# 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.

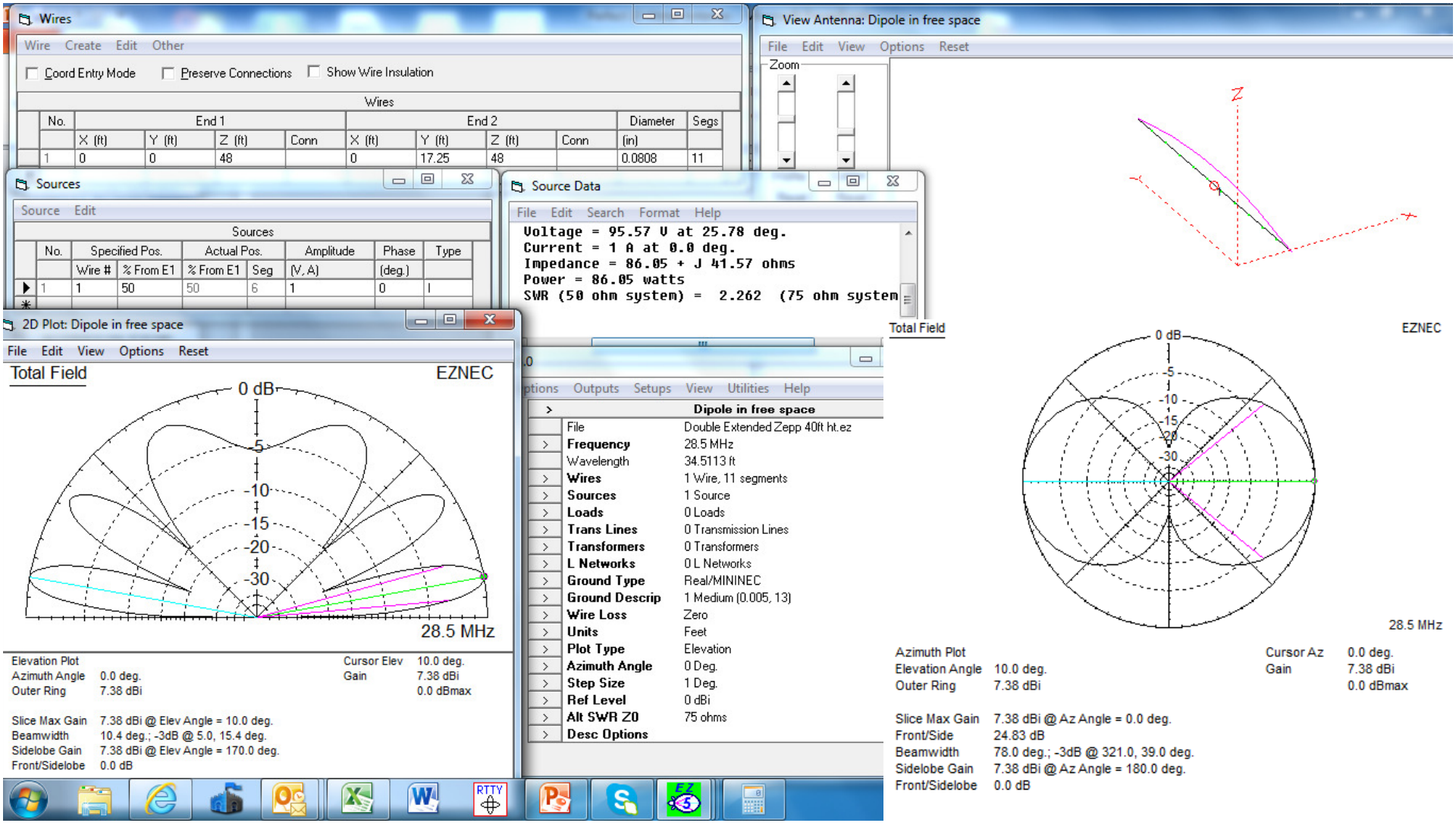
# Steps

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

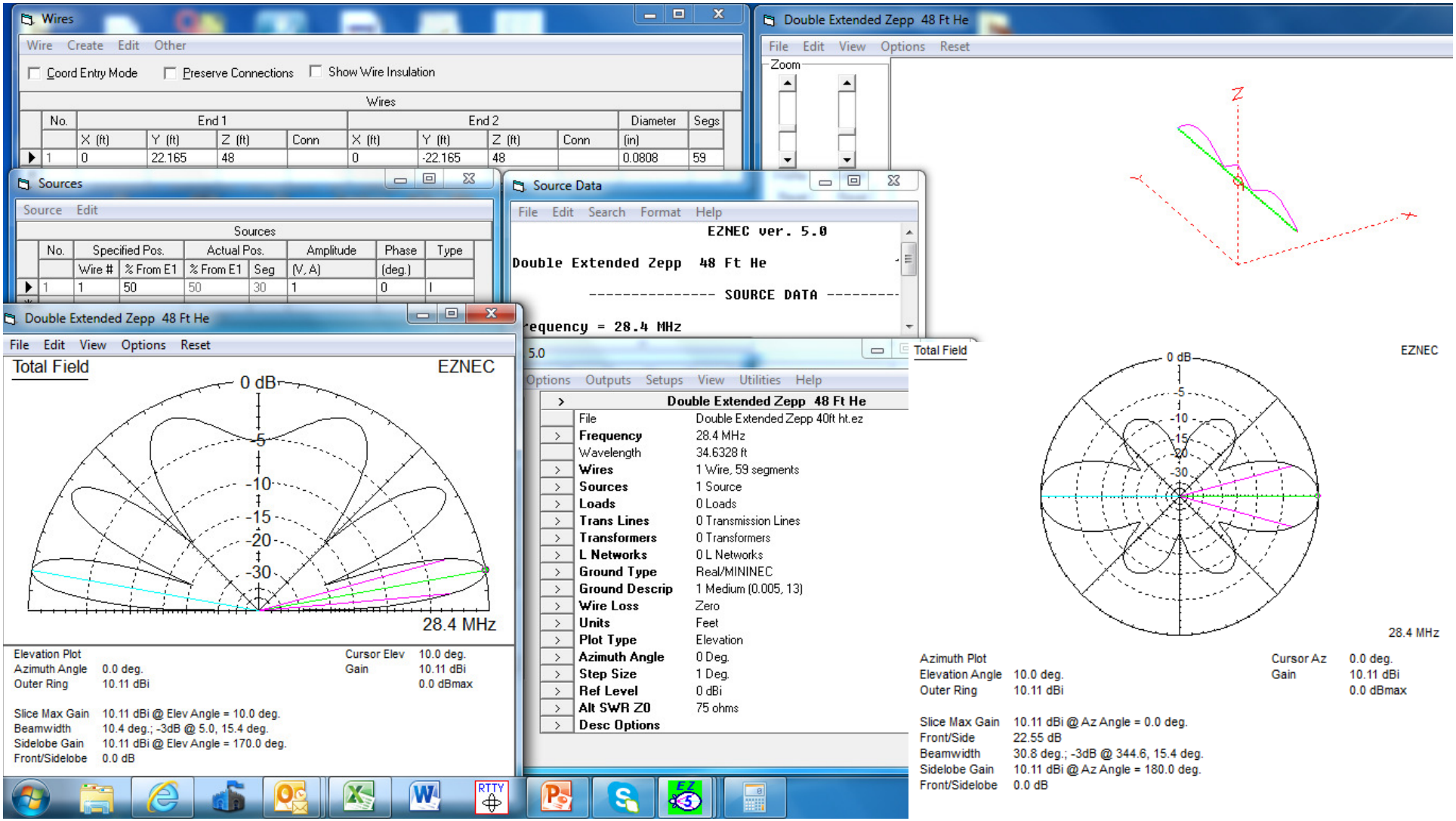
# Which is the BEST 10 Meter Antenna

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

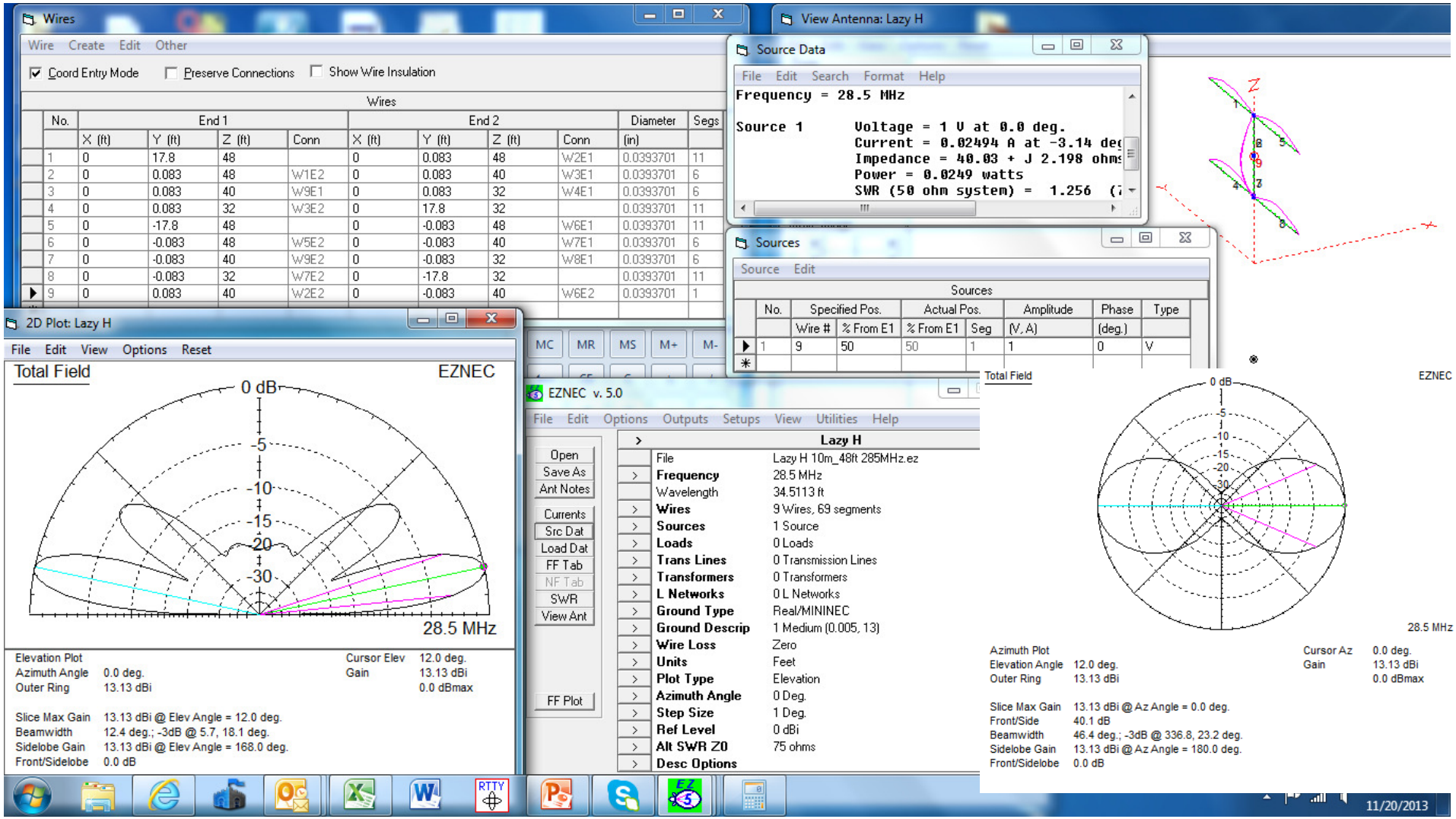
# Dipole, 48 ft Height



# Double Extended Zepp, 48 ft Height

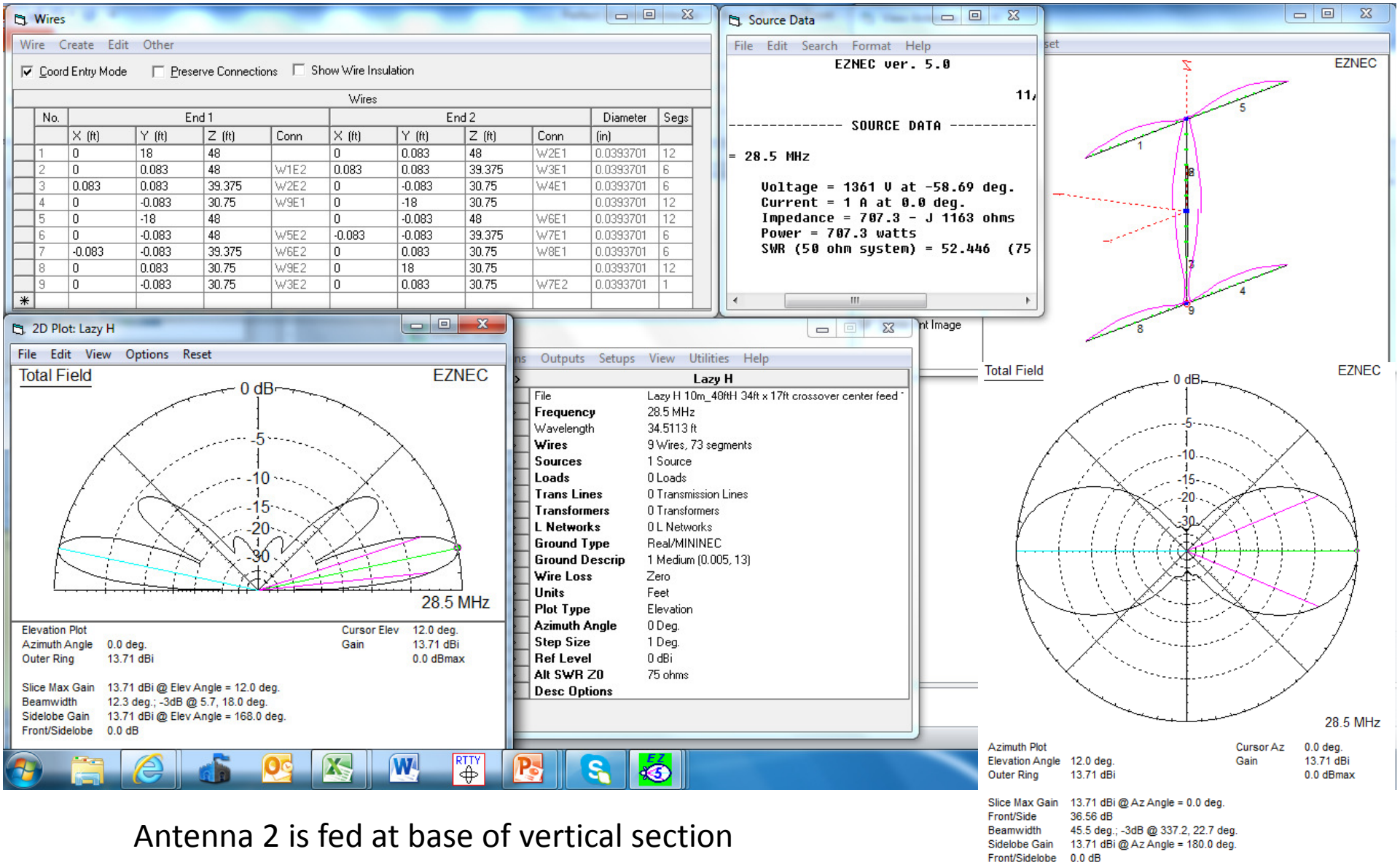


# Lazy H Antenna 1, at 48 Feet Height



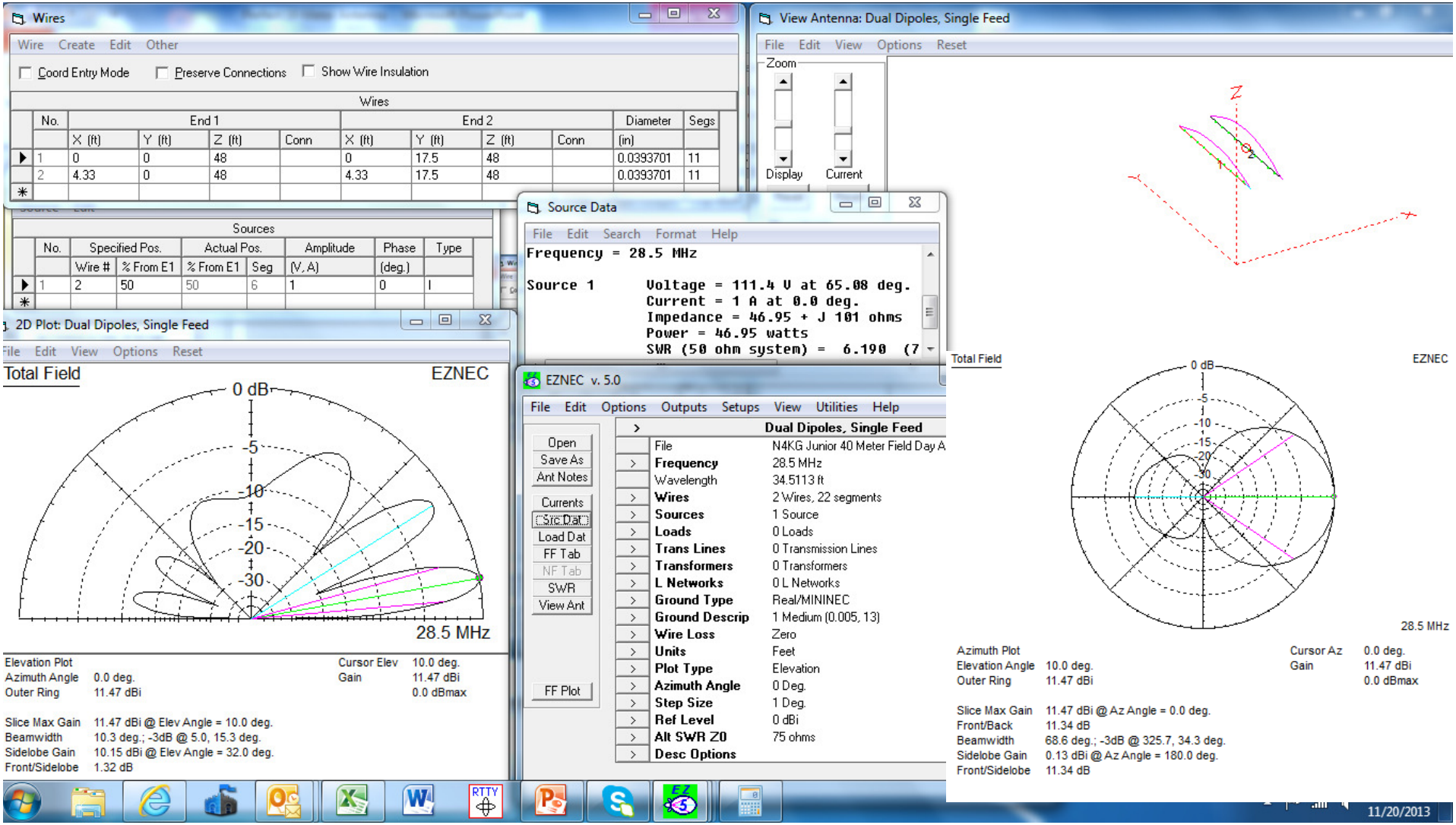

Antenna 1 is fed in the center of the Vertical Section

# Lazy H Antenna 2, at 48 Feet Height

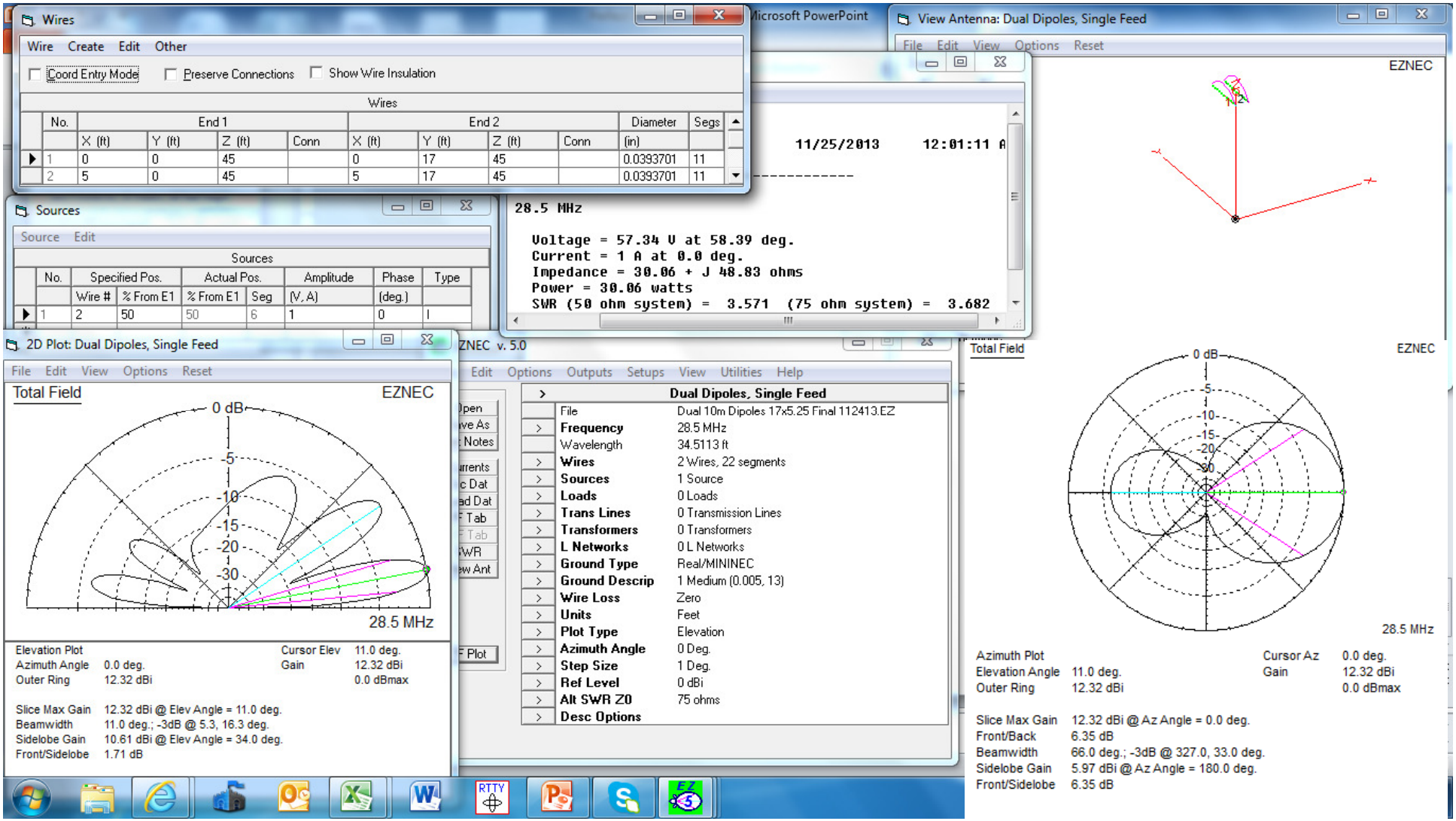



Antenna 2 is fed at base of vertical section

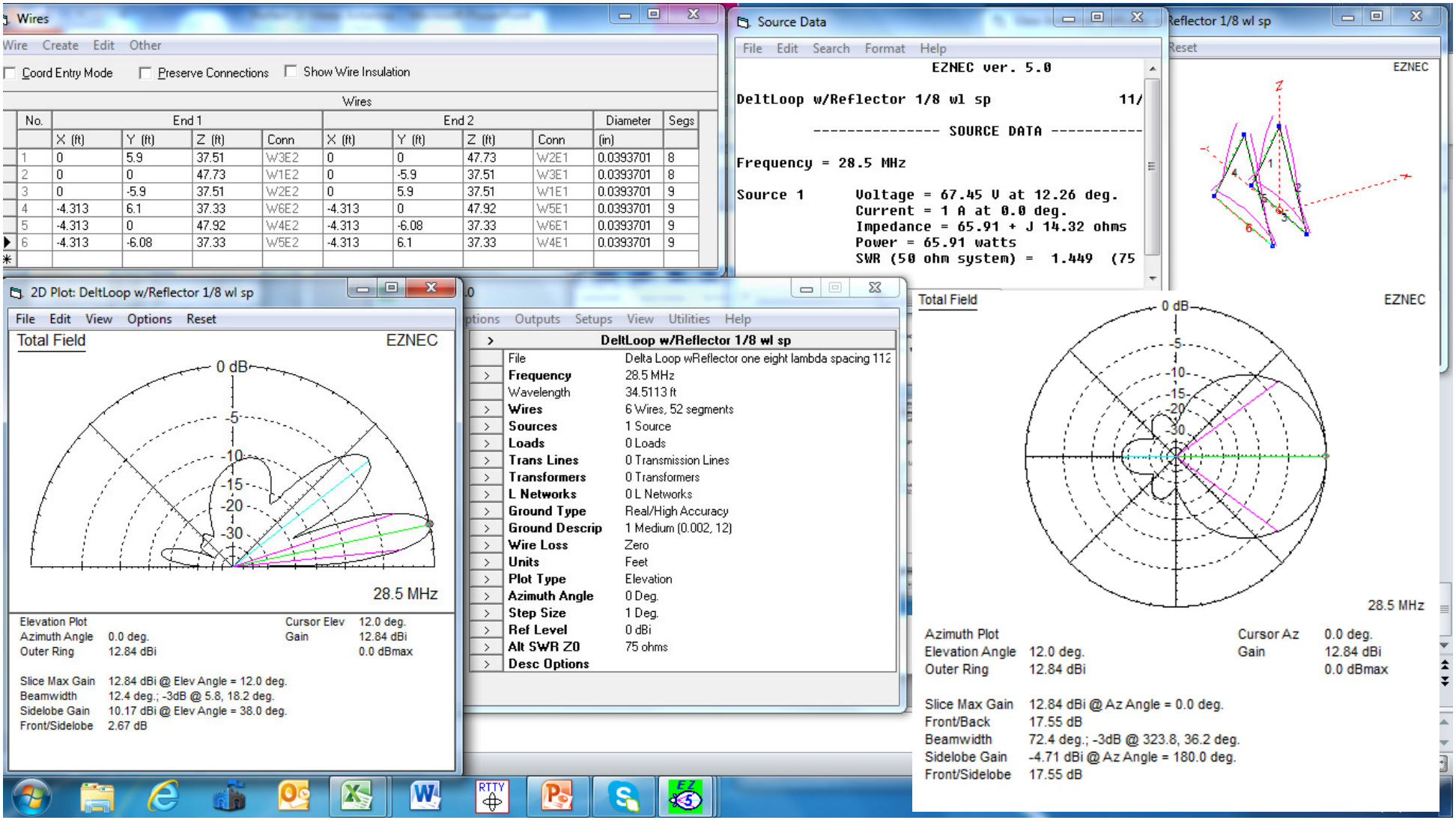
# Dipole with Reflector 1, 1/8 λ spacing



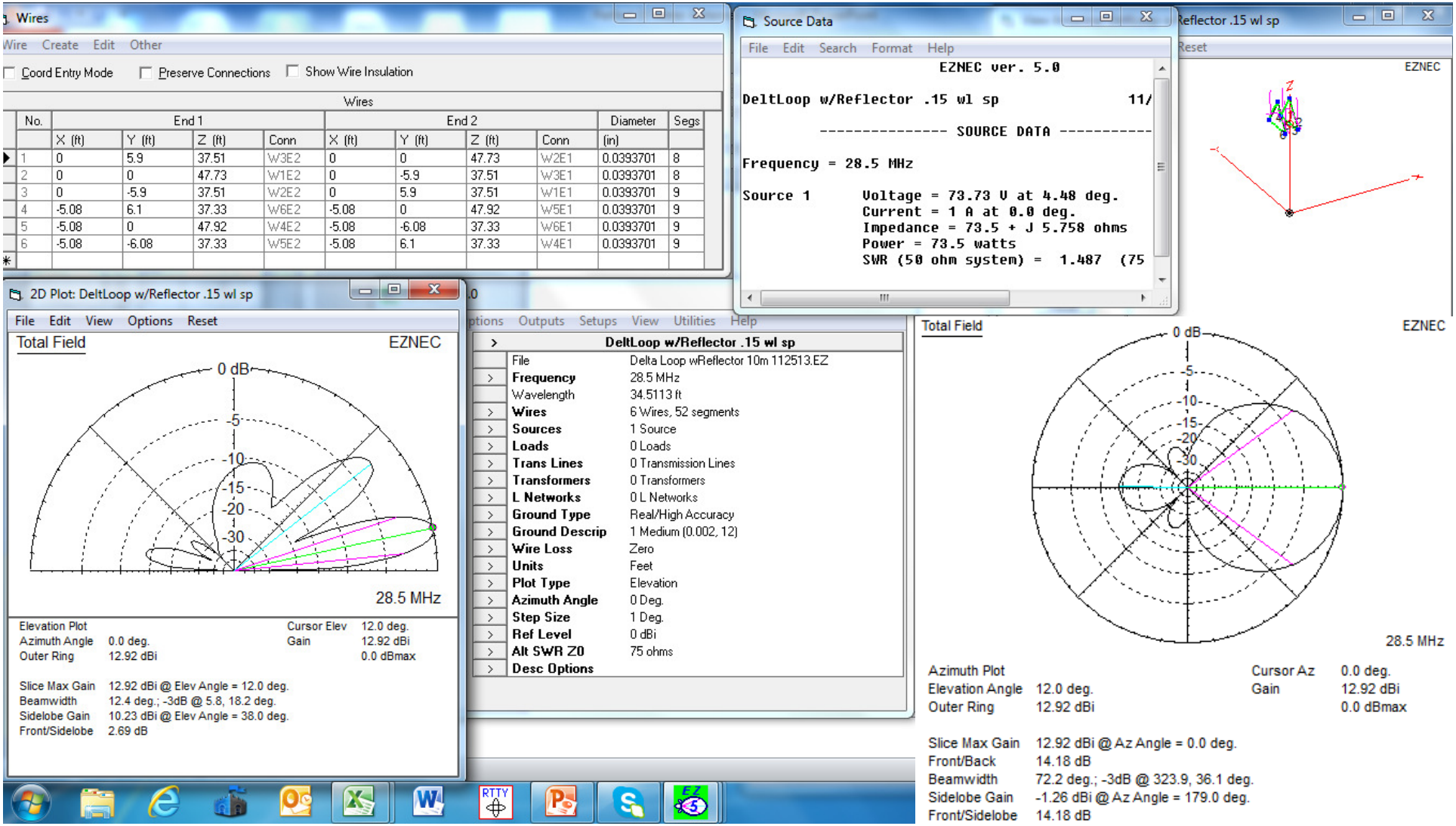
# Dipole with Reflector 2, .15 λ spacing



# Delta Loop with Reflector, 1/8 λ Spacing



# Delta Loop with Reflector, .15λ Spacing

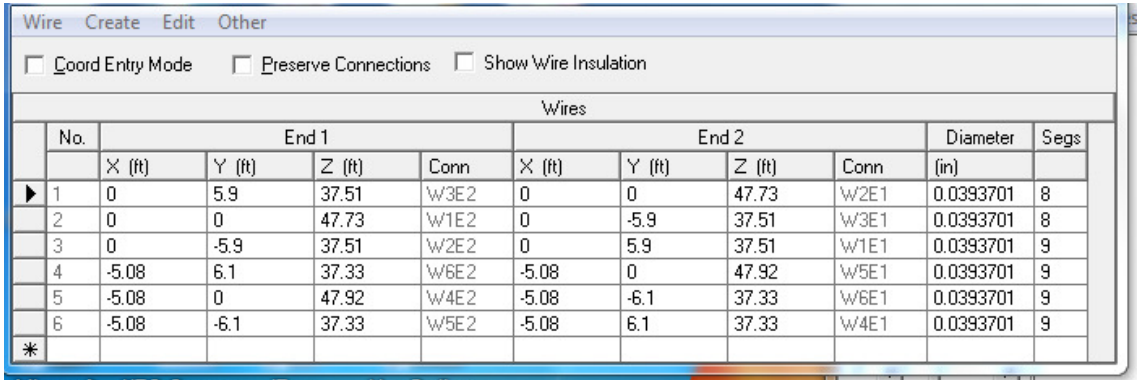


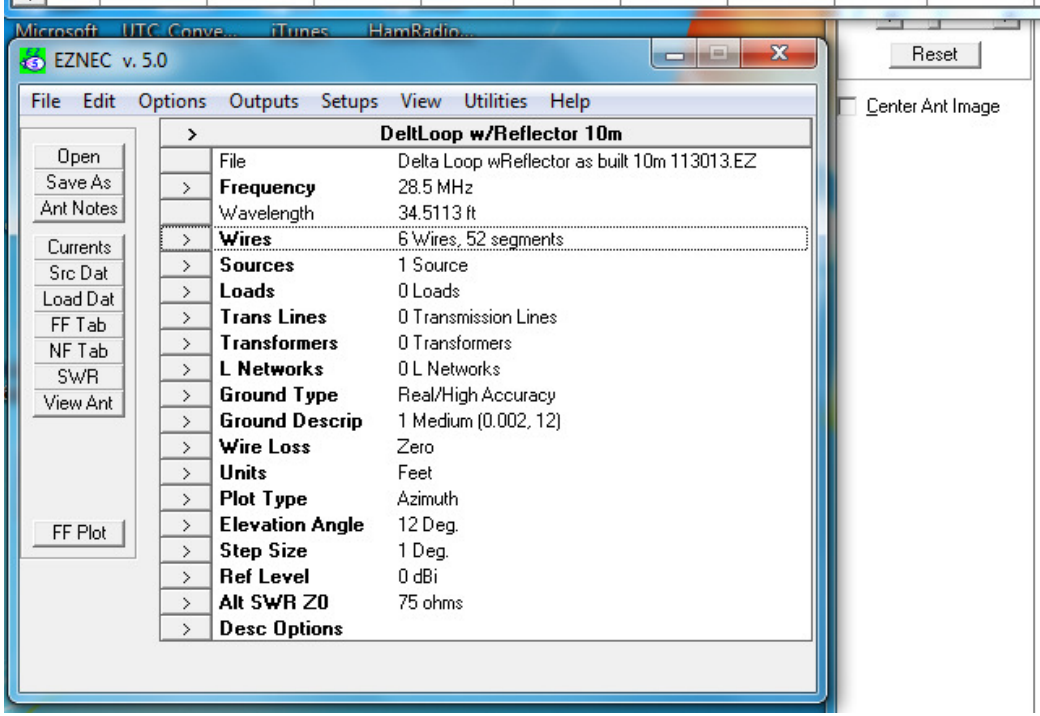
# Selection Summary

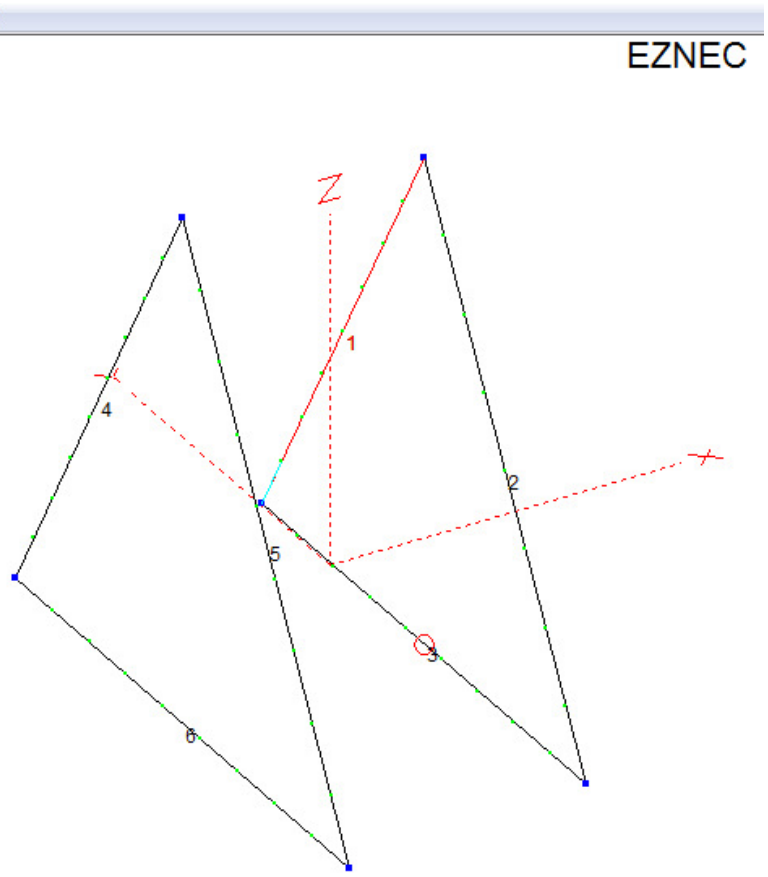
| Antenna | Azimuth | Elevation | Construction | Gain |
|---|---|---|---|---|
| | | | | |
| Dipole | Wide, bidirectional | Too many lobes | Easy | Lousy |
| Double Extended Zepp | Narrow, bidirectional | Too many lobes | Easy | Marginal |
| Lazy H 1 Vertical Center Fed | Good | Very good | 2 or 3 supports 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 λ Spacing | Wide, 10dB F/B | High-angle lobe | 2 support points | Good |
| Dipole + Reflector 2 0.15 λ Spacing | Wide, 5dB F/B | High-angle lobe | 2 support points | Good |
| Delta Loop & Reflector 1/8 λ Spacing | Wide, good F/B and F/S | Low principle lobe | Rotatable Bamboo frame | Good |
| Delta Loop & Reflector 0.15 λ 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" |



# Build It

Modeled Impedance 75.7 +j 6.3 Ω