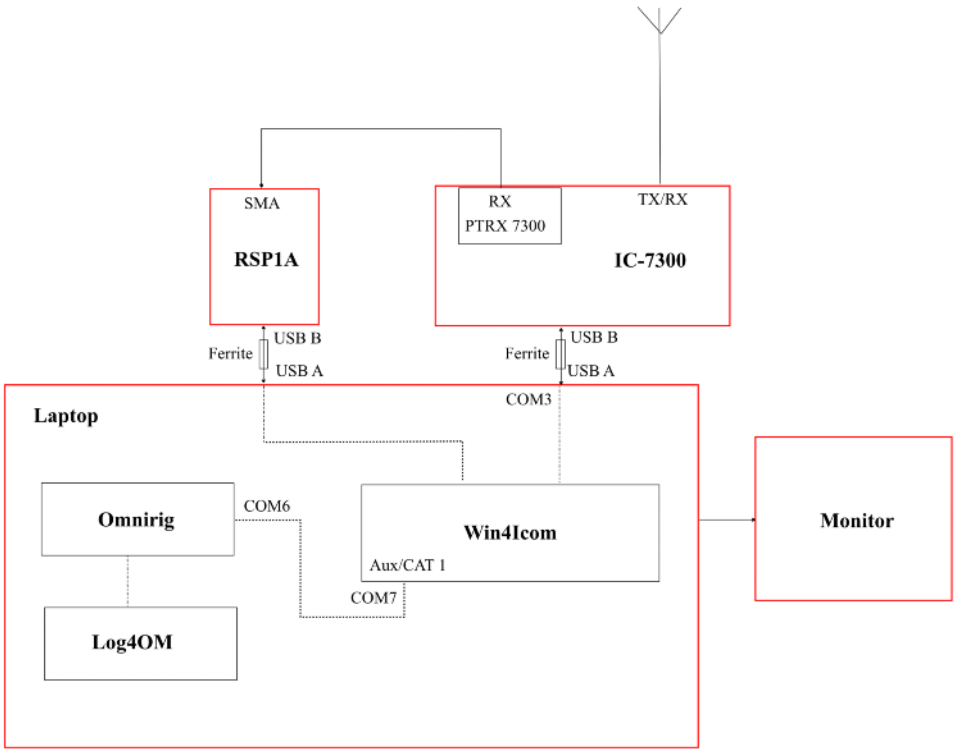
Using Aux/CAT Port 1 - set the Port to COM7 (free end of virtual cable connected to Omnirig), Baud to 19,200 and choose suitable Tag text eg 'Omnirig' or 'Log4OM' and click Connect. This should change to Disconnect if all is well. (Leave Echo ticked)

Finally, it is convenient to Auto Launch Log4OM when Win4Icom starts by browding for Log4OM's .exe file location and left tick the box on the left. In v2 of Win4Icom there is now a box on the right to enable a program to close on exit.

Note that since Win4Icom contains its own Spectrum Scope Display, it is no longer necessary to run SDRuno.

Click on Save and Win4Icom is now fully configured. It just remains for the user to adjust the Spectrum Display cosmetically to their liking and familiarise themselves with the Display controls with the aid of the Manual.

The following schematic shows the system developed so far :-



We now have a system offering graphical control of many of the IC-7300 functions some of which would normally require access through the menu together with a Spectrum Display (Panadaptor) enabling new signals to be quickly spotted or suitable unused places on the band in which to call CQ. All this combined with a logging program updated by the IC-7300 and offering qrz lookups, eqsl etc uploads, and many other functions.

Digital modes PSK and FT8 operating will now be added to the system.

There are numerous programs offering PSK including MixW (latest version 4 also includes FT8) and Fldigi. The latter has been adopted as I have used it before and it is free!

FLDIGI INSTALLATION AND SETUP

Go to www.sourceforge.net Files Tab, and select Fldigi (23/04/2020).

Now select fldigi.4.1.12.setup.exe (6.3Mb) and download and then run.

In the 'License' window that appears click Continue and then select Fldigi, Flarq, Start Menu Shortcuts, and Desktop Shortcuts.

Note the Destinations Folder (Program Files (x86) and click Install and Close.

Results in 2 icons on Desktop : Fldigi 4.1.12 and Flarq 4.3.7

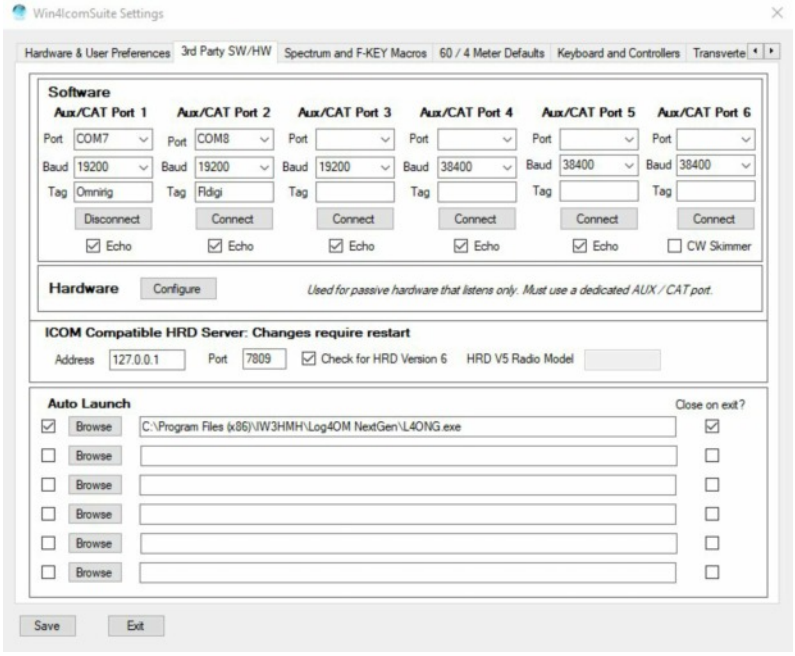
Double left click on Fldigi icon which opens a Configuration window which can be bypassed and details entered later.

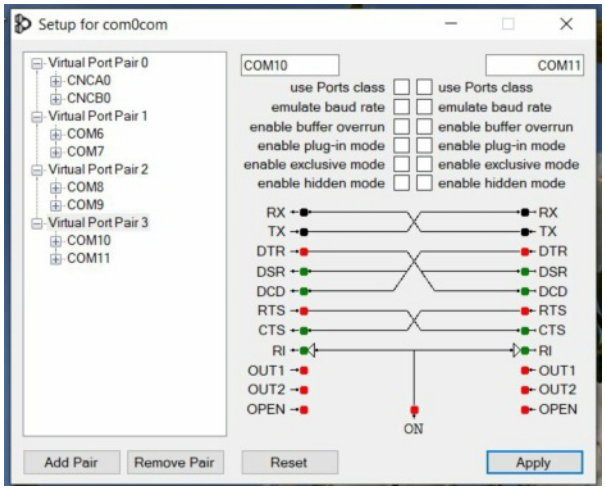
Since Fldigi is incompatible with Omnirig, it is necessary for Fldigi to communicate with the IC-7300 via a Aux/CAT Port in Win4Icom in order to access COM3.

Start Win4Icom and in the Control Window, click on Tools on top menu bar and select Settings from dropdown list.

Select 3rd Party SW/HW Tab in Settings window and select Aux/CAT Port 2. Using the Com0Com virtual Port 2 with COM 8 and COM9 at its ends, enter the required details for Aux/COM Port ie:-

Port COM9, 19,200 bps, and label it as Fldigi and Connect. Thus the other end of this virtual cable COM 8 will be used by Fldigi.





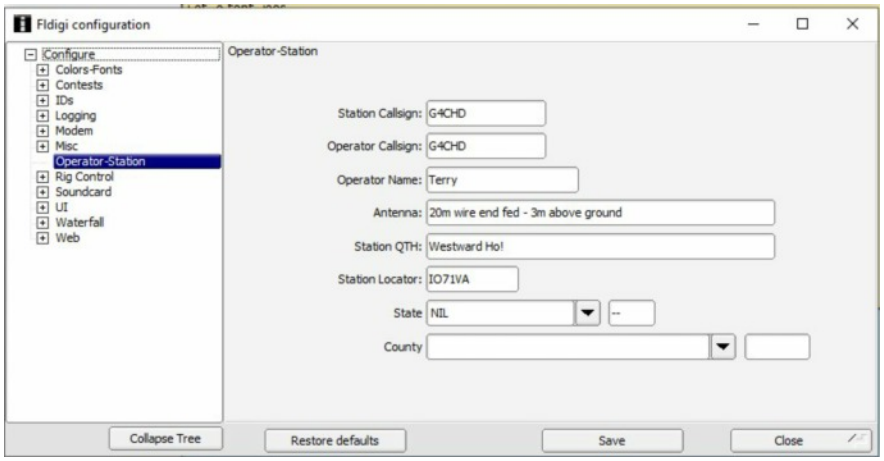
In the Autorun Section, browse to the Fldigi .exe file location and then tick 'Auto Launch' and 'Close on exit' boxes as required and finally click Save.

Close Win4Icom and rerun it when hopefully Win4Icom (both Control and Spectrum windows), Log4OM and Fldigi should all start.

Alt Tab to the Fldigi Window and click on the Configure Tab and select Config Dialog in drop down list.

Fldigi will now be configured - a one off activity

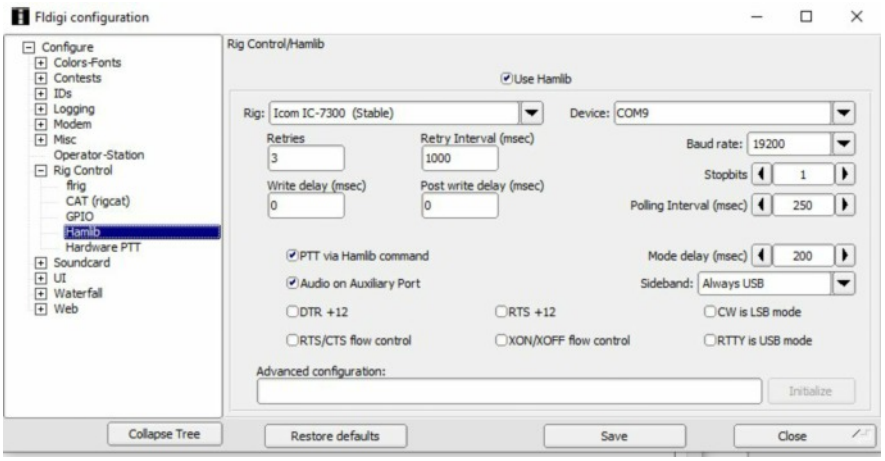
Expand and select Misc/Operator-Station and enter Callsign, QTH, Locator, Antenna details



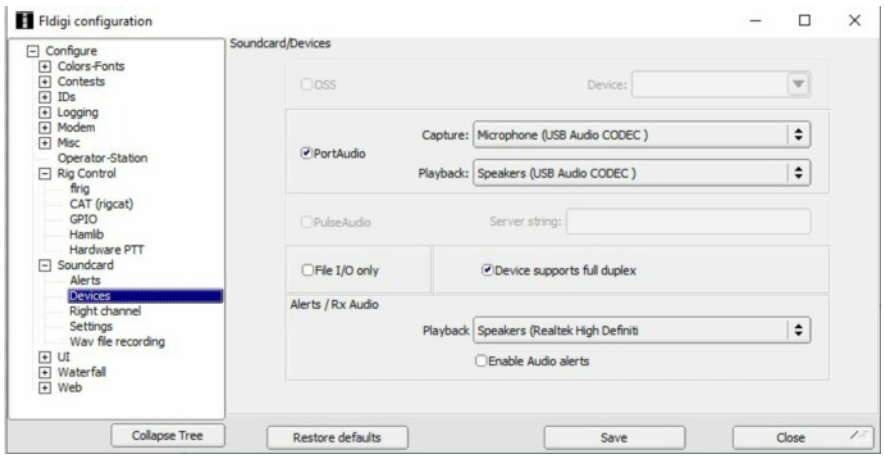
Now select Rig Control and select Hamlib

Select IC-7300 as the Rig, Device is COM 8 (other end of virtual cable), Baud rate is 19200 bps, and tick PTT via Hamlib, Audio on Aux Port and Sideband - Rig Mode.

Now tick Use Hamlib and you MUST then click Initialise.



Now select Soundcard/Devices and tick Port Audio and select for Microphone (USB Audio Codec) for Capture and Speakers (USB Audio Codec) for Playback. These Codecs were installed with the IC-7300 Driver. Tick Device supports full duplex



Select Waterfall/Display and untick ‘Always show Audio frequency’ if you prefer RF frequencies displayed rather than AF.

Finally select Logging/QSO Logging and tick ‘Prompt Save on exit’, ‘Sort by date/time’ OFF and ‘Convert callsigns to Uppercase’ or whatever is your preference.

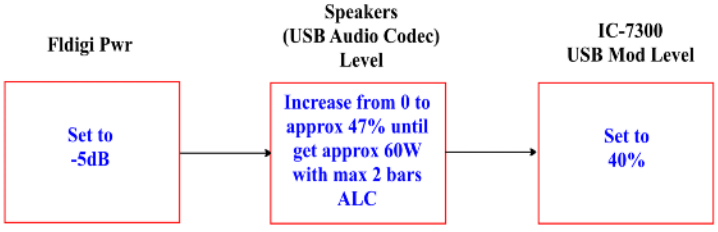
Now click SAVE and CLOSE.

Check that IC-7300 /Win4Icom /Log4OM and Fldigi frequencies all track each other.

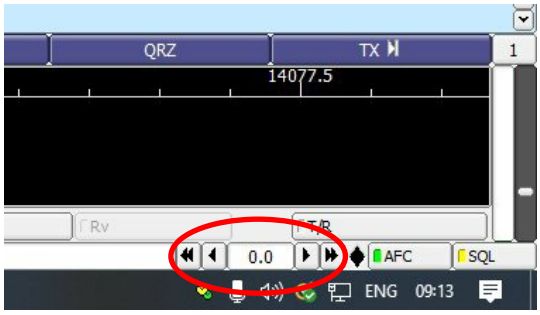
Before transmitting, it is imperative to set up the Transmit Drive levels

Since digital modes are quite power intensive, IC-7300 Power Setting was s et to 75%.

Transmitter drive level is controlled in 3 ways :-



As shown in the diagram :-



USB Mod Level in the IC-7300 40%

Power setting in Fldigi - change to -5dB

Access Loudspeakers (USB Audio Codec) volume setting is via Windows Settings/System/Sound. In the Output section, ensure Output Device shown is Speakers (USB Audio Codec) and set Master Volume slider to zero.

In Fldigi click on the Tune button (top right) to put the IC-7300 into TX mode and whilst checking the Power out and the ALC level, increase the Master Volume slider slowly until the Power out is approx 70% and NO MORE than 3 bars of ALC showing. My Master Volume setting was approx 45%.

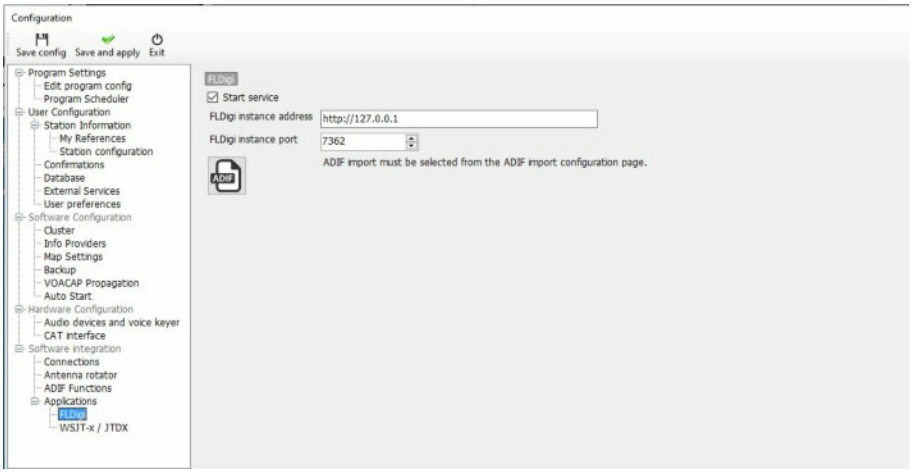
We are almost now ready to have the first QSO via FSK with Fldigi but it is to useful first to edit the default Macros provided. RIGHT click on the selected Macro button (Note a left click will TRANSMIT the Macro!) and edit its name and contents as required. It is worth noting down a suggested sequence for a typical QSO.

Finally click on the book icon just below the frequency to Open List and select the band and BPSK31 frequency and from the top Menu bar select Op Mode/PSK/BPSK-31 and then select PKTUSB from the drop down list below the frequency - this will switch the IC-7300 into USB-D mode - essential for it to transmit in a data mode. You are now ready to have a QSO!

Having finished a QSO, and clicked on the 'Save QSO to log' button one has completed your first QSO.

However, there is a way to copy this log entry also into the Log4OM Log and to auto send an eqsl as follows

In Log4OM/Settings/Program Configuration/Fldigi tab as shown opposite :-

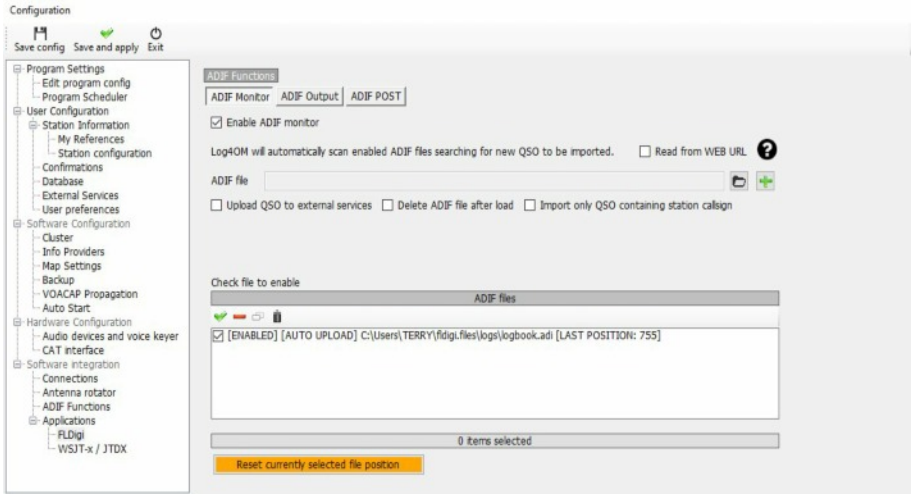


Click on the ADIF icon to open ADIF Functions window shown opposite :-

In this window, under ADIF Monitor Tab, tick 'Enable ADIF Monitor'

To right of ADIF Field box, click folder icon and browse for Fldigi logbook - probably under

C:\Users\You\fldigi.files\logs\Logbook.adi



Tick 'Upload to external services' (eg eqsl) Finally click green '+' to right of ADIF field box to insert it into File List window below and ensure it is ticked. Now click Save and apply at the top of this window.

Now when log is entered into Fldigi logbook it is also entered into the Log4OM logbook.

PSK was very popular until FT8 appeared which being a weak signal mode offered better communication using lower power. FT8 now predominates and is mainly achieved using the program WSJT-X.

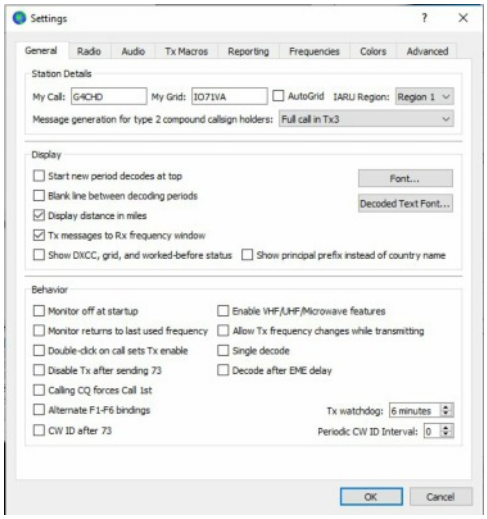
However, FT8 functions using just three fixed macros whereas FSK does allow macros to be personalised as well as in addition allowing keyboard usage.

WSJT-X INSTALLATION AND SETUP

Go to https://physics.princeton.edu/pulsar/K1JT/wsjtx.html and download the relevant Installation package as well as the manual.

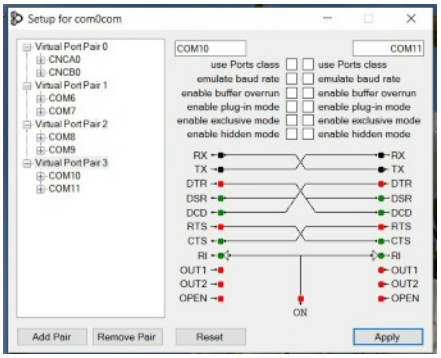
When WSJT-X is first run it is necessary as was with Fldigi to set up user details, radio CAT control, soundcard details and logging preferences followed by transmitter power level setting.

On the top menu bar select File/Settings and on the General Tab enter your Name, Callsign, locator etc. as shown opposite.

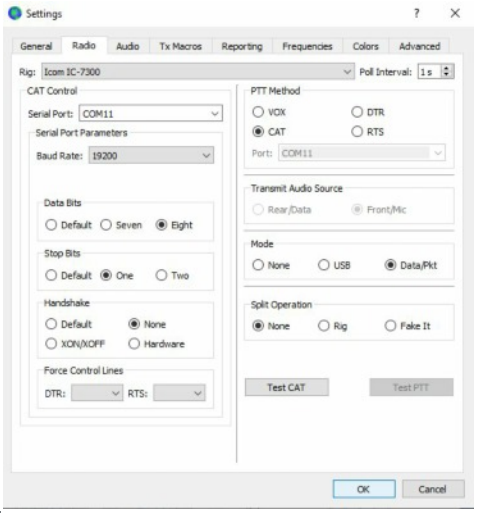


On the Radio Tab in WSJT-X a COM Port is required through which WSJT-X can communicate with the IC-7300.

Just as with Fldigi, this can be achieved via a virtual null modem cable connected to one of the six Aux/CAT Ports in Win4Icom. Since Omnirig used Port 1, Fldigi used Port 2, then WSJT-X is connected using the virtual cable 3 (Pair 3) (COM10 and COM11 at its ends) and hence COM11 is used.



Run Win4Icom and go to Tools/Settings window and under the 3rd Party SW/HW Tab enter COM10 as the Port, 19,200 as the Baud, and suggest WSJT-X as a suitable Tag. Click Connect which should change to Disconnect showing that WSJT-X is communicating with the IC-7300 via the virtual cable, Win4Icom, and COM3.



In WSJT-X on the Audio Tab, select the USB Audio Codecs as was done for Fldigi.

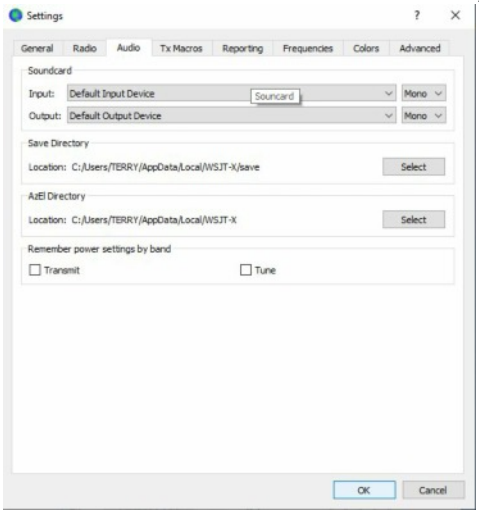
Finally on the Reporting Tab, tick 'Prompt me to log QSO' and 'Enable logged contact ADIF broadcast' for future use and click OK.

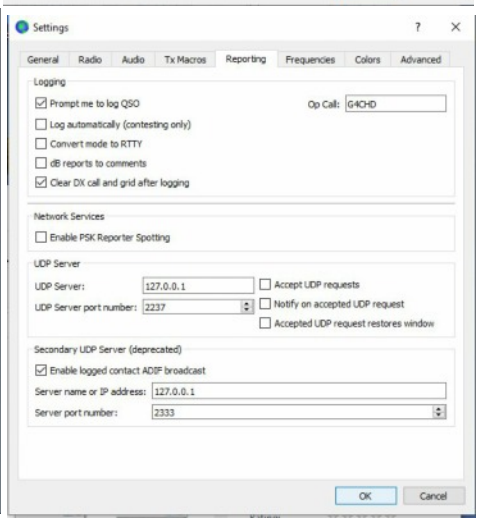
Setting up Transmit Drive levels :

Windows :-
Control Panel/System/Sound : Master Volume (Speakers) set to 10% Check (USB Audio Codec used)

IC-7300 :- Power set to 75%
Menu/Set/Connectors :
USB Mod Level set to 50%

WSJT-X :-
Power (slider) set to approx 90% (minimise ALC whilst keeping power out - approx 70W on 20m)





Finally - it just remains to ensure that the Mode is FT8, and the IC-7300 is tuned to the FT8 part of the chosen band :-

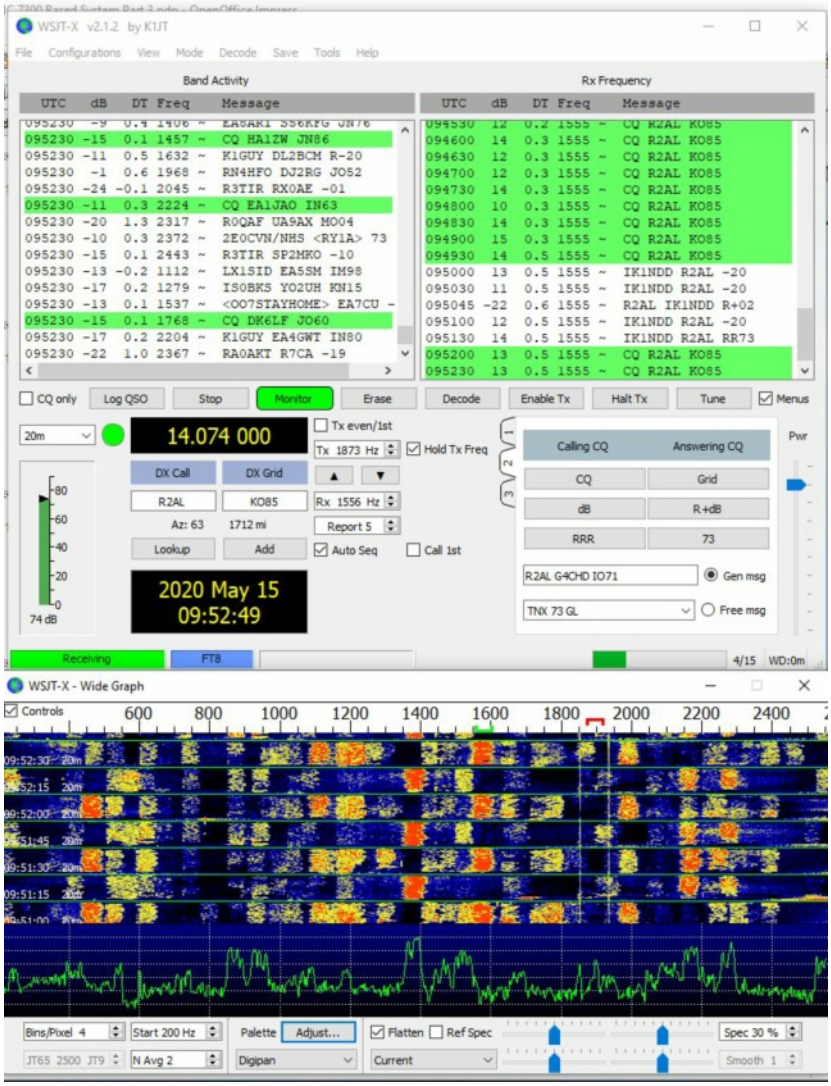
From the top menu bar select Mode/FT8

Then, to the left of the frequency display, from the drop down list select your chosen band/Frequency - eg 17.074MHz

Ensure the IC-7300 is now switched to USB-D mode.

Hopefully everything now works.

If WSJT-X is not able to decode FT8 signals, it may be that the Windows clock is not sufficiently accurate and time synchronisation software eg 'NetTime'is needed.

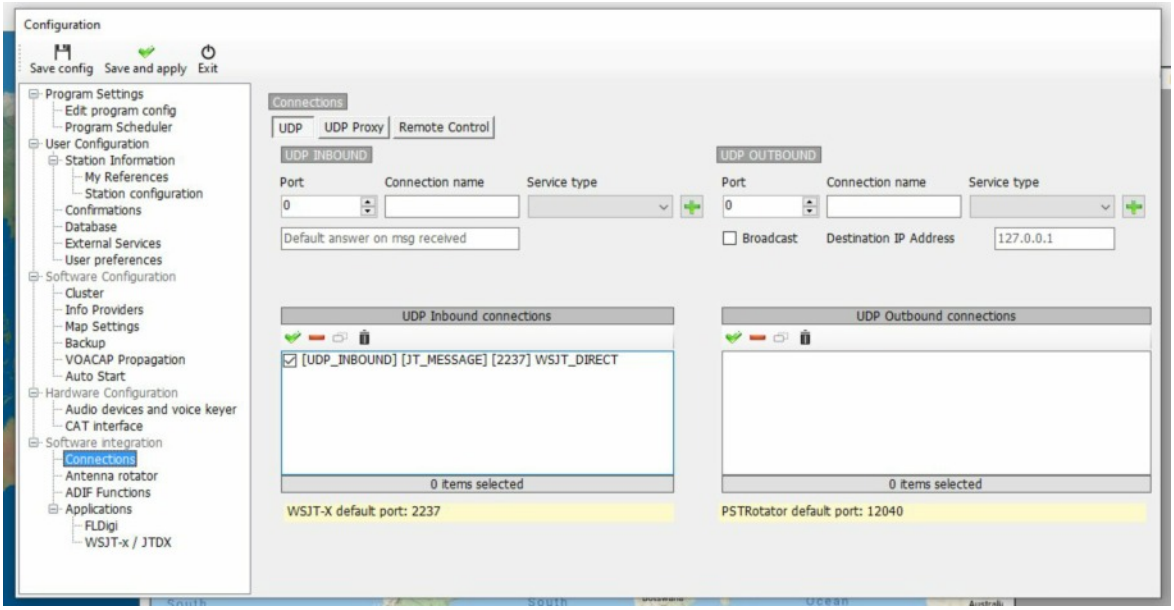


Instructions for operating WSJT-X is not really part of this article as there are plenty of YouTube videos etc. However, when double left clicking on a station in the Activity/RX Frequency areas, doing so with the Cntl key depressed will shift BOTH the TX and RX frequencies.

QSOs are logged to a Logbook within WSJT-X but just as with Fldigi, it is useful to also be able to copy any log entry into the Log4OM2 Log and also auto upload the entry to eg Eqsl.

To do this :-

In Log4OM2 go to Settings/Program Configuration/Software Integration/Connections and ensure that the UDP Tab is selected and in the UDP Inbound area enter 2237 in the Port box, 'WSJT_DIRECT' in the Connection Name box, select 'JT_MESSAGE' from the drop down list for the Service Type box, and finally click the green '+' to add it to the UDP Inbound Connections window below as shown :-

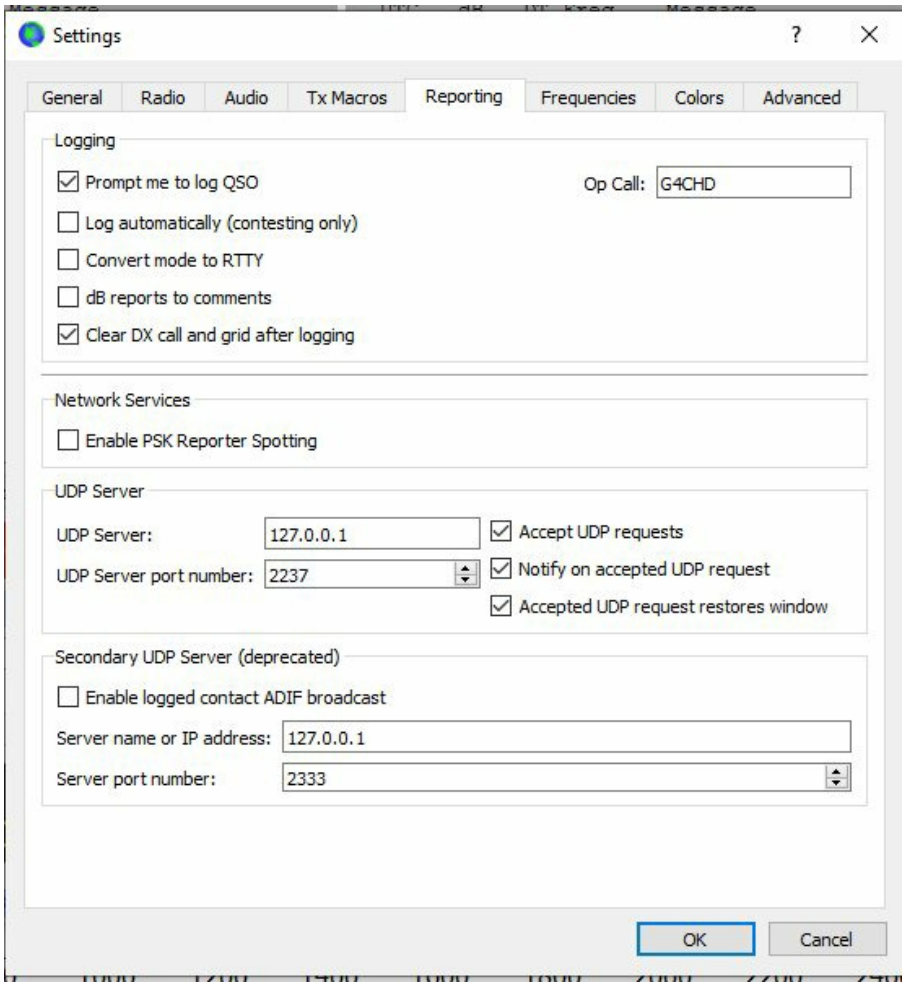


Click 'Save and Apply' (green tick).

Still in Log4OM2, go to Settings/Program Configuration/Software Integration/Applications/WSJT-X/JTDX and tick the box labelled ‘Import QSOs from JT Message #12’ as shown :-

and click ‘Save and Apply’ (green tick)

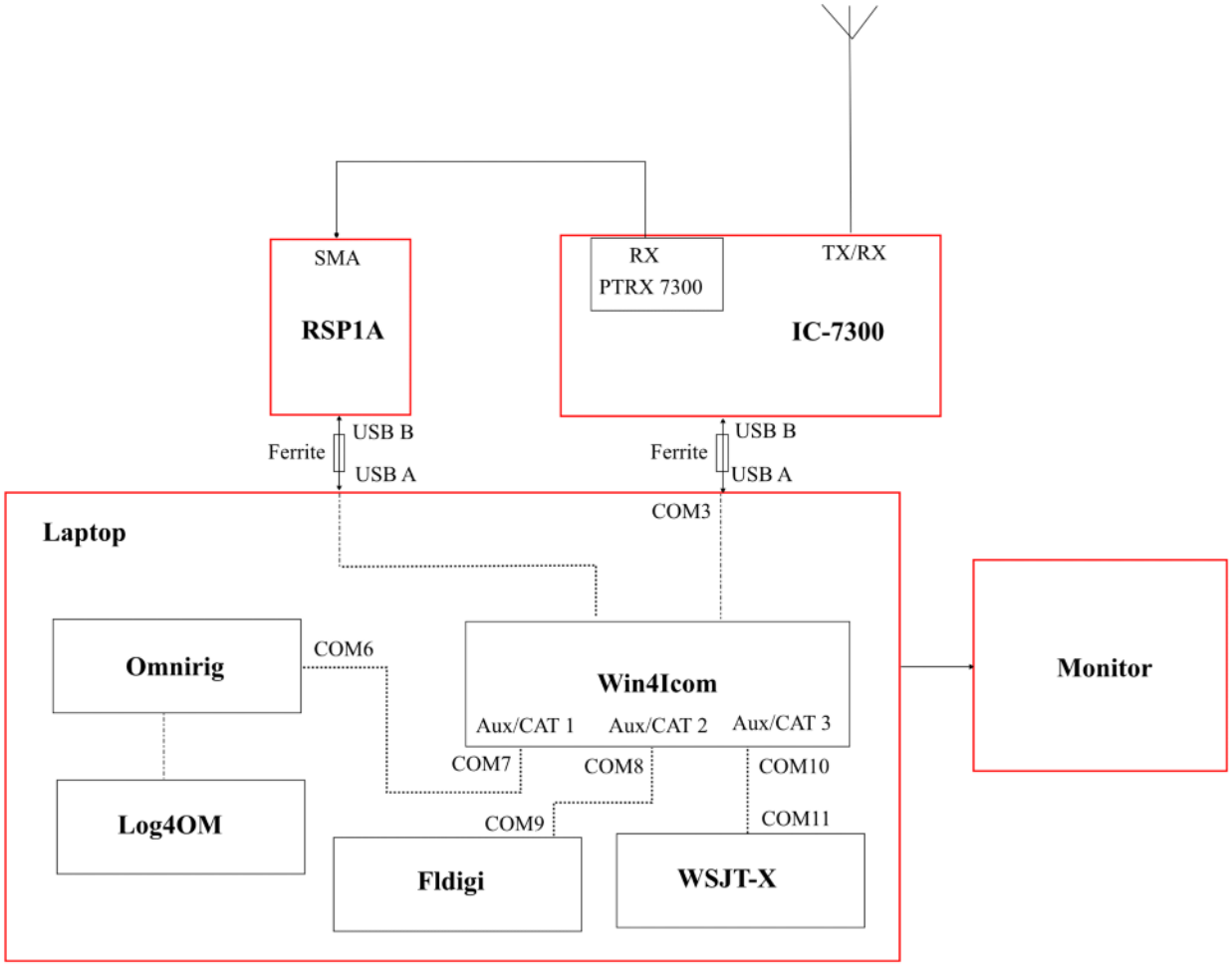
Now in WSJT-X go to File/Settings/Reporting tab and complete the ‘Network Services' area as shown :-



and click on OK. Close both Log4OM” and WSJT-X and restart for these changes to take effect.

Now whenever a station is selected in WSJT-X to work by clicking on it, its details will appear in Log4OM2 and when the QSO is saved, it will be copied into the Log4OM2 log and after a 1 to 2 minute wait will be uploaded to Eqsl.

Final schematic diagram of the whole system :-



Terry (G4CHD)