



Rural Training Center-Thailand: EmComm Paper

Wangwa QTH Mast: Follow-up

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The Mast Raising

The concrete-filled tractor tire base was allowed to cure for 3 days before we raised the mast to its full height. Pi Oi's youngest son, Nhum, joined the work party. When Nhum (near the top) and Korn got on ladders to lift and lock the mast in place, the tower base section didn't move at all.

As the steel pipe mast was raised incrementally, a wood safety block was placed across the horizontal braces of the tower sections.

The final lift to full height was concluded with inserting the safety pin and tightening the 2 stainless steel locking bolts.



The masthead reaches a maximum height of 9.6m AGL (above ground level). Since no antennas are permanently attached to the mast, no guying is planned for now.

As antenna masts go, this is a tiny one. The teak trees (tall trees on the left in the photo above) and the bamboo (at the back of the property (see 2nd photo from the top) stand taller than our “little mast who thought it could”. It comes close to, but falls about a meter short of the antennas mounted on the house. But a sky hook is a sky hook, and it will make testing our antenna projects easier.

Locating the mast was done so that Sparky and Sam can easily park near it. Antennas can be raised on the mast for backyard portable operating. This is akin to backyard camping. But it is another opportunity for a semi-controlled practice workout for operating from Sparky and Sam.

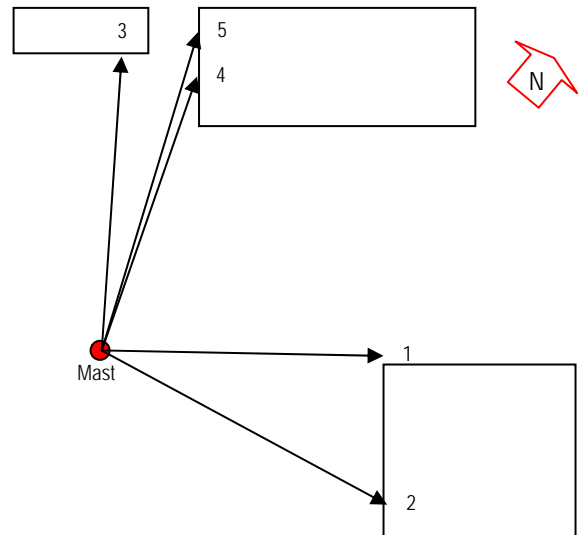
Another use for mast could be to string up wire antennas. Wires can be hoisted on the mast. The summary table below shows possible wire lengths and orientations between the mast and various buildings on the property. (These alignments are clear of power lines on the property.)

Distances / Azimuths from Mast			
Location		Azimuth (Mag)	Distance (m)
1	Smog Check Front	39°	18
2	Smog Check Middle	64°	23.1
3	Isopole Mast (house)	301°	32
4	Car Lot West middle	314°	29.2
5	Car lot West front	318°	23.4

Various combination wire runs can be made between these basic attachment points. We have to get the AGL height measurements for these points at a future date. Wire lengths and orientations all depend on the operating frequency and contact target destinations.



The mast viewed from the 2nd floor back balcony of the house looking southeast. The bamboo growing at the back of the property is taller than the mast.



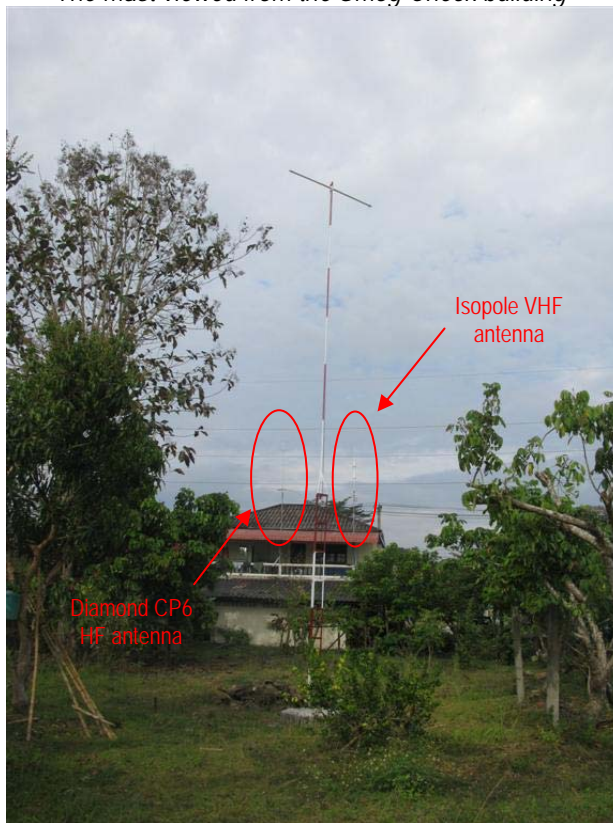
General layout diagram (not to scale)



The mast viewed from the Smog Check building



The mast seen from the NE corner of the car lot garage



Mast fully extended with yardarm raised to maximum height (9.4 m AGL). Left photo toward house; Right photo toward the back of the property (generally south southeast).

The mast is located in a strip of yard between two rows of fruit trees. Although the trees will grow in time, we plan on pruning them to a manageable height for easy fruit picking. This should prevent the fruit trees from eventually blocking the mast for antenna testing. The spacing of the trees makes it easy to maneuver Sparky and Sam close to the mast for coax connections. The trees also provide shade and make setting up tarps for shady picnicking, too.

This outdoor environment is a good simulation to “field test” Sparky and Sam. We hope to iron out any kinks and potential problems in advance of an actual deployment.

Rigging the Yardarm

The yardarm halyards are attached in a simple 5 step process for each end of the yardarm: 1) Start with the yardarm at its lowest position on the mast. 2) Retrieve the halyards from storage; 3) Place the halyard truck on the nail at the end of a bamboo pole; 4) Lift the pole and slip the halyard truck onto the S-hook at the end of the yardarm. Repeat the process for the other halyard. 5) Use the main mast halyard to raise the yardarm to the top of the mast.



Before hoisting anything on a halyard, be sure the halyard is not twisted. Separate the two lines so they are clear all the way up to the truck. Open the quick links (as needed) to secure the tether of the antenna to be tested. Check to be sure the quick links are securely closed before hoisting anything aloft.



We hoisted the long measuring tape to verify the maximum lift height of the halyards at 9.4 m AGL. **[Note:** The actual antenna height depends on the antenna length, tether length, and actual feed point height AGL. These will vary depending on the antenna and must be recorded for each antenna test.]

As a "fair weather" mast, guying will only be considered if, over time, we see conditions warrant the added effort.



Sparky parked between T1/T10-P1/P2.

The plot diagram (on the next page) shows the 425 sq m of the backyard around the mast. The red grid lines are about 1m squares. The green dots represent trees. The gray squares are concrete posts. The triangle is the mast.

The circle has a 6 m radius. This is the maximum distance from the mast using the coax assigned to the halyards (when lifted to maximum height). It forms about a 117 sq m operating area. Sparky and Sam should be parked within this circle for easy connection to the onboard ICE (lightning arrestor) bus bars.

The green arrows indicate the routes for easy access for Sparky and Sam. The arrowheads are at the parking locations.

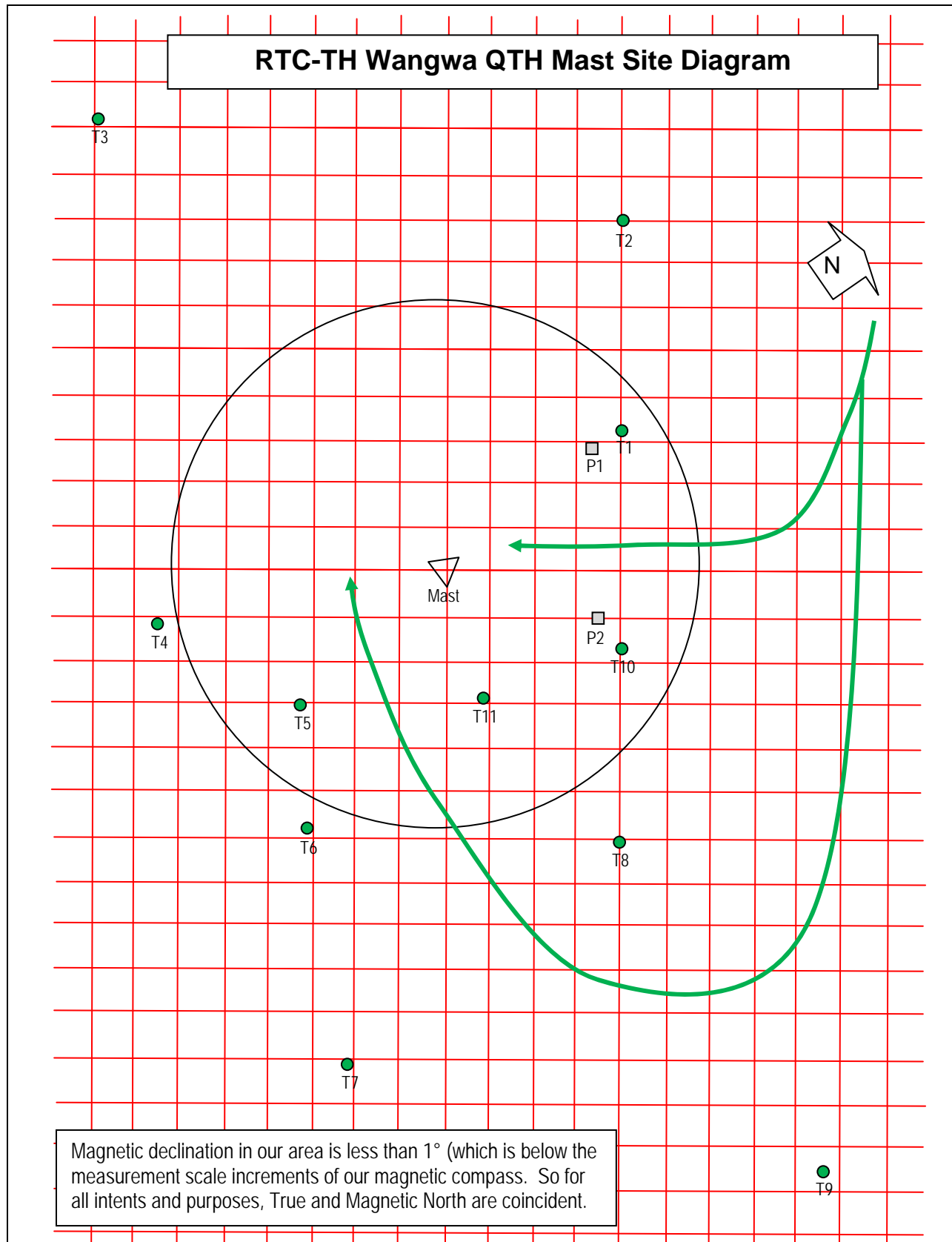
When Sparky and Sam are parked on site, the ideal trees for shade tarps would be T5, T6, T8, and T10. Toilet facilities are available in the Smog Check building to the NE of the orchard area.



View of the mast area with the access between T10 and T8 (out of the right edge of the photo). Toilet facilities are available in the Smog Check building (right side of photo).

Future site enhancements could include tent pads, fire pit, BBQ. There are two small cinder block fish ponds to next to T5 and T6. We can catch fresh catfish for dinner. All in all, this is a nice place for a ham antenna party. There is ample room for all of these features. Convenient visitor parking along trees TT10, T1-T2 would be shaded in the afternoon.

The Wangwa QTH mast is now at a minimal operating capability. Future enhancements are now on a lower priority list. We will report any enhancements in future publications.

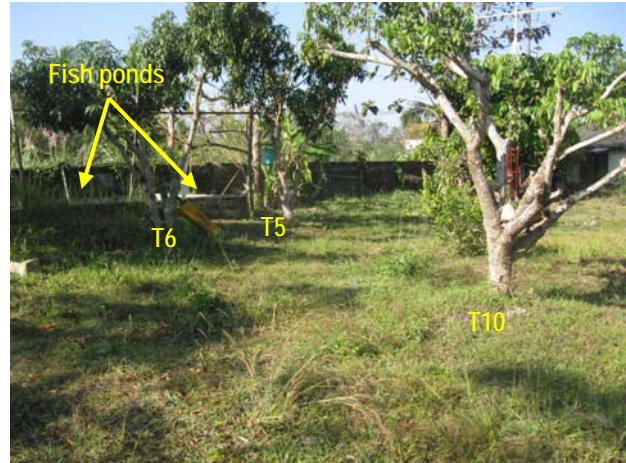




Easy access between T10/T1-P1/P2.

The section of the backyard showing the access points for Sparky (top left photo) and Sam (top right photo). The 2 cinder block fish “ponds” next to T5 and T6 are shown in the photo to the right. Visiting hams and their families can feed or catch fresh catfish for lunch or dinner during ham antenna parties. Shade tarps can be set up between the trees.

This setting is a good simulation of outdoor operating to test the systems onboard Sparky and Sam before a real deployment.



Access to Sam's parking spot.



The 2 “ponds” are stocked with Thai catfish.