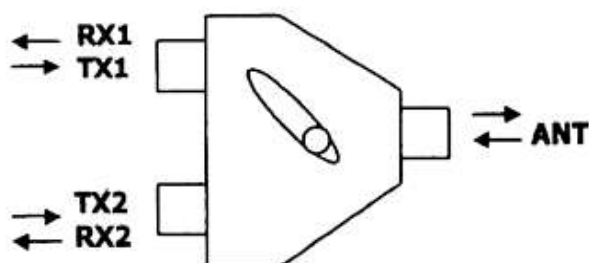


SOURCING 2 TX's TO ONE ANTENNA SYSTEM - using a 2-way coaxial switch.

Being able to employ a standby- or alternative rig at short notice is very handy and neat if one could just flip a switch and not worry about RF cable connections.

Having studied the specifications of various coaxial switches available such as MFJ and DAIWA it turned out that both had very similar specifications (surprised?) and apart from insertion loss, the port-port isolation is of course the important parameter when configured as shown below:

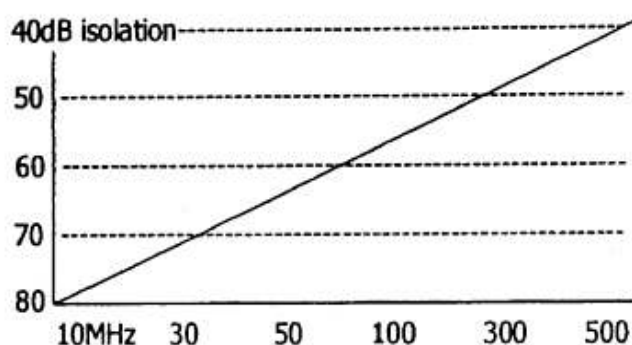


A basic precaution in such a scheme is to ensure that both rigs cannot TX at the same time. This is generally not a problem as only one MIC/PTT is handled at any one time, or only one rig is switched on at the time. It is also important not to use a switch that has a middle position that grounds both sockets.

Performance

Let us now examine their isolation properties at various frequencies. Both types under discussion have typical characteristics as shown by the graph:

Port-Port at 30 MHz \sim -70dBm
 150 MHz \sim -55dBm
 450 MHz \sim -45dBm



Thus, the most pessimistic isolation or worst crosstalk that takes place can be calculated:

100W (=+50dBm) HF generates +50-70 = -20dBm = 22mV (\sim S9+50dB)
 50W (=+47dBm) VHF generates +47-55 = -08dBm = 90mV (\sim S9+60dB)
 50W (=+47dBm) UHF generates +47-45 = +02dBm = 282mV (\sim S9+70dB)

The voltages leaked through are very much more than a strong signal, but except for the last one, can probably all be easily be accommodated without damage in a radio front-end. Remember that these figures are only applicable if the receiving side is tuned to exactly the same frequency. Nevertheless, the use of these particular two-way "low cost" coaxial switches is not recommended for UHF, nor using them in this specific configuration for more than 100W throughput at any frequency.

There are improved versions such as the DAIWA 201a for which an isolation of 60dB is claimed at 600MHz; and the DAIWA 201G that is specifically made for UHF (50dB at 1GHz). Few manufacturers appear to manufacture quality coaxial switches that amateurs can afford and an internet search has only yielded a WELZ CH20N (66dB at 400MHz) and various doubtfuls which are probably for CB use.

Useful HF set-up:

