



SHAK NOWTZ BY "MAD" FRANK – G3ZMF

SHAK NOWTZ No 15: The "Slender James"

Hi all, here is my version of a well-known antenna. I have been badgered to publish details of this by several people. It is of course the Slim Jim (or slender James, as I call it!)

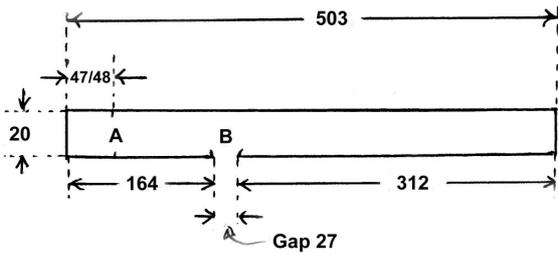


Fig 1: Layout of 70 cm Slim Jim (All dimensions in mm)
A = feed point (see Fig 5), B = gap (see Fig 3)

My version is based on the original design by G2BCX and uses stripped down copper wire from 1.5mm² mains cable fixed on the outside of 20mm white plastic conduit (suitably microwave tested.)

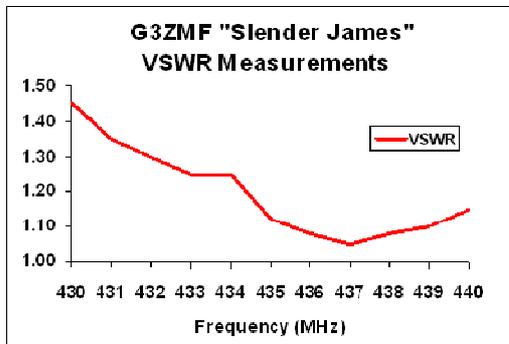


Fig 2: VSWR plot of G3ZMF's Slim Jim
NB: The SWR slowly rises above 440 MHz, reaching 1.65:1 at 460 MHz

As you can see from the results above, the centre frequency is around 437 MHz, with very low SWR for UK repeater inputs. However it is useable right up to 450 MHz – handy for our friends in countries lucky enough to have more RF spectrum available.

If you find the VSWR is not quite right, then resolder the coax feed up or down by 1 mm at a time and retest. Should you find the centre frequency is too low, then trim 1mm only from each of the tuning legs in fig 3. If the centre frequency is too high, then pull it apart and fit new wire, so the tuning legs are about 2mm longer, and then go through your tests again.

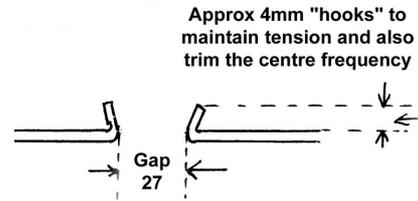
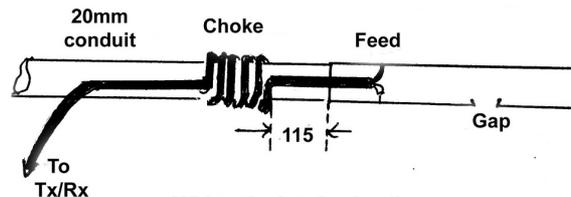


Fig 3: Gap & tuning leg adjustment
All dimensions in mm

On further test and equipment, adding five turns of coax onto the conduit as a "choke feed", the bandwidth and overall VSWR was greatly improved, to around 410 to 460 MHz overall, further suiting those who can use the upper frequencies.



115 is calculated using the formula $(75/f)$ times the velocity factor of the coax cable.

Fig 4: Detail of choke feed (All dimensions in mm)

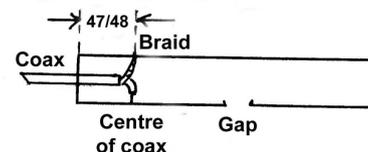


Fig 5: Detail of feed point (All dimensions in mm)

To complete the antenna, I covered it with a layer of insulating tape that had passed the microwave oven test.

Some people may disagree with feeding the centre of the coax to the shorter leg of the antenna when other publications show the braid connected to this leg. My investigations on the development from the J-Pole antenna and gamma matching your tower all show the coax inner going to the short leg or gamma leg. "Circuit and See" for yourself!

That should keep you busy for a while, as I'm researching/building some fun projects for Shak Nowtz no.16 - hopefully on "AC batteries."

73 de Mad Frank G3ZMF