

Sheet: AF Amplifier

File: af-amplifier.sch

Sheet: Misc

File: misc.sch

Sheet: AGC

File: agc.sch

Sheet: IF-9Mhz

File: if-9mhz.sch

Sheet: IF-45Mhz

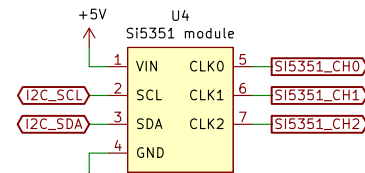
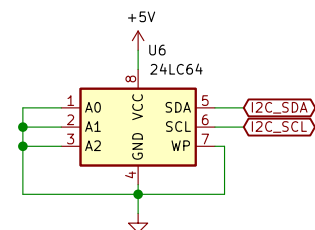
File: if-45mhz.sch

Sheet: LPFs

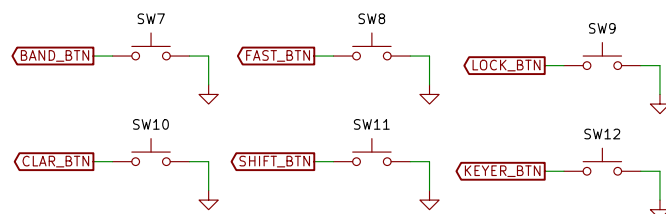
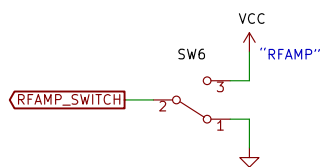
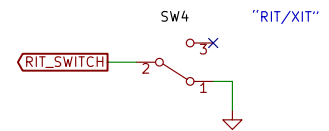
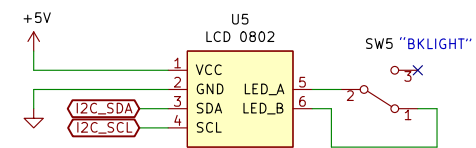
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Sheet: PA

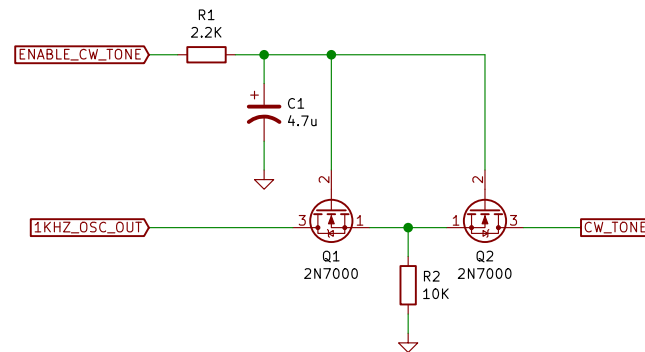
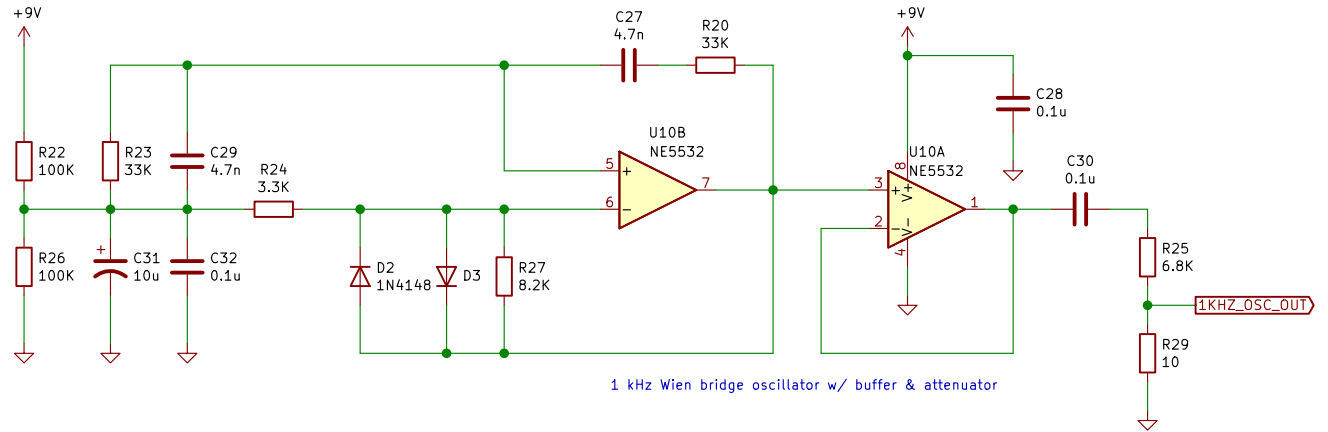
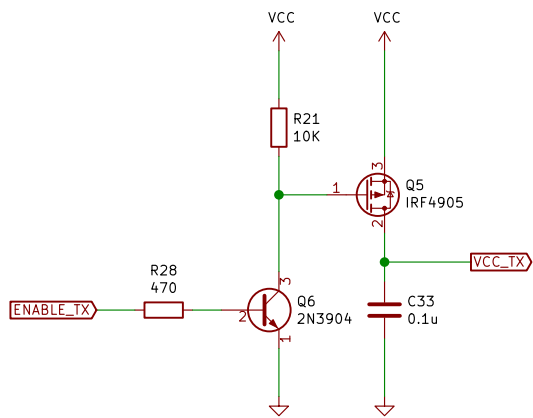
File: pa.sch



The Si5351 module has built-in pull-up resistors for the I2C bus.





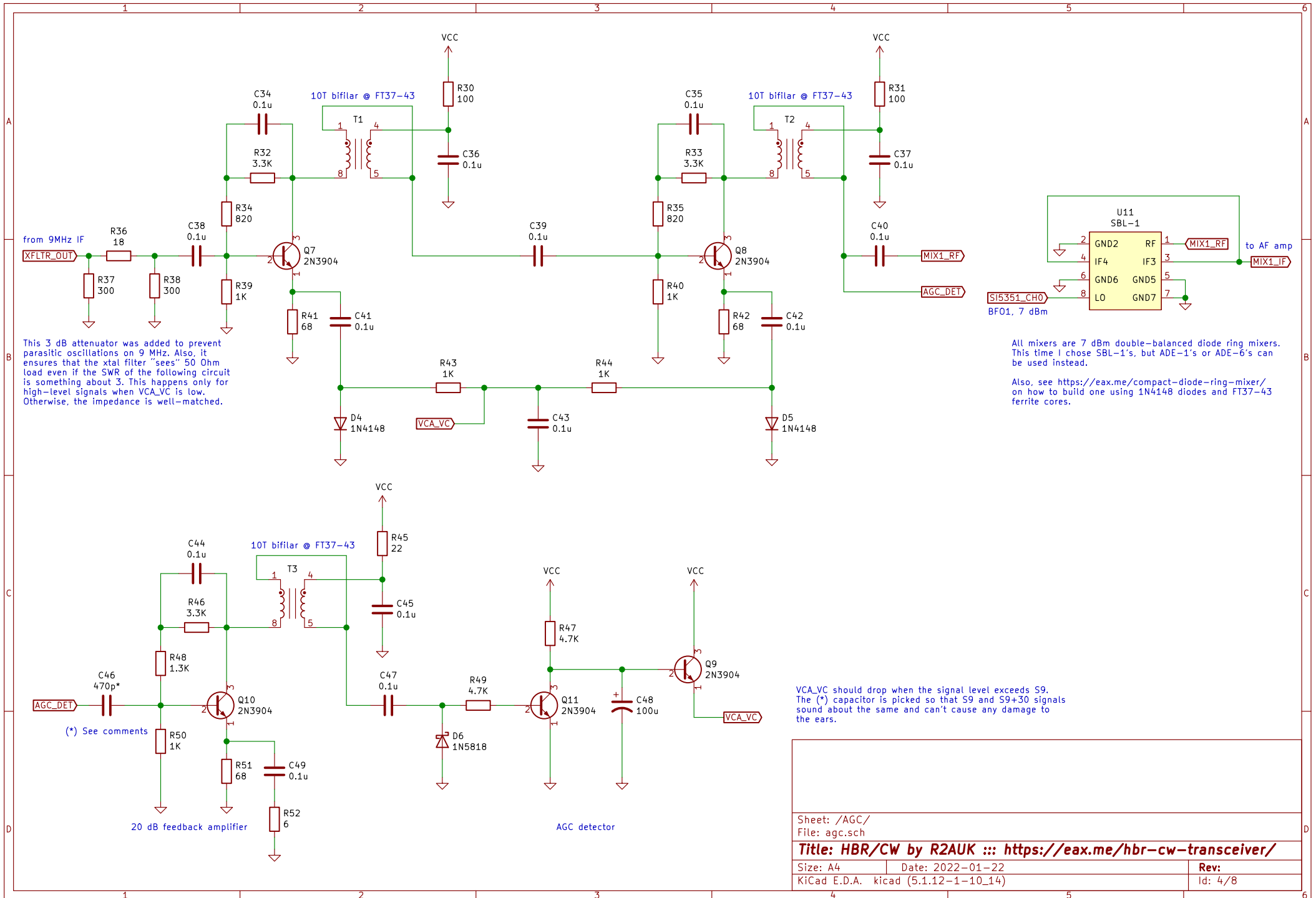


Sheet: /Misc/  
File: misc.sch

**Title: HBR/CW by R2AUK ::: <https://eax.me/hbr-cw-transceiver/>**

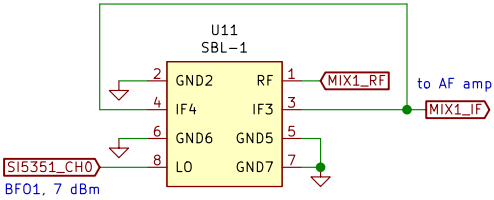
Size: A4 Date: 2022-01-22  
KiCad E.D.A. kicad (5.1.12-1-10\_14)

Rev:  
Id: 3/8



from 9MHz IF  
XFLTR\_OUT

This 3 dB attenuator was added to prevent parasitic oscillations at 9 MHz. Also, it ensures that the xtal filter "sees" 50 Ohm load even if the SWR of the following circuit is something about 3. This happens only for high-level signals when VCA\_VC is low. Otherwise, the impedance is well-matched.



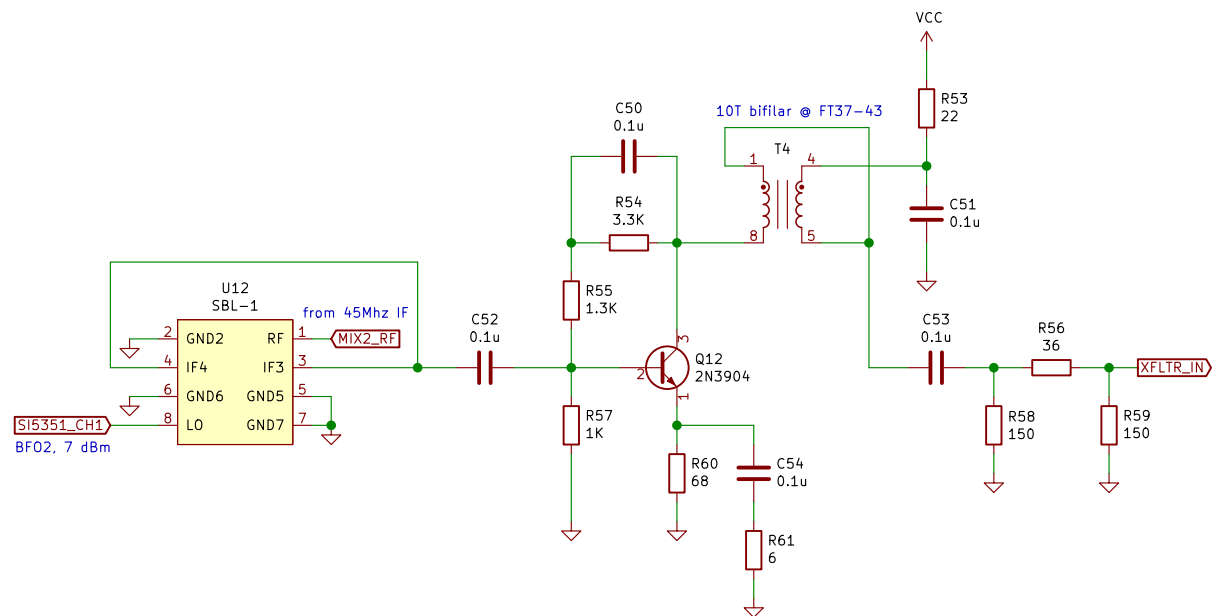
All mixers are 7 dBm double-balanced diode ring mixers. This time I chose SBL-1's, but ADE-1's or ADE-6's can be used instead.

Also, see <https://eax.me/compact-diode-ring-mixer/> on how to build one using 1N4148 diodes and FT37-43 ferrite cores.

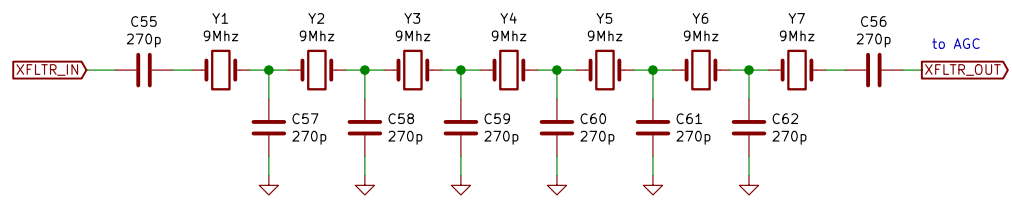
(\* See comments)

VCA\_VC should drop when the signal level exceeds S9. The (\*) capacitor is picked so that S9 and S9+30 signals sound about the same and can't cause any damage to the ears.

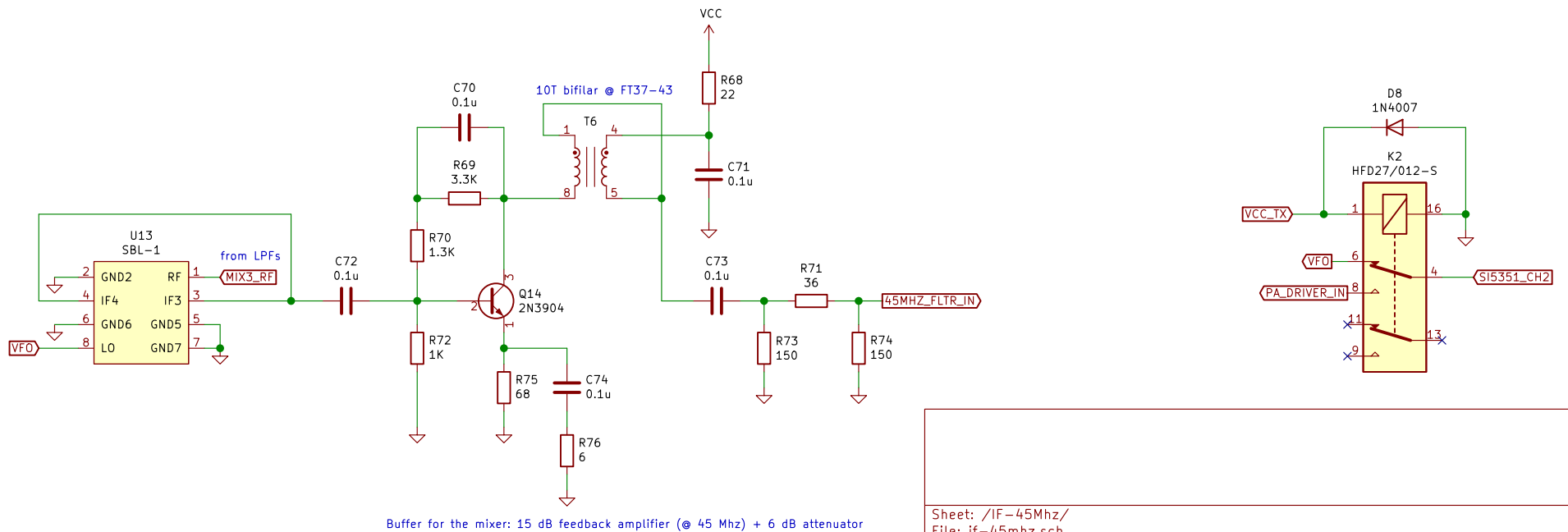
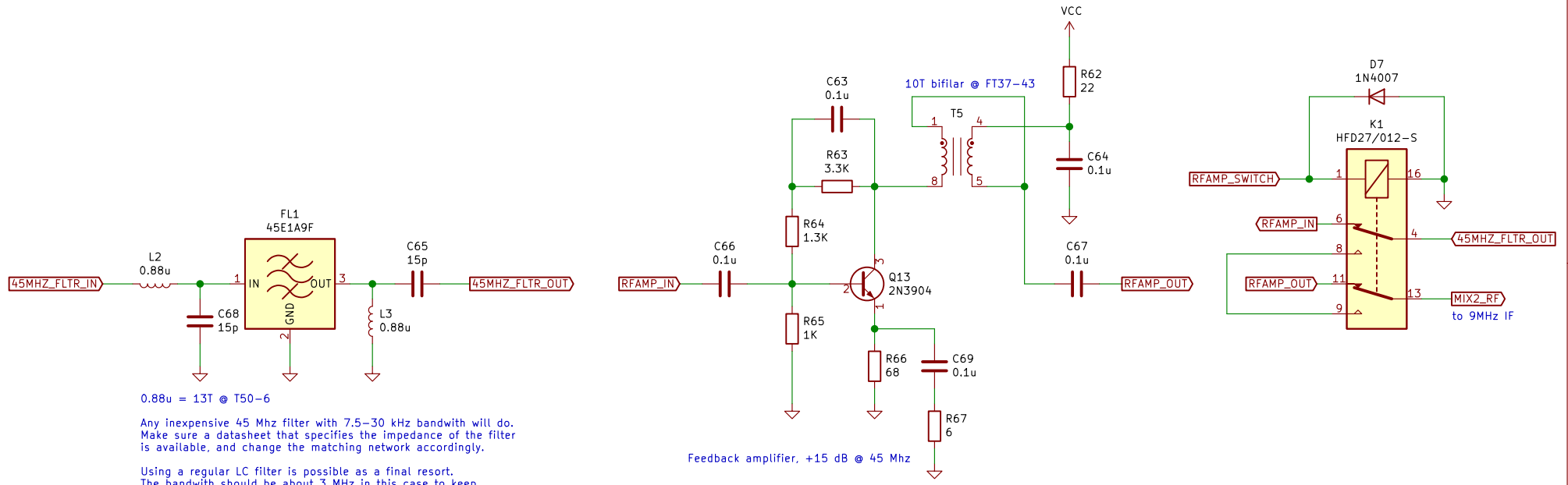
Sheet: /AGC/		File: agc.sch	
<b>Title: HBR/CW by R2AUK ::: <a href="https://eax.me/hbr-cw-transceiver/">https://eax.me/hbr-cw-transceiver/</a></b>			
Size: A4	Date: 2022-01-22	Rev:	
KiCad E.D.A. kicad (5.1.12-1-10_14)	Id: 4/8		



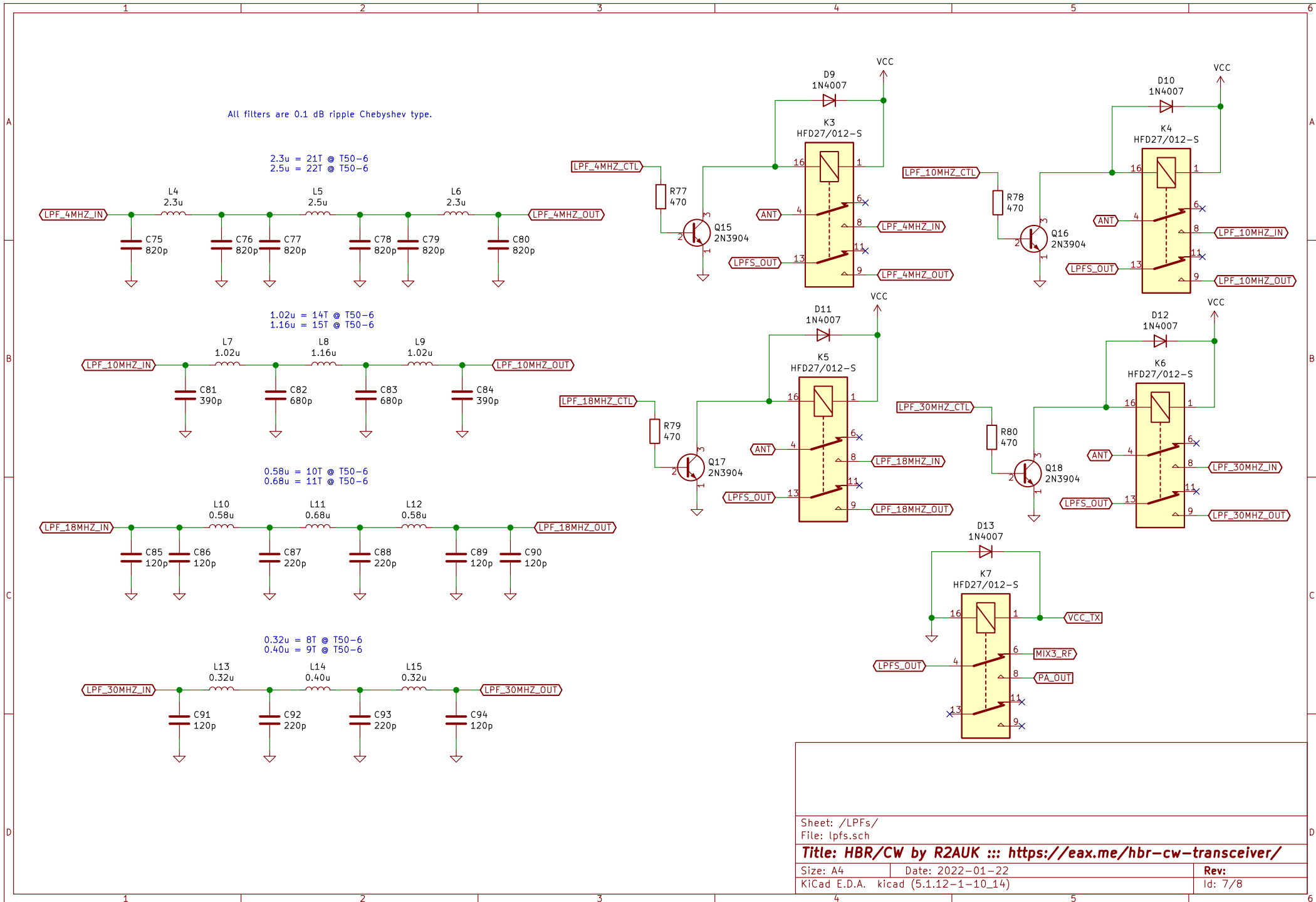
Buffer for the mixer: 20 dB feedback amplifier + 6 dB attenuator

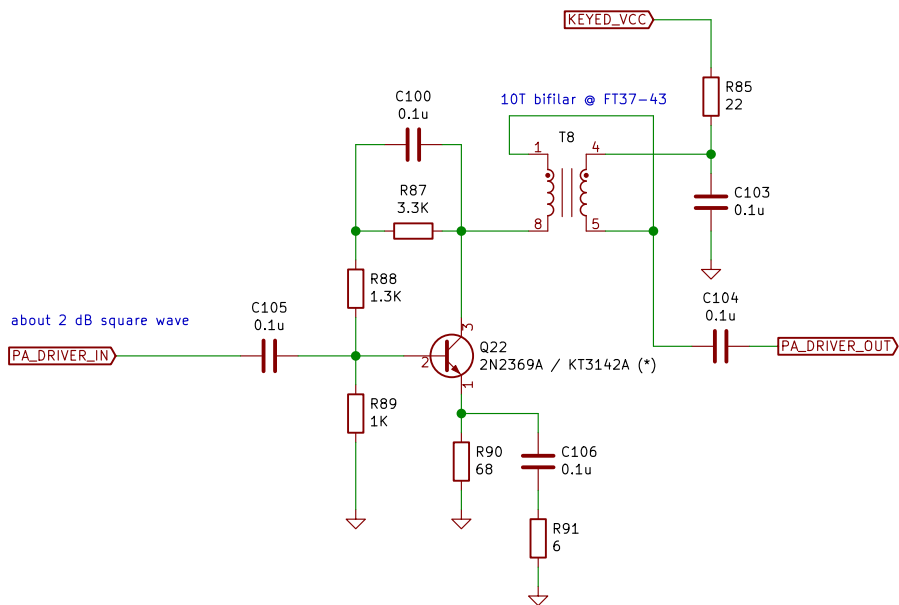
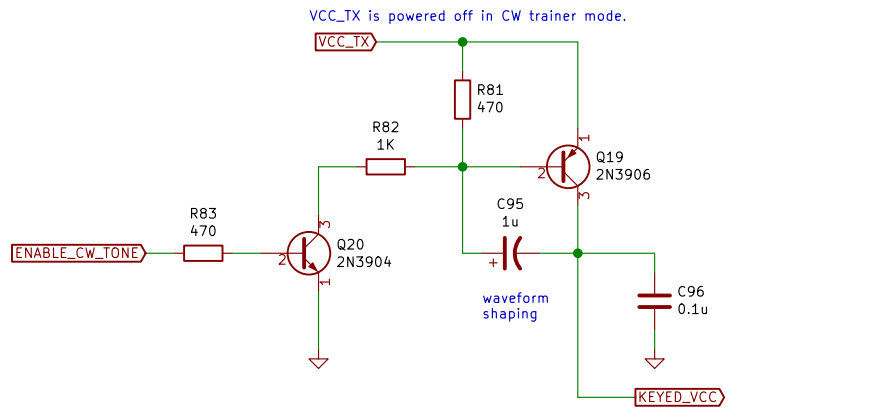


Sheet: /IF-9Mhz/		Date: 2022-01-22	
File: if-9mhz.sch		Rev:	
<b>Title: HBR/CW by R2AUK ::: <a href="https://eax.me/hbr-cw-transceiver/">https://eax.me/hbr-cw-transceiver/</a></b>			
Size: A4	KiCad E.D.A. kicad (5.1.12-1-10_14)		Id: 5/8

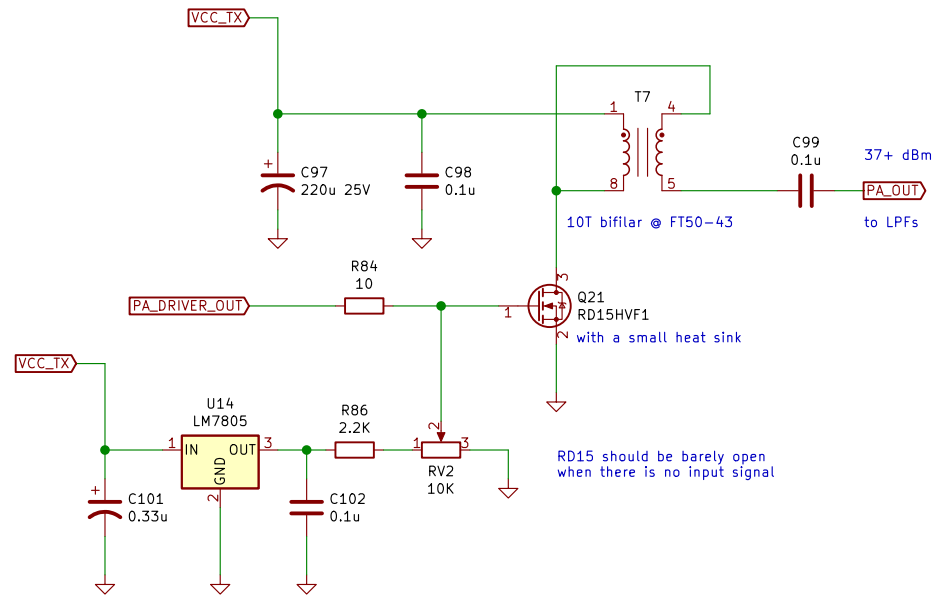


Sheet: /IF-45Mhz/  
 File: if-45mhz.sch  
**Title: HBR/CW by R2AUK ::: <https://eax.me/hbr-cw-transceiver/>**  
 Size: A4 | Date: 2022-01-22 | Rev:  
 KiCad E.D.A. kicad (5.1.12-1-10\_14) | Id: 6/8





(\*) You need something similar to 2N3904 but with higher FT to get equal power across all HF bands. 2N2369A / KT3142A have FT = 500 Mhz.  
 Note that 2N2368A and KT3142A have different pinouts!



RD15 should be barely open when there is no input signal