

Anan 100D Review

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Z Featured A

A lot of my fun in Ham Radio is the tinkering with these software defined radios. If you want to know more about the me as the reviewer there will be an about the reviewer at the bottom of the review.

Ordering and Shipping

Apache Labs was very seamless to work with. Questions on ordering and shipping were always answered in 24 hours or less. Of note to me is the honesty in which the product seems to have been advertised and lack of false claims.

The Yahoo group has been informative, support was extremely patient. Some of the original designers of the Hermes and Mercury projects have chimed in and helped or even exchanged personal e-mails answer some of the numerous questions I asked.

As a newer ham I had many questions and in many cases the push was to read the manual. The manual is very informative and getting better literally each week as more contributions and edits are made. There are now some supplements that will be listed later in the review that can help new users today get up and going even faster.

Reading the Yahoo group the initial experiences of those receiving their radios appeared to be a bit rough. These ranged from getting a mic setup to many issues with calibrating the power output to reach the full advertised 100W. I can see now that many radios have shipped and some supplemental guides have been created that it seems users are settling into their radios with greater ease.

I found it surprising to see some first time SDR users buying these radios. That is definitely a difficult path to follow as I know my second radio was a Flex 5000 SDR and it was definitely a time with lots of head scratching. The PowerSDR MRX Fast Settings Guide in the Yahoo Group files area definitely makes that part of the setup easier.

For many, trusting your money to an overseas little known company is a big deal. Each person has to make their own decision on this. Mine was based on conversations with a few owners and hams I knew prior to becoming aware of the Anan providing very favorable feedback on their Anan 10 experiences.

After lots of research on the forum, watching videos on the Mercury project, visiting lots of websites, YouTube videos, ect, I decided to place my order.

Ordering required that I pay for the radio and the shipping separate since I had an unknown safety limit on my PayPal account. This was no issue and Apache made it easy for me. Alternately you can do this yourself by ordering and paying for the radio and then paying the shipping.

Apache labs openly advertised that radios ordered after the April release would start shipping after May 10th. This was the hardest part of the process so far! :) Radios seem to ship within a week now as of August 2013.

About a 2 weeks after my order I e-mailed Apache Labs and checked where I was in the queue and was promised my radio would ship by Friday. Sure enough, Friday I got a ship notice and my Anan was in the Fedex system. It remained Idle at Fedex until Sunday and then started moving. It left India on Monday and ended up in France on Tuesday. From there it went to Great Britan by Tuesday night when I went to bed. I woke up Wednesday and saw it was in Lenexa KS and awaiting customs clearance.

Wednesday about 8:30AM I received a call from Fedex requesting information about my import. We agreed on me filling out and emailing back some forms. 740 was not required, however, we agreed that I would send it anyways. Later Wednesday I was contacted by Fedex that my forms were submitted and about 1 hour later the status reads International shipment release - import.

As you can see, below is the Fedex Tracking screen. I received my receiver just fine!

[Customize Delivery](#)[Request Notifications](#)[Obta](#)

Let us tell you when your shipment arrives. Sign up for d

Travel History

▲ Date/Time Activity

- 5/23/2013 - Thursday

8:55 am	Delivered
6:49 am	On FedEx vehicle for delivery
6:42 am	At local FedEx facility
4:41 am	At destination sort facility
4:34 am	Departed FedEx location

- 5/22/2013 - Wednesday

4:40 pm	International shipment release - Import
2:54 pm	International shipment release - Import
3:16 am	Clearance delay - Import
2:42 am	In transit Package available for clearance
2:16 am	Clearance delay - Import
1:36 am	Arrived at FedEx location

Unpacking

Despite the excitement and the desire to open it all up quickly, I did take a moment to snap some pictures with my Cell Phone of the unpacking. My Appologies, the first two pictures were corrupted and I did the best I could to restore them.



The box was well taped and sealed.



The radio inside was double boxed counting the outer box



The power cord was boxed and wrapped in bubble wrap.



The Power Cord is substantial, the leads nicely tinned! Feet for the radio are in the packet.





Styrofoam protected the radio itself. The envelope has a sheet inside with links to fast setup instructions.



The radio is substantial, the case solid, nothing rattles!



Soldered on the Power Poles!



Put the radio on my rack, plugged in all the cables I had waiting for it.

Powered it on!

In summary, Apache Labs, well done!

It should be noted that I recieved an invoice from Fedex requesting \$32 for fees. After some research I elected to simply pay the fees and enjoy my new radio.

SETUP

I had no real issues setting up the radio, my Flex 5000 experience in setup directly translated over to the Anan.

The manual is very decent. In some parts due to different people contributing it can be difficult to understand what the author means or difficult to transition from one writing style to another. By and large the manual is volunteer generated. Overall if you're willing to read through it a few times though, a great deal of what you need to know is covered and you will be able to get everything up and running. The Apache support team is extremely open to feedback and help in improving the manual. I even made a small contribution myself.

There is additional information that can be found in the file area in the form of a Digital Modes Supplement and the SDR PC Help Guide and PowerSDR MRX Fast Settings in the Apache Labs Yahoo group.

If you are overall new to SDR's and interested in these radios, I suggest signing up for the Apache Labs Yahoo Group and reading the SDR PC Help Guide first. It will help you get ready for owning your Anan SDR as well as other SDRs. If you are a digital modes user then the Digital Modes Guide will help you understand what the setup for those modes looks like. Both guides offer a little theory here and there as well, explaining some of the basic whys. I highly suggest reading everything you can prior to your Anan radio arriving, if you do you will have a much greater chance of having a very positive experience like I ended up having.

If one plans ahead as to how they will connect their Anan via ethernet (Direct to PC or via Gigabit Switch) and also how they will use a Mic with their Anan, installation should be very smooth! I connected direct to the PC via Cat 5 at first and while I did have a PC network adaptor issue that created some strange behavior with VAC settings, simply deleting the interface in device manager and letting Windows scan and reinstall it cured all my issues. I simply used some Radio Shack connectors as prescribed in the documentation and a balanced to unbalanced Art Cleanbox converter and reused my Flex 5000 setup. Antenna connections are pretty straight forward.

Setup can be summarized as follows:

- I. Unpack
- II. Check Contents for completeness and or damage
- III. Decide how you will connect your power cord to your powersupply. I used PowerPolls.
- IV. Ensure you put feet on Radio
- V. Place Radio in shack testing position
- VI. Connect Mic (if you use a regular unbalanced Mic connection no Jumper changes will be required.)
- VII. Connect Ethernet CAT 5/6 Cable to radio and PC or Hub (No Crossover cable needed)
- VIII. Connect Dummy Load and or Antenna depending on whether you wish to transmit
- IX. Connect Power
- X. Connect PTT device if using one (You can use Space Bar with Power SDR MRX if you want to keep it simple.
- XI. Connect Speaker if you plan on using it on front
- XII. Power Up Radio
- XIII. Look for Lan and Power Lights and Fan sound
- XIV. Launch Power SDR MRX
- XV. Connect to radio
- XVI. Follow manuals!

SDR Manuals and Improtant References

- [Anan Users Guide](#)
- [Anan Programer Tool Guide](#)
- [SDR PC Help Guide](#) - A guide to help buy/build SDR PC's and or Troubleshoot SDR PC Issues.
- [Digital Modes Supplement](#) - A guide to help configure digital modes with PowerSDR
- [Anan Fast Settings](#) - A small rough guide to quickly get your Anan settings configured.
- [PowerSDR MRX AGC Notes](#) - A small guide to explain the AGC Controls in PowerSDR MRX.

- [Adjusting Audio Chain](#) - videos and information on adjusting the audio chain in PowerSDR.

About the Anan

Let's talk about the physical aspects of the radio first. Some may disagree, however, I think the case is very professional. It's rugged, solid and pretty sleek as well. Amazingly small when you think about the power that resides inside the case! The connectors all seem solid and other than that they are all BNC type connectors (you may need adaptors if you are currently all 259), everything seems nice and tight!

Users have complained about the case getting hot and the Anan does use its case as a large heat sync, however, even after a 3 hour SSB session I have never found my radio to be hot, only warm at best. To be fair, my radio sits on a bakers rack and so other than the few cross supports that it sits upon on the shelf, it has ventilation on all sides and this may be the reason my radio doesn't get hot.

The other factor could be that I don't over drive my Anan. I don't ever operate more than 40 Watts on SSB and only 5-30 watts tops on digital modes. My unit also had no issues to set the PA to deliver 100 watts on all bands into the dummy load. I just left mine all at the factory settings which gave me about 95-97 watts on all bands. That includes the infamous 6M people originally seemed to complain about and has since been silent as I have not heard power output complaints anymore. It should be noted I use an Amp to run power for SSB. I am a believer of not using high-power on digital modes.

If you are buying one of the 100D's you need to understand up front its **not** really able to operate at the full 100% of the duty cycle. Digital Modes should basically be run at 30% of the hundred watts. Overheating or damage could occur if you do run it above the documented duty cycles.

The ethernet connection works really well! Even with it only running at

100MB as of this review (future gigabit code is in the works) there are no hiccups or glitches on receive or send.

Let me say that PowerSDR MRX is a pleasant surprise!

The Hermes community has done a great job customizing PowerSDR for the many Open Source radios that one can find out there now. If you allow it to, it will stitch together receivers and the Anan series of radios to provide more bandwidth and you can get a view of the entire band say on 20M for example. This is nice to put on RX2 while you work on RX1.

Of course at present out of the box you need a separate receive antenna to really take advantage of all its features. Stitching in case you are not following me is the practice of joining the RF from 2 or more receivers together to make a single receiver look like it has more bandwidth.

With the use of a splitter [and optionally an MFJ-1708 or the DX Engineering T/R Switch] one can feed the same antenna into 2 different ports, Ant1 and RX2 for example, to leverage more of the SDR's capabilities with a single antenna [main advantage being able to use RX2 in PowerSDR MRX with one antenna and additional receivers from both ADC's]. The Anan 100D does not have the RXin/Out Tap capability like the Flex 5000, hence my use of a Splitter T/R Switch. This can also work for a second dedicated receive antenna.

While there isn't any software currently available to leverage all of the 14 receivers for the Anan 100D, this should eventually come in time. Keep in mind, all the developers out there working on all this are unpaid.

While one may be tempted to declare this a negative aspect of owning these radios, I don't. Despite having probably rubbed a few people the wrong way a few times on the forums in the spirit of pushing for the software roadmap, I actually have experienced all this as a positive. A few developers have personally been in touch with me, helped me and seem very receptive to input, ideas, ect. It's actually quite refreshing to actually work with the developers writing your software rather than being a request in a queue.

I have used both the MFJ and DX Engineering solutions referenced above and both work well. I am able to transmit on Ant1 while providing additional protection for RX2 using the same antenna. While one in theory could use just a splitter, I have opted to use the TR Switch as it has nice connections that make this setup easier for me to facilitate verses just using a splitter alone.

Having a substantial investment in my Hex Beam it is nice to be able to use the antenna for both receivers [using both ADCs and Dual RX in PowerSDR MRX] rather than using a lesser antenna for RX 2 like I had to previously. The difference between my Hex and my receive antenna is immense and so this is useful to me in working split weak DX's. This will work in any shack BTW so I am not touting it to be Anan specific.

Incidentally if you want to have a dedicated receive type antenna that can not tolerate power, the DX Engineering device can help there as well by protecting your RX Antenna while your TX Antenna transmits. I am in no way advocating you need a TR Switch or even a splitter to enjoy the Anan.

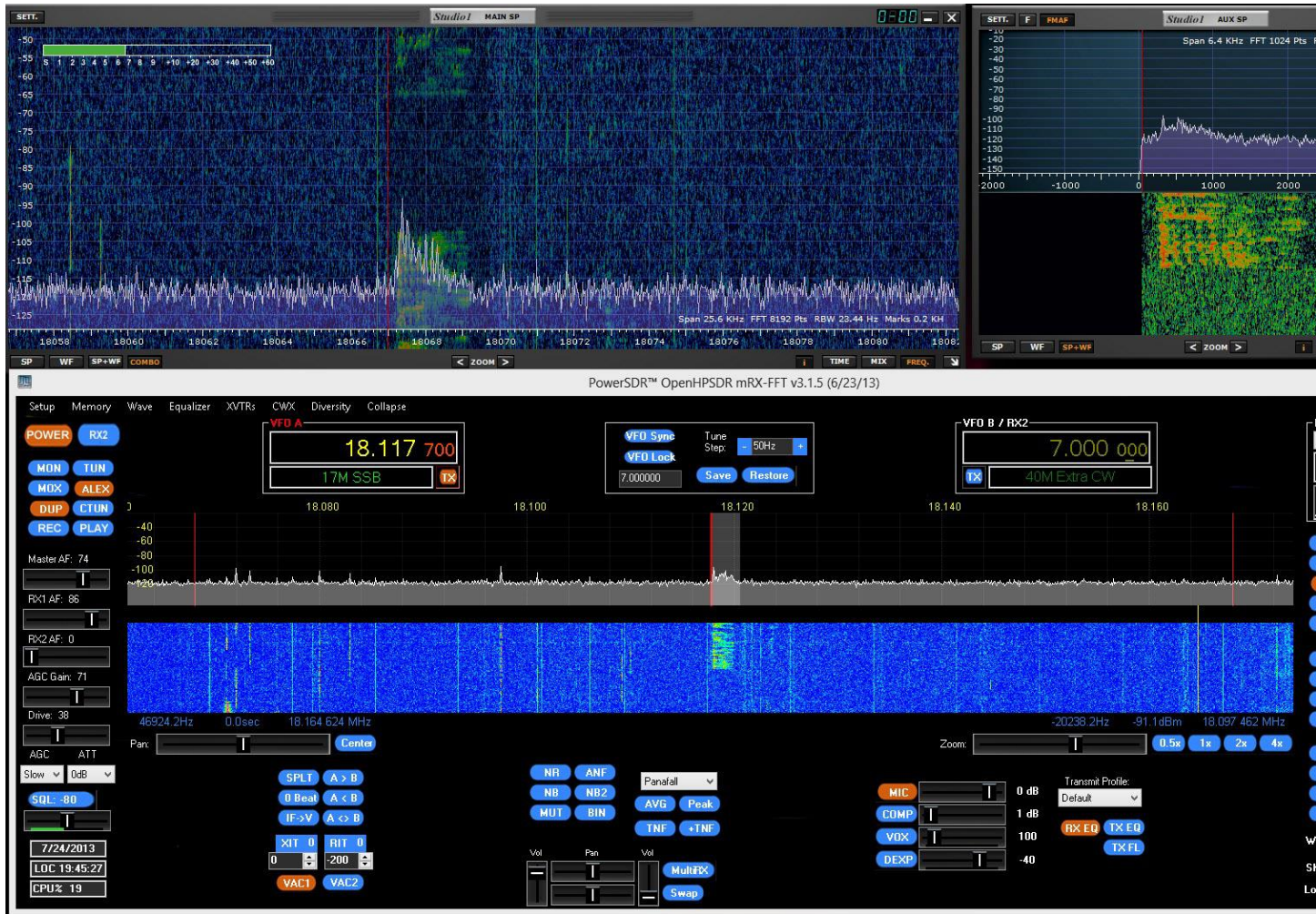
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PowerSDRMRX

Let's talk about PowerSDR MRX some more! It is worth mentioning that since Flex copyrighted the Tracking Notch Filter code, there are no TNF's in MRX. That is the only down side I have found thus far! The upshots are there are lots more controls! I won't cover them all, however the display settings for the RX1 and RX2 waterfall display is one difference. Optional display and audio attenuation for RX2 during RX1 transmit is another.

There are detailed PA settings and watt meter settings. There are also AMP controls as well if you are willing to explore the DB25 connector on the rear of the radio. Quickly speaking about the DB25, one could literally create a breakout box for this radio with Speakers, PTT ect. Lot's of goodies available on the port. I would like to suggest that Apache Labs make such said break-out box as their first accessory.



MRX and Studio 1 - Studio 1 fed by IQ Out on VAC

MRX diversity reception works well. Its rather fun to tinker with and you can see how it works when using different antennas and how it doesnt when the same antenna feed RX1 & RX2.

We may get a TNF replacement in the future as well. You may miss these if you used them a lot with your Flex radios. Programs like Studio 1 have them, however that software is limited to receive only right now.

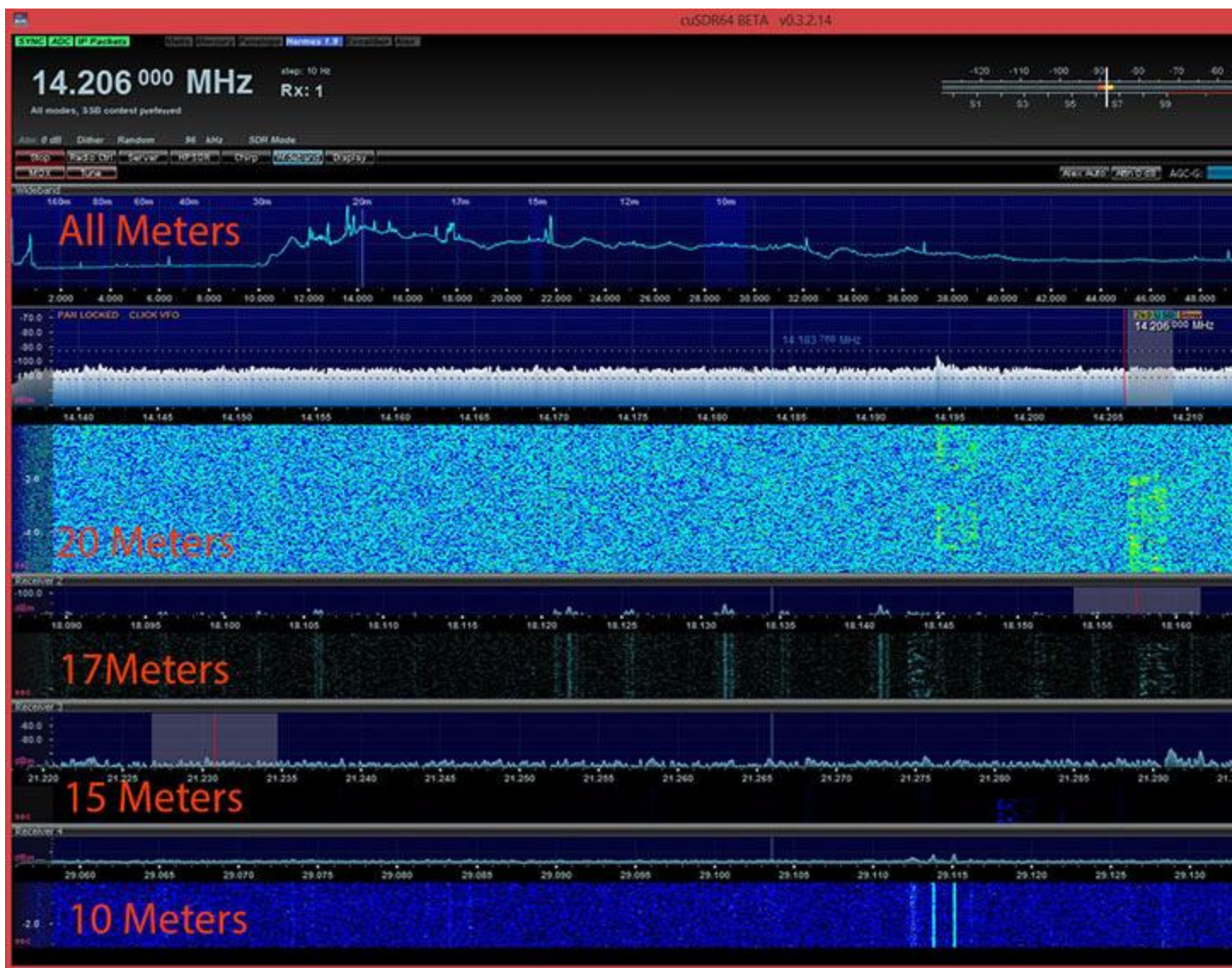
A big deal for me personally is the Hercules DJ Controller support built right into the code. Not waiting for forks to be released when new versions are released is really very nice. Speaking of which, updates come quite frequently for the Anan. Firmware and Software are both works in progress. I can't cover everything and honestly I am not even capable of covering it all. Suffice to say that on the average screen in PowerSDR one either finds improvements in functionality or expanded controls. Again the fast settings guide on the Yahoo Group I wrote will help you get going and allow you to learn over time how to tweak.

If you hang out with the group on Yahoo be prepared to learn things you didn't even know you could do with an SDR. One thing I learned that I should have already known was about being able to use a USB headset with mic with VAC for your mic and speakers over ethernet with no speaker or mic connection needed on the radio. While this was there for the Flex 5K all along, I just missed it. The hams that hang out there on the yahoo group are very sharp and have several years of SDR experience. You just never know who might reply to your messages as well! Some of the rock stars of SDR radio hang out there.

Let's move on to audio. The Anan has very good audio. I have used it on three different sets of speakers and it sounds great on all of them. In my opinion, the receiver is a little quieter sounding than the Flex 5000 as well. Overall Audio reports for the station have been very positive. Not unlike the Flex 5000 I also get reports of some fan noise at times in my audio. This is a combination of my PC, Amp and Radio Fans. I am able to block a great amount of it now with a software DSP I have fashioned for my ham radios and studio Mic.

As I wrote elsewhere, once you get setup, because that setup is so easy, you may feel a little underwhelmed at first when comparing it directly to a Flex 5000. Its looks like the same software on the surface, the learning curve seems small, ect. After you start digging in though is where the fun begins.

After all the playing around it came down to just spending some time operating the radio. It's been very pleasurable. I have had really nice Rag chews on 17M and 20M. One Saturday I had a nice three way on 17M with a gentleman in Chicago and another just three miles away from me. Also, cuSDR is a gorgeous piece of software in the making! I can't wait for it to be completed and I enjoyed fooling around with it for a while! Apache Labs is providing help to the author of cuSDR to complete development for the Anan's.

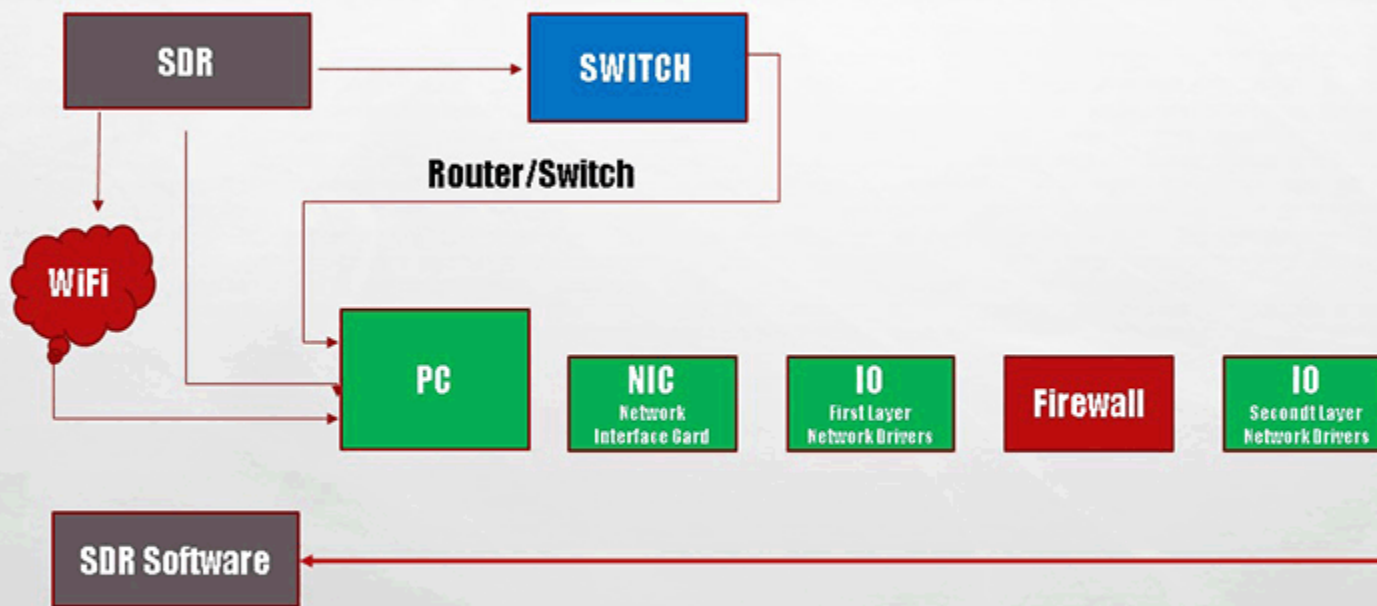


cuSDR on 4 bands with WideBand Display at top

I have started to run some PSK and RTTY again as well. It's all working great! There have been no radio specific issues integrating VAC, VSP or DDUtil. It all works great!

I purchased and setup a gigabyte switch and router solution recently for the Anan. The router is connected to the switch as a DHCP server and is able to track the Mac addresses and assign dedicated IP's to the PC and Radio. The router then gets out of the way and allows high speed communications between the radio and PC. The dedicated IP then can be set in PowerSDR and startup becomes instantaneous! This also allows you to set the dedicated IP addresses up in your firewall for uninhibited communications. Very cheap solution overall!

High-level Communication Path between SDR and SDR Software



SDR Bi Directional Communication Path

The outlook for the Anan is very exciting. You can order and have one now and everything works for your basic radio operations. You get a fully functioning radio and can access fully functioning software now. Compared to the commercial competition you get a substantial radio at a pretty nice price. You have three models to choose from as does the competition. Ironically they are similar in the way they would appeal to end users. One being low power, one being higher power and the most capable having two ADCs and 14 possible receivers.

It will be really fascinating to see where these radios sit verses the Flex radios in 2 years' time as they should both have matured in terms of their software significantly! Apache Labs ironically has an edge on Flex right now. I am not sure that was their goal to compete commercially against them, however, intent or not they are in this hams humble opinion ahead by virtue of having a shipping and fully functional radio. If they can spur more rapid development to expose all the receivers and add TNF filters, the new diversity reception code the Open Source community has developed then they could actually compete neck and neck in my opinion. The next 12 months will be critical for Apache Labs if their desire is to seriously compete with the Flex radios. Ironically their fate mostly lies in the Open Source Developer Community now.

Sometimes writing reviews like this causes one to reflect and that reflection leads to more revelations. The Anan 100D has many of the future promised goodies that encompass some of its competition already here and ready now. There has been much talk about Fat and Thin clients and while in general people tend to think of PowerSDR as a Fat client, it really isnt all that fat and in many cases the fat clients will almost always be able to offer more features than thin clients. Just one example of this is the concept that through VAC we can hook a USB mic to a laptop and truly operate wireless with the Anan 100D already today.

Think about this for a moment, hook your radio to a WIFI Rotuer/Switch and turn on your radio and go upstairs with your MS Surface, plug in a USB head set and fire up PowerSDR. You are on the air. Add an IP Based rotator program like PstRotator and you can now swing your beam. Because you have the full fat client you can run cat control,

ect.. We are talking sweet stuff here! No remote PC control, no long cables, no Sykpe!

All this reminds me of my days in astronomy when there were some lower profile manufactures of remote control telescope astronomy software that were way ahead of the game, even though their software did not have all the commercial glitz, hype and marketing that other platforms had or said they were developing. Behind the scenes advanced amateur astronomers were using this software while others were merely only talking about it and waiting for the big guys to produce it. I used some of that software and it was seriously cool and way ahead of its time. I am starting to have that same familiar feeling with my new Anan 100D now that I have gotten it to jump through all the classic hoops and am starting to push the envelope and trying to tap into its real power!

cuSDR

This brings me to talking about cuSDR, it looks like it will become a highly promising and exciting software option for the Anan radios. I see no reason why one shouldn't be able to get all 14 receivers or variants and combinations of them in the future either independently or via stitching. As code gets reworked and rewritten we should see the doors open up for lots of new cool functions come along, not only in cuSDR but also PowerSDR MRX. Both the Flex and Apache Lab platforms should spur new ideas and features!

cuSDR has great audio and I have already had fun listening to Shortwave Radio Braodcasts and using its full spectrum few to poke and peak around the Anan's full spectrum range with the click of the mouse. The drill down in the waterfall is awersome as well and you can see CM and PSK if you zoom in enough.

cuSDR Video

Anan Cons

The only one annoying thing about the radio is the fan noise. A quieter fan would be nice. It's not extremely loud, however, with the studio type mic I

use, its loud enough to get into the background noise of my transmissions. That said tough, if it wasn't louder than the PC fan or the Amp fan those also would get into my background as they had previously. I was able to make some EQ setting changes and add a mic shield to reduce that issue.

One last noteworthy of mentioning as well. The jumpers for the radio require you open the case to change them. I have not needed to open my radio to change them, however, for example, if I wanted to run an Elecraft KX3 hand mic I would need to change a jumper. For running a balanced Mic input I would need to change a jumper as well. This would have been nice if they had designed a DIP Switch Bank on the back of the radio. Perhaps they can consider this for future designs.

While software support for the radio is not really offered as a part of the purchase (the software is not owned or controlled by Apache Labs), I have to say that Apache Labs had a US resource manning the boards full time and helping users with common issues. Support was faster on average than I have had with other radios. Considering Apache doesnt own the software they have provided an amazing amount of help to users for software and pc issues. They are also trying to open an office in New Jersey as well. Recently US Support changed with the lead support tech moving on due to personal reasons.

One must understand clearly that software support is not included in the purchase price of the radio. To that end there are some very capable Hams out there that will provide support for free or for a small fee.

And just in case your wondering about RF issues, I have had some. Typical RF into the audio which was mitigated with a few more ferrites. I cant say if that is because I finally have my shack RF proofed or if they have a better case and shielding, the issues seemed about the same as with the Flex 5000.

Finally, one can debate how dependent the radio is on hefty computer hardware. I would say that my position is that its fairly dependent and that the more you want it to do (more receivers for example) the more resource intense the computer needs are. I have run it on something as simple as an MS Surface Pro to a very fast modern speed machine running all the stuff you see in the screen shot below. You can read all about my PC

philosophy in the SDR PC Supplement found in the value here which is accessible to registered users.

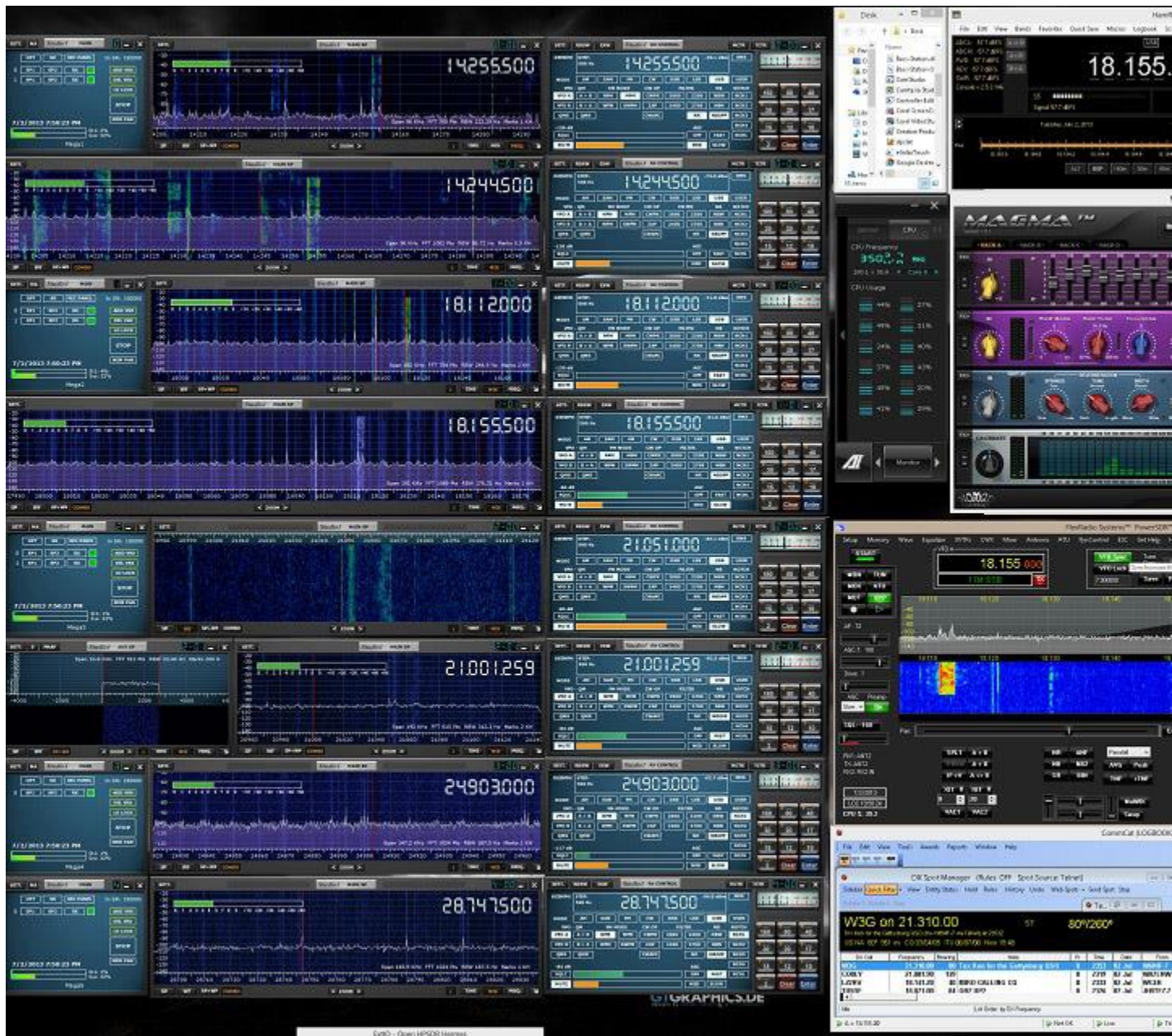
Wrap Up

So, it's time to sum things up! Right now I am a happy camper. I have lots to play with, lots to learn and lots to explore and even more to look forward to. That's a nice place to be! I have met and continue to meet lots of new fascinating hams along my journey. The radio is seemingly rock solid stable for me right now and other than a few computer glitches it is amazing quiet and trouble free to operate.

I have had good signal reports after I got a new Mic (the old one shot craps on me) and other Flex 5000 users have told me the signal on the panadaptor looks tight and dead on. Take what you will from these comments.

I have no desire to sell you one of these radios, it's not my goal. It is nice though to have a positive report so far, after all I did buy one to ultimately become my future primary SDR.

If you have come to this article as a non SDR user interested in SDR's they can be fabulous radios in your shack! They may not be quite prime time for contesting, I'll leave that to others to decide as I don't contest. However, the fact that they are so flexible due to the software you can surround them with makes for a very rich hamming experience. If you look at the picture below, all of those screens and software are tied into the Anna for logging, propagation, spotting, ect. While all of that works with the Flex as well, the point I am making here is about SDR's in general.



One more note here: I also highly recommend going to HamRadioNow and watching videos 61-63. Be sure to make a small donation as some of these videos used to sell for \$15 a piece and they are rich with basic DDC SDR theory.

The Competition

While most of this review was published on the Old RaoringStar site, there were changes and updates after having owned the radio and used it for three months now. What I can tell you is that the Anan 10 and Anan 100 series radios represent a huge value in the SDR Market. I have now played with some other SDRs and non have the true multi reciever capability that the Anan's offer save the Flex 6K series which by and large still isn't main stream as of this update.

You can even look at the numerous DDC receivers on the market and I can tell you after playing with some, only a few come close in quality and capability.

There are two of note that come to mind. The QS1R and the SunSDR. I hope to review both of them in the next few months and offer more comparisons.

Truly last and maybe not least is that after three months I am still feeling positive about my Anan. Other than the ugly transmit display ont waterfall display caused to RF leakage inside the case I have no issues. By the way, this issue is not unique to the Anan. I see this effect on several other SDRs. Until someone writes software to clean that up during Xmit we are likely to see it for some time to come because in large part its simply unavoidable.

Scoring: All categories are weighted equal and averaged then rounded up or down to the nearest 10th.

Criteria	*Score 1-10 is high	Notes
Order/Ship	10	Good Communication and Packaging
Build Quality	9.5	Very solid Professional Build
Design Quality	8	Fan Noise & Power Output and Power Connectors
Ease of Setup	8.5	How hard is it to setup and Operate
Documentation	8	Easy to locate and follow, user generated

Expandability	9.0	There is lots of room to add on and experiment
Operating Experience	9.0	Software is very mature
Performance	9.5	Very clean receive audio, good on weak sigs
Support	9.5	Fast Hardware Support - Software Support not included
Value	9	Cost as compared to specs and other SDRs
	90	
Overall Score (Average)	9.0	Excellent Overall!

*8-10 = best in class, 5-7 Above Average, 3-4 Below Average, 2 Poor, 0-1 Unacceptable

Summary

If you can manage supporting yourself and being patient and resilient when you need help from others then the Anan 100D is simply an incredible value for your SDR dollar. This assessment is based on comparing the Anan 100D to the Flex 6700. It factors in the functionality available now as well as price. The assesment might change after the Flex radios are completed and or as new radios become available.

We suggest thinking about changing your fan (may void the warranty). For this radio to really shine you'll want cuSDR for your main program when development completes.

About the Reviewer

You can learn more about Mark [N10Z] on the site at the link below.

https://sdrzone.com/index.php?option=com_content&view=category&layout=blog&id=24&Itemid=506