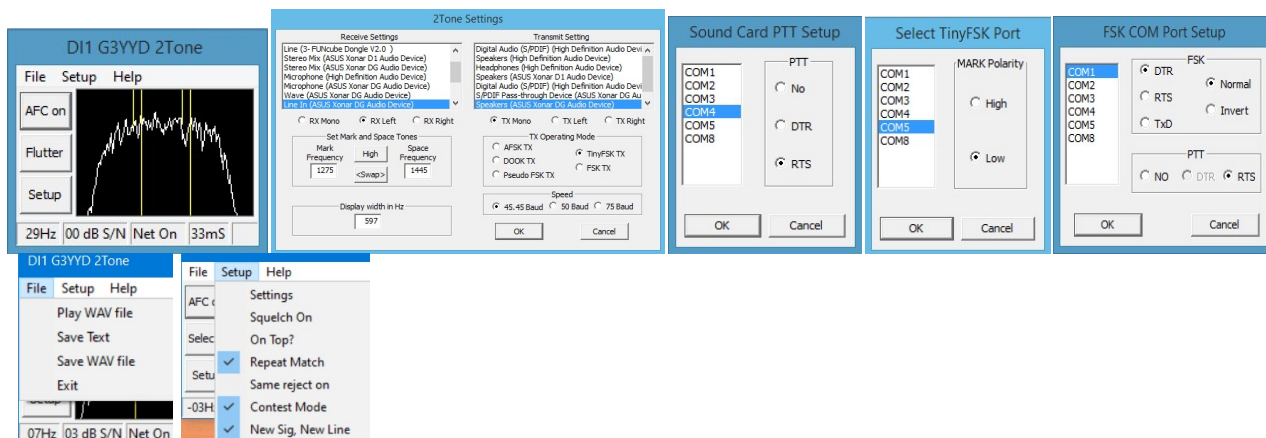


G3YYD's 2Tone, Operational Information



In Use

Top button: toggles AFC on/off. N1MM also controls this button via the Di. AFC range is $\pm 60\text{Hz}$.

Middle button: optimises the decoder for current signal propagation.

Flutter for slow to very rapid fading conditions;

Selectiv(e) for when mark and space tones fade independently of each other;

Spread not common most often on trans-polar paths, has a distinctive sound.

Setup button displays the 2Tone settings dialogue, see below for further information

The FFT display:

Tune the radio so the RTTY twin peaks and the short yellow (or white with AFC off) vertical tuning indicators are near or co-incident with the vertical yellow lines. The long vertical lines are the set tone frequencies. The displayed bandwidth can be adjusted, click on Setup button.

Menu, Setup

Settings:

Opens the Settings Dialogue;

Set the receive sound card and whether left, right or mono is to be used.

Set the tone frequencies, high/low button default values, tones frequency from 650 to 3000Hz standard 170Hz apart. Swap swaps tone frequencies. Standard Mark high radio frequency = low audio frequency & Radio on LSB. Set spectrum display bandwidth, maximum is 1292Hz at 45.45 baud and 2133Hz at 75 baud.

Set transmit method, DOOK is an AFSK mode with the best performance. Select sound card if AFSK, DDOK or pFSK is being used. Sound cards can be used by other apps.

Clicking on a TX mode will open a PTT setting window use none if VOX or alternative logging program PTT is being used. COM ports cannot be shared with another app.

Set baud rate normally 45.45, a few contests use 75 baud.

Squelch:

Go to Menu Setup, Squelch left click will toggle on/off. Characters are displayed when the signal to noise is 1.5dB or higher. An occasional character will be displayed with a noise input. There is a delay after a signal goes before squelch happens. This is deliberate to ensure nothing is missed in a reply.

Repeat Match:

Setup, Repeat Match, tick is on, looks for repeated strings and when found combines the analogue data to provide a lower probability of error by displaying the synthesized string between {} brackets.

Same reject on:

Setup, Same reject on when ticked, the {} string is not displayed when the repeated strings are identical to the previous {} reduces window clutter.

G3YYD's 2Tone, Operational Information

Contest Mode:

Setup, Contest Mode, tick is on and uses a reduced RTTY character set for decode with all mainly unambiguous figures case 1 bit errors mapped to the highest probability character.

New Sig, New Line:

Setup, New Sig, New line when ticked will when it can put the start of a new received transmission on a new line. Work in progress as does not perform as well as I would like.

Menu, File:

Play WAV file: This will read a .wav sound file at full PC speed. Any .wav file with a sampling rate of 8000 samples/second or faster. Click again to stop playing.

Save Text: The decoded text is saved to a file when ticked, untick to stop.

Save sound files: Saves .wav file for each QSO logged when ticked. Only works with N1MM when configurer Broadcast Data tab is modified to include 127.0.0.1:12061 127.0.0.1:12062 on the contacts line and contact is ticked.

Status Bar Display

AFC bottom left of 2Tone window shows the offset in Hz from the exact frequency.

Signal to Noise ratio, next to the AFC value in the status bar is the measured signal to noise ratio of the decoded signal in dB. This is averaged over several RTTY characters.

NET: It is essential that the N1MM DI, Digital Interface, setup menu has "NET off/on with RUN change ticked". If this is ticked then clicking on the Entry Window's Running box will alter the Net status display in 2Tone's status bar. S&P = "Net ON", RUN = "Net OFF". Only useful for AFSK and DOOK transmit modes.

Stop Bit Length: On the status bar fourth in from the left is a display of the received stop bit length. Ideally this should be around 32 to 34 milliseconds for 45.45 baud. Some RTTY software differs from the 33mS standard.

Other Matters

Replay last 60 seconds: Clicking on the spectrum window will replay last 60seconds at max rate then hold for 10 seconds or right clicked.

Receiver AGC: This should be set to slow as fast will confuse the selective fade algorithms and cause AGC induced IMD (Intermodulation Distortion).

Receiver Filters: 2Tone filters are optimised. Bandwidth should not be set below 350Hz. Twin peak filtering may sound good to human ears but not to 2Tone.

SO2R: is possible with one sound card. More than one 2Tone can be used with the same sound card. Use separate folders for each 2Tone. Set one 2Tone for Di1 and in Setup dialogue, receive left and transmit AFSK/DOOK left for the left rig with another 2Tone for the Di2 with receive right and transmit AFSK/DOOK right for the right rig. This is in conjunction with wiring the left rig to the left Line in/out and right rig with the right line in/out.

David, M7T & G3YYD
15th January 2021