

SUBJECT: EME202-Ver1 Post Mixer Amplifier Upgrade

The 2x BFQ19 post mixer amplifier in this Kit has been changed as there was instability caused by the amplifiers impedance matching that caused a bad mismatch between the mixer and crystal filters. The symptom can be checked by removing the antenna and listening for spurious noise out of the speaker while waving a hand over the modules on the chassis. This may also appear as being the 9MHz IF amplifier oscillating causing a howling sound from the speaker. There was no way that we could modify the two transistor circuit as it appears to be a PC board layout issue, so we redesigned the amplifier for a single transistor. The single transistor also allowed us to increase the bias current of the transistor to 50mA, and IP3 performance is very similar, and amplifier gain and return loss was dramatically improved.

PROCEEDURE:

- 1/ Remove T1 (BFQ19) as it is not required
- 2/ Replace R2 with a 680R 1/4W Resistor
- 3/ Replace C3 with a 1nF Monolithic Capacitor
- 4/ Replace R10 with a 2.7R Resistor
- 5/ Replace R9 with a 15R Resistor
- 6/ Add a 1nF monolithic capacitor across R10 on the bottom of the board.

TESTING:

- 1/ Power up the module and check that the voltage across the 22R resistor R11 is around 1.1v for 50mA. The total power consumption of the module is around 70mA @ 12vdc.
- 2/ With the Ver1 modules with the antenna removed, there were audible birdies when tuning across the bands due to the mismatch to the mixer. A good indication that the module has no potential instability or mismatch problems, is when audible birdies are virtually unreadable. With the AD9850/51 10 bit DDS there will be the occasional high level birdie but most will be very low level.

NOTE: This change is for all EME202-Ver1 Kits produced before February 2016. It is recommended that all Ver1 modules are upgraded for maximum performance.