SHAK NOWTZ BY "MAD" FRANK - G3ZMF

SHAK NOWTZ No 9 – Test gear old(e) and new

Introduction

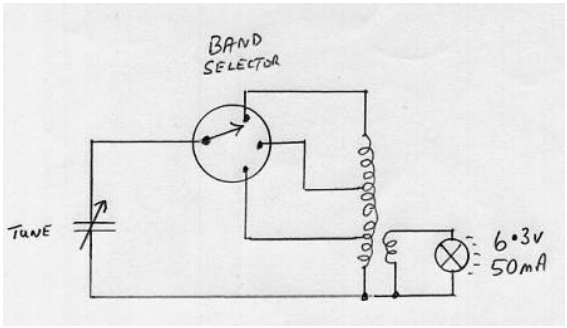
Sorry it's been so long since the last Shak Nowtz (No 8) but I've been doing a lot of jobs for others, a few for myself, plus researching items for the next batch of Shak Nowtz.

So .. Merry Christmas, Happy New Year, Happy Easter, Happy Birthday and Happy Anniversary. There. That covers most of it I think!

I wonder how many of the commercially made items in the following pictures you will recognise – if you're old enough, that is!

The Raymart Band Checker was an absorption wavemeter from the 1950s and 1960s when it was essential to have this or similar piece of kit to comply with licence conditions. It used a lamp as an indicator of RF energy and covered 3.3 to 36 MHz in three ranges.

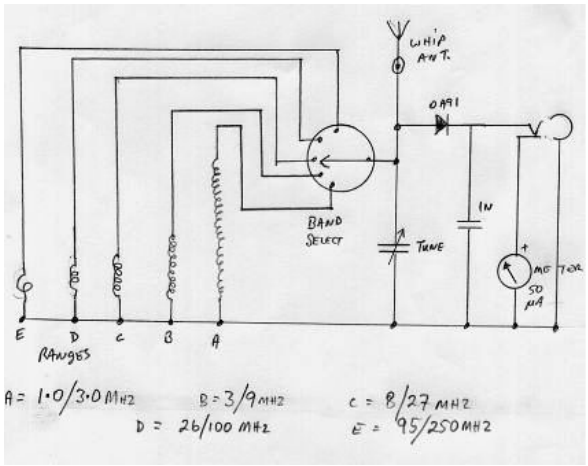
The Raymart Band Checker Dial



Circuit Diagram Of The Raymart Band Checker

The Eagle Products RF-40 RF Field Indicator was in common use in the 1960s and 1970s and covered 1.0 to 250 MHz in five ranges. Being that AM (amplitude modulation) was the only speech mode that was in general use (unless you were rich and had SSB) there was a diode detector output to a 3.5 mm socket for use with a crystal earpiece to monitor your modulation. A telescopic whip antenna provided signal pick-up.

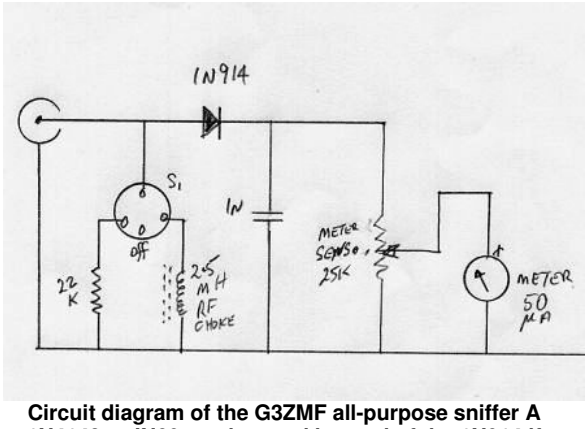
The Eagle RF40 RF Field Indicator



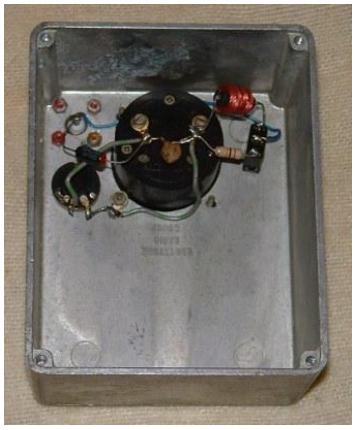
Circuit diagram of the RF40

This **simple AF/RF sniffer** was something I built in the 1990s when I was out of work and had no pennies to spare. I had an opportunity to modify some ex-PMR gear for use on 70 MHz and 144 MHz but lacked suitable test gear to get it working properly. My solution was to build myself some – but keep it simple!

External view of G3ZMF's all-purpose sniffer



Circuit diagram of the G3ZMF all-purpose sniffer A 1N4148 or IN60 can be used instead of the 1N914 if preferred



Internal view of G3ZMF's sniffer

I constructed three probes for use with the sniffer - see pictures below:

Probe 1: Coax lead with large loop

The above pick-up loop consists of 3 turns of 20/22 SWG enamelled copper wire with an internal diameter of 6 mm.

Probe 2: Coax lead with pick up loop

The pick up loop consists of 4 turns of fine insulated single core wire with an internal diameter of 3 mm. This is ideal for placing over the aperture of an IF transformer while using a trimming tool to adjust the core.

Probe 2: Close-up of the pick up coil

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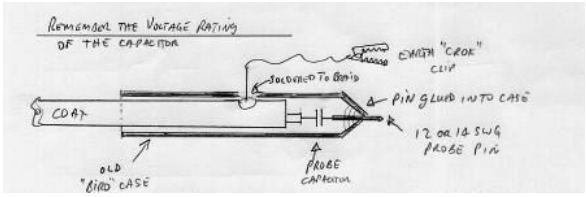
Probe 3: A coax lead with a probe constructed from an old ball point pen case.

In Probe 3, the coax braid is connected to a short fly lead that emerges through a small hole in the side of the pen case and is terminated in a crocodile clip. The coax inner is connected to the contact probe (18 to 14 swg copper wire) via a suitable capacitor. I use 100nF for audio, 1nF for HF and a few pF (eg a "gimmick" capacitor) for VHF/ UHF – see diagram below. Don't forget the safe working voltages of these capacitors when carrying out tests.



Schematic of G3ZMF's probe

Now to the most complex piece of test kit that I ever built. The diecast box contains three tuned circuits and I used it to tame a Pye Westminster (W15FM) that was prone to self-oscillation and mis-tuning. It covers the following frequency ranges:

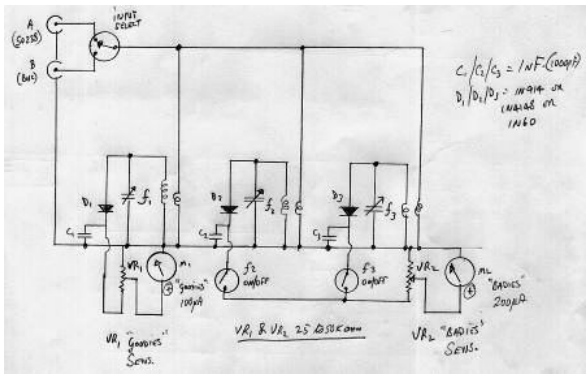
F1: 46 – 50 MHz or 56 – 72 MHz
F2: 66-189 MHz
F3: 136 – 270 MHz

Separate tuning controls are provided for each of the 3 frequency ranges, with sensitivity controls and selection switches. The meters provide an indication of the power levels of both required and spurious signal levels.

(Editor's note: the design of this sniffer is that it must only be used with probes such as those described by G3ZMF. It must not be connected directly to any equipment without a suitable probe.)

The G3ZMF test rig.

Inside the G3ZMF test rig



Circuit diagram of G3ZMF's test rig

The next Shak Nowtz will feature designs for a QRP LF/HF VSWR bridge and a quad loop antenna for 1296 MHz plus several other goodies.

73 de Mad Frank G3ZMF