Subject: Re: RASDR2 direct sampling 15MHz to 30MHz, Radio Jove, etc.
From: Nathan <towne56@ownmail.net>
Date: 2/13/19 21:38
To: Bogdan Vacaliuc <bvacaliuc@gmail.com>, Dave Typinski <davetyp@typnet.net>
CC: Larry Dodd <101science@gmail.com>

Bogdan, you can find the SDRPlay2RSS source code at this link

  http://myplace.frontier.com/~nathan56/SDRPlay2RSS/temp/

and the needed DLLs and a couple other files are at this link

  http://myplace.frontier.com/~nathan56/SDRPlay2RSS/

There is some documentation at this link

  http://myplace.frontier.com/~nathan56/SDRPlay2RSS/doc/SDRPlay2RSS.html

Dave, some time ago Jim Sky had expressed an interest in working with the program.
Please mention to him that he is also welcome to the code if by chance he is still interested.

Nathan

On 2/12/2019 8:19 PM, Bogdan Vacaliuc wrote:

> Hi Everyone,
>
> Thank you so much for the warm response. It will be a fun project and its so nice to
> have folks to talk with and bounce ideas off.
>
> Dave, I think I might not have room for the full antenna at my home. I do have a modest
> clearing, but there are lots of tall trees surrounding and I dont think I have the
> recommended keep out.
>
> So for now, I'll get started on the software and use a VNA to characterize the input port
> so we can figure out the transformer requirements.
>
> Nathan, if you would make the software available that would be great. No worries
> about the mix of control and data. The current RASDR is the same way and it bugs me
> too. Maybe this will be the project where it's finally pulled out. :)
>
> Thanks so much for your encouraging responses!
>
> Best Regards,

-bogdan

On Tue, Feb 12, 2019, 00:31 Dave Typinski <davetyp@typnet.net wrote:

Hi All,

That's very generous of you, thank you, Nathan! I wish I had the time to mess with the code, it would be a fun project.

My opinion about preamps in the HF band, for what it's worth:

As long as one is using a resonant antenna (e.g., half wave dipole or Yagi) or something close (e.g., TFD or LPDA), preamps at the feed points are not needed.

If amplification is needed ahead of the receiver, stick the preamp indoors, out of the weather, and avoid the hassle of supplying DC to the array element feed points.

In the HF band, T_sys is so hot (the galactic background is 50,000 K at 20 MHz) that lowering it several hundred K by putting the preamp at the feed point does not provide much, if any, practical benefit in terms of (S+N)/N.
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Dave

On 2/11/19 23:25, Nathan wrote:
> Hi Bogdan,
>
> It is nice to hear from you. As you know, the datasheet for the LMS6002 says
> that the RXVGA2 amplifier can be switched off, the RXOUTSW closed, and the RXOUT
> pins used as input to the ADC. I found an email from 4/20/2016 where you
> mentioned basic characteristics of the ADC inputs and what I had in mind for
> interfacing to those pins (through transformers). A network analyzer (if one is
> available) could be used to measure the input impedance, and a matching network
> devised (if needed) to improve the match based on the measured impedance. My
> plans did not progress beyond that point.
>
> The signal will need a lot of gain, and I would make sure that some of it is at
> the antenna.
>
> Radio Sky Spectrograph (RSS) acts as a TCP client. It connects to a data source
> expecting a header and streamed data. A server that can provide the data can in

> principle be on any platform (windows, linux, etc.) and provide data over a
> network to whatever computer is running RSS. I did not have any special plans
> for RASDRstreamer, although I looked at it. If you choose to work on windows,
> my program SDRPlay2RSS might be a useful starting point. It is written in
> VB.Net, and has classes that manage the gui, acquiring (over USB) and
processing
> data from the receiver, performs spectral analysis, and streams spectra to RSS.
> The possibility is that the SDRPlay class can be adapted to take data from RASDR
> instead of SDRPlay.
>
> The spectral analysis class is multithreaded and makes use of multiple processor
> cores, which is definitely helpful. Also, it uses fftw, which is a very fast
> Fourier library. So a reasonable computer should be able to process all the
> bandwidth RASDR2 is able to provide.
>
> One caveat is that, looking at the code in the SDRPlay class, I can see that it
> does not cleanly separate code for controlling and fetching data from the
> receiver from code for processing data. This would make interfacing it to RASDR
> more complicated to untangle, but hopefully not impossible. Were I to do it
> over I would separate these functions better.
>
> I'll make the code available to you (and others) if you choose to go this
> route. I can provide some assistance, but my time is limited.
>
> Nathan
>
>
> On 2/11/2019 6:39 PM, Bogdan Vacaliuc wrote:
>> Hi Dave, Larry and Nathan,
>>
>> I hope you are all well.
>>
>> Nathan, a long time ago you were working on a matching circuit and some
>> software to use the direct sampling input capability of the RASDR2 software
>> defined receiver. I have been corresponding with Larry Dodd and he and I
>> would like to have a go at getting that worked out to connect to a Radio Sky
>> Spectrograph back end. I wonder if you still have your notes on the design
>> and perhaps any software archive? If I remember right, you based it on the
>> RASDRstreamer C++ app.
>>
>> Dave, I wonder if I might be able to get one of your twin folded dipole
>> antennas and amplifier? Or at least the amplifier and the combiner. From my
>> experience, tuning out the spurs on the receiver requires the full front end
>> electronics. I'm happy to pay for whatever equipment costs there are.
>>

>> Thanks and Best Regards,
>>
>> -bogdan
>> Oak Ridge, TN
>>
>>> On Sat, Feb 9, 2019 at 9:35 AM Larry Dodd <101science@gmail.com
>>> <mailto:101science@gmail.com>> wrote:
>>>
>>>   Bogdan
>>>   We (RadioJOVE) do two things. We monitor 20.1 MHz single frequency
mainly
>>>   looking at the Galactic Background daily and also for single frequency
>>>   solar and Jupiter storms using Radio SkyPipe chart software and the
>>>   simple NE 602 JOVE receiver made by Richard Flagg.
>>>
>>>   Second we monitor 15 to 30 MHz for Spectrographs using Radio Sky
>>>   Spectrograph software written by Jim Sky. Dick Flagg made about 13 FSK
>>>   analog receivers with a 15 MHz bandwidth. I have #13 he says that will be
>>>   the last one. It works well but has analog noise and lacks sensitivity
>>>   found in SDR receivers. We monitor that 15 MHz slice of the spectrum as
>>>   the majority of Jupiter storms occur there as well as part of solar
>>>   flares. We have one member Dave Typinski that also monitors for CAS A and
>>>   CYG A scintillation. Dave also produces a twin folded dipole TFD antenna
>>>   for broadband 15 to 30 MHz with right and left hand polarization. It's
>>>   square, four elements with a hybrid combiner. We also have been using
>>>   SDRPlay2 receivers but they only capture 8 MHz bandwidth and have many
>>>   spurs and artifacts. Probably much of which comes from USB spurs as you
>>>   mentioned.
>>>
>>>   So that is why we are still searching for a better Spectrograph solution.
>>>   RSS works well for us and since NASA has a contract with UCLA to process
>>>   and archive our files we are tied to RSS for our spectrographs. There is
>>>   a more expensive LimeSDR that has a PCie interface that I may get one to
>>>   test. Would eliminate using USB but we would still have the RSS interface
>>>   need. Also I'm looking into Red Pitaya as a possibility. SDR Console has
>>>   the ability to connect to most all of these SDR radios and is pretty
>>>   comprehensive. I have asked Simon Brown to write an RSS interface for his
>>>   SDRConsole software and he has agreed to do that but it's at least a year
>>>   or more in his future if at all. Another guy wrote a RSS interface for
>>>   SDR# but while it works sort of it's very limited in capability. So
>>>   that's where we are.
>>>   Larry
>>>
>>
>>   On Thursday, September 15, 2016, Nathan

>> <<mailto:towne56@ownmail.net>towne56@ownmail.net> wrote:
>>
>> Bogdan,
>>
>> I want to let you know that I recently found a job out of state and
>> have started the grueling process of the move . I had earlier started
>> working with the RASDR2 unit you had sent me, but with the move I
>> cannot afford the time to continue to develop software for it. For
>> this reason, I've mailed the unit back to you today. The tracking
>> number is 9505 5154 0616 6259 0131 84.
>>
>> I am disappointed not to further pursue the software development. The
>> spectrograph users group and others really need the receiver to better
>> its instruments. On the other hand the job is with NRAO in Socorro,
>> which is itself an exciting prospect.
>>
>> Nathan
>>
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