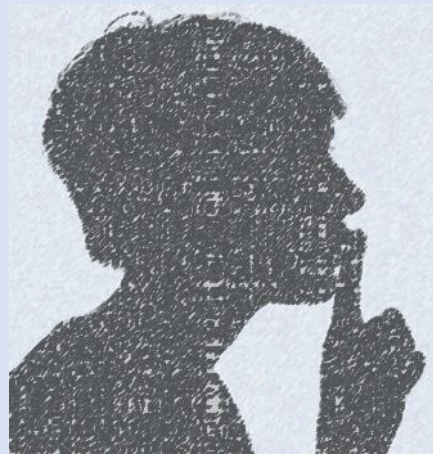




WSPR: Weak Signal Propagation Reporter

Developed by Joe Taylor, K1JT





What is WSPR?

WSPR is a digital protocol “designed for probing potential radio propagation paths using low power beacon-like transmissions.”

-WSTJ-X User Guide

UTC	dB	DT	Freq	Drift	Call	Grid	dBm	mi	
1252	-18	-0.0	28.126080	0	W4WLO	EM50	30	878	
1254	----- Transmitting WSPR -----								10m
1256	-19	0.1	28.126079	-1	W4WLO	EM50	30	878	
1258	----- Transmitting WSPR -----								10m
1300	-18	-0.1	28.126078	-1	W4WLO	EM50	30	878	

Menus

10m **28.124 600**

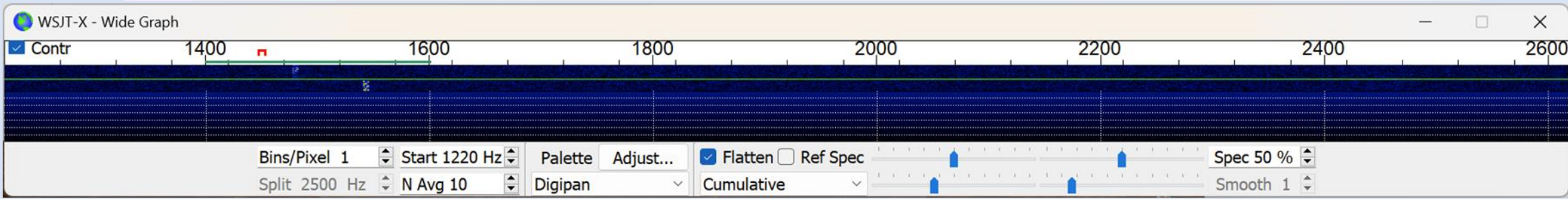
- H
- FT8
- FT4
- MSK
- Q65
- JT65

2023 Aug 11
13:02:59

Tx 1450 Hz Upload spots
 Tx Pct 20 % Prefer Type 1 messages
 Band Hopping No own call decodes

 37 dBm 5 W

Receiving 7100 WSPR WSPR Last Tx: KO4IJH FM18 37 59/120







WSPR: A Propagation Reporter for Antenna Testing???

Disclaimer!



Relative Sensitivity of Communication Modes

Mode	Signal to Noise Ratio Threshold	Power Equivalence
WSPR	-27 dB	5 W
JT65	-24 dB	10 W
Olivia	-17 dB	50 W
PSK31	-7 dB	500 W
CW	-1 dB	2,000 W
RTTY	+5 dB	8,000 W
SSB	+10 dB	25,000 W

[by Dr. Carol F. Milazzo, KP4MD](#)

Signal above Threshold = WSPR Spot SNR + (WSPR Threshold - Mode Threshold) + (Transmitter Power - WSPR Spot Power) + (Antenna gain - WSPR Antenna gain)



NVIS TESTING

1. Set up

2. Run a few iterations at 5 watts

3. Obtain spotting data on

[WSPR.rocks](https://wsprrocks.com)

4. Analyze!

Average search time over 7 searches = 0.3 sec

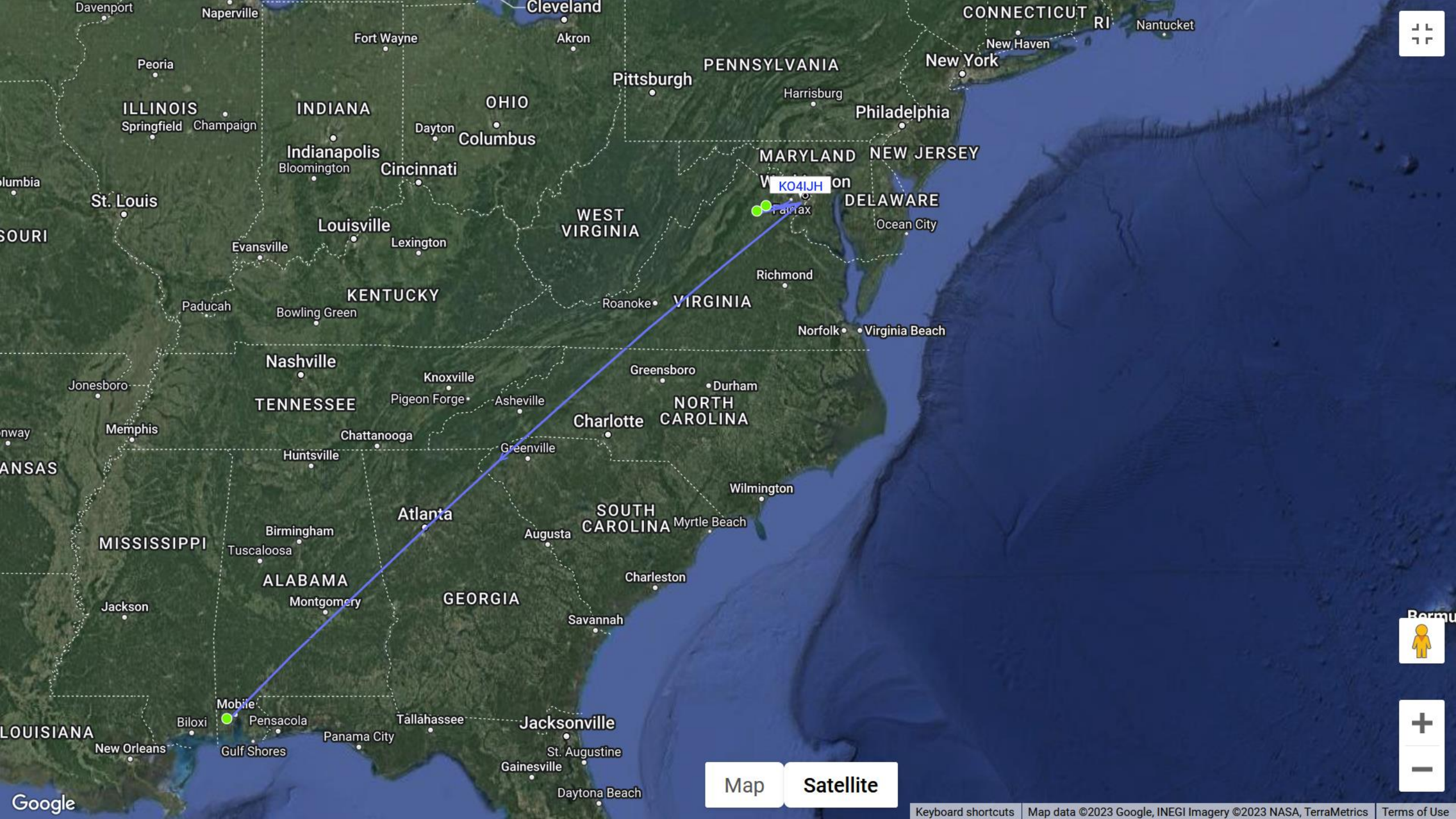
[9 spots] 7,291km 95 avgQ 11 Aug 2023 @ 0901 local

Table options... find duplicates callsign find call

search | saved | locator I001ds, LST 11:42

Click: Date for utc/local • column label to sort • callsign for country info • mode number for mode name • right click callsign to view that spot on the map

Local (y-m-d)	TX	txGrid	RX	rxGrid	MHz	W	SNR	drift	km	Az°	mode	km/W	spotQ	version
2023-08-11 08:58	KO4IJH	FM18kt	KA3BWP	FM18gk	28.12609	5	-23	0	51	215	2	10	4	2.3.0
2023-08-11 08:58	KO4IJH	FM18kt	W4WLO	EM50vj	28.12613	5	-21	0	1378	231	2	276	115	2.1.2
2023-08-11 08:58	KO4IJH	FM18kt	K4YLP/W	EM73rw	28.12609	5	-6	0	857	233	2	171	143	2.2.159-32
2023-08-11 08:58	KO4IJH	FM18kt	HP1COO	FJ08bn	28.126082	5	-14	0	3375	185	2	675	413	2.5.0
2023-08-11 08:58	KO4IJH	FM18kt	K1HTV-4	FM18ap	28.126172	5	-11	0	75	256	2	15	10	SparkSDR
2023-08-11 08:54	KO4IJH	FM18kt	W4WLO	EM50vo	28.126073	5	-16	0	1362	231	2	272	151	2.5.4
2023-08-11 08:54	KO4IJH	FM18kt	K1RA-4	FM18cr	28.126106	5	-24	0	59	261	2	12	4	SparkSDR
2023-08-11 08:54	KO4IJH	FM18kt	K1HTV-4	FM18ap	28.126171	5	-11	0	75	256	2	15	10	SparkSDR
2023-08-11 08:54	KO4IJH	FM18kt	K1RA-PI	FM18cr	28.126073	5	-28	-1	59	261	2	12	3	DS_0.35.1



Washington


Map

Satellite



SNR vs distance

Mouseover or click chart dots/columns for details.

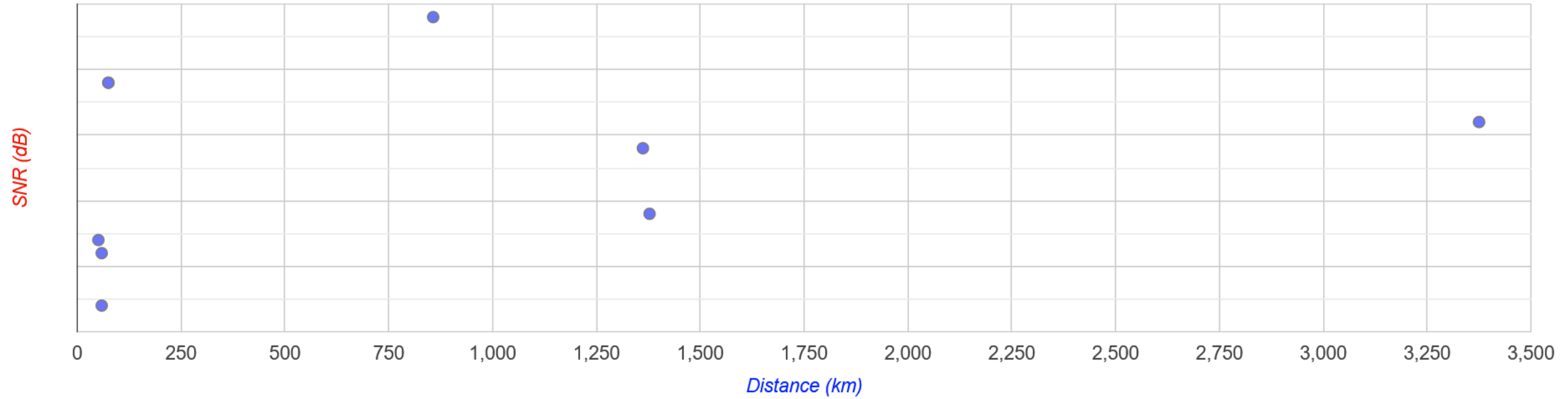
[help](#) | [stats](#) | [charts](#) | [map](#) | [table](#) | [home](#) | 

[↑](#) | [search](#) | [saved](#) | [locator](#) | [I001ds](#), [LST](#) | [11:42](#)

SNR against Distance

Tx = ko4ijh, Rx = any

Click a dot to see that spot on the map.





Analysis: How do we use this data?

- Identify signal strengths within target area
 - Statewide (0-650km)
 - DC-Baltimore Area (0-75km)
- Determine viability of various modes within the target area at given conditions
- Determine what antenna adjustments could be made to improve communications with desired modes
 - Tuning, configuration, antenna type?
- Record findings over multiple test periods and identify trends



Questions?



Thanks and 73

Todd KO4IJH