HF SDR S/H Sample and Hold Receiver DR2-2 receiver without any coils from 30 KHz to 40 MHz-Make it Simple as Possible with Outstanding Performances

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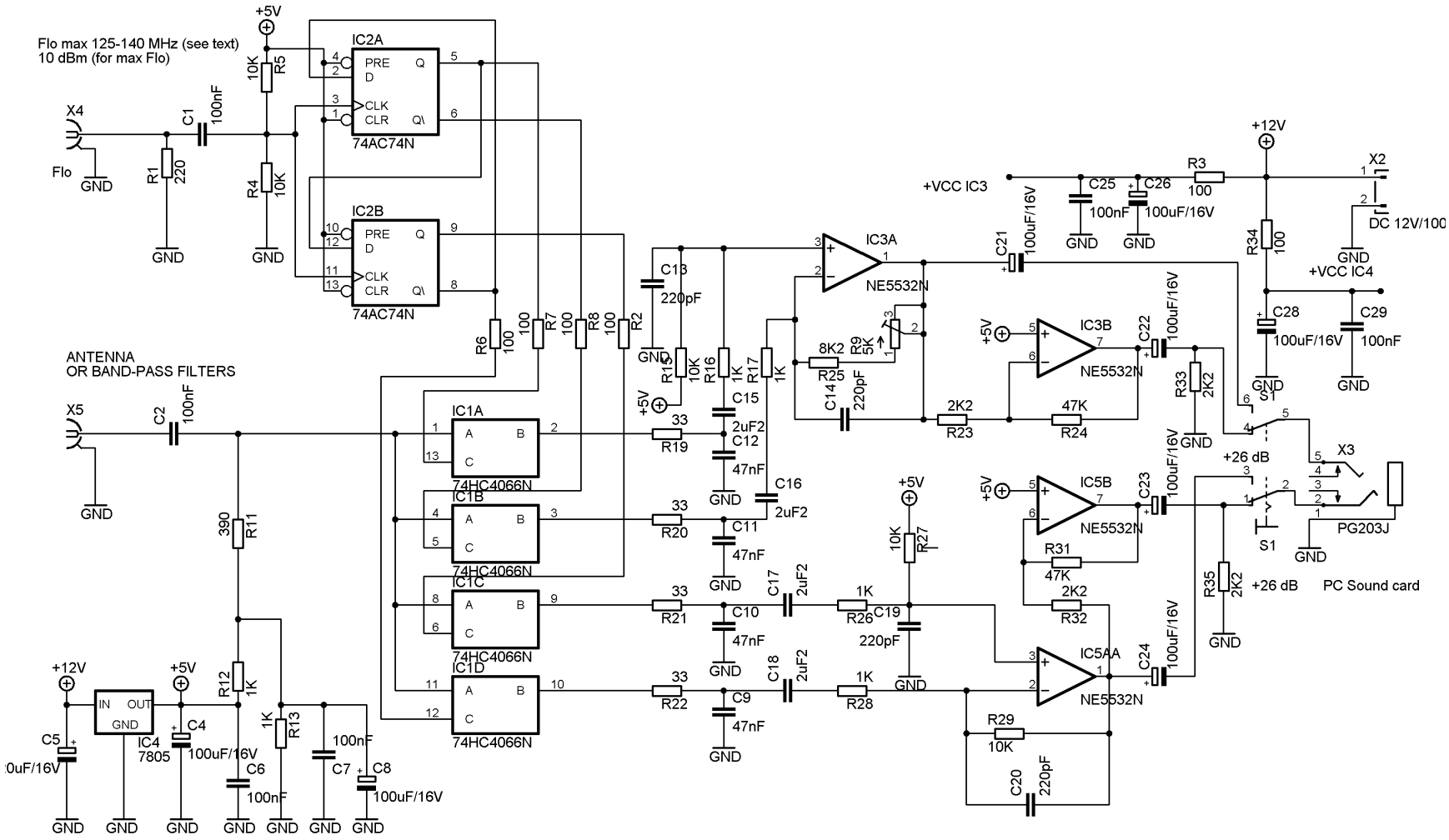
Many HAMs all over the world built my SDR S/H receivers DR1, DR2, DR2A, DR1A… . You can see some photos on my sites and I can emphasize that they are all satisfied with results .Simple constructions with cheap classic components are working really very well. All SDR receiver designs have some positive and some negative aspects of design. The SDR receiver DR2 with I/Q outputs which I had been published first , it is mine the most popular design. I received a lot positive comments all over the world and I read many positive impressions on forums. Two things returned me back to this design.

1. I wrote that is possible to build extra simple receiver with outstanding performances without any coils. I noticed that this statement was without any comments. Many homebrew builders are still suspicious in my realizations that it is possible make receiver without any input filters and coils. This fact was really unbelievable for most builders who try to make any kind of receiver. They know that these facts mean a lot IMD products and really "mix" unwanted broadcast signals at the receiver output. I received pictures of my realizations with input band pass filters for any case. The band pass are not necessary part except for DR2C receiver (non optimum design) and only in one situation that we must have it is multi-multi operation in very close neighborhoods. This kind operation can damage receivers with excessive input power and lead to the IMD products at receiver outputs (mainly cased by the OP AMP clipping). I wrote about this situation with my neighbor YU1KR in article part1.
2. I received also some negative comments about PCB. It is bigger than it is necessary and that I could make PCB better. I am not CAD PCB expert I am in that field only hobbyist. My initial intension was not to fascinate readers and builders how small and good PCB and original parts placement I that can do but to share my results with all and help them to make easier PCB. I have professional experience with design repeatability and even mass production problems. I know how hard it is making something like receivers, transmitters which can everybody repeat at home in any circumstances with parts which are not as in schematics but close values and close performances. I am sure that most number of my designs have this quality and that only errors are cased by wrong soldering could make problems that designs are not working. This article is my attempt to make situations that anybody with or without any practical experience can make receiver which will work from the first if it is soldered correctly with outstanding performances. In realizations are only resistors, capacitors and couple ICs. I will write article in future in which I will on popular way explain how my designs are working and how they are balanced and how they are achieving performances without RF parts.

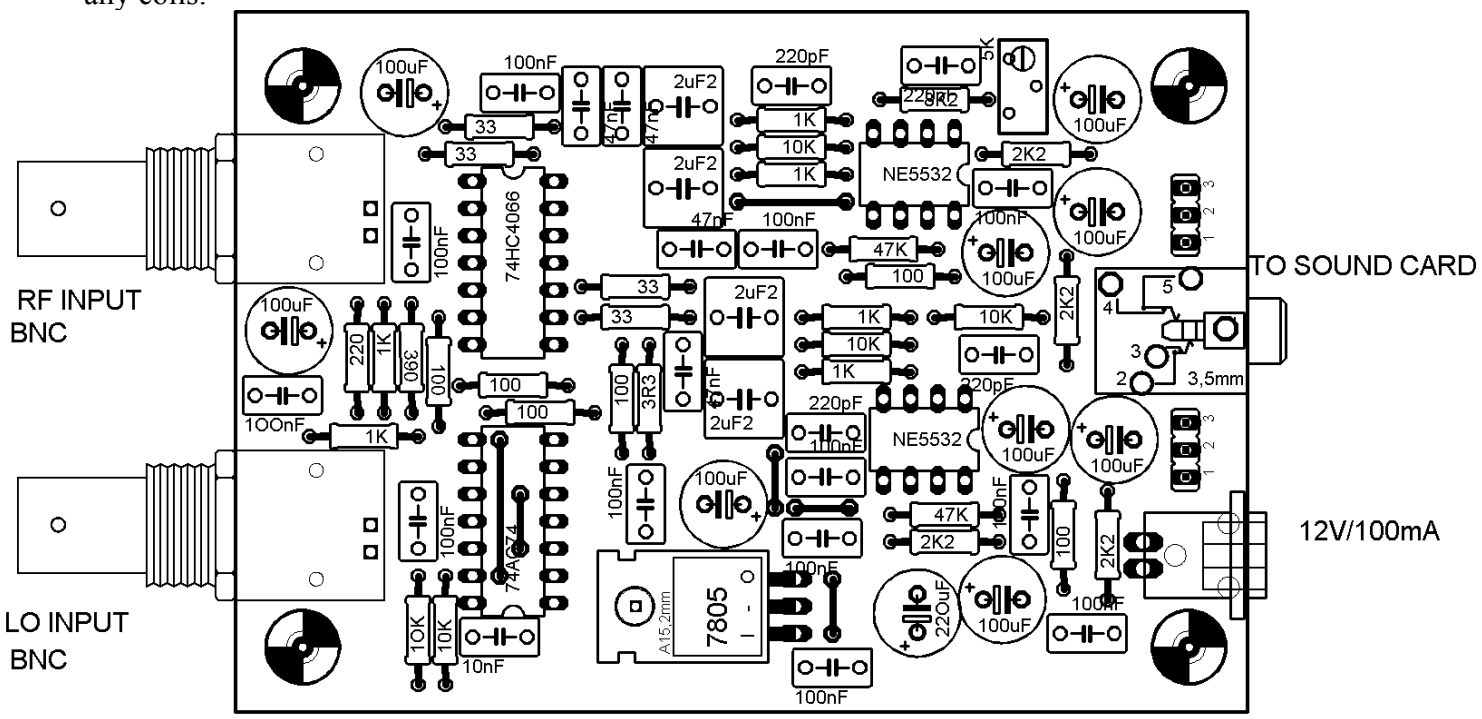
If we are talking about measured performances ,they are the same as they were for DR2 original design (see part1) except one that I lost about 1-2 dB in MDS but with better sound card like Audigy NX2 which I am using now. MDS Results are the same or few dB 1-2 even better than with Realtec AC79.

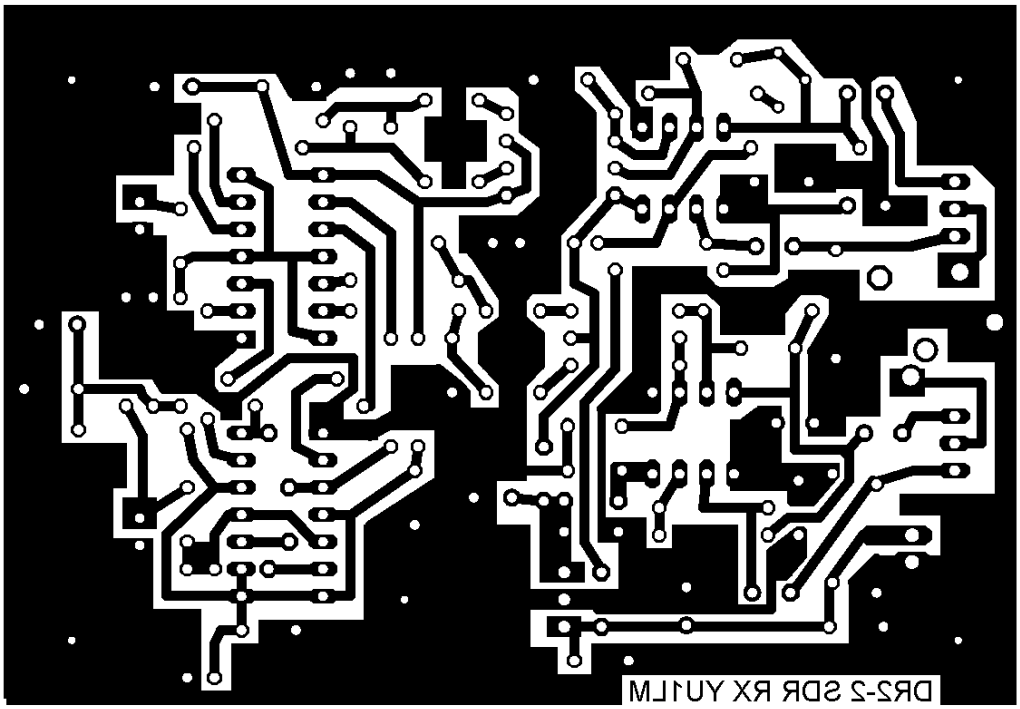


HF I/Q SDR Receiver without coils DR2-2

30 kHz-40 MHz YU1LM/QRP

I made some simplifications in schematic but basically design is the same except that is without any coils.





DR2-2 single side PCB dimensions 95 x 65 mm (original DR2 dimensions are 105 x 80 mm)

I made great effort to make SDR projects and share them with all who are interesting for. Anyway send me your comments positive or negative, results or photos of your realization please.

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References:

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2. ***http://forum.cqham.ru/viewforum.php ?f=28***
3. ***Skidan@mail.ints.net T03DSP UR3IQO http://users.ints.net/skidan/T03DSP***
4. ***http://www.nitehawk.com/sm5bsz Leif LINARD***
5. ***http://www.flex-radio.com SDR1000 Gerald AC5OG***
6. ***http://www.njqrp.org/mbrproj/9850dds.html***
   www.analog.com/en/prod/0,,770_843_AD9850,00.html

   http://www.qsl.net/pa3ckr/signalgenerator/

   http://www.k6ese.com/DDS_Project.htm

   http://ham.kiev.ua/pic/dds_ham2.html

   http://www.qsl.net/om3cph/dds/rx.html

   http://www.seboldt.net/k0jd/othervfo.html

   http://perso.wanadoo.fr/f6itv/p2063001.htm

   http://koti.netplaza.fi/~jonverro/ad9854.htm

   http://www.labyrinth.net.au/~steve/freq/

   http://members.aol.com/Dl4JAL/DDS.html

   http://hem.passagen.se/communication/dds.html

7. ***Recent Advances in Shortwave Receiver Design Dr. Ulrich Rohde QST Nov 1992 page 53***
   6. RF Design 6/1995

Software LINK for SDR radio receiving and transmitting

1. ***www.weaksignals.com Alberto I2PHD SDRadio software ver 0.99***

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2. ***www.weaksignals.com WINRAD***
3. ***www.ciaoradio.com***
4. ***www.m0kgk.co.uk/sdr Duncan M0KGK***
5. ***www.g8jcf.dyndns.org Peter G8JCF***
6. ***http://www.nitehawk.com/sm5bsz Leif LINARD***
7. ***http://www.flex-radio.com SDR1000 Gerald AC5OG***
8. ***dl6iak.ba-karlsruhe.de***