

# G3YYD's 2Tone using FSK

## Introduction

There are a number of limitations in using radio based FSK with 2Tone. They centre on minimum computer performance and the use of USB COM port adapters.

## PC Requirements

2Tone toggles the TxD (or RTS/DTR) line so that it produces the individual bit timing. Windows is not designed to do this as it is not a real time operating system. However with recent CPUs it is possible to do this without the timing errors being too significant.

The minimum requirement is a multi-core processor with 4 GB RAM and that CPU is not a Core 2 Duo. It is recommended that the minimum CPU is Intel I5 or a six core AMD clocked at 2.2GHZ or faster.

A lesser machine may appear to work but in practice on air results will be very poor, use AFSK or DOOK instead.

Then ensure that there are no other programs running that are hogging the CPU. It is also a good idea to have a solid state disk rather than a mechanical one. If you get strange results then use the task manager to find the program that is hogging the machine and disable it.

Task Manager can be opened by using ctrl-shift-ESC.

## COM Port

The best com port to use is either one on the motherboard or using a plug in PCIe or PCI board. If a USB COM port adapter has to be used then note the following:

- The adapter uses the FTDI chip. Other manufacturers chips have proved to be unreliable.
- Use the latest FTDI drivers, which are available from <http://www.ftdichip.com/Drivers/VCP.htm>
- The USB is plugged directly into a root hub of the PC with no other USB ports used on this root hub.
- Set the USB adapter as follows:

- Open Windows Device manager (via control panel)
  - Click on Ports
  - Right click on the wanted USB Com port
  - Select properties
  - Click on Port setting
  - Click on advance button
  - Set Receive(Bytes) and Transmit (bytes) to 64
  - Set Latency Timer(msec) to 1

## Finally

Consider using AFSK or DOOK instead. This will occupy less bandwidth on air as most radio FSK is unfiltered and will QRM the adjacent channels (K3 is an exception to this). Also AFSK/DOOK produces very accurate bit timing with narrow occupied bandwidth. Both AFS and DOOK spectrums have been optimised for best 2Tone decoding performance. If you use PC DVK then you already have all that is needed for AFSK/DOOK.

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