

The MINI (1/4th) W3EDP – A Special Design for a Balcony Down South

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Much as any boat, a radio-amateur antenna design is always a compromise between performance (efficiency, in the case of an antenna) and what is possible and feasible or even convenient and available.

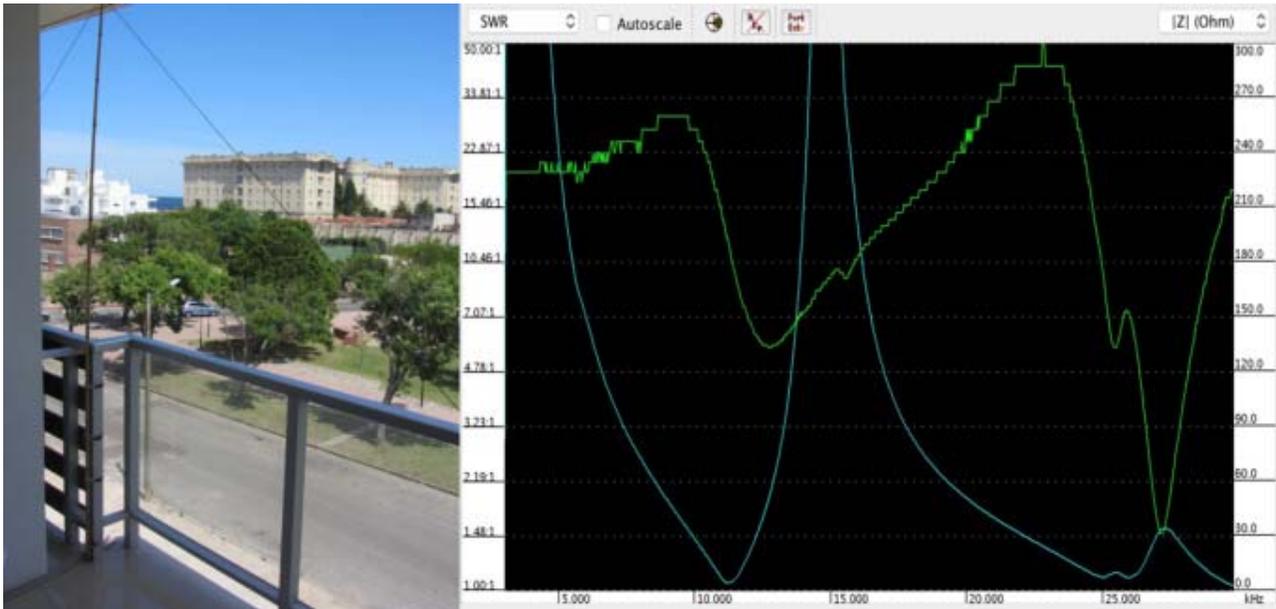
In CX-Land (Grid Loc.: GF25id), using callsign CX7RT, I operate /QRP/P mostly from a small balcony in a 4rd floor apartment (facing NW). My preferred antennas there have been the Alexloop and end-fed dipoles. With the aid of a small (2.40m long) "Tacuara" (a local bamboo-like cane of just the perfect size, found in the flotsam at the beach) I have been rigging, as inverted "V's", PAR EndfedZ dipoles for the 10m or 15m bands spanning the entire front of the apartment (5.7m). The maximum wire length for this arrangement is abt. 7m.

During last summer up North, I have explored the use of a portable wire multiband antenna not requiring counterpoise wires on the ground: the 10-80m W3EDP (<https://thewakesileave.wordpress.com/2016/05/22/a-flimsy-w3edp-portable-antenna-la-manquita/>). The W3EDP is 85' long, which limits its deployment in small quarters. In an effort to further adapt its concept for operation in restricted areas I proposed the W3EDP "Junior" (a 1/2 version of the full W3EDP) and have used it with success as a stand-alone vertical (<https://thewakesileave.wordpress.com/2016/08/15/a-42-portable-multiband-hf-antenna-with-no-wire-on-the-ground-the-w3edp-jr/>) and as an inverted "V" in the standing rigging of a small boat (<https://thewakesileave.wordpress.com/2016/08/24/wires-in-the-rigging-junior-and-the-suncat-a-perfect-match/>).

It did not escape my attention that a 1/4th version of the W3EDP would be 21 feet long (6.4 meters), i.e., almost the perfect length for an inverted V spanning the front of CX7RT's apartment. All that was needed was a piece of thin wire 16.75 Ft. long, a twin-lead leftover 3.5 Ft. long, some connectors, a few pieces of shrinking tubing and some soldering and *voilà*: the Mini W3EDP was already wrapped in "eight's" around a Staedtler HB2 pencil, ready for the trip down South.

Similar to its two bigger sisters, the Mini requires a tuner (I use the Elecraft T1 remote) and in theory, because of the high impedance of the parallel transmission line, it also requires a 4:1 unun. Between the unun and the coaxial I've been adding a toroidal choke to prevent any possibility of common currents.

In theory this mini version of the W3EDP should also have some interesting behaviour in several of the bands. Any W3EDP-like antenna can be viewed in three different ways: a) as a single wire end fed via a parallel line 1/4th its length, b) as an end-fed wire with a single counterpoise 1/5th its length juxtaposed to its proximal section or c) as a wire antenna fed off-center at 1/6th its length from one of its ends with both arms also juxtaposed. Depending on each of these views the antenna could be resonant in different frequencies. According to a) the Mini W3EDP may correspond to a full WL in 10m, and Half a WL in 20m; according to b) it may be a full WL in 12m and 3/4 WL in 17m; and according to c) it might be a WL and a half in 10m, a full WL in 15m and 1/2 WL in 30m. The following graph obtained with the Mini-VNA antenna analyzer directly from the 4:1 unun (no choke or coax) shows that the antenna resonates best close to the 10m band (SWR=1.5:1; Z=35 Ohms) and that SWR values (without tuning) remain below 50:1 throughout most of the HF portion of the spectrum (SWR:green; Z:blue):



Does it work? Well... a multi-element Yagi-Uda it is not... but the Elecraft T1 tuner does readily tune it in all bands from 80m to 6m at SWR values of less than 1.5:1. Also, in the recent CQ WW RTTY it allowed the logging of 21 QRP contacts (several of which have already been confirmed in eQSL and/or LoTW): 16 in the 15m band and 5 in the 20m band. Five of the QSOs in 15m were transcontinental: 2 in Europe and 5 in North America. All these QSOs have been posted in (<http://www.hamlog.eu/CX7RT>) and uploaded to LoTW and eQSL. Given current propagation conditions, particularly in the high bands (SFI<90) most of the credit has to go to the QRO stations contacted. However, some credit ought to also be given to the brave Mini W3EDP.

And yes, in the picture above, the blue spot between the big hotel on the right and the white building on the left is the *Río de la Plata* (River Plate)... Here is a better view of it from the top of the *Pan de Azúcar* (Sugar Loaf), which I climbed just to take this picture. CX7RT's QTH is right in the middle, to the left of the white tall building.

