

# RX Detector

RX Detector module is a classic Tayloe detector. It also implements a small gain pre-amp and voltage controlled attenuator.

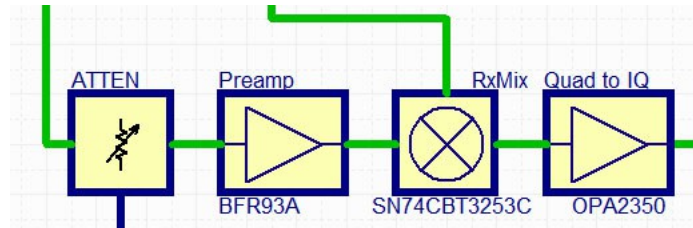


Fig1: RXD block diagram

The purpose of the preamp is to compensate for losses in the bandpass filters preceding the RX Detector. The voltage controlled preamp is implemented with a single JFET transistor that acts as analog potentiometer and is on the path of the incoming RX signal. Control voltage is provided by the built in MCU DAC.

The switch for the detector is based on SN74CBT3253C in balanced mode, the input transformer T3 is off the shelf SMD component, rather than hand wound toroid. Finally the IQ pair of audio signals is generated by high quality OP amp – OPA2350UA.

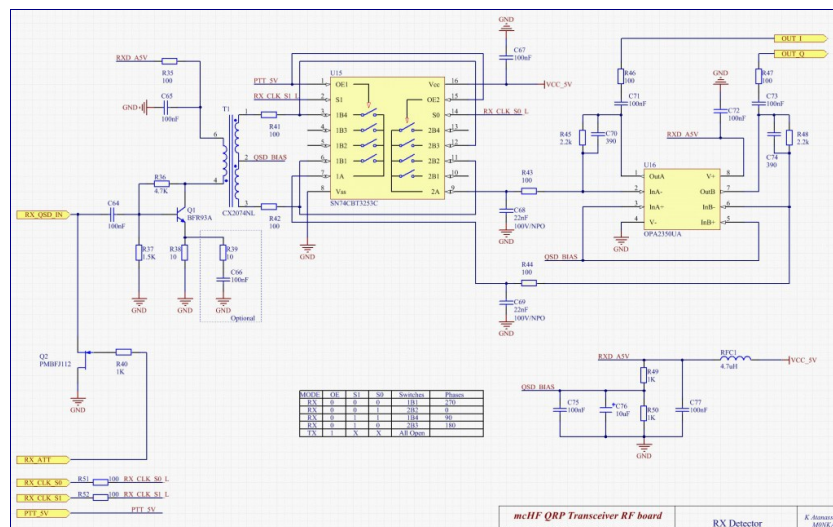


Fig2: RXD schematics(click for larger view)

The switching mixer uses two high quality 22nF capacitors for each leg of the switch. Those are 100V NPO type.

The pre-amp uses classic common emitter design, with old school NPN transistor. I have tried some monolithic chip amplifiers, but they were too unstable for the purpose as losses in the BPF are not more than 3-4 dB, and most GHz amps provide gain larger than 15 dB without an easy way to bring the gain down at HF, where they are clearly not designed to operate. The board has space for the extra gain equalizing circuit in the emitter, if you need more gain, you can add the two components off course.