

Coax Feeder Tests

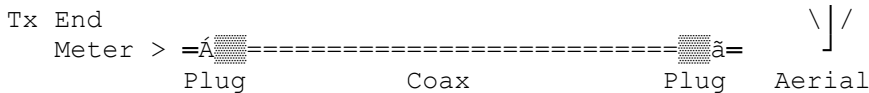
By John G8MNY

(New Jul 08)

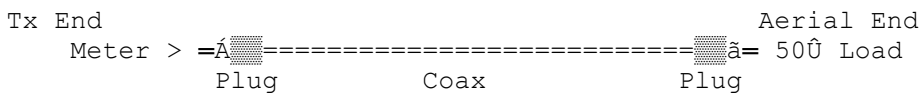
When putting up a new aerial system (fixed, /P or /M) it is generally worth while testing the feeder. RF SWR testing seems the best as far as the Tx goes, but is not always fool proof.

DC TEST

With an Ohm meter it is quite simple to measure the coax & if there are no copper whiskers across the Tx or Aerial coax ends an open circuit will be seen.

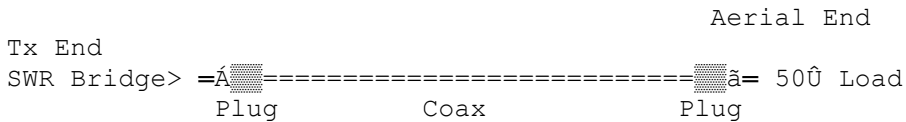


But this is not the most efficient DC test, by putting a dummy load at one end e.g. instead of the aerial, Short, Open circuits & then RF tests can be done.



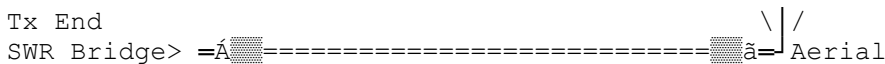
Here the meter should reads 50Ω + cable DC resistance.

RF TESTING



After the DC test, this RF test will reveal if there is problem that will affect the Tx.

Now putting the aerial in should give the same results.



It is worth noting if the aerial is a DC short or not, for future testing.

It is possible to get a good DC & RF SWR indication on a faulty installation where say the braid is bypassed by other earths & the coax outer becomes the aerial.

CONNECTIONS

The most common is PL259, with its 4mm wander plug centre it is rated at 500V & 10A, it is hardy plug usable to 200MHz (400W). The Z is not 50Ω on the cheap versions & generally the mismatch length is so short compared to a 1/4 wave it is quite irrelevant as is the loss, but fully waterproof 50Ω version are made for a price. To waterproof the cheap ones it is best to fill them with grease (vaseline) & then tape over the outside with amalgamating tape. Making a good shield connection in some designs can be difficult & some have white nylon insulators that melt easily, while others have brown ones that burn & char. Small cable bore plugs or adaptors are needed for thin coax. There are in line female SO239 made, if you can find them, otherwise you need barrel joiners.

N connectors are used above 200MHz, these are made to be 50Ω & 75Ω, & are fairly rugged, but the thin centre pin & socket & small 6mm surrounding shield connection (not the screw up bit) must give good RF connection to maintain 50Ω & low losses. The thin pin is not rated to carry heavy current like the 259 so high SWR & high power, can potentially damage it. There are many designs of plug/socket with loads of fiddly bits to put on the coax in the right order, but the principle is to keep the Z constant, so the outer connection is made close to the front of the plug as possible, until the centre conductor size alters. Be aware the waterproof seal not only keeps water out but in too!

BNC connectors use the same small 50 or 75Ω pin N plug system but with small bayonet locking arrangement. Normally made for 5mm & 7mm coax, but larger cable types are made.

TNC connectors are as BNC, except have a smaller screw outer than the N type. All plug into each other to make a good RF link when the outer screw/bayonet/larger screw part does not foul.

SMA/SMB/SMC series connectors are use on UHF small kit, my advice is to get a wander lead to a sensible plug/socket.

Why don't U send an interesting bud?

73 de John G8MNY @ GB7CIP