Modifying a 27MHz Ringo Antenna for 80–6Mtrs

A 27MHz Ringo has been collecting dust in the shed for years, and after successfully constructing a vertical for 6 meters, it was time to put the Ringo to good use.

The plan is to remove the ring and connect 4 x ¼λ radials for each band. The center of the SO239 connector is connected to the 5.3 meter driven element via a short piece of aluminum. The driven element is already a 1/4λ on 20 meters. A bracket was made from aluminum strip to bolt the radials to and was screwed to the existing earth bracket left over after removal of the ring.

A 50mm x 500mm pipe is hammered into the ground leaving 200mm above the ground for the base of the vertical to slip into. Radials were cut from 2.5mm diameter aluminum wire scavenged from old power line cable. Initially the 10 and 20 meter radials were bolted to the earth bracket. A random length of RG58 coax was run from the antenna to the shack where a dip meter coil was screwed on. One would have thought that 20 meters would have tuned/dipped perfectly being a 1/4λ vertical. But not so. Adjusting the length of the antenna had no real effect on the reading of 18MHz dip.

Picture 1. Several radials yet to be added.

After several failed attempts on other frequencies, the coax was tested resulting in – yes – a 18MHz dip. (It is interesting to note that the coax had little effect on reasonance when the antenna was setup for a 1/4 λ on 28MHz, but played havoc when used for other wavelengths and/or bands.) A new 27.85 meter length of coax was cut and terminated with PL259 plugs. This

cable now dipped on the amateur bands and was duly plugged into the antenna. Hey presto, a perfect VSWR was obtained on 14MHz as expected. The length of coax cut is the only length of cable that is resonant on all HF ham bands. One could cut a single 1/4λ piece to match one band but the aim here was to use all bands with one vertical.

Two radials for 7MHz were now attached and laid out across the ground. (The other two are yet to be cut.) 10cm of each end was bent down and pushed into the soil to hold them in place till a proper burial can take place. Further testing confirmed the entire 14MHz band was 1:1 and 1.4:1 on 6 meters. With the aid of an ATU, all other bands were tunable including 80 meters. Yet to add is 2 more radials for 7 MHz, and radials for 21MHz. It will be interesting to see what improvements, if any, take place once they are in place.

The following table was used as a guide for measurements.
Radials were cut using the measurements in the 1/4λ column.

300	**Wavelength**						
	FULL	**5/8TH**	**3/4.**	**1/2.**	**1/4.**	**1/8.**	**1/16.**
Freq	***1.000***	***0.625***	***0.750***	***0.500***	***0.250***	***0.125***	**0.0625**
52.000	5.769	3.606	4.327	2.885	1.442	0.721	0.361
28.000	10.714	6.696	8.036	**5.357**	2.679	1.339	0.670
21.000	14.286	8.929	10.714	7.143	3.571	1.786	0.893
14.000	21.429	13.393	16.071	10.714	**5.357**	2.679	1.339
7.000	42.857	26.786	32.143	21.429	10.714	**5.357**	2.679
3.570	84.034	52.521	63.025	42.017	21.008	10.504	**5.252**
1.825	164.384	102.740	123.288	82.192	41.096	20.548	10.274

Antenna length = **5.3mtrs**

Performance

VK4 to ZL tests on 20mtrs were 1 to 2 S points lower from the vertical than the TH6DXX beam. Feeding the antenna with RG213 instead of RG58 would give better results due to lower line losses.
At around 0510z I worked VK7XX and the vertical was 1 to 2 S points better than the beam. At 0530 the signal to VK7 was identical off both antennas. A VK3 joined the now expanding group and comparisons were 1 S point in favour of the beam. Tests returned good results on all other bands.

In conclusion the 'all band' CB antenna with 1/4λ radials for each band surprised initial contacts on its performance and simplicity. It is small enough for confined spaces and the longer radials can be bent around if insufficient space exists to lay them out straight.

Good DX.
Alan, VK4SN