

# Re: AM radio receiver – design

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- *From:* "miso@xxxxxxxx" <miso@xxxxxxxx>
  - *Date:* Mon, 9 Feb 2009 14:17:03 –0800 (PST)
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On Feb 9, 8:24 am, cs\_post...@xxxxxxxxxxxx wrote:

On Feb 6, 10:51 am, "Joe G \(\Home\) " <jo...@xxxxxxxxxxxxxxxx> wrote:

I am looking for a super sensitive / selective AM radio design.  
Where I am I get lots of interference ....  
Have you seen any good designs on the internet you can suggest.

Many have made some good suggestions on the antenna front.

For a receiver, if you really want something economical that can pick out exactly the bandwidth of interest and reject everything else, try looking at a quadrature sampling detector, aka Tayloe Mixer. The basic idea is to do a very high dynamic range commutating mixer with four phases of a digital clock, giving you a quadrature IF either at zero or in the kilohertz range. You use some op–amp filters to remove strong interference, then put the result into a high quality stereo sound card (it's still an RF signal at this point not 'audio' but the frequency range is within the bandwidth of high end audio converters). From then on, the remainder of the signal processing is all digital – highly customizable IF filter bandwidths, detector algorithms, etc.

I'm amazed that has a patent. It is very similar to designs used at least a decade earlier.

In the early 80s, we did a modem using a similar scheme, but at that point it could be done in DSP. The easiest way to derive IQ signals via sampling is by decimation and alternate sample inversion.

Assume this is your sample stream  
1 2 3 4 5 6 7 8 9 10  
Produce two streams as such  
+1 –3 +5 –7 +9  
+2 –4 +6 –8 +10

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This assumes sampling at 4x. You could need to do clock recovery of the carrier with a multiplier.