

Dual Yagi Array for 6-meters

Novel Half-H Frame Support
For horizontal stacking of two Horz-pol yagis

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www.kl7uw.com/6m.htm

Background

- I originally did not plan to try 6-meter EME.
- But many stations need “KL7” to complete 6m WAS.
- So that encouraged me to try if I could acquire needed equipment.
- WA2LBI provided the 1,000 watt Harris ch.2 TV amplifier & PS— Free!
- I found some surplus 44-MHz KLM log-yagis for \$100.
- I had an ARR 50-MHz preamp.
- Some others contributed funds for cable.



Background

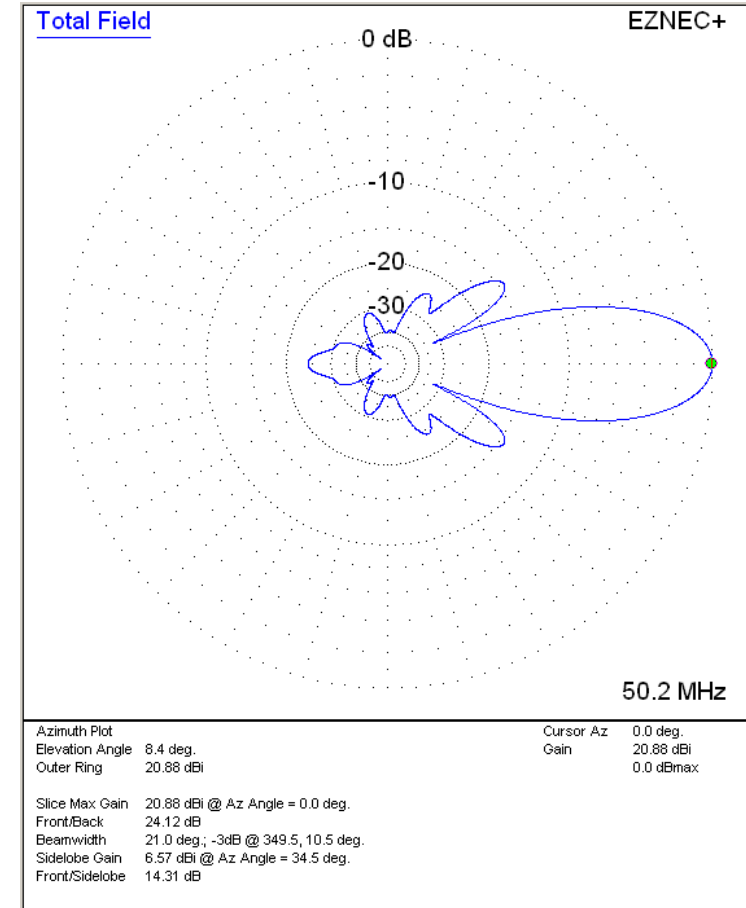
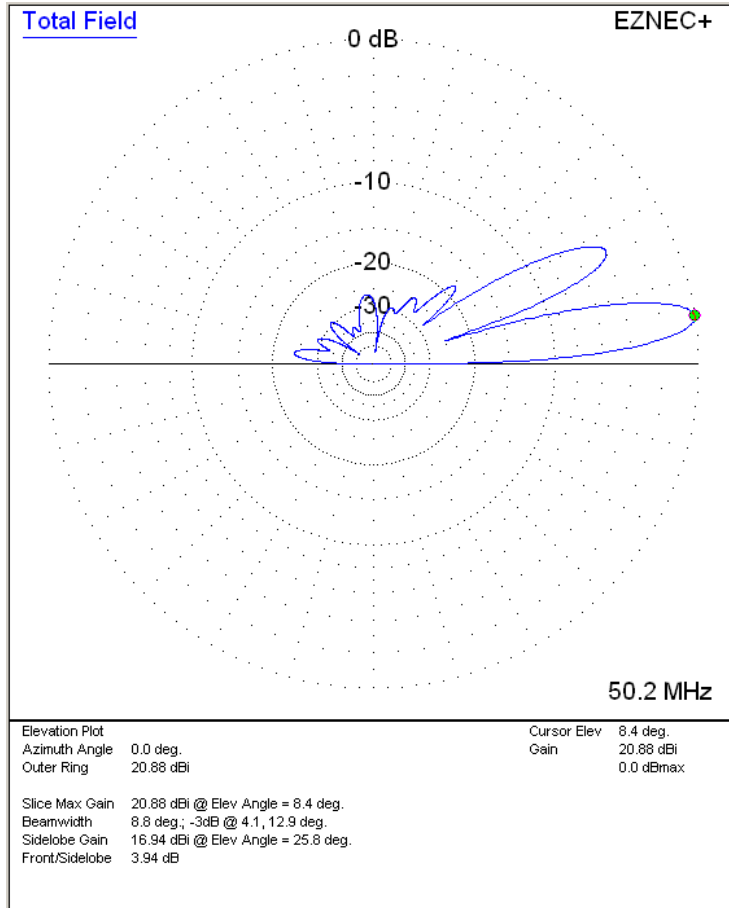
- I began trying to operate 6-meter EME using a single yagi.
- It had no elevation system which limited use at Moon-rise or Moon-set.
- Fortunately that provides maximum ground gain.
- 1 kW provided enough signal for some of the larger 6m stations to copy me.
- But I found I had insufficient gain for receiving stations
- Mostly resulted in contacts with four-antenna and two-antenna stations.
- Reception required perfect polarization and was sensitive to Faraday effects.
- So, consulting with Lance-W7GJ, he recommended a min of 15 dBi for 6m EME.
- This how I found myself embarking on a two-yagi array.

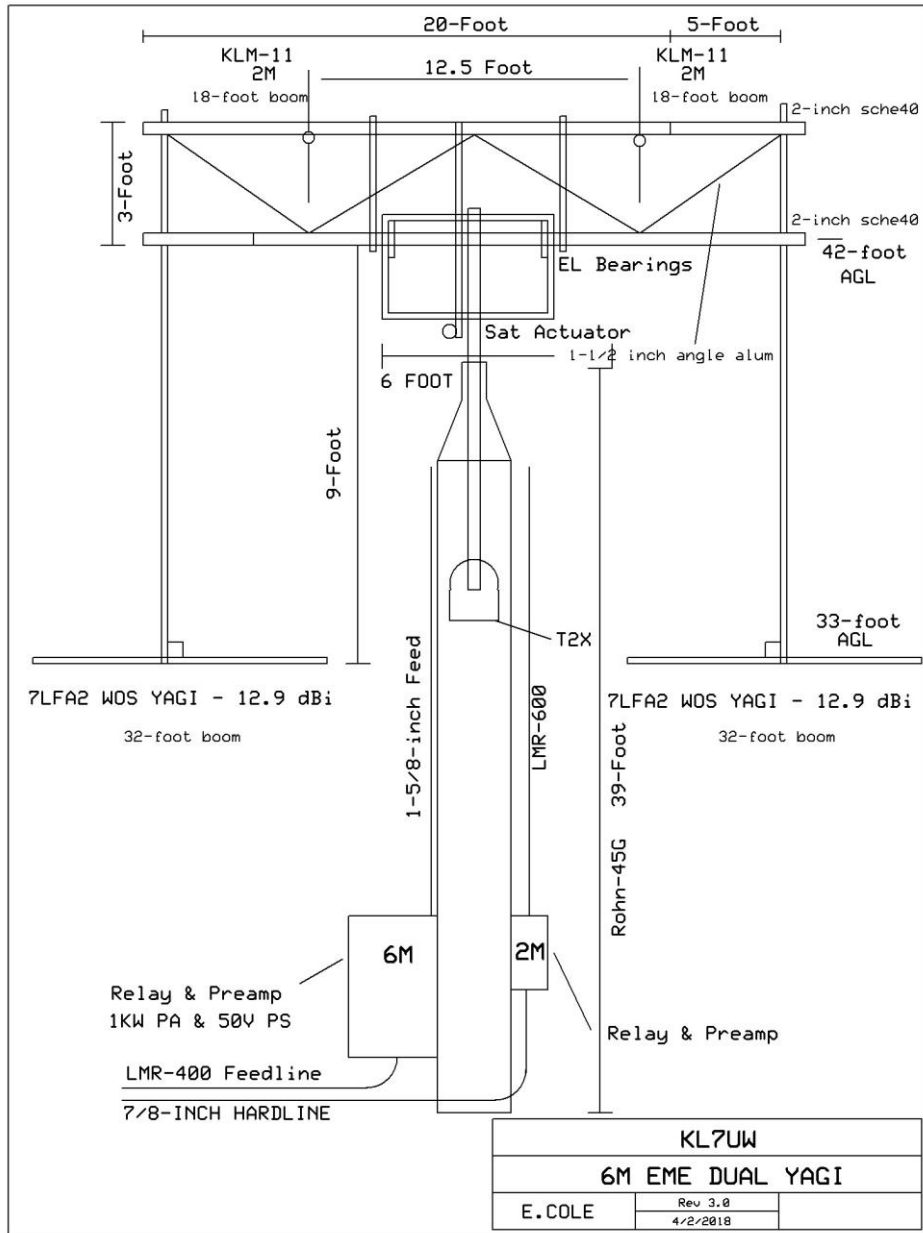
Initial Installation



- I acquired two sections of Rohn-45 tower in 2015.
- Installed a modified KLM 7LP commercial 44-MHz log-yagi.
- Converted it to six-element yagi
- Mike-K6MYC aided redesigning it dubbing it 6M6UW
- Thus I had 13-dBi gain at 20-feet over ground.
- YU7EF convinced me to use the LFA antennas, instead.

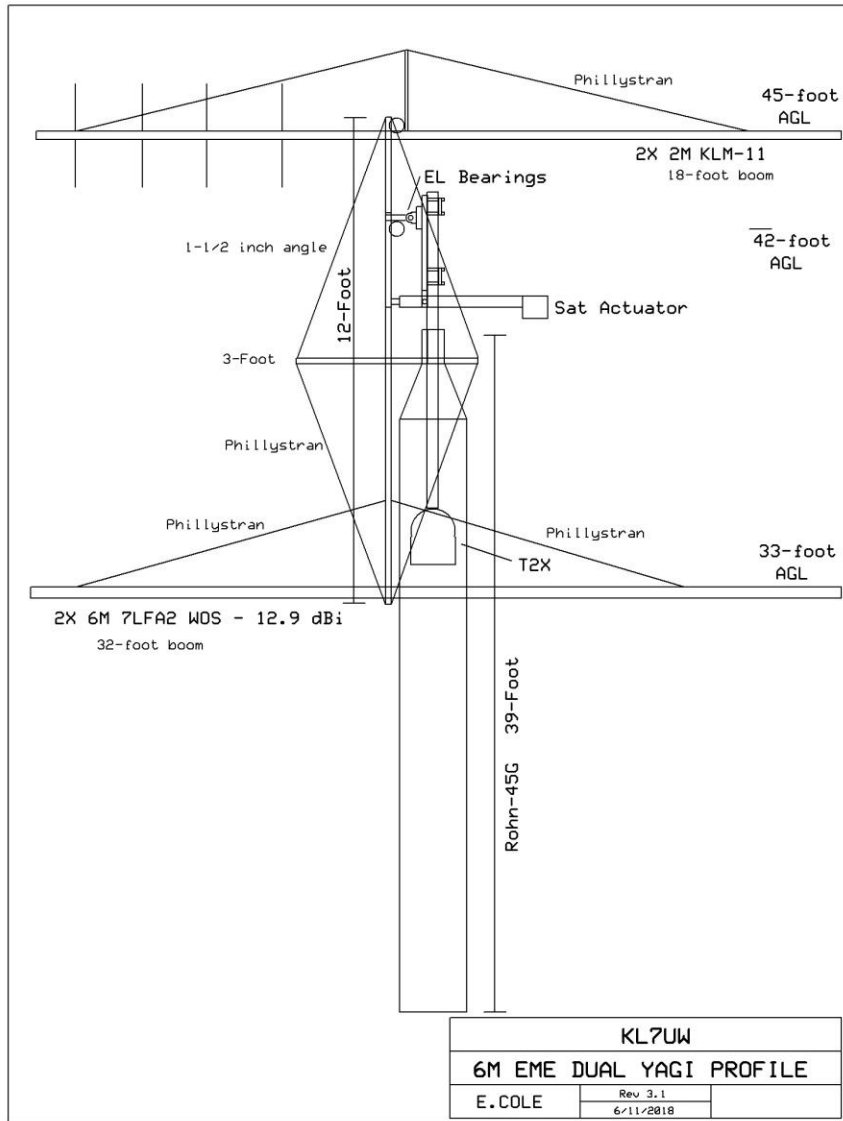
GOKSC 2LFA7 WOS Antennas





Stacking

- Common method of stacking two yagis in vertical polarity.
- But I wanted to preserve max ground gain.
- That requires a non-metallic cross boom, or:
- Using a classic “H-Frame”.
- I developed a “Half-H” or “Inverted-U” design.

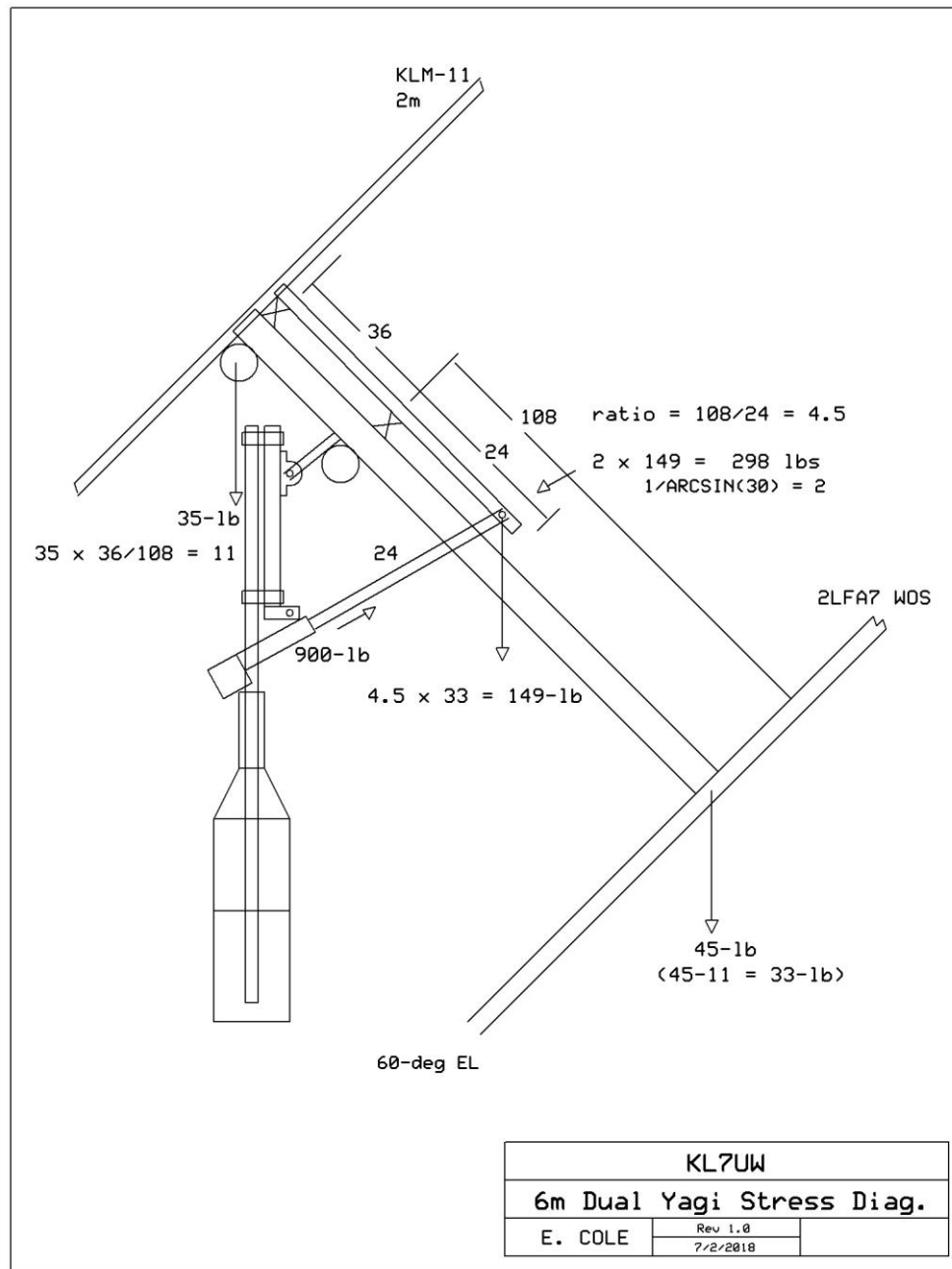


Stacking

- Many warned “this will fail”; “its unbalanced”, etc.
- So I built a strong truss using two 25-ft sections of 2-in alum. Pipe.
- Slightly under-stacked with 9-ft Risers of 2-in square alum.
- The truss above the elevation axis and has two KLM 2m yagis added in vert-pol
- I use Phillystran for bracing.

Weight Balance Analysis

- The diagram shows stress at elevation of 60-degrees.



Frame Design



- The array is mounted on a 60-in by 28-in welded frame made of 2-in square steel pipe.
- Two pillow-block bearings are attached using 1-inch steel axle for elevation.
- Lower cross-boom tube clamps to two steel arms which are welded to the axle.
- A 24-in VonWiese actuator raises the array with 900-lbs trust.

photos



photos



photos



photos



photos



Progress in October – Array up/Antennas in progress



more photos

