

Using JT4 on 10ghz

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Overview

- Technical overview of JT4
- Some interesting QSOs

How JT4 Works

- 2 Callsigns and a Grid packed into 72 bits.
- Error Correction Codes expand to 206 bits
- Transmission uses 2-bit “symbols”
 - One bit from the message data, the other bit from synchronization data
- Symbols are transmitted using audio frequency-shift keying between 4 tones
 - A – G sub-modes indicate tone spacing: 17.5hz to 1260hz bandwidth
- Data Rate is 4.375 baud

JT4F Message

WSJT 9.7 r3639 by K1JT

File Setup View Mode Decode Save Band Help

Moon
Az: 233.39
El: 9.46
Dop: -178
Dgrd: -4.7

17.7 Time (s) Mon_140816_134900

FileID	Sync	dB	DT	DF	W						
133600	5	-15	-0.1	101	28	*	KC0IYT	WA2VOI	EN34	1	0 C
134900	5	-15	-0.3	39	11	*	73	73		1	0 A

134900 1 1/1 KC0IYT WA2VOI EN34 1 0
134900 2 1/1 73 73 1 0

Log QSO Stop Monitor Decode Erase Clear Avg Include Exclude TxStop

To radio: KC0IYT Lookup
Grid: Add

2015 Mar 15 17:47:02 Dsec 0.0

Sync 1 Zap
Tol 400 AFC
MinW A Freeze
Tx First
Rpt: -20
Gen Msgs Auto is Off

0.9997 1.0006 JT4F Freeze DF: 0 Rx noise: -6 dB T/R Period: 60 s Receiving

Options

Station parameters
My Call: KC0IYT
Grid Locator: EN34js
ID Interval (m): 10
PTT Port: rigctl:localhost
Audio In: 0
Audio Out: 0
Rate In: 1.0
Rate Out: 1.0
PTT line: DTR RTS
Distance unit: mi km

Message templates for FSK441, ISCAT, JT
EU NA
Report Grid
My tag His tag
Reset Reset and Gen Msgs
Tx 1: %T %M
Tx 2: %T %M %R
Tx 3: R%R
Tx 4: RRR
Tx 5: 73
Tx 6: CQ %M

Miscellaneous
DXCC prefix:
Source RA: 0
Source DEC: 0
AzElDir: /home/glen
Echo Avg: 1
RIT (Hz): 0
Dither (Hz): 0
CW Speed (WPM): 15

SpecJT by K1JT

Options Freq: 320 DF: -950 (Hz) BW: Speed: 1 2 3 4 5 H1 H2

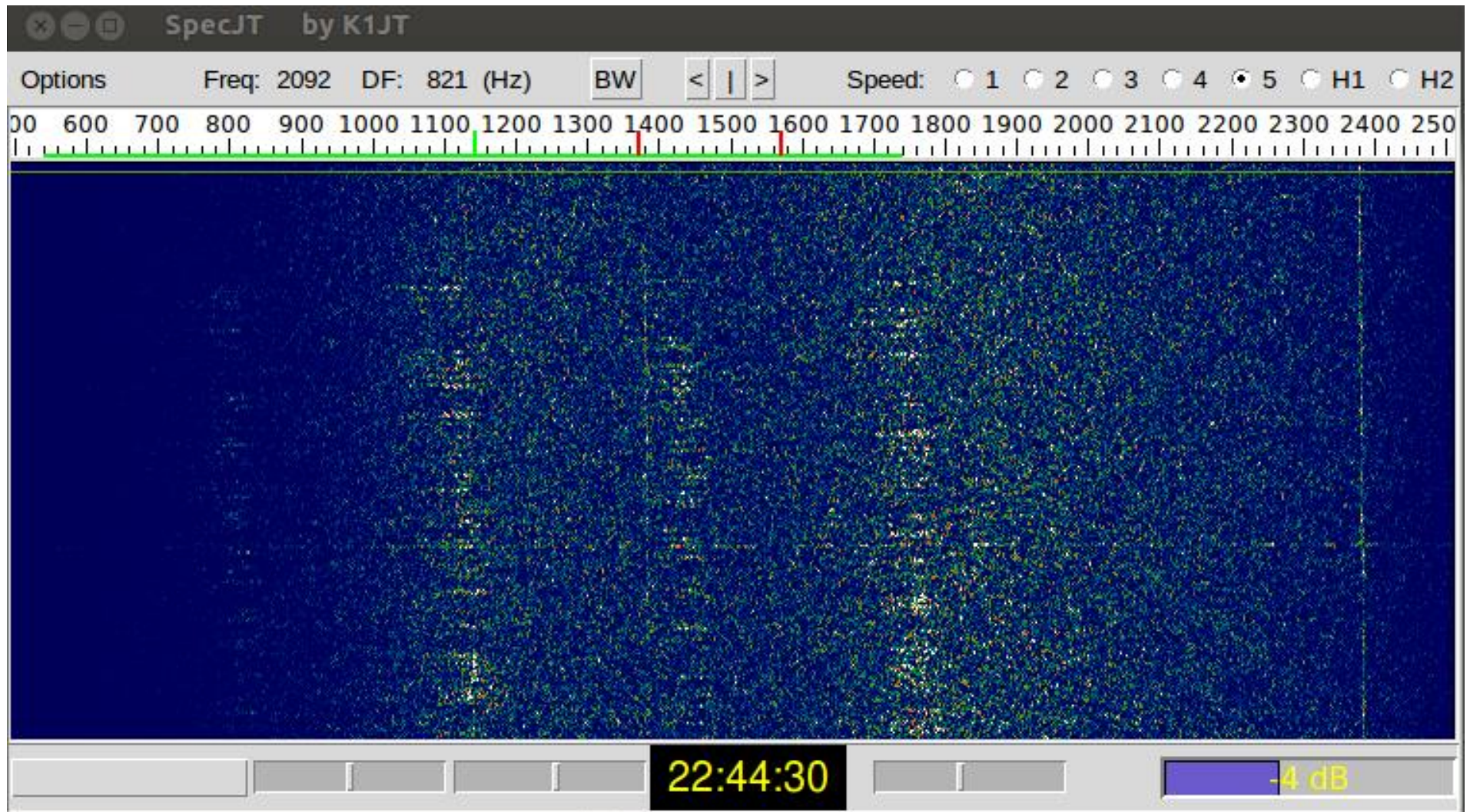
00 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300

17:47:02 -20 dB

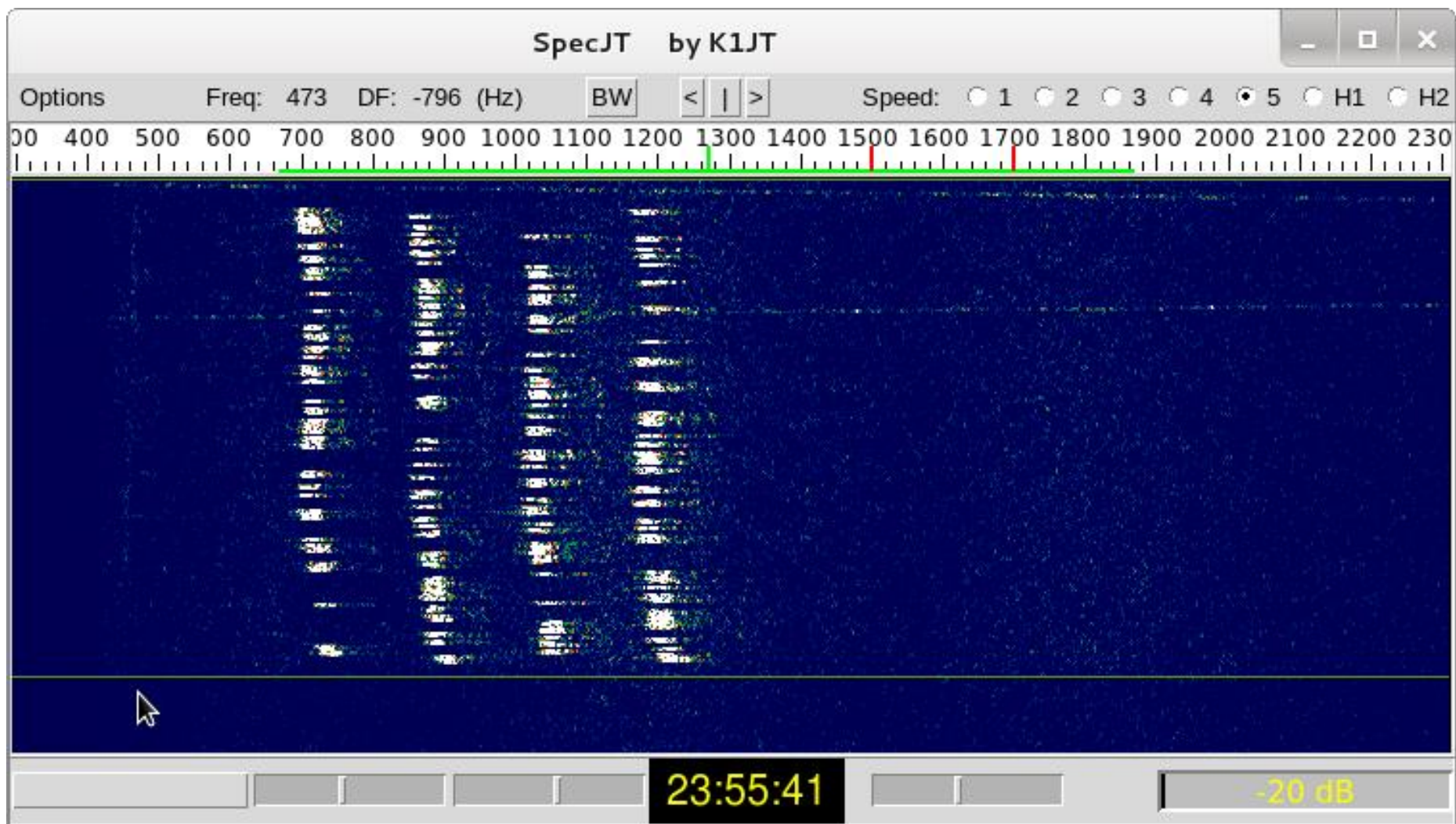
Some QSOs

- SBMS Contest
- August Trip
- 10GHZ-and-Up

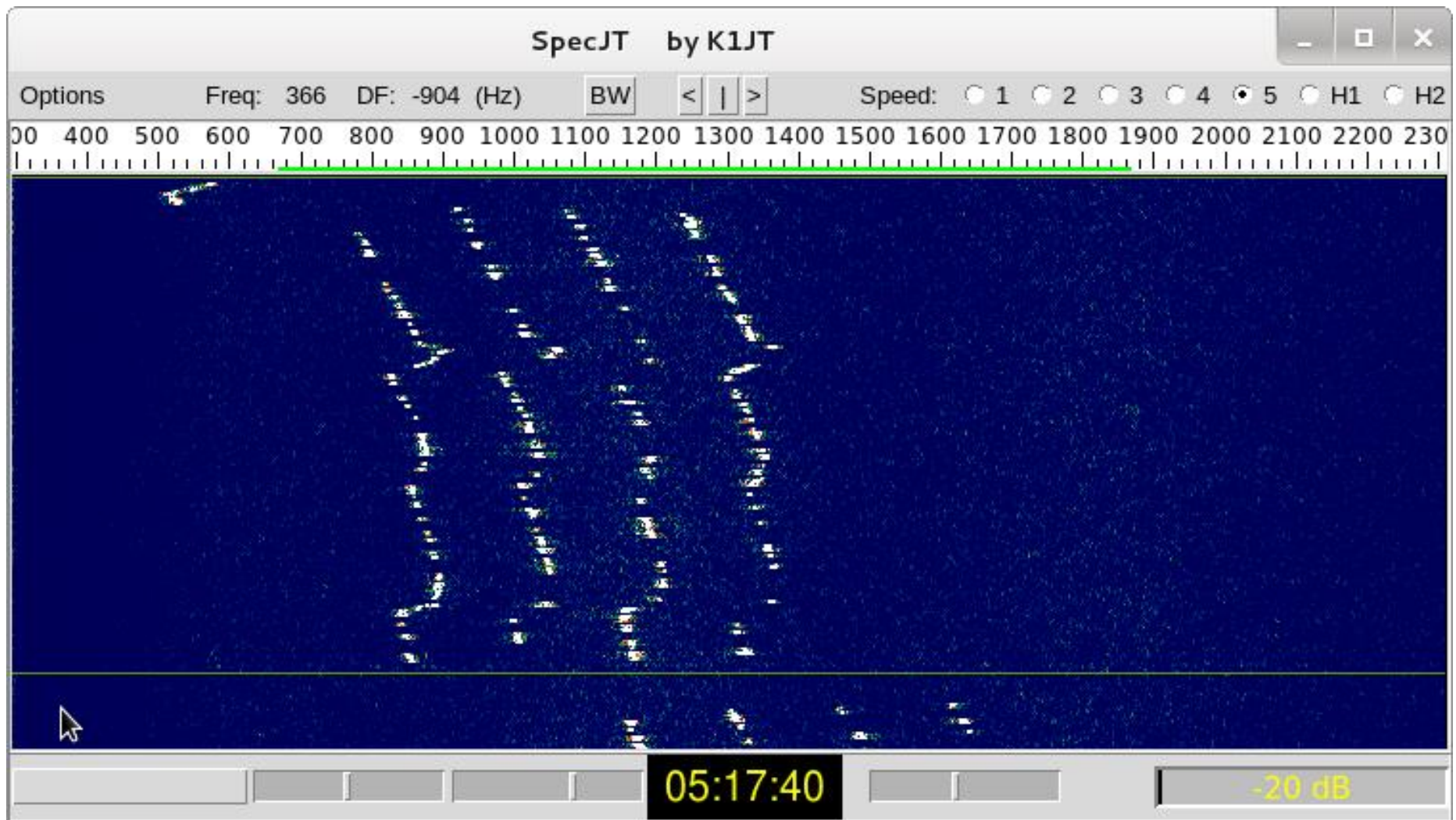
2014 SBMS Contest



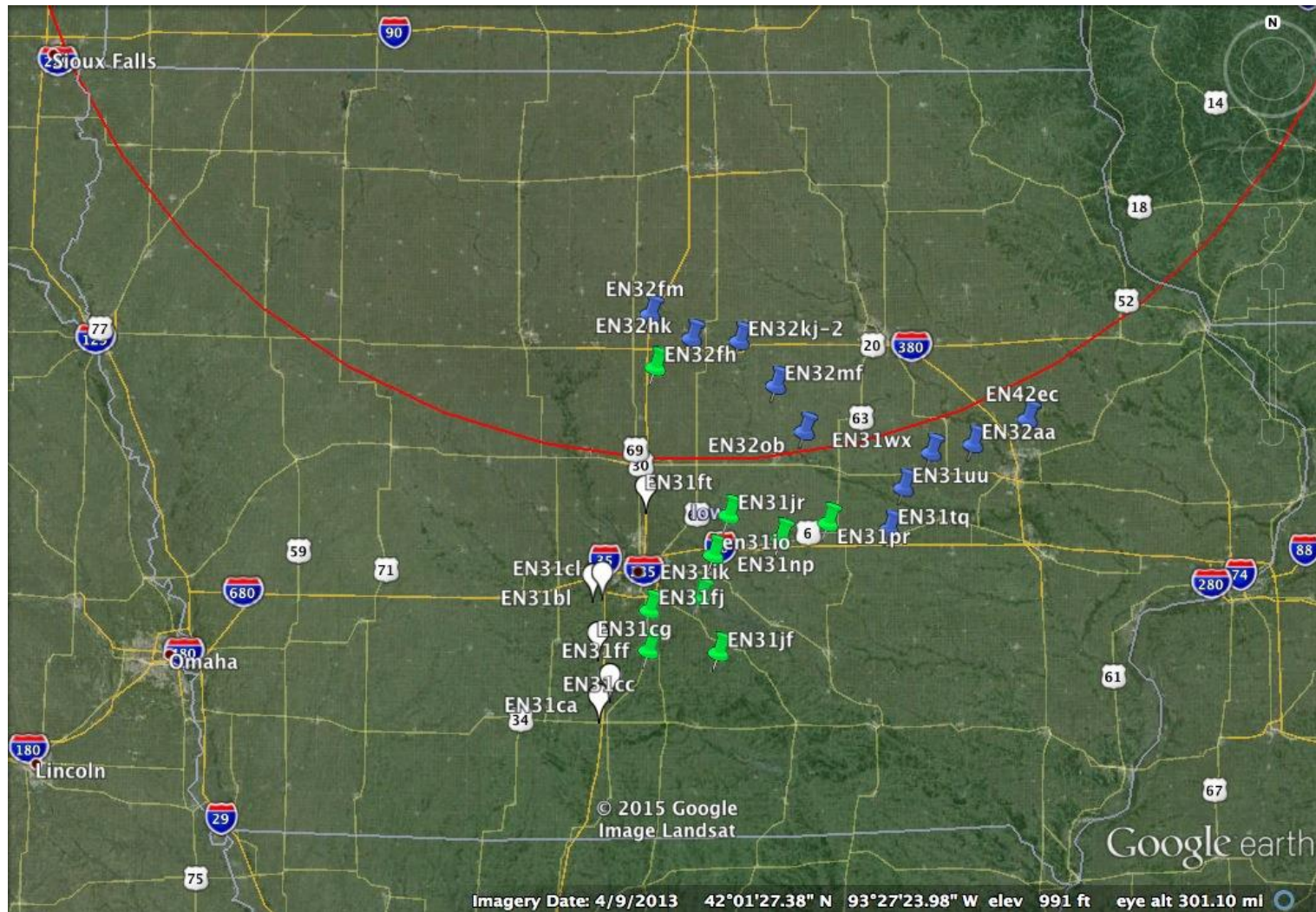
August – VE4MA



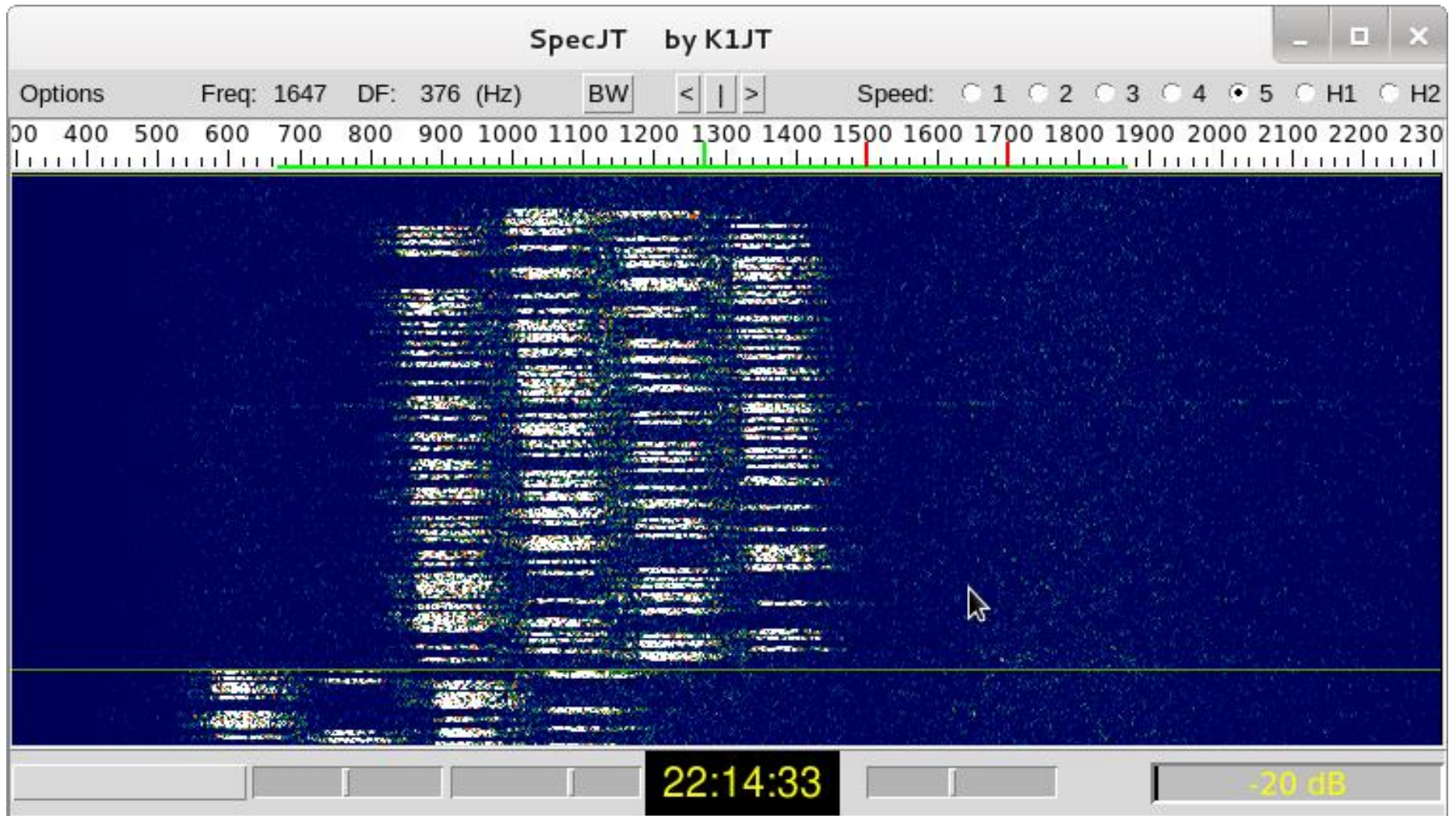
August - NT0V



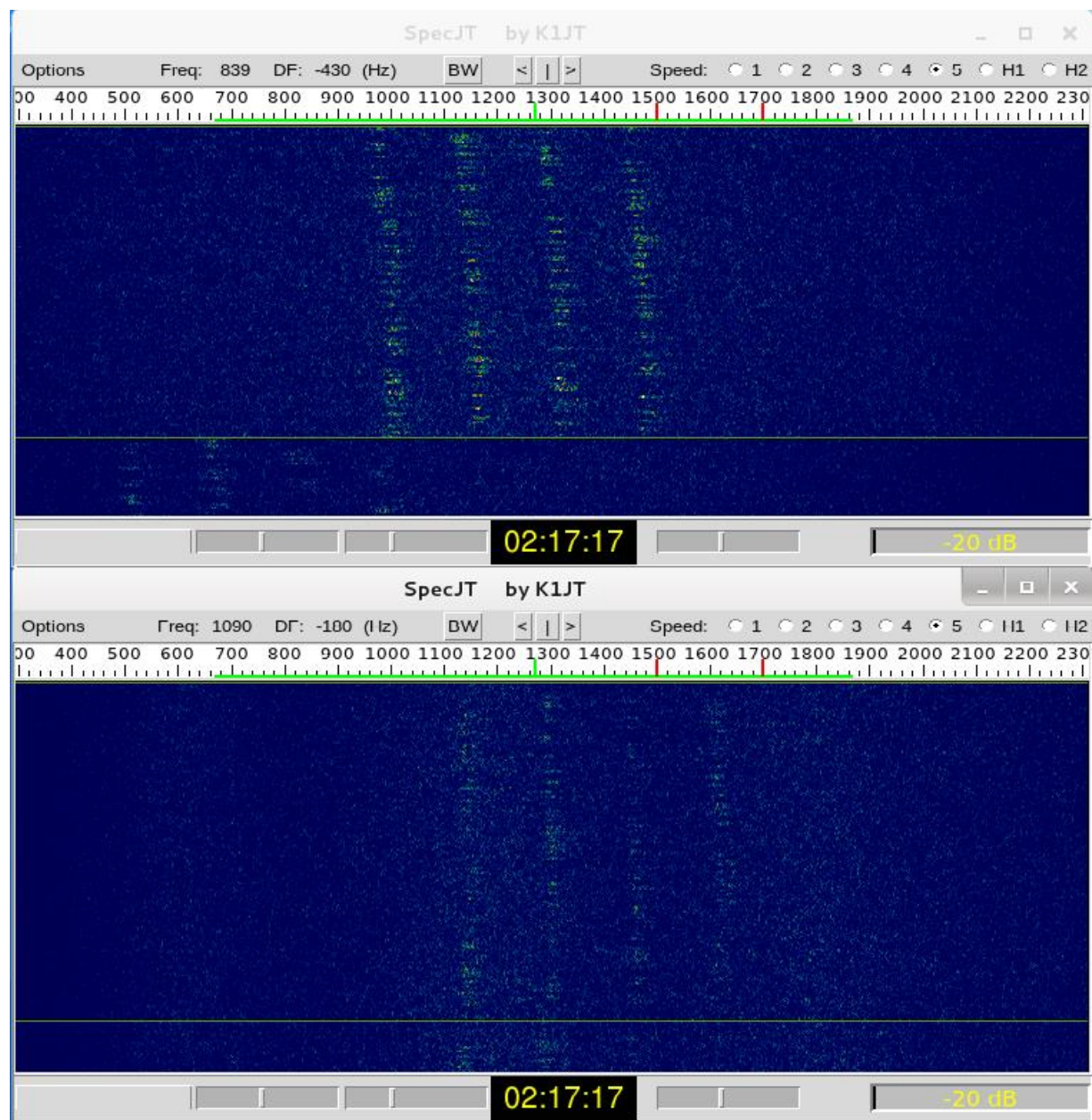
2014 ARRL 10G Contest



EN31pr – Rain on the path



EN31ff



Conclusions

- JT4 works well on 10ghz
- An A32 with a good 10mhz oscillator gives adequate frequency accuracy and stability
- Pointing accuracy is important
- Going further from the stations you're working is a higher risk of working nothing
- More stations = More fun
- Wear sunscreen

References

- WSJT
<http://physics.princeton.edu/pulsar/k1jt/wsjt.html>
- Joe Taylor papers:
 - "The JT65 Communications Protocol"
 - "Open Source WSJT: Status, Capabilities, and Future Evolution."
 - WSJT 9.0 Supplement (in source tree)