OFDM Digital Modes Introduction

The new OFDM digital-modes send data quickly over the HF, VHF, and UHF bands using unmodified radios with stock filters.

This allows amateur operators to send NBEMS and other data much faster, saving time during emergencies.

HF SSB Modes:

OFDM-500F gives 250 bits/second in 500Hz bandwidth

OFDM-750F gives 562 bits/second in 750Hz bandwidth

OFDM-2000F gives 2000 bits/second in 2000Hz bandwidth

OFDM-2000 gives 3000 bits/second in 2000Hz bandwidth

These modes are legal on all HF bands (FCC/USA)
Modes work with any soundcard interface

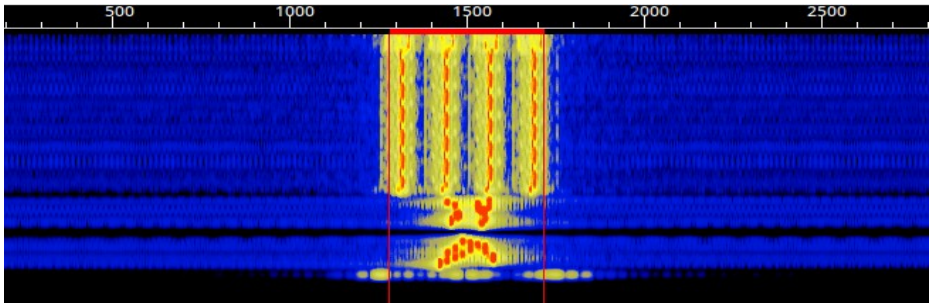
9600-Port FM Modes:

OFDM-3500 gives 5250 bits/second in 3500Hz bandwidth

- faster modes are being created and tested, work in-progress.

Modes work with post-2018 Signalink interfaces only
Require connection to a radios 9600-pin on the data-jack

OFDM-500F



- Survives HF NVIS usage
- Survives disturbed ionospheric-paths
- Usable for multi-hop ionspheric paths
- ~4 times faster than MFSK32

Usage:

- Use 1/3 of transmitter or amplifiers Max RF-output
- Recommended to use amplifier with this mode
- For NBEMS data usage over HF SSB radios

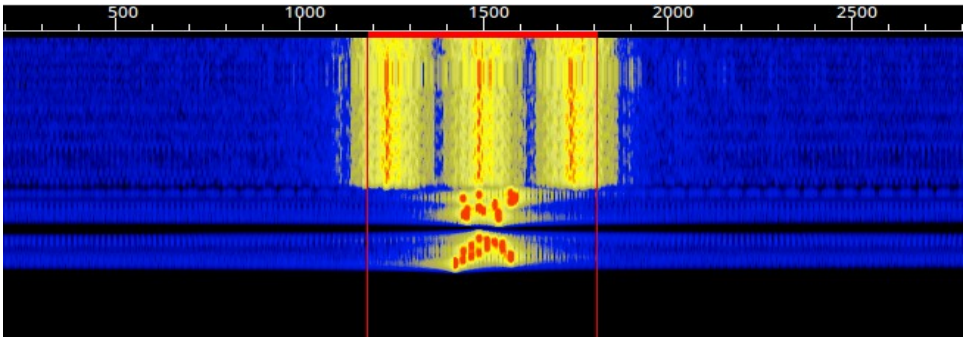
Tradeoffs:

- Requires a high frequency-accuracy (± 5Hz)
- Requires use of RSID (to set frequency accurately)
- Requires 4x more transmit power than MFSK

Technicals:

- 250 bits/sec throughput
- 4 carriers at 62.5 baud
- 500 Hz bandwidth
- Gray-coded 4-PSK modulation
- Heavy constraint-length 15 FEC
- Long 4000 millisecond interleaver

OFDM-750F



- May survive HF NVIS usage
- Survives moderate ionospheric-paths
- Usable for multi-hop ionspheric paths
- ~9 times faster than MFSK32

Usage:

- Use 1/3 of transmitter or amplifiers Max RF-output
- Recommended to use amplifier with this mode
- For NBEMS data usage over HF SSB radios

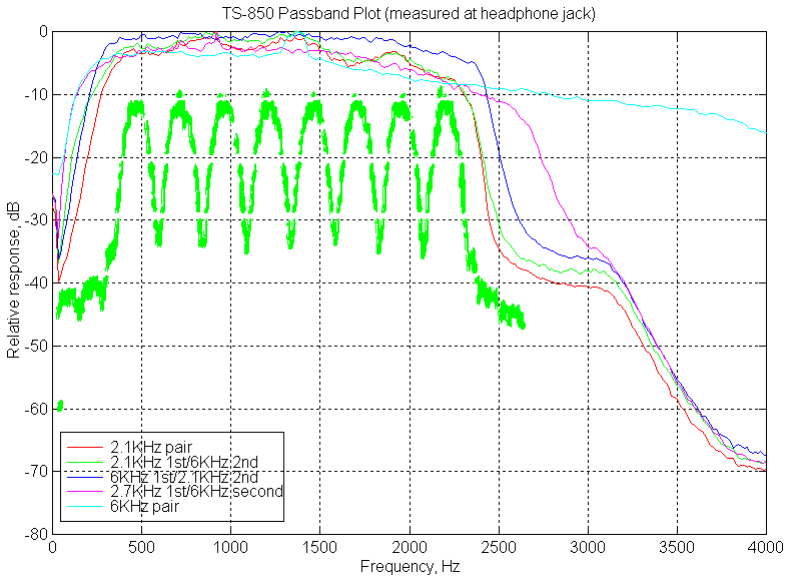
Tradeoffs:

- Requires a high frequency-accuracy (± 4Hz)
- Requires use of RSID (to set frequency accurately)
- Requires 6x more transmit power than MFSK

Technicals:

- 562 bits/sec throughput
- 3 carriers at 125 baud
- 750 Hz bandwidth
- Gray-coded 8-PSK modulation
- Heavy constraint-length 13 FEC
- Long 3200 millisecond interleaver

OFDM-2000F



- Intended for single-hop or line-of-sight on HF
- May Survive multi-hop ionspheric paths
- Adjusted to *barely-fit* within an HF-SSB passband

Usage:

- Use 1/3 of transmitter or amplifiers Max RF-output
- For NBEMS data usage over HF SSB radios
- Usable for through-microphone VHF/UHF FM data
- Usable through some FM repeaters

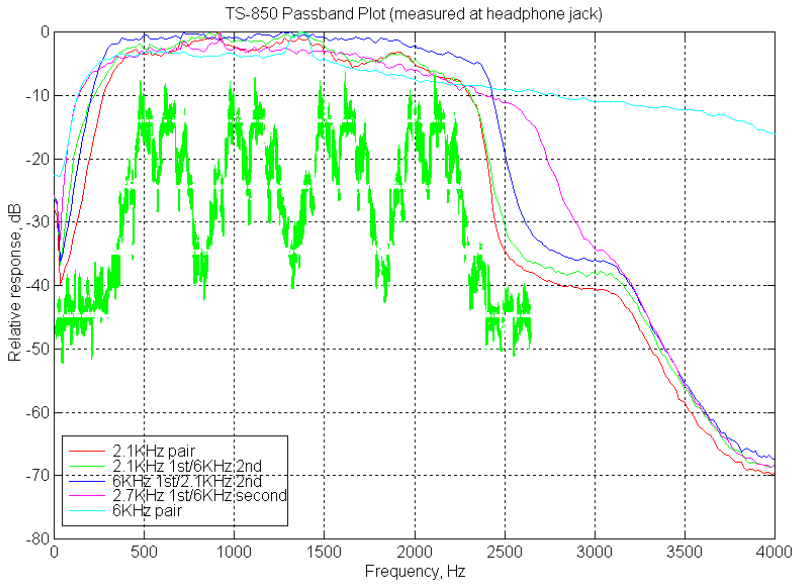
Tradeoffs:

- Requires a high frequency-accuracy (± 4Hz)
- Requires use of RSID (to set frequency accurately)

Technicals:

- 2000 bits/sec throughput
- 8 carriers at 125 baud
- 2000 Hz bandwidth
- Gray-coded 8-PSK modulation
- Constraint-length 11 FEC @ 2/3 rate
- Long 1600 millisecond interleaver

OFDM-2000



- Intended for line-of-sight on HF SSB or VHF/UHF FM
- Adjusted to *barely-fit* within an HF-SSB passband
- RSID optional for this mode

Usage:

- Use 1/3 of transmitter or amplifiers Max RF-output
- For NBEMS data usage over HF SSB radios
- Usable for through-microphone VHF/UHF FM data
- Fast turnaround with no FEC or RSID delays

Tradeoffs:

- Requires a high frequency-accuracy (± 8Hz)
- No FEC, so requires a strong signal without distortions

Technicals:

- 3000 bits/sec throughput
- 4 carriers at 250 baud
- 2000 Hz bandwidth
- Gray-coded 8-PSK modulation
- No FEC used

OFDM-3500

This is the first digital-mode within Fldigi intended to be used with the 9600-pin on an FM radios data-jack.

This connection allows wider-bandwidth and a high-quality signal, allowing for much faster digital modes.

- Intended for line-of-sight on FM
- Adjusted to *barely-fit* within a Signalinks audio-passband

Usage:

- Use 1/2 of FM transmitter or amplifiers Max RF-output
- Connect to the 9600-pin on the rear data-jack
- Ensure Signalink is built after 2018 (has new transformers)
- For NBEMS data usage over 9600-capable FM radios

Tradeoffs:

- No FEC, so requires a strong signal without distortions
- Experimental mode. Better 9600-FM modes to follow.

Technicals:

- 5260 bits/sec throughput
- 7 carriers at 250 baud
- 3500 Hz bandwidth
- 8-PSK modulation
- No FEC used