



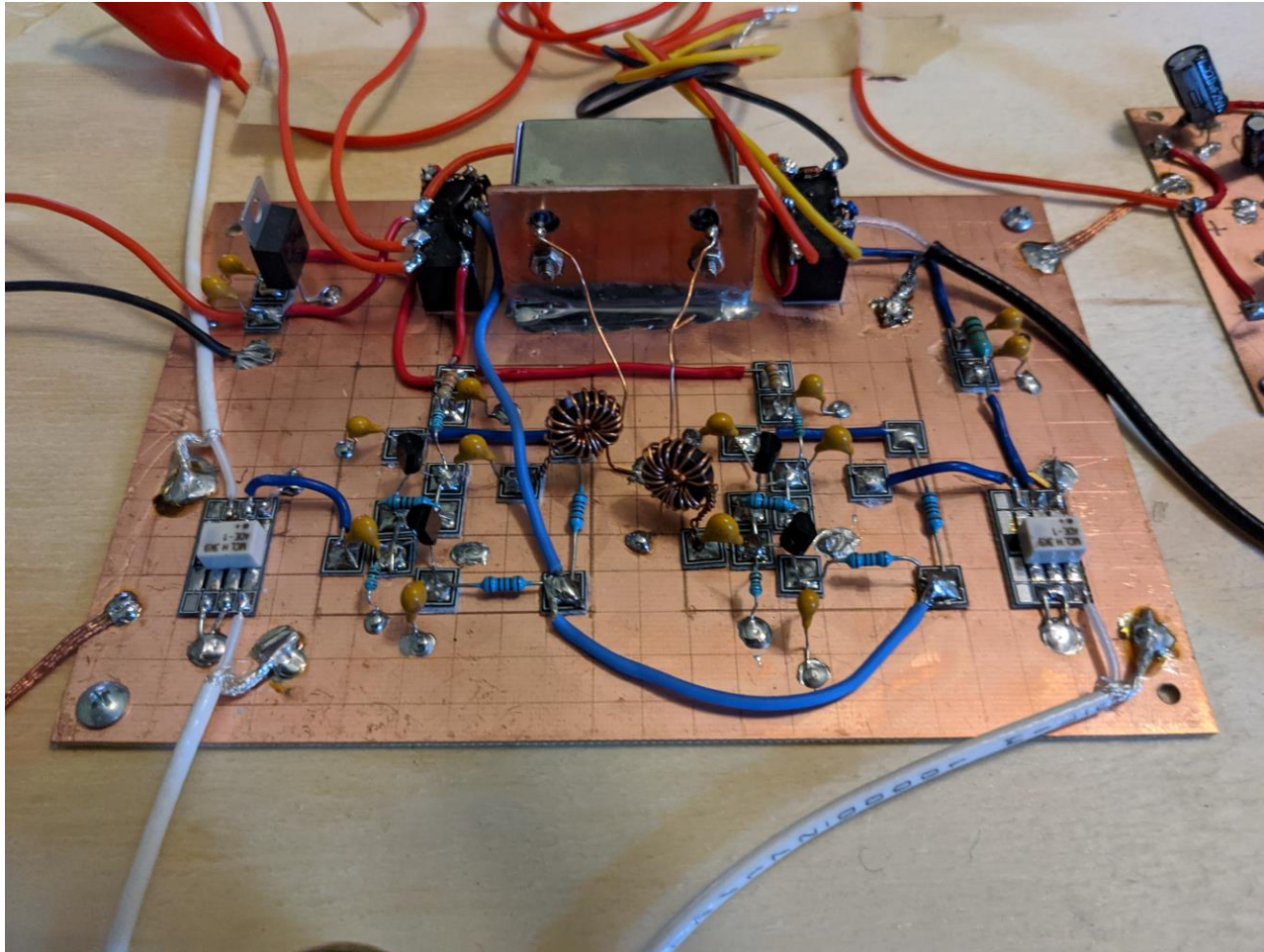
HOMEBREW MANHATTAN STYLE CONSTRUCTION

DEAN SOULELES

KK4DAS

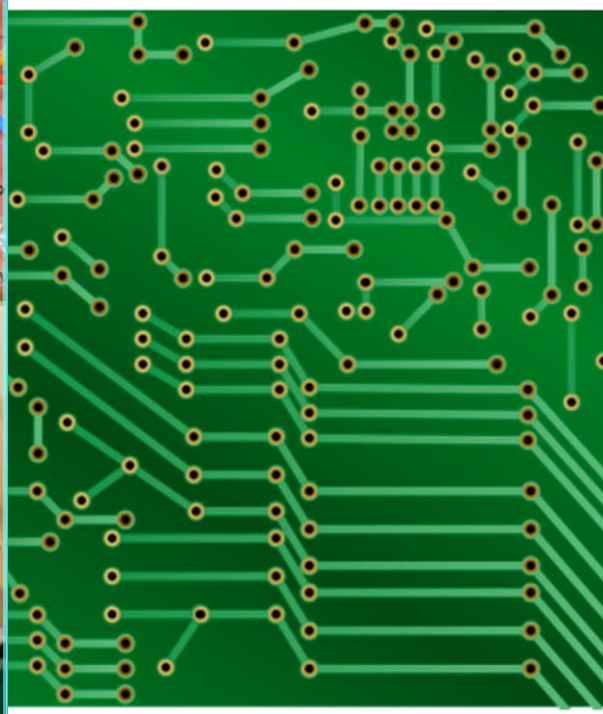
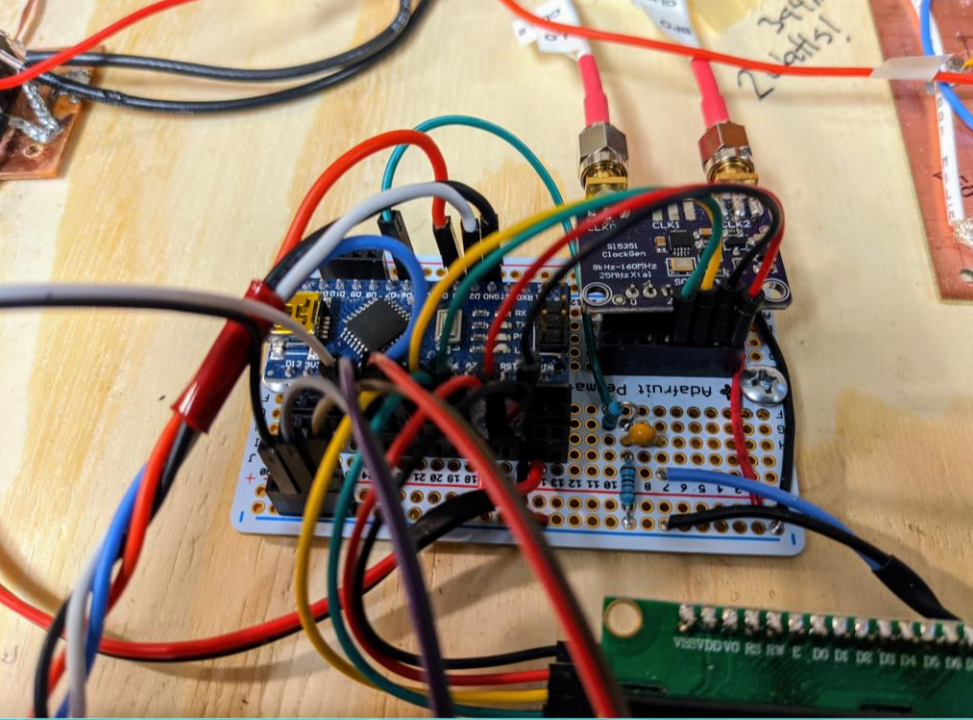
VIENNA WIRELESS SOCIETY

MAY 22, 2020



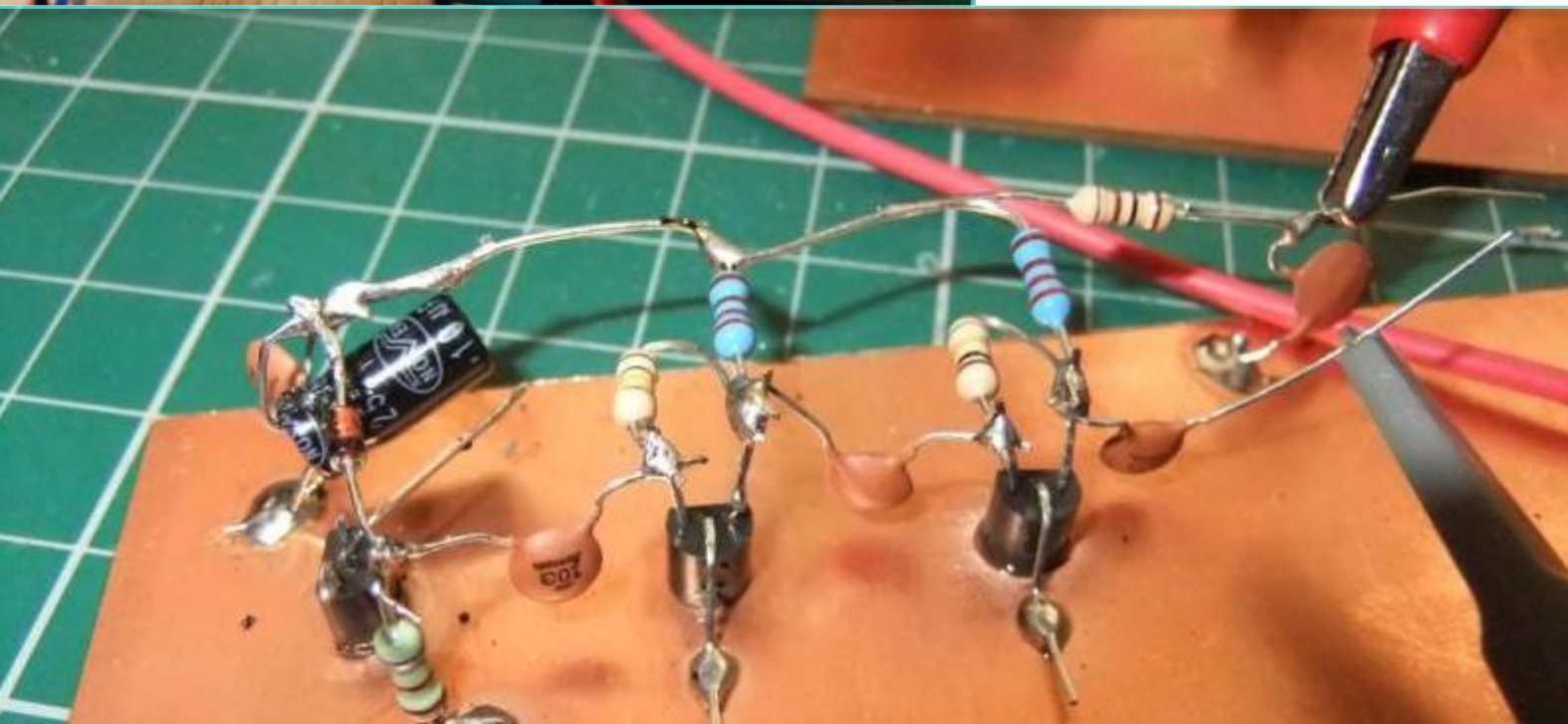
MANHATTAN STYLE

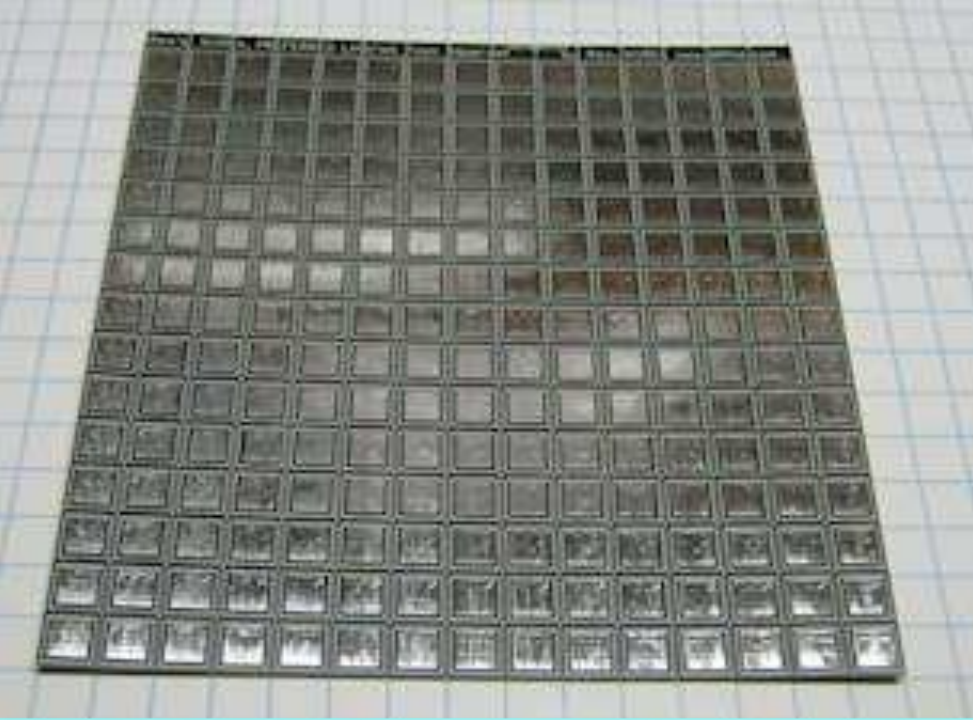
- “Manhattan Style” is a technique for constructing electronic circuits by gluing pads or traces to make “islands” of separate conductivity on top of a base material. ... Component leads are then soldered to the top of the pads and traces to build the circuit. A metallic base board can provide a good ground plane.



COMPARED TO
OTHER COMMON
CONSTRUCTION
METHODS

- Proto-board
- Printed circuit board (PCB)
- Deadbug

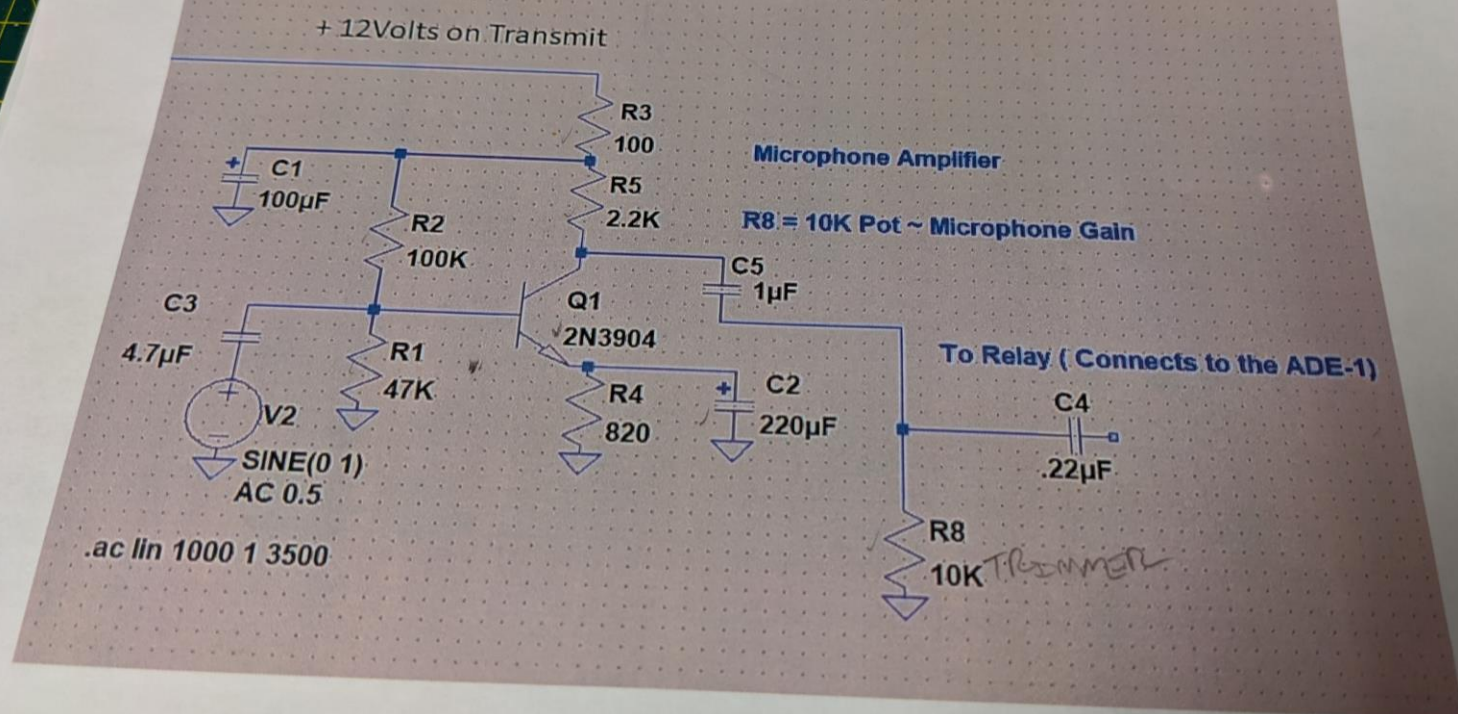




MATERIALS

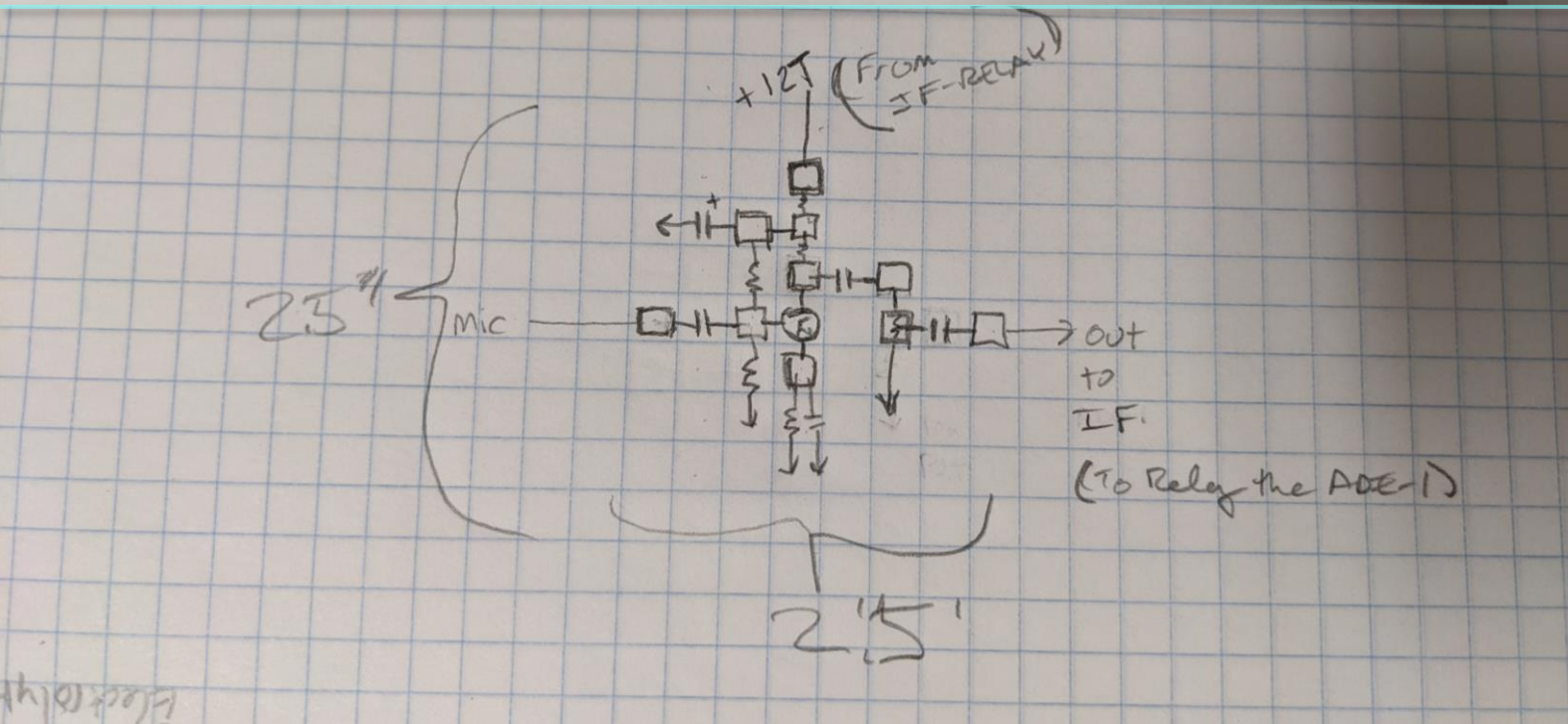
- Copper PCB Boards – single sided or double sided
- Something to make the islands – QRPME.COM ME Squares
- Super Glue
- Soldering Iron, Solder
- Wire and components





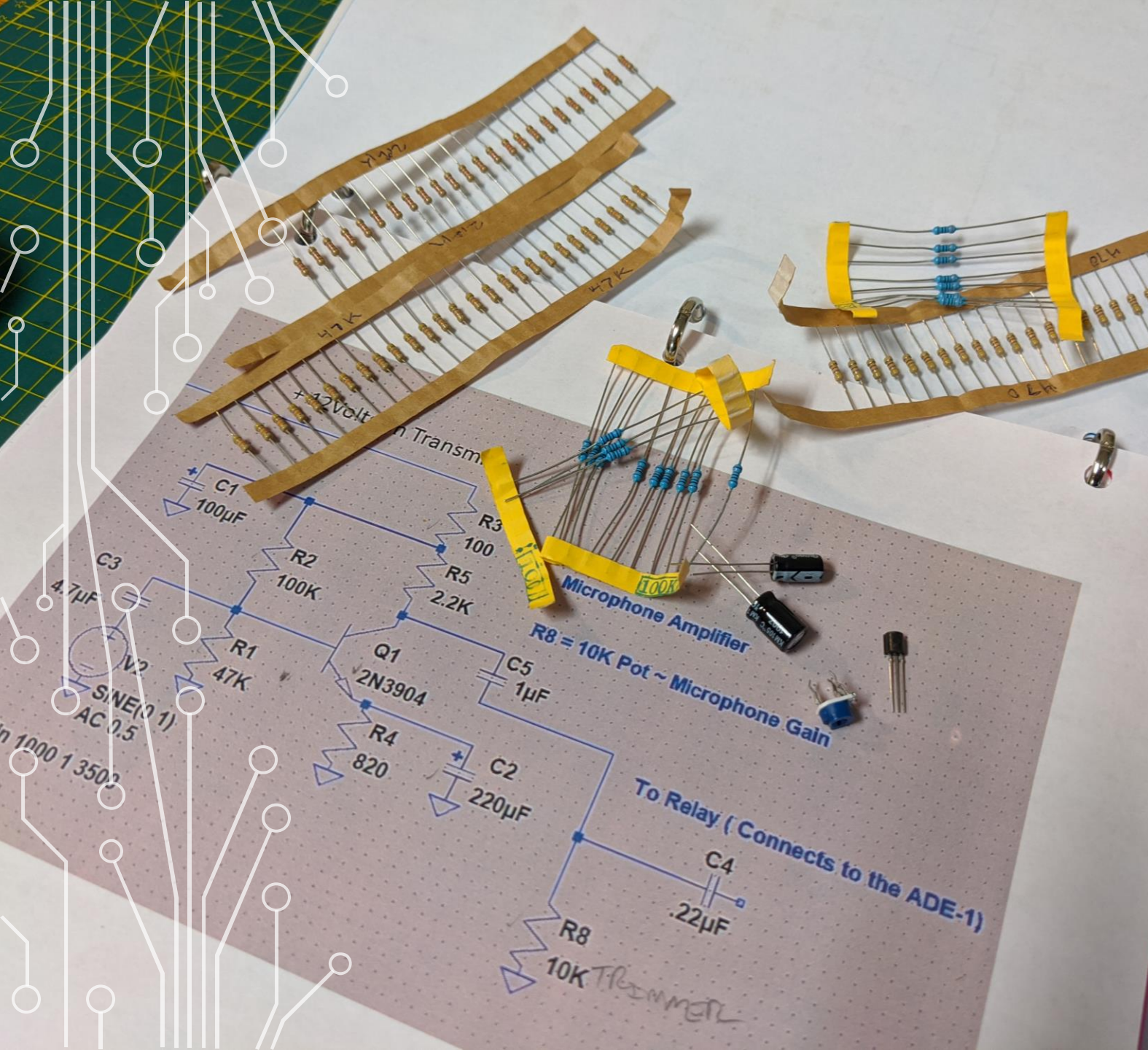
STEP 1 LAYOUT

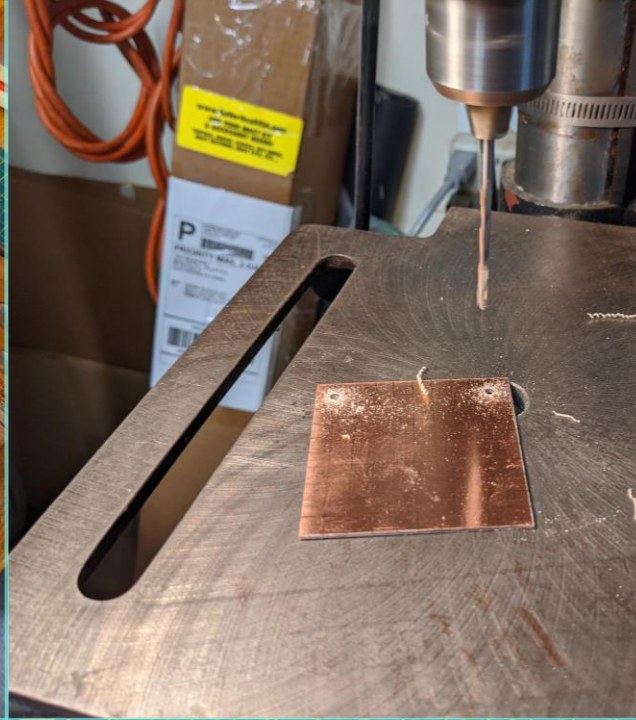
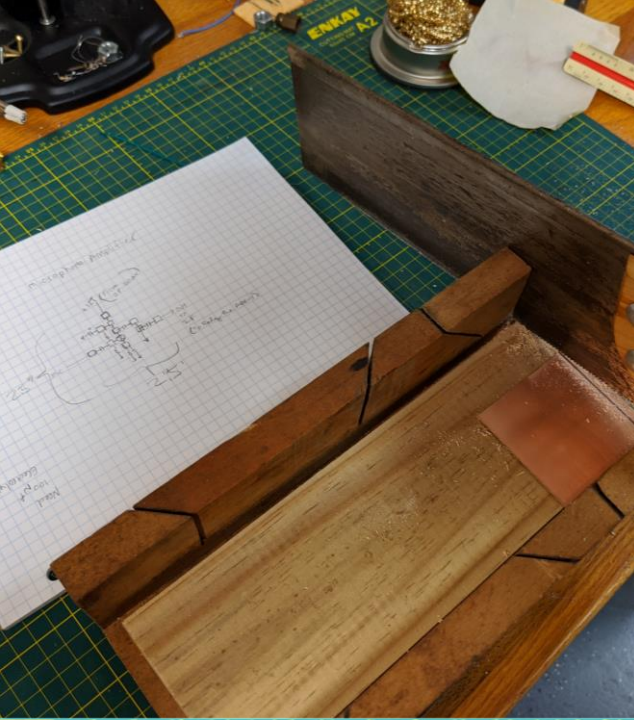
- Start with your schematic
- Using 1/4" graph paper to layout your rig
- Each network junction will require a soldering island
- Advantage – easy to follow the schematic flow on the board



GATHER YOUR MATERIALS

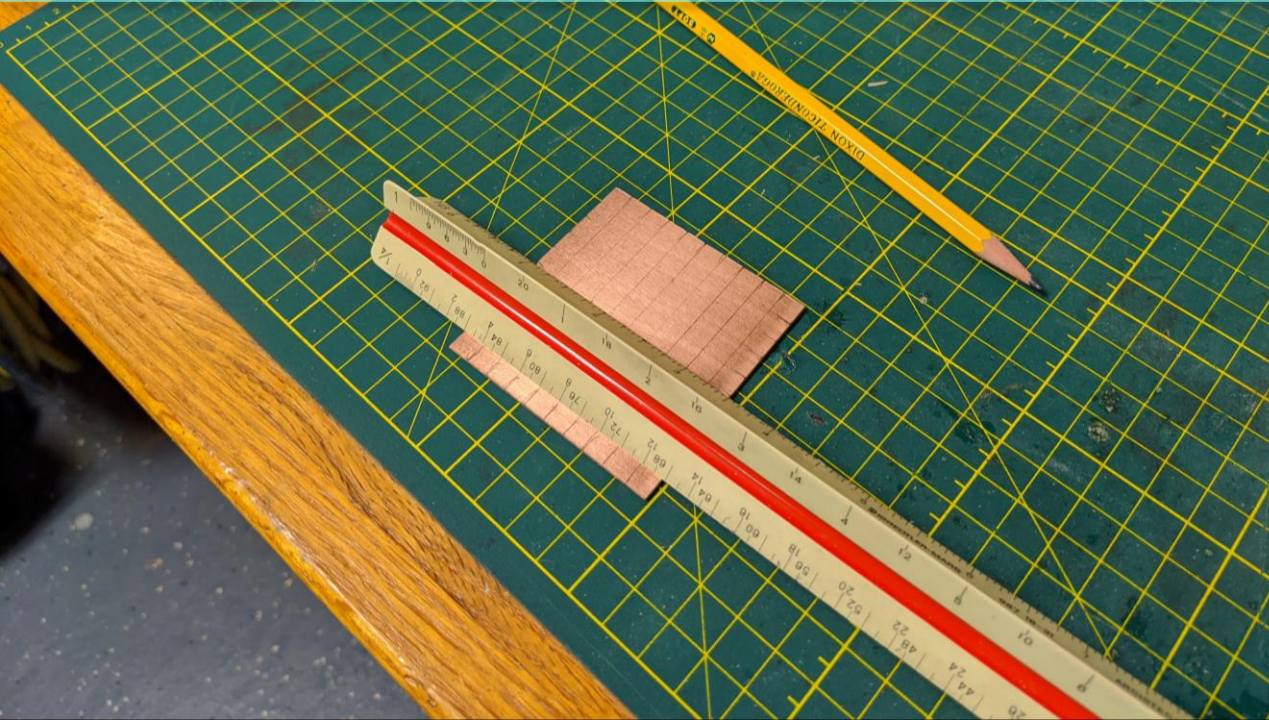
MAKE SURE YOU HAVE ALL
THE PARTS ON HAND





PREPARE THE BOARD

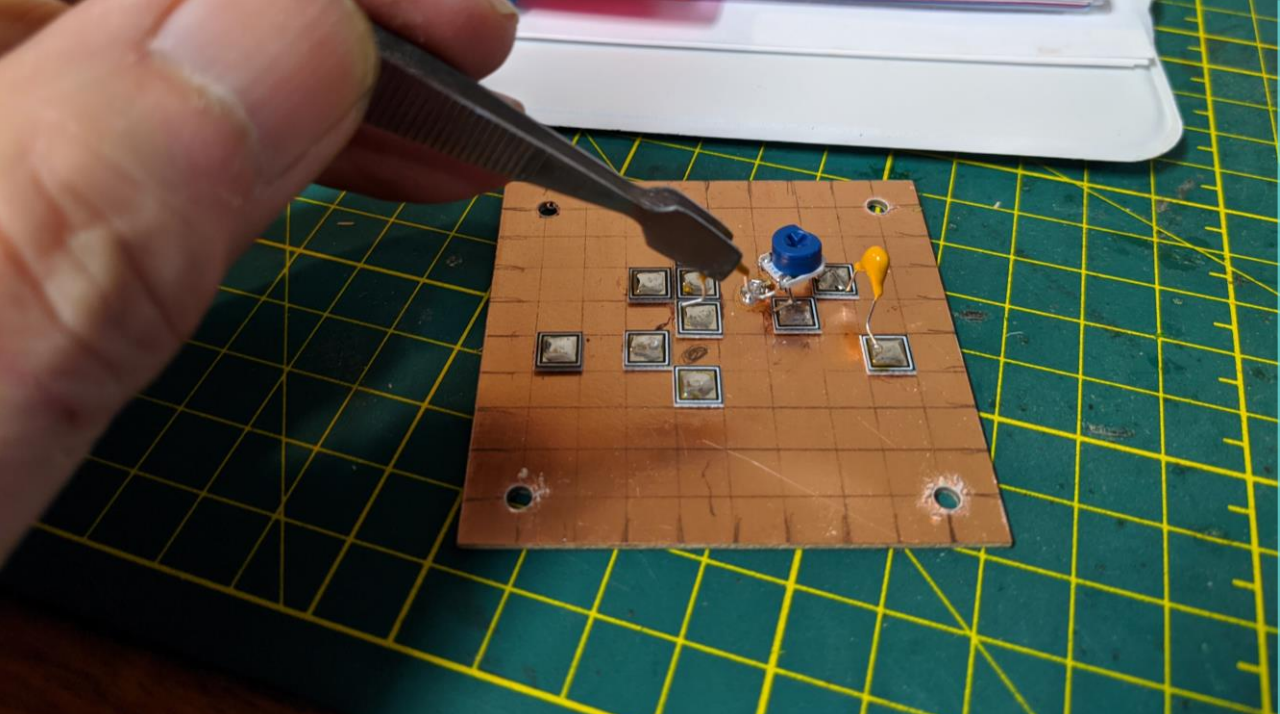
- Cut the board to size (wear a mask)
- Layout the grid lines $\frac{1}{4}$ " squares
- Drill the mounting holes before you start assembling



GLUE ON THE SQUARES

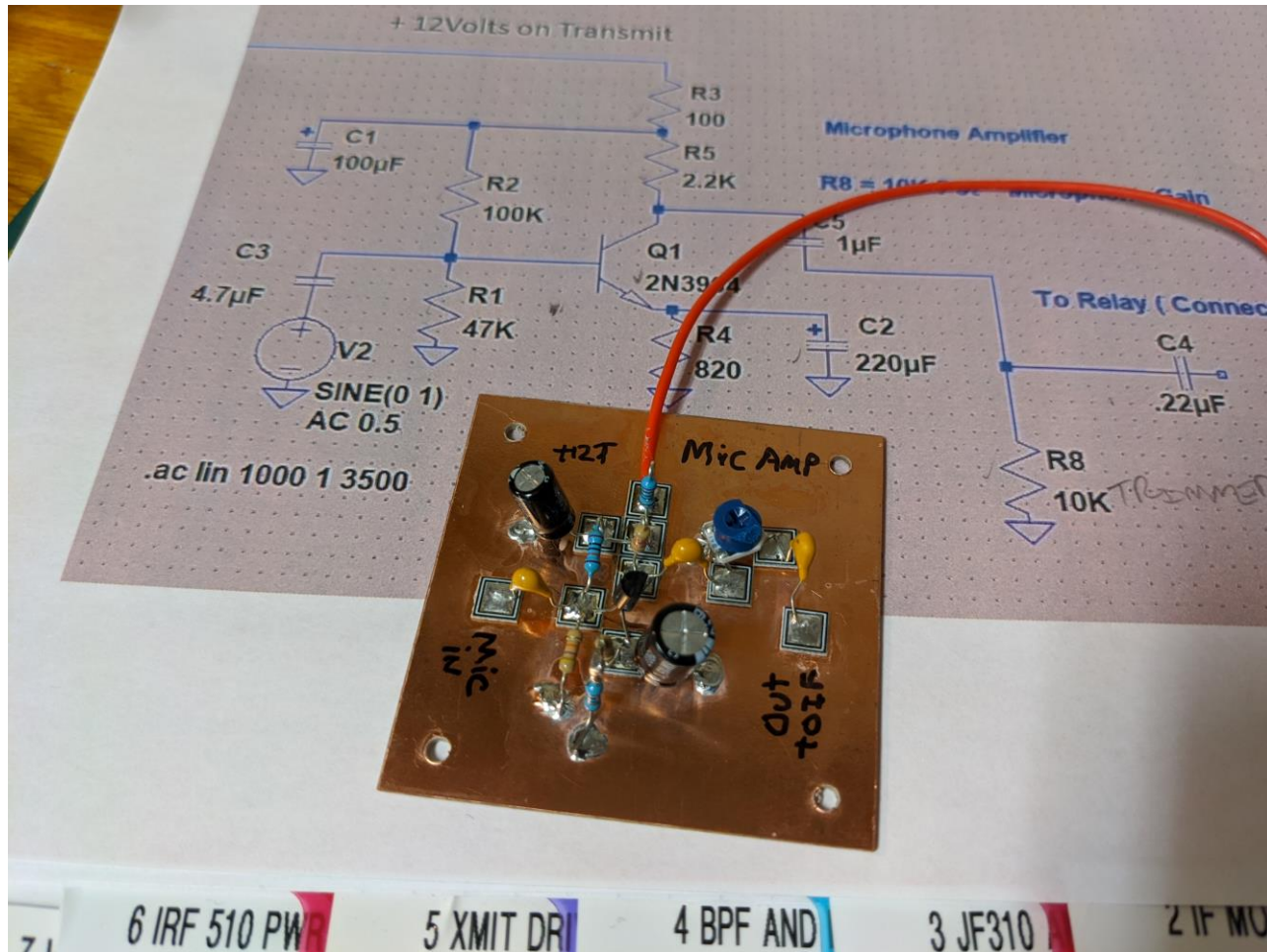
- A pair of tweezers helps for positioning
- Small groups of squares should go on together
- A toothpick helps to spread the glue
- You only need a drop...the more glue you use the longer it takes to set





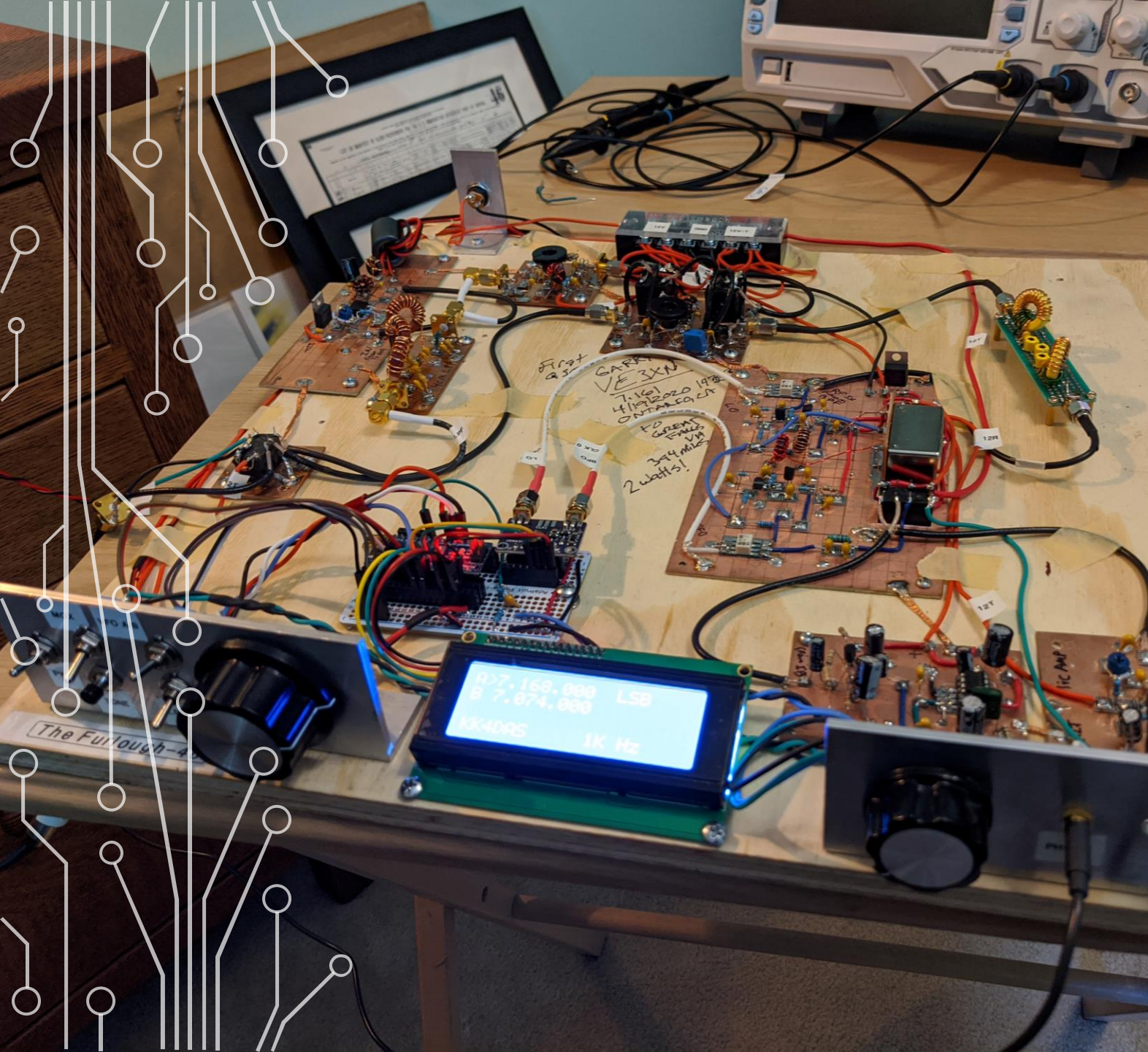
MELT SOME SOLDER!

- Tin the pads and the leads
- Start in the middle and work your way to the edges
- Keep your layout and schematic handy
- Think ahead, use the edges of the pads where multiple connections need to go
- Use solder sparingly – soldering, not welding
- Use solder flux for the ground connections – and maybe a heavier tip
- Check for shorts – your pads should not be shorted to the board



FINISHING IT UP

- Double check all connections
- Check for shorts
- Clean off the flux – either with flux removal or alcohol and a toothbrush
- Label the connections



THE FURLOUGH 40 - PUTTING IT ALL TOGETHER

- Fast and flexible – gives you control over the layout
- Good ground plane for RF
 - Great for quiet noise free-builds (superior to stripboard, perfboard and tagboard in this respect)
 - Evens so – tie the boards together with good ground straps
- Fast build time (at least compared to etching boards)
- Easy building and schematic to layout conversion
- Surface mount is challenging – but QRPME has pads to help with that also

RESOURCES

- ME Squares – QRPME.COM
- Copper PCB Boards – Seller ABCFAB on Ebay
- Hackaday.com and Youtube
- KK4DAS.blogspot.com

KK4DAS
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