

### HF Packet Basic Operation

The requirements for optimum performance with a typical HF or OSCAR 10 path are very different compared to local VHF FM environment. Lower signal to noise ratios require lower baud rates, noise spikes and fades require shorter packet lengths, and a higher rate of false carrier detects lowers the total usable dynamic range in the audio input. The MFJ-1278 hardware and software are configured to improve throughput in these environments. The MFJ-1278s settings of MAXFRAME and PACLEN provide the possibility of several continuous frames of long data length. For HF operation at 300 baud, we recommend setting MAXFRAME to 1.

The MFJ-1278 detects a busy channel by monitoring the lock-detect signal from the demodulator. The presence of a lock-detect signal is indicated by the Data Carrier Detect (DCD) LED. Each time DCD goes off the MFJ-1278 will start a DWAIT interval which must elapse before the channel is considered to be available. On a noisy channel spurious lock-detect signals may be generated. For HF and OSCAR operation you should set DWAIT to 0. The random wait before retry transmissions can be disabled by setting TXDELAY 0 and using AXDELAY to set the required keyup delay. Of course, AXHANG should be 0 for this application.

If you are operating a full-duplex radio station (simultaneous transmit and receive) such as an OSCAR 10 station, you should set FULLDUP ON. The MFJ-1278 is always electrically capable of full duplex operation, but this parameter causes the protocol to behave differently in acknowledging packets. In addition, the MFJ-1278 will ignore the state of the DCD line.

Although intuition tells you that lower baud rates will reduce the number of packet retries, there is usually a small range between "too fast" and "too slow." A slower packet takes longer to transmit and is therefore a larger target for fades and static crashes. The entire packet must be received correctly in order to be accepted. Data rates of 1200 baud have been used on both HF and through OSCAR 10.

HF activity may generally be found on 7.093 or 14.107 MHz. Use LSB or USB - it really doesn't matter (although most stations use LSB when referring to the suppressed carrier frequency).

Tune through a few packet signals. Tune slowly! You will find a point at which the display becomes bright. As you continue tuning, you will see the moving bar display slide across your tuning indicator. When one of the center LEDs

is illuminated, you are tuned in and you should be able to copy the packets.

Each bar on the tuning indicator represents about 10 Hz. Thus, if a packet comes through and you are 4 bars off, retune your transceiver 40 Hz in the indicated direction. The direction depends on the sideband you selected and the manner in which you have the tuning indicator oriented. One or two bars will quickly tell you which way to go! Bars to the left of center indicate you should tune higher, while the other side of center means to tune lower.

Many BBS station forward traffic on HF at the above frequencies. Call CQ a couple KHz away from such channels. If you can't raise anyone, call CQ on one of the above frequencies, **but QSY immediately after establishing contact!** Be careful on 20 meters especially that you don't operate +/- 2KHz around 14.100 MHz (you will cause interference to propagation beacons and give packet a bad name...)

Other HF Operation Hints:

1. Try to keep all packets below 80 characters in length.
2. Set MAXFRAME to 1. This will minimize transmission time.
3. Avoid multiple connections and digipeated packet operation.
4. Qsy away from the standard calling frequencies as soon as possible.
5. Set FRACK to a sensible long value.

More detail on HF packet operation is discussed in the next chapter in this instruction manual.