

# Data Modes

For all occasions

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# Why Data modes

- \* CW and Hell the original data modes – “Hell” dates back to 1920.
- \* Modern techniques and FEC have improved data rates and error free transmission.
- \* Data provides efficient use of RF and increased range.
- \* Worked well with low power and less than ideal antennas.
- \* 10 to 20w (suitable for M3/M6) friendly.

# So many to choose...

- \* We have been fortunate, many very talented amateurs have developed free-to-use modes.
- \* Each data mode has advantages and disadvantages.
- \* Most of the software required is also free.
- \* Lets look at the basic setup and software.

# Basic setup

- \* In its simplest form, to decode you just need to feed audio into your computer.
- \* If your TXM has a sound card built in you're sorted !
- \* If you want to TX you may need an audio interface.
  
- \* Why not start with RX and see how you get on.
  
- \* If you do TX remember "No ALC" and don't overdrive the output audio levels.

# Software

- \* Most software is windows, but some will run on other platforms.
- \* HRD (both free and paid)
- \* Fldigi (free) Windows and MAC
- \* No one program supports every digital mode.
- \* You will need some mode specific programs.
  
- \* Start with HRD or Fldigi for good multi mode support.

# Advantages / Disadvantages

Mode	Advantages	Disadvantages
RTTY	Fast, high power, easy to tune.	No FEC, bigger is better. Doesn't cope well under some condx.
PSK	Robust, low power	No FEC. Doesn't cope well under some condx
Olivia	FEC, choice of modes	Slow
JT65	FEC, very robust	Slow, not a chat mode
JT9	FEC, even more robust	Slow, not a chat mode
WSPR	FEC, very robust	Slow, not a chat mode
Slowscan TV	You can send pictures	Slow, bandwidth
MFSK	FEC, robust, fast	Difficult to tune
PSK SIM31	FEC, robust, auto qso	Looks like PSK, special program.

# Mode choice is essential

- \* Want to simply see who can hear you – WSPR
- \* Interested in working a noisy 80M – Olivia
- \* Want a quick “macro based qso” – PSK
- \* Enjoy chatting or contesting in QRO - RTTY
- \* Low power “point and click” qso – JT65
  
- \* Every mode has some advantage.

# How can I identify what I hear?

- \* That's often a challenge, you tune round and hear data...but what mode.
- \* Using the modes helps, but even then its hard sometimes.
- \* RSID can help, as this sends an identification ID for the mode.
- \* Some modes are impossible to identify and its important you know this..



# Identifying Digital Modes

- \* Contestia, Olivia, ROS, MFSK all look identical. If you don't use RSID no one will decode you.
- \* Online resources here is what they look like [http://www.george-smart.co.uk/wiki/Digital\\_Modes\\_Waterfall](http://www.george-smart.co.uk/wiki/Digital_Modes_Waterfall)
- \* And look and sound <http://www.w1hkj.com/FldigiHelp-3.21/Modes/>

# Want to work JA on 10w?

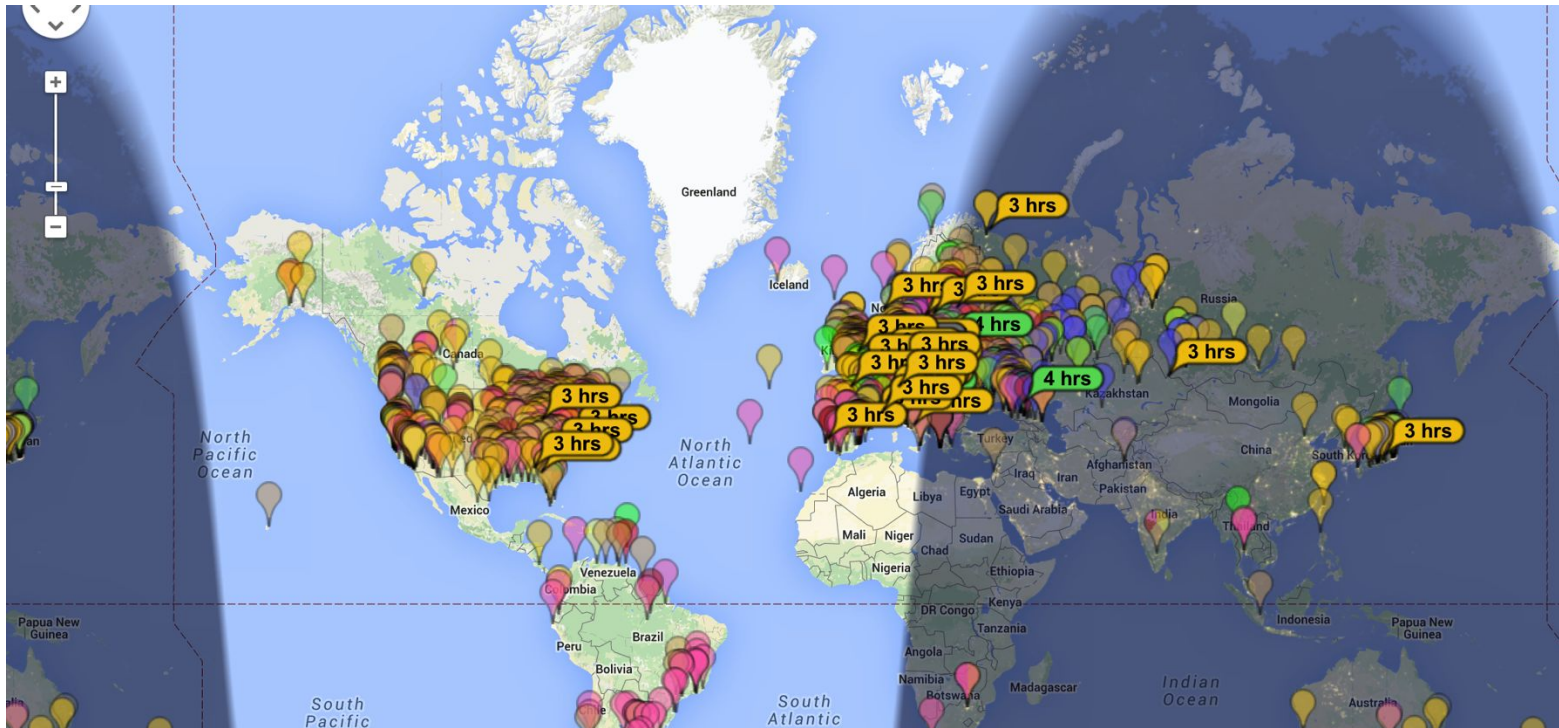
- \* Unless you have a very good antenna system its unlikely to happen on phone. While shouting into a mic can be fun, your power is spread over 3 KHz.
- \* Using a data mode (including CW) will make much more efficient use of the band, and ensure your signal goes further.
- \* Some modern digital modes out perform CW !!

# Some modes require dedicated software

- \* WSPR, JT65, JT9, SIM31 require software.
- \* This can present a challenge, as CAT control and accurate PC clock is essential.
- \* Imagine TXM and then almost instantly being able to see who received you. JT65 and JT9 both have that advantage, and unlike WSPR you can make a QSO.
- \* PSK reporter provides online reception reports.

# PSK Reporter

Not just PSK despite the name.



# Points To Remember.

- \* Each mode has a typical frequency, try to follow this protocol.
- \* TX Audio levels are very important.
- \* Measuring your TX power can be difficult
- \* Using RSID helps others find you and answer
- \* 5MHz is ideal for a data ragchew (Olivia 16 on 5.3665)
- \* Some modes require a very accurate PC clock (WSPR, JT9, JT65) to +or- 1 second.

# Experiment

- \* Why not setup a sked and experiment
- \* Many German stations still use Hellscriber, and if you call CQ its distinctive sound will often get results.
- \* Try low power QRP or QQRP data modes, how far can you work on 200 mW