Digital Modes in Amateur Radio

PSK31

AMTOR FT8 PACTOR

HF PACKET G-TOR PACTOR

HELLSCHREIBER RTTY CLOVER MT63

CW MFSK16 JT65

Presented by Larry, K0LB and Scott, KK4SNO

Why this presentation?

1. Educate hams about digital communications.
2. Get hams motivated about digital communications.

Digital vs. Traditional Modes?

- SSB and CW are “general purpose modes” suitable for ragchewing, DXing, contesting, and emergency communications.
- Digital modes can be used for ragchewing, DXing, contesting and emergency Communications. Provides reliable error-free contacts.

Why Digital Modes?

- Efficient use of band width.
- Efficient use of power.
- Provide more capability for Technician Class Licensees
- A more “secure” method of passing traffic
- Generate more use of our bands – “use them or lose them”.

Which Mode to Use?

- PSK31 – Designed for “real-time keyboard operation. Signal is 31.5 Hz wide.
- QPSK - provides Forward Error Correction.
- FT8 – 8 frequency shift keying format. Signal is 50 Hz wide. Transmit and receive cycle is 15 seconds. Needs accurate time source on computer. Minimal data is exchanged to complete a QSO (location, Signal Strength, 73).

Which Mode to Use?

- FT8 has a bit of a learning curve.
  - Need to learn the software.
  - Need to tweak settings to make it work.
  - Need exact time sync.
- For many hams this is a fun challenge.
- FT8 is about making a radio contact. It does not enable conversations. Designed for making fast QSOs with weak, fading signals.
- When the bands are poor you can make radio contacts.

Weak Signal S/N Limits

Weak-Signal S/N Limits

Mode	(B = 2500 Hz)
SSB	~+10 dB
MSK144	- 8
CW, "ear-and-brain"	-15
FT8	-21
JT4	-23
JT65	-25
JT9	-27
QRA64	-27
WSPR	-31

FT8 Accounts for Nearly Two-Thirds of HF Activity

- Mode of choice for 60% of HF operators
- FT8 activity is nearly 85% on 6 meters
- FT8 upswing has come at the expense of phone, CW, RTTY, PSK and other modes
- Most dramatic increase of nearly 29% in the past year
- FT8 occupies vastly less spectrum than traditional ham radio operating modes