

PARA Field Day 2010 Digital GOTA Station Setup

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Physically connecting up the radio

Primary connections

- 12v power
- Yaesu FT-897 HF S0-239 to antenna tuner
- Antenna Tuner to Antenna

Data Connections:

- 6-pin DATA cable from radio's DATA port to the Singalink USB sound card
- 8-pin CAT cable from radio's "CAT" port to PC's DB9 rs232 serial port

Configure the FT-897

1. Turn on the radio
2. Set menu items By holding down the F button (just left of the VFO knob)

```
# 1 - Extended Menus :: ON
#19 - CAT RATE      :: 38400
#20 - CAT/LIN/TUN   :: CAT
#37 - DIG GAIN      :: 50
#61 - ATX SEL       :: SWR
#65 - PG A          :: 75 - RF power
#66 - PG B          :: Q.SPL
#67 - PG C          :: #61: MTR ATX
#75 - RF Power      :: 5 (for now)
#85 - TUNER/ATAS    :: OFF
```

Initial Singalink settings

Looking at the Singalink device, if the first 'tick' is 0 and the last 'tick' is 10

1. RX: 10.0
2. Tx: 2.5
3. Dly: 1.0

NOTE: for QRP (RF output of 5W), Singalink TX should be :: 5.6

Initial Windows Settings:

1. Date/time
 - 1.a. Make sure Windows/Date and time are as accurate as possible
2. Sound card levels
 - 2.a. run the Windows mixer: Start--> Run --> sndvol32
 - 2.b. Goto Options --> Properties --> select Mixer Device: USB audio codec
 - 2.b.1. Speaker: 90% (botton of slider should be aligned with the second to top most line)
 - 2.b.2. WAVE: 100%

Initial Radio settings

1. set the radio's RF power to it's lowest setting as described above
2. Make sure an antenna or dummy load is connected
3. If a real antenna, make sure the SWR is matched through the tuner
4. Tune into a frequency you can hear digital modes on

80m: 3.577 - 3.90
40m: 7.032 - 7.038, 7.060 - 7.080 [PSK 7.032]
20m: 14.060 - 14.090 [PSK 14.071 : RTTY usually 14.082]
15m: 21.060 - 21.080
10m: 28.110 - 28.125

Configuring Fldigi

1. Start up fldigi
2. Goto Configure
 - 2.a. --> Operator
 - 2.a.1. Set the callsign, name, QTH, locator, and antenna to the right setting
 - 2.b. --> UI --> General
 - 2.b.1. QSO logging: Set the transmit power to 45w
 - 2.c. --> UI
 - 2.c.1. General

Checkmark: Clear on Save
Convert callsign field to upper case: ON
Transmit Power: 45W

2.c.2. Contest:

Duplicate Check: ON
Call Plus: ON
checkmark BAND, MODE, TIMESPAN: 2880 minutes

2.c.3. Waterfall

--> Display

Frequency scale:
UNCHECK always show audio frequencies

Transmit signal:
CHECK - Monitor transmitted signal

--> Mouse
Dragging on the waterfall scale changes frequency: ON
 - 2.d. --> Rig --> Hamlib (all other RIG controls should be disabled)
 - 2.d.1. Use Hamlib: CHECKED, Rig: Yaesu FT-897,
Device: COM1, Baud:38400, stop:1, RTS+12:checked
Retries:2, Retry interval:5, write delay:0, postwrite delay:0

- 2.e. --> Audio --> Devices
 - PortAudio:
 - Capture: USB audio Codec :: Playback: USB audio codec
- 2.f. --> Misc --> CPU
 - 2.f.1. Slow CPU: DISABLED
- 2.g. click on SAVE and then close
- 3. In the Main window, the black/blue waterfall area should show signals being received
 - 3.a. Tune the left most number (Upper signal level_ to where most background color is a mix of black and blue. Only yellow you see is the CENTER of the waveforms (PSK, RTTY, etc)
 - stock Fldigi: upper signal level: -20 :: signal range: 70
 - tuned for FT-950: upper signal level: -31 :: signal range: 70

Testing the system

1. Start up fldigi
2. Make sure the radio is set to it's LOWEST RF power level

If you have a PSK meter:

- 2.a. urn off the radio and connect the meter between the rig and the antenna tuner
 - NOTE: Yes, this PSK meter unit is fully rated to handle from 5w to 100W (but nothing more)
- 2.b. go into Fldigi Configure --> Rig --> Hamlib and UNCHECK "use hamlib". Click save.
- 2.c. restart fldigi
- 2.d. connect the DB9 RS232 to the laptop's port (disconnect the CAT cable for the moment)
- 2.e. power the pskmeter ON
- 2.f. Start up the PSK meter program
- 2.g. continue with the reset of these steps
3. Have the following settings ready to change:
 - Signalink TX level
 - radio RF power level
 - Windows sound card levels
4. Start Up Fldigi
 - 4.a.1. run the Windows mixer: Start--> Run --> sndvol32
 - 4.a.2. Goto Options --> Properties --> Mixer Device: USB audio codec

4.b. connect a set of headphones to the Radio's MON port

4.c. In FLdigi, set the mode to BPSK-31

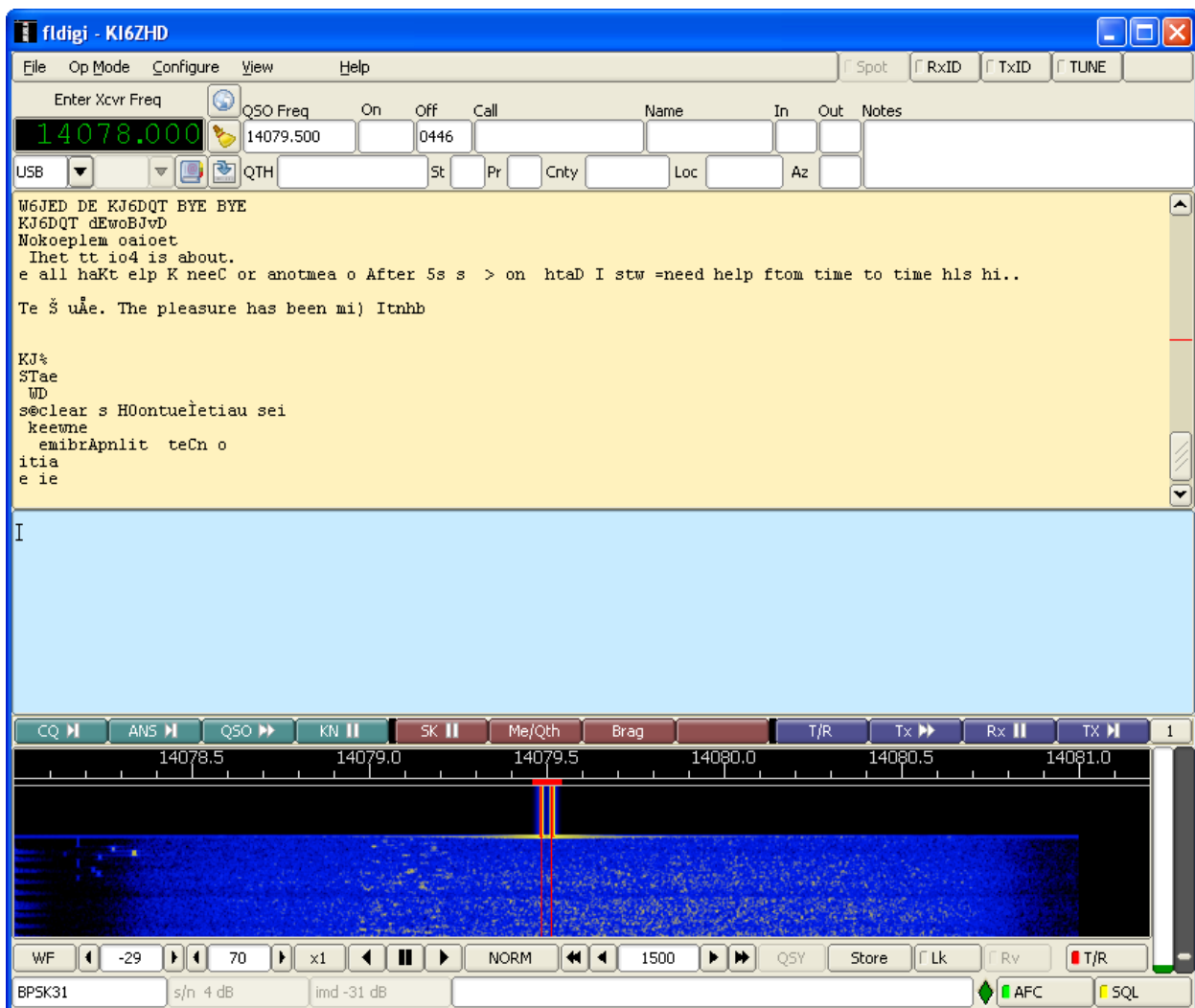
Op Mode --> PSK --> BPSK-31

4.d. Tune to an empty section of the digital RF spectrum

4.e. Make sure to tune up the SWR on the antenna

4.f. Click in the light blue text area and hit Control-T to start transmitting an IDLE PSK31 tone.

4.g. Looking at the bottom of the radio's LCD, make sure the SWR is low



4.h. The PTT light on the Signalink unit should light up. If it doesn't light, you need to increase Windows's sound card output levels

4.i. You should hear dual idle PSK31 tones coming from the MON port of the Signalink box

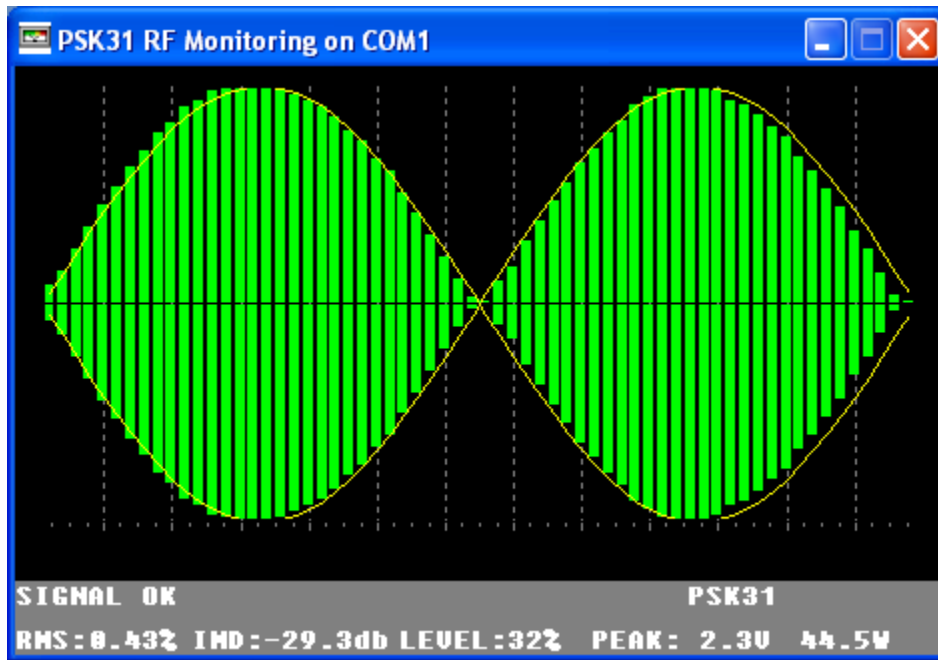
4.j. Make sure that the SWR on the radio's display is low

4.k. Make sure the output RF on the Antenna tuner is <50w

If you're using the PSK meter:

- a. you should see green lines filling up the lobes of the PSK meter window
- b. Start increasing the RF power on the radio to a max of 45w
- c. Make sure that both lobes are FULL (not too little, not beyond the lines either:

Signal show show "OK"
IMD should be between -20 and -30
Level should be around ??%
Voltage should be between 1 and 5v



- 5. If you don't have a PSK meter:
 - 5.a. Start increasing the RF power to a max of 45w
 - 5.b. Monitor the SWR and Antenna Tuner's reported power
- 6. hit Escape to stop transmitting
- 7. You're now good to go with Fldigi and the various digital modes!

Final Steps:

If you're using the PSK Meter:

- shut down the PSK meter app

- turn off the radio and take it out of the TX path
- Replace the CAT cables
- re-enable the CAT signaling in FLdigi
- restart fldigi
- set the RF output power to it's lowest setting
- retune the antenna SWR
- retest the idle PSK tones as shown above

As a final test, tune the radio to WWV and confirm the carrier wave is right on the money. If it's not, you can do adjustments in FLdigi with
Configure --> Audio --> Settings

Using FLdigi

1. If there are multiple modes going on, newer stations might have the RxID feature enabled. This system allows for automatic mode detection and switching. Make sure the RxID is turned ON in the upper right corner

The screenshot shows the FLdigi software interface. At the top, the title bar reads "fldigi - KI6ZHD". The menu bar includes "File", "Op Mode", "Configure", "View", and "Help". On the right side of the menu bar, there are checkboxes for "Spot", "RxID", "TxID", and "TUNE", with "RxID" currently checked. Below the menu bar, there is a section for "Enter Xcvr Freq" with a frequency field set to "14070.000". To the right of this are fields for "QSO Freq" (14071.499), "On", "Off" (0629), "Call", "Name", "In", "Out", and "Notes". Below this is a section for "USB" and "QTH" with fields for "St", "Pr", "Cnty", "Loc", and "Az". The main text area contains a QSO log entry:


```
] N2MLP sk skUAOKEF de KH7DH KH7DX pse kn SJ e rt ncTsi,rep
eye
2iTuE EF de KH7DX k
KH7dmt de UA
ALL COPIEtT DR Stu!
OY BEST WISHES TO YOU
GOOD L uCK AND MANY DX
KH7d - op. Stu de UTon
[
aop. EUGEeeu
73 uAy o s n
Before RSID: <<2010-06-13T06:27Z BPSK-31 @ 14070+0985>>
oUAOKEF de KH7DX 73 Eugene and thanks for tt i e QSO on ntte
<<2010-06-13T06:28Z BPSK-31 @ 14070+1608>>
anrh .n UA0KEF de KH7DX Aloha sk | tetstFe ct . iow copy? BTU Pavel, OK1AW de M
```

 Below the log is a large blue area. At the bottom, there is a control panel with various buttons: "CQ", "ANS", "QSO", "KN", "SK", "Me/Qth", "Brag", "T/R", "Tx", "Rx", and "TX". Below these buttons is a waterfall display showing frequency from 14070.5 to 14073.0 kHz. The display shows a strong signal at approximately 14071.5 kHz. At the bottom of the control panel, there are fields for "WF" (set to -20), "70", "x1", "NORM", "1499", "QSY", "Store", "Lk", "Rv", "T/R", "BPSK31", "s/n 7 dB", "imd -26 dB", "AFC", and "SQL".

2010 FieldDay Rules:

GOTA exchange:

W60TX SCV 4A

station call sign, the name of the ARRL-recognized section from which the station is operating, and a class designator which indicates the number of transmitters concurrently used at the station and information about the type of electrical power source being used.

GOTA Station Rules:

1. Digital GOTA station callsign: W60TX
1. GOTA Must use different callsign
2. Less than 150W
3. Max of 500 QS0 points (considering modes, multipliers, etc.)
4. Exchange is "W60TX 4A SCV"

Questions about GOTA

1. If there aren't any non-licensed / infrequent users for the GOTA station, can it be converted back to a regular station? Yes, but one of the other stations must be turned off to stay in the "4A" classification

Expected Bonus points

2 points per digital QS0
2x multiplier per QS0 for <150watts

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Single GOTA operator that completes 20 QS0s gets an extra 20 points to a max of 100 bonus points per operator

If each of the 20 QS0s are supervised by a coach, the points are doubled

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100 points - media publicity
100 points - public location
100 points - public information table
100 points - NTS message to Section manager
100 points - 5 QS0s made from battery power
100 points - copy W1AW/K6KPH bulletin
100 points - Educational activity
100 points - elected official
100 points - representative of an agency
50 points - Submitting FD logs on the web
20 points - per <18yr GOTA that completes at least one QS0 (max of 100 points)