

# 10m Antenna Selection

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# Objectives, Constraints, Resources

- Wanted to get 30 new countries in the December ARRL 10m Contest
- Most interest in EU: other antennas are adequate for NA, SA, KL7, JA
- No towers or masts are available
- Plenty of tall trees: 48' is an easily-achievable height.

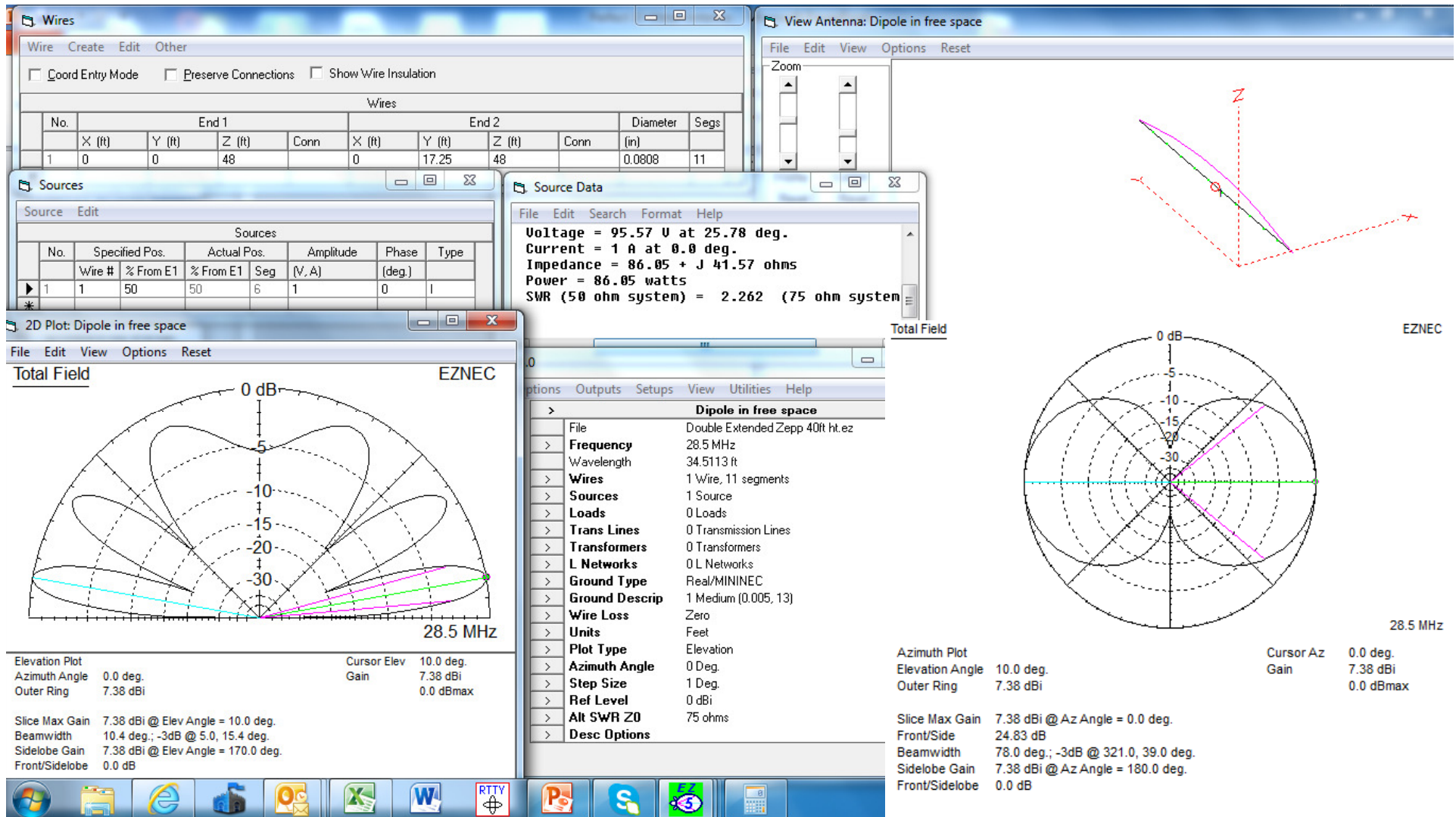
# Steps

- Decide which antenna to build
- Build it
- Install it
- Make it work

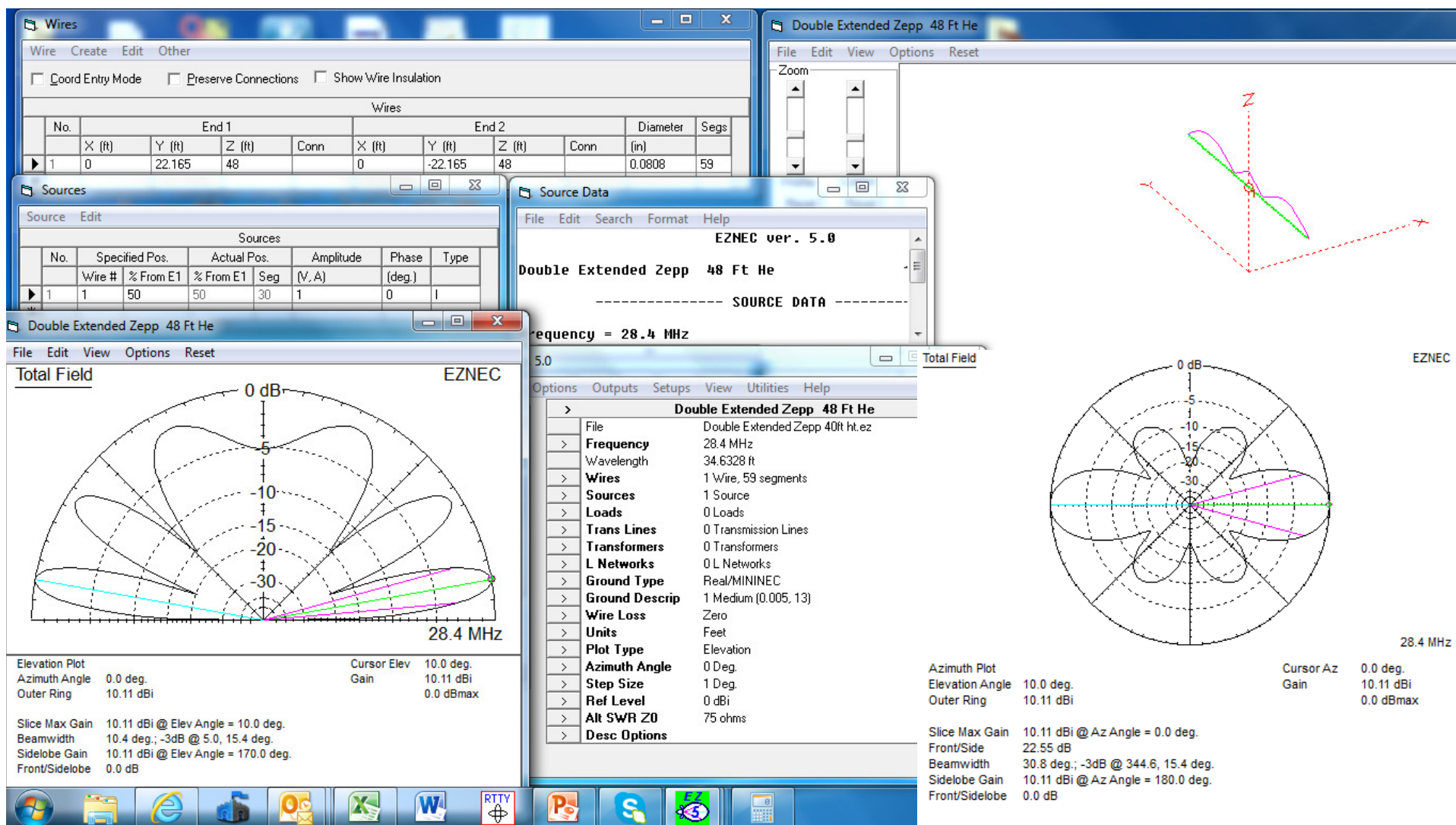
# Which is the BEST 10 Meter Antenna

Antenna (10 Meters)	Height (feet)	Plot Type Azimuth Elevation	Beam Width (deg)	Gain (dBi)	Angle (deg)	Gain Over Dipole (dB)
<b>Dipole</b>	48	A	78.0	7.38	0	0
		E	10.4	7.38	10	
<b>Double Extend Zepp</b>	48	A	30.8	10.27	0	2.89
		E	10.4	10.27	10	
<b>Lazy H 1</b>	48 & 32	A	46.4	13.13	0	5.75
<b>Vertical Center Fed</b>		E	12.4	13.13	12	
<b>Lazy H 2</b>	48 & 30.75	A	46.4	13.71	0	6.33
<b>Vertical Bottom Fed</b>		E	12.3	13.71	12	
<b>Dipole + Reflector 1</b>	48	A	68.6	11.47	0	4.09
1/8 $\lambda$ spacing		E	10.3	11.47	10	
<b>Dipole + Reflector 2</b>	48	A	66.0	12.32	0	4.94
.15 $\lambda$ Spacing		E	11.0	12.32	11	
<b>Delta Loop +Reflector</b>	48	A	72.4	12.84	0	5.46
1/8 $\lambda$ spacing		E	12.4	12.84	12	
<b>Delta Loop +Reflector</b>	48	A	72.2	12.92	0	5.54
.15 $\lambda$ spacing		E	12.4	12.92	12	

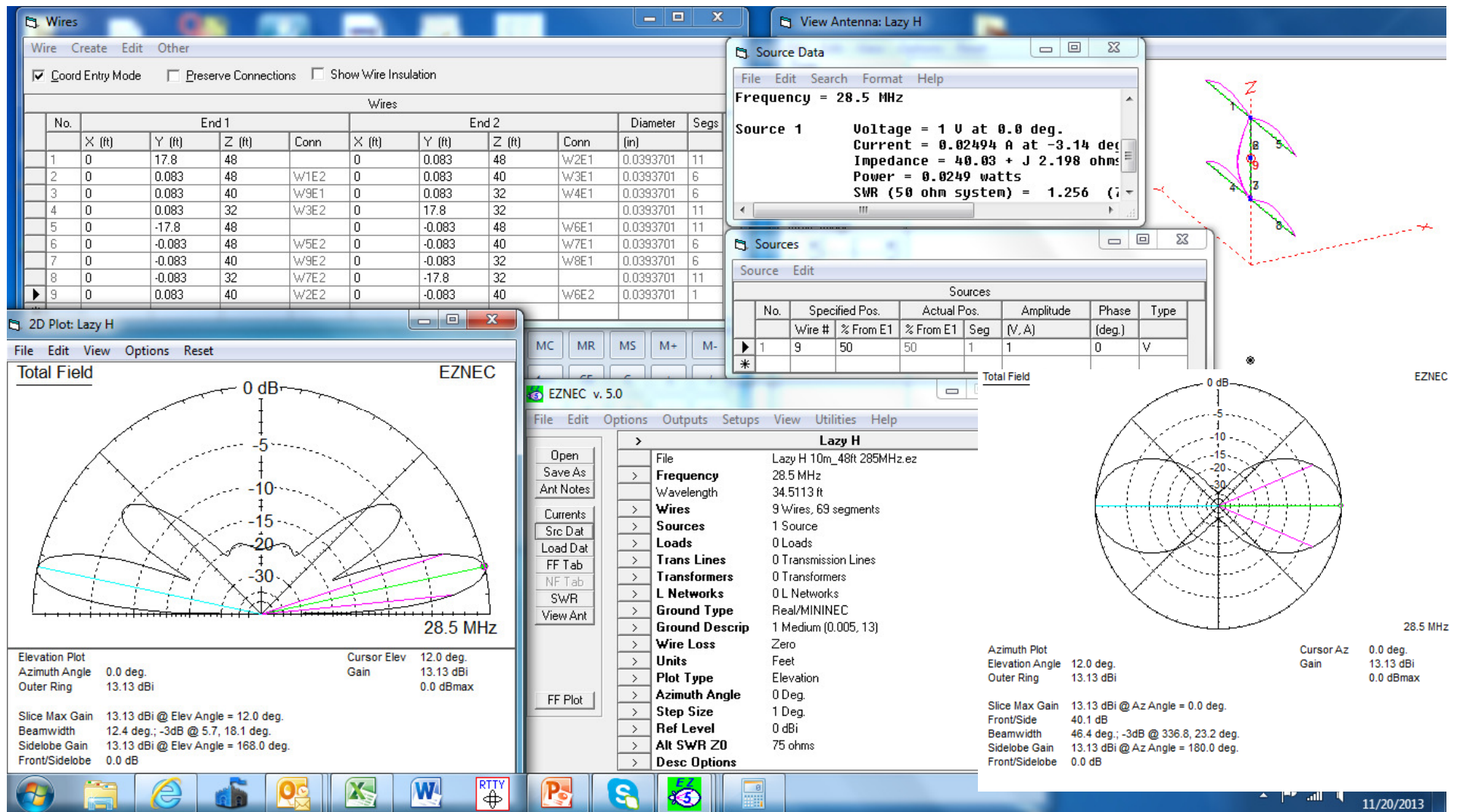
# Dipole, 48 ft Height



# Double Extended Zepp, 48 ft Height

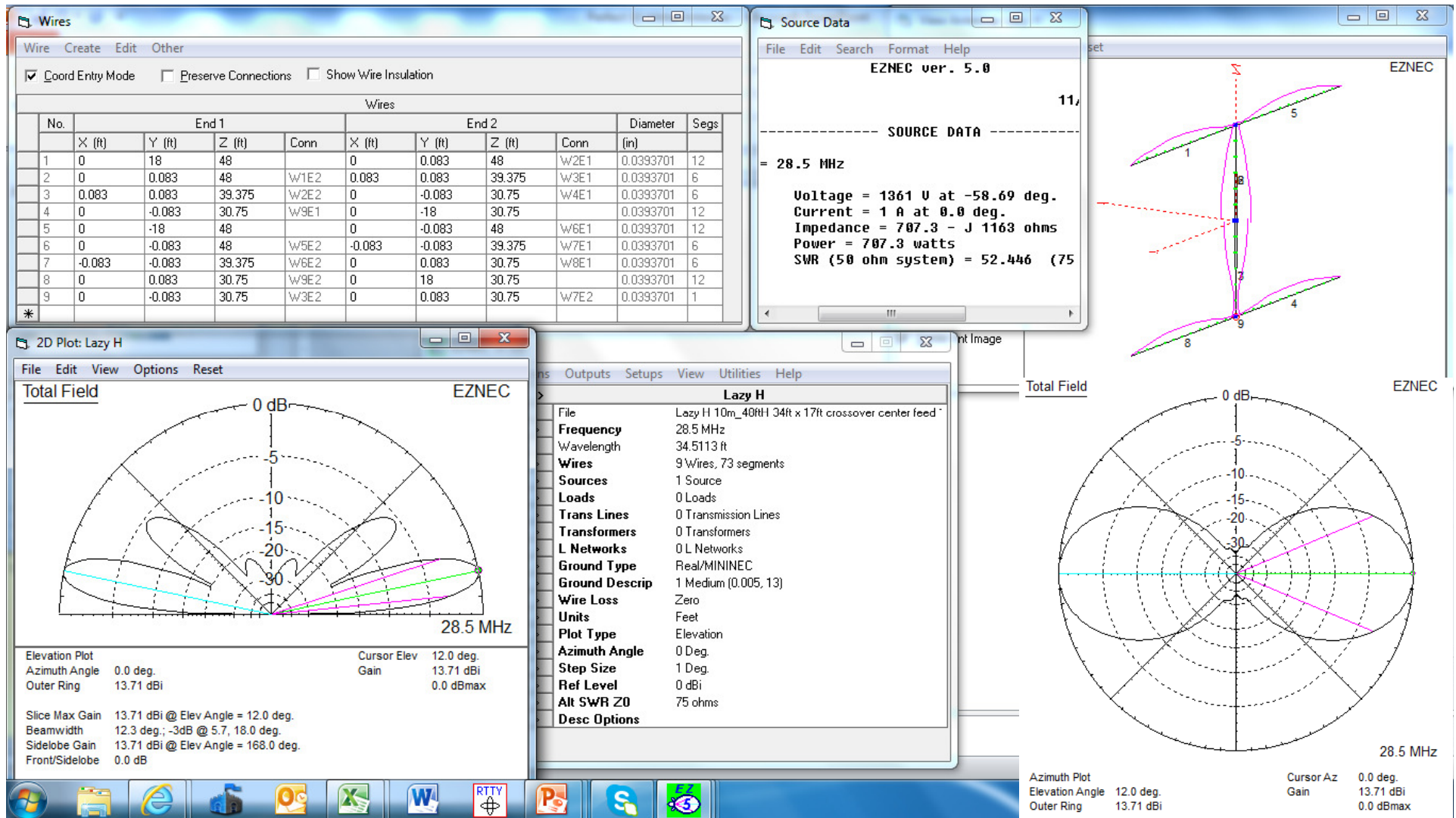


# Lazy H Antenna 1, at 48 Feet Height





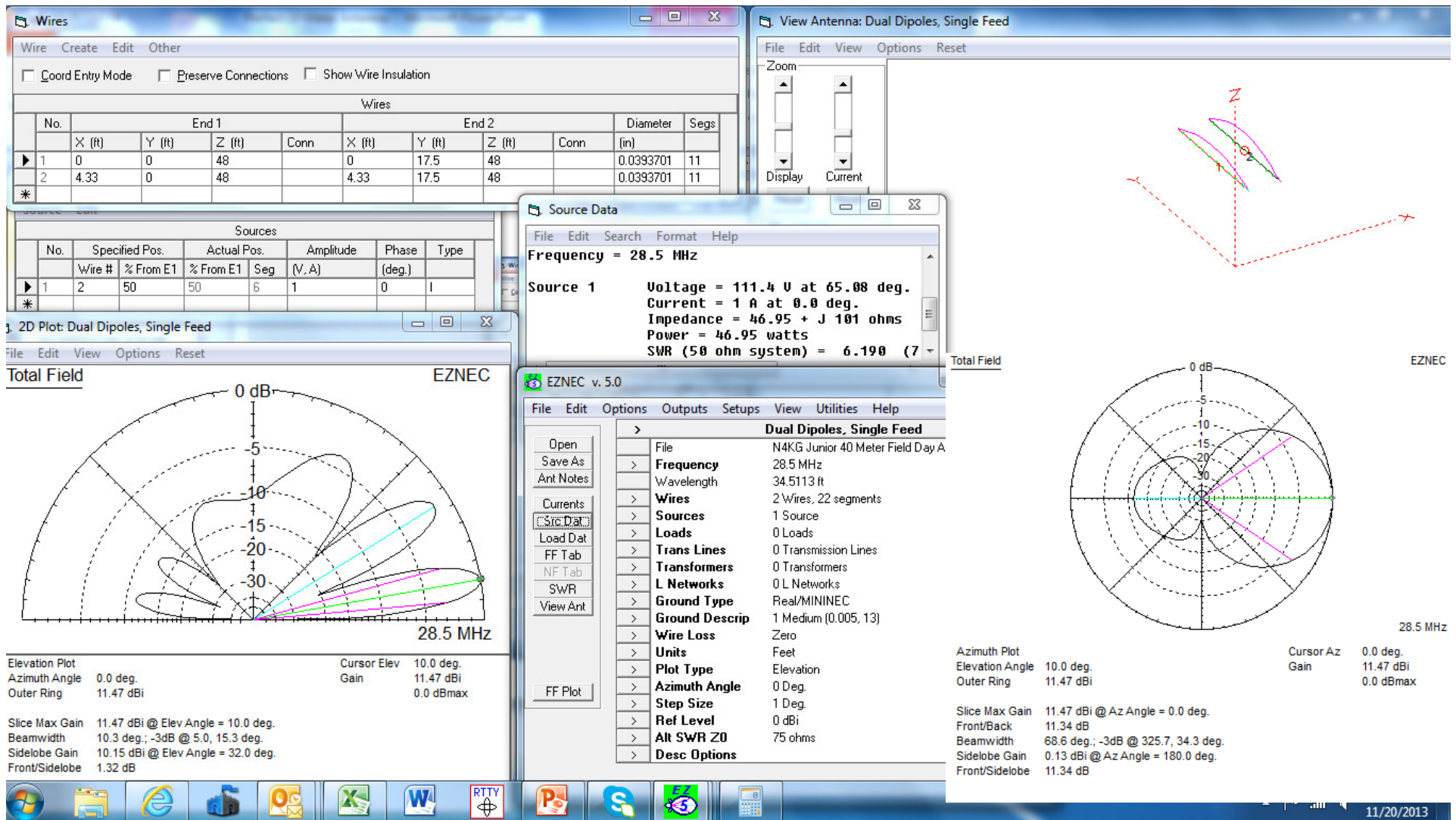
# Lazy H Antenna 2, at 48 Feet Height



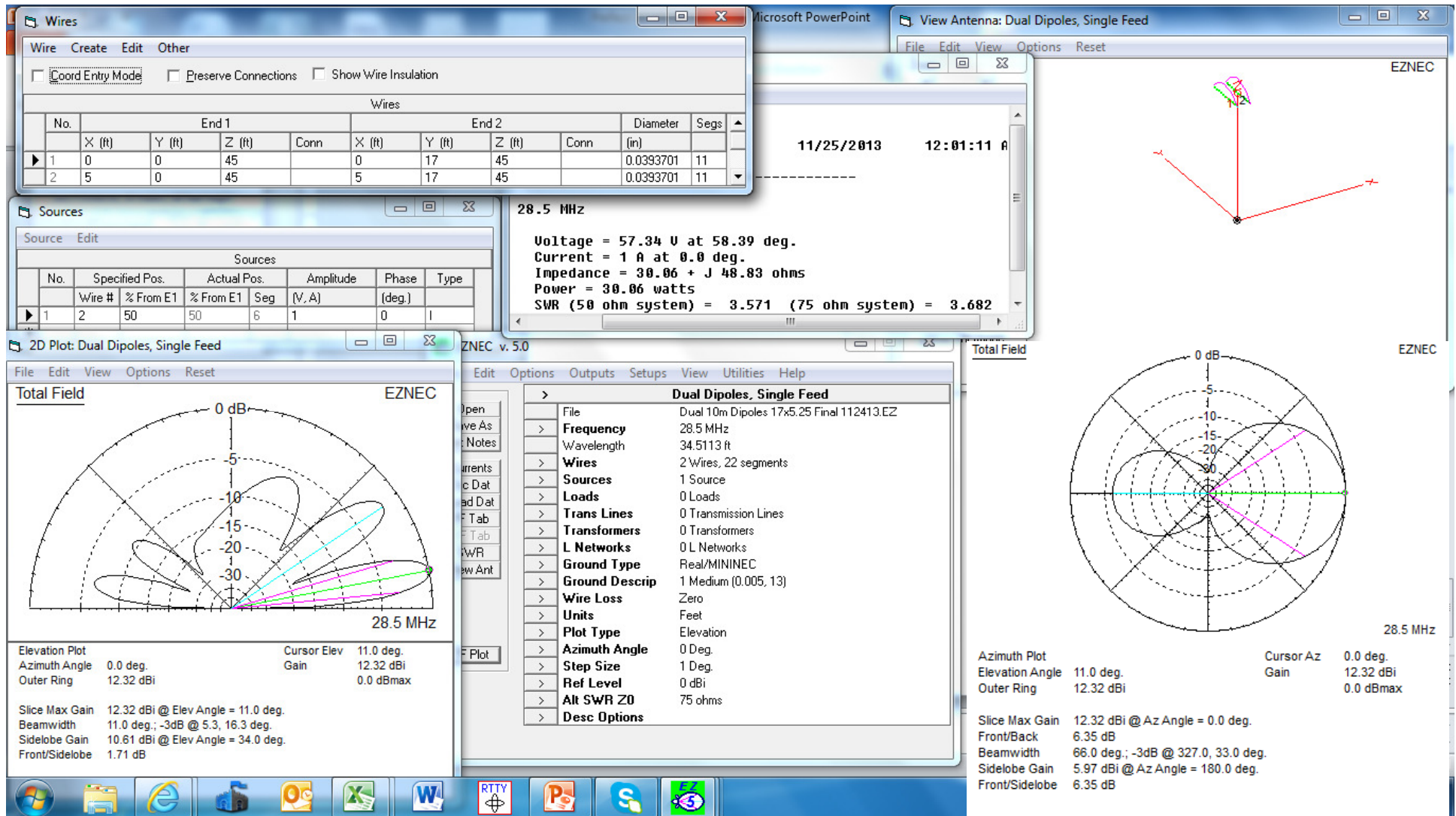
Antenna 2 is fed at base of vertical section



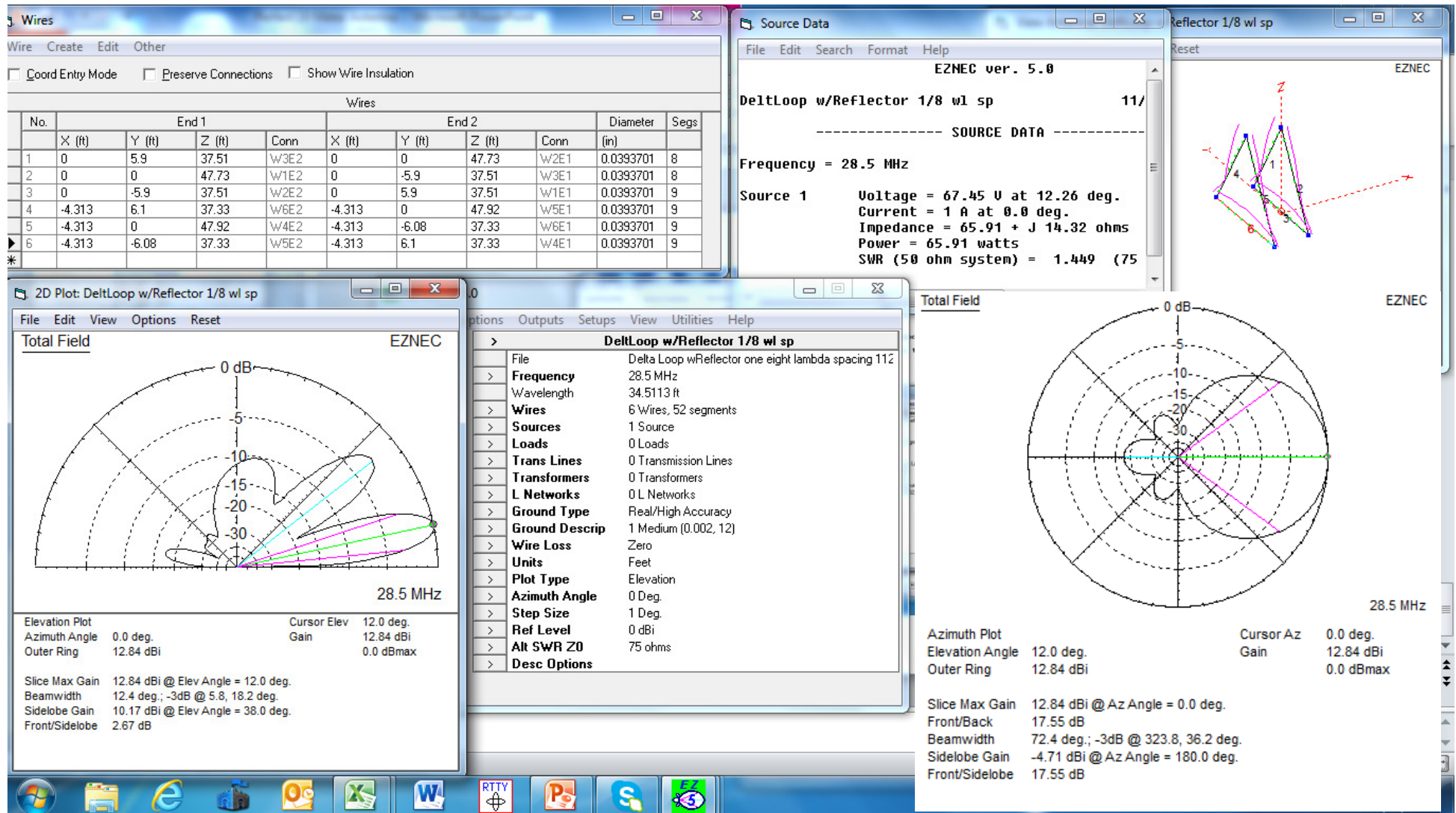
# Dipole with Reflector 1, 1/8 $\lambda$ spacing



# Dipole with Reflector 2, .15 $\lambda$ spacing

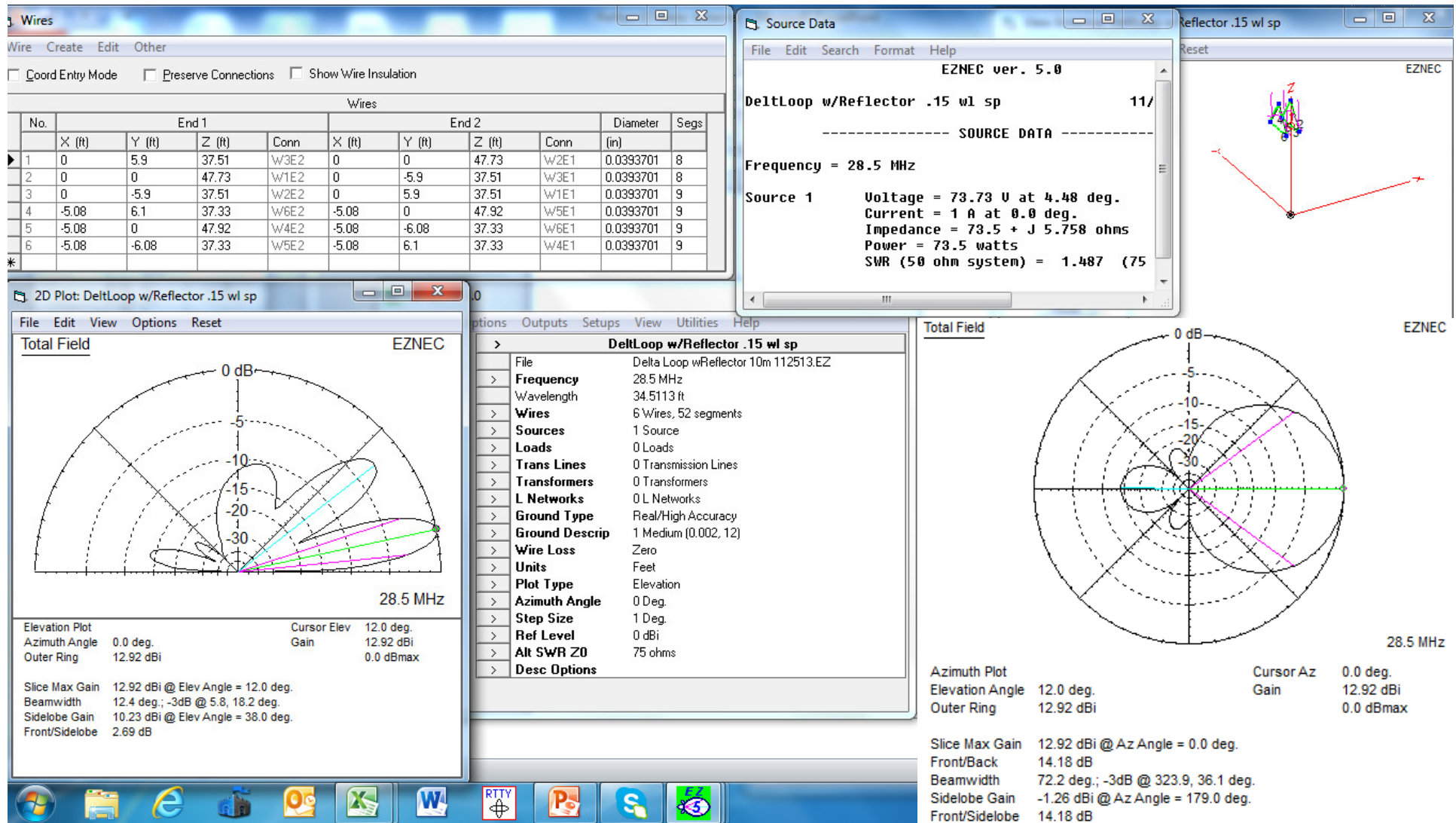


# Delta Loop with Reflector, 1/8 $\lambda$ Spacing





# Delta Loop with Reflector, .15λ Spacing



# Selection Summary

Antenna	Azimuth	Elevation	Construction	Gain
Dipole	Wide, bidirectional	Too many lobes	Easy	Lousy
Double Extended Zepp	Narrow, bidirectional	Too many lobes	Easy	Marginal
Lazy H 1 Vertical Center Fed	Good	Very good	2 or 3 supports at 2 levels	Good
Lazy H 2 Vertical Bottom Fed	Good	Very good	As above, feedpoint also a problem	Very Good
Dipole + Reflector 1 1/8 $\lambda$ Spacing	Wide, 10dB F/B	High-angle lobe	2 support points	Good
Dipole + Reflector 2 0.15 $\lambda$ Spacing	Wide, 5dB F/B	High-angle lobe	2 support points	Good
Delta Loop & Reflector 1/8 $\lambda$ Spacing	Wide, good F/B and F/S	Low principle lobe	Rotatable Bamboo frame	Good
Delta Loop & Reflector 0.15 $\lambda$ Spacing	Wide, good F/B, excellent F/S	Low principle lobe	Rotatable Bamboo frame	Good

# Build It

	Driven Element	Reflector
Loop Length	35' 4 3/4"	36' 4 1/2"
Side Length	11' 9 1/2"	12' 2 1/2"

Wires											
No.	End 1				Conn	End 2				Diameter (in)	Segs
	X (ft)	Y (ft)	Z (ft)			X (ft)	Y (ft)	Z (ft)			
1	0	5.9	37.51	W3E2	0	0	0	47.73	W2E1	0.0393701	8
2	0	0	47.73	W1E2	0	-5.9	37.51	37.51	W3E1	0.0393701	8
3	0	-5.9	37.51	W2E2	0	5.9	37.51	37.51	W1E1	0.0393701	9
4	-5.08	6.1	37.33	W6E2	-5.08	0	47.92	47.92	W5E1	0.0393701	9
5	-5.08	0	47.92	W4E2	-5.08	-6.1	37.33	37.33	W6E1	0.0393701	9
6	-5.08	-6.1	37.33	W5E2	-5.08	6.1	37.33	37.33	W4E1	0.0393701	9

Microsoft UTC Conve... iTunes HamRadio...

EZNEC v. 5.0

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**DeltLoop w/Reflector 10m**

File Delta Loop wReflector as built 10m 113013.EZ

Frequency 28.5 MHz

Wavelength 34.5113 ft

Wires 6 Wires, 52 segments

Sources 1 Source

Loads 0 Loads

Trans Lines 0 Transmission Lines

Transformers 0 Transformers

L Networks 0 L Networks

Ground Type Real/High Accuracy

Ground Descrip 1 Medium (0.002, 12)

Wire Loss Zero

Units Feet

Plot Type Azimuth

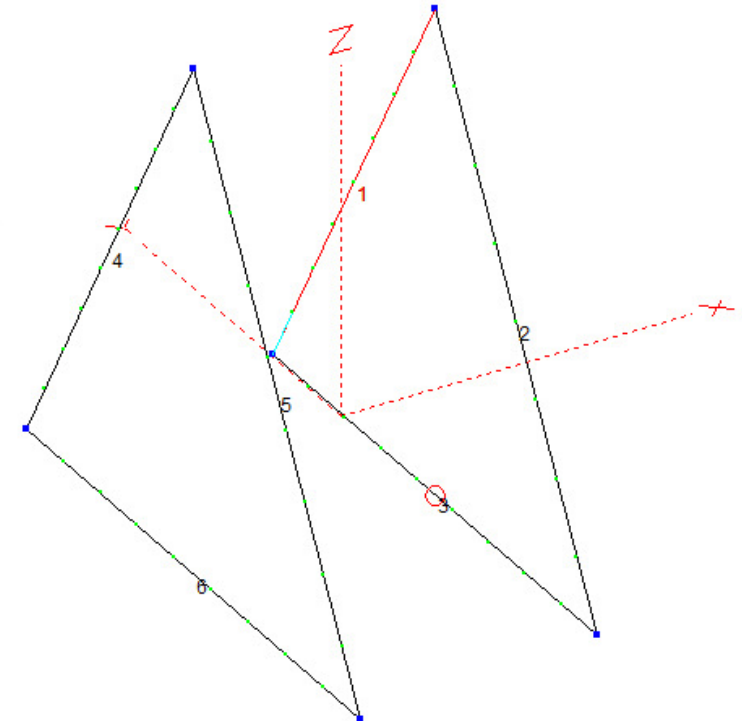
Elevation Angle 12 Deg.

Step Size 1 Deg.

Ref Level 0 dBi

Alt SWR Z0 75 ohms

Desc Options





# Build It

Modeled Impedance  $75.7 + j 6.3 \Omega$

