

New alignment procedure for G3WDG003 Transmit converter

The alignment procedure described on pages 7 and 8 of the G3WDG003 booklet has worked well for most constructors, but there have been some reports of difficulties with the alignment of FL2. This is probably because the mixer bias settings were well away from their optimum values leading to low mixer output at that stage in the alignment procedure. The method described below is suggested as an alternative which should prove easier. The principle is similar to that described for the G3WDG002 module in the November 91 Microwave Newsletter update, ie temporarily bridging out filters. Unlike the 002 method, the cavities cannot be bridged out by a simple short circuit as the filters in the 003 serve a secondary role of dc blocking between stages. The method described below uses home-made parallel coupled quarter-wave sections made out of 0.315mm enamelled copper wire (as supplied in the kits). This is shown in Fig 1. The wires should lie flat to the board and be spaced apart by one wire diameter (approximately). The loss of this arrangement has been measured as less than 1dB. It is easiest if the wires are made longer than necessary initially and then trimmed to length with a scalpel blade or other sharp knife in-situ after soldering (thanks to GW3XYW for this tip).

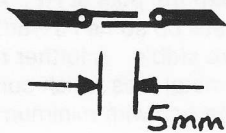


Fig 1 DC Block / RF short circuit

Revised tuning procedure:

1. Follow original steps 1 - 5.
2. Temporarily remove DC power and connect bridges as described above to FL3 and FL4. Set VR3 to centre position and after restoring DC power set current through F2 to 0.5mA with VR2. Reconnect 2.5GHz drive and apply 1mW of 144MHz drive to J3. The mixer current should increase incrementally on application of the drive signals. Next bias up F3, F4, F5 and F6 to about 5mA each using VR4-7. Using the 10GHz power indicator connected to the output socket, adjust FL2. Three peaks should be observed, with about 3/16 turn between each. The centre peak will be the strongest (10224MHz). The correct peak is the one with the screw furthest out (minimum penetration).
3. Follow original step 7.
4. Remove DC power and the bridge across FL3. Power on again and adjust FL3 for maximum output.
5. Repeat last step for FL4.
6. Reset bias on F3 - 6 to about 20mA each.
7. Follow original steps 9, 10 and 11.