SDR – Part 7

Components and Painting

(Version 2 of 12 July 2022)

1. Resistors R125 and R126

I received this from Steve G1LMN:

> *Just a question - R125 and R126 on the Detector & I/Q amp board are shown as 408R ?? seems an oddish value and not available of the shelf.*

My response was:

> *You are right about R125 and R126 and it is these kinds of small things that put people off building stuff.*
>
> *Having the amplifiers U2/U4 and U3/U5 as balanced as possible was my goal so I used 0.1% 10K resistors and matched the 408R resistors from a bag of 1% tolerance resistors.*
>
> *I am looking at the bag of 408R resistors and wondering where they came from as they are not E96 values ?? I have had them for a while and have no idea where or when I bought them. I also never twigged that they are not a standard value and will be difficult to find.*
>
> ***Is balancing the amps necessary** ? - not if you use HDSDR as you can adjust the balance between the incoming I and Q. Necessary if you are not using software that cannot adjust the balance.*
>
> ***Is the value important** - No - Use a E96 compliant value of 402R or 412R . I aimed for a gain of 50 in each amplifier. The gain with 408R is 50 and the gain with 402R is 50.75 412R will provide a gain of 49.5 I can't measure that difference even with a steady signal on the input.*

Thank you Steve for the question.

2. Power Switch

Figure 6, SW6 is used to switch the mains on the receiver.

I used an Illuminated SPST, Off-On Rocker, Panel Mount Switch made by ZF – part number LRA22H2BBGEN. This came from Radionics (stock number 706-4329) and costs about €2.70 each.

Make sure you are switching the mains live wire. You do need to connect the mains neutral to the switch as well as this is needed to operate the internal bulb.

3. Mains connector

Figure 6, M1 is where the mains lead connects.

I used a C14 Panel Mount IEC Connector Male, 10A, 250 V made by RS PRO. This came from Radionics (stock number 811-7235) and costs about €2.80 each.

This model has two fuses in it and I used a 0.25A fuse for both.

Make sure that there are no exposed mains carrying wires whatsoever. I use heat shrink to completely cover every bare piece of wire or metal that might be carrying mains voltages.

4. Transformer

Figure 6, T1 is the mains transformer.

I used a model 444439 made by Myrra and available from Radionics (stock number 173-4580) and costs about €20 each.

This is not the ideal choice. As noted in the article, by connecting the two secondary winding in series I have to high a voltage.

5. Resettable fuse

Figure 6, F1 is a 2.2A resettable fuse.

I used a model MF-R110 made by Bourns and available from Radionics (stock number 647-8522) and costs about €0.30 each but you must buy a minimum of 10 pieces.

6. Pillars and screws

Slot Countersunk Brass, Machine Screw - M2.5 × 6 mm: Radionics 482-9142. A bag of 100 costs about €8.

Plain Stainless Steel Hex Nut, M2.5: Radionics 248-4567. A bag of 100 costs about €6.70.

Brass Hex Threaded Standoff, Female / Female, 6 mm long, M2.5 internal thread : Radionics 184-2971. A bag of 20 costs about €8.20 I used these on the LCD display.

Brass Hex Threaded Standoff, Female / Female, 8 mm long, M2.5: Radionics 184-2599. A bag of 20 costs about €10.50 I used these on the switch PCBs.

Stainless Steel Plain Washer, 0.5mm Thickness, M2.5 (Form A): Radionics 248-7106. A bag of 100 costs about €4.50

7. Painting

The front panel is made from 2.5 mm thick aluminium.

To prepare it for painting I used sandpaper as shown in Figure 1. I started with the 600 grit paper to remove all the indentations and marks and finished off with the 1200 grit paper to get a mirror finish. I used both of these in the wet mode.

Figure 1. Sandpaper

Then one coating of grey primer – see Figure 2. As it was cold when I was doing this work I placed the panel, after painting in a low oven (50^{o} C) for an hour or so to make sure all dried well.

Figure 2. Grey primer

Then two coats of the colour French Grey Matt – bought from my local WOODIES (Figure 3). Before we went shopping I showed my wife the colour my Hewlett-Packard equipment is painted and this was the closest match she could find – and it is close. Again placed in the oven after each coat to make sure it dried well.

Figure 3. French Grey Matte.

Finally one coat of a clear matt varnish - Figure 4. This protects the paint from scratching and marking.

Figure 4. Clear Matt varnish

Endnote.

I have no personal connection with or financial interests in WOODIES or Radionics or any of the spray paint or sand paper manufacturers.