Natural Radio

News, Comments and Letters About Natural Radio

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Despite being surrounded by racks of equipment for most of my life and spending most of my day looking at one computer screen or another, I had been resistant to getting a smartphone. I have multiple computers at work and a couple at home and my commute is about 5 minutes, so why did I need to access the Internet when I wasn't at either of those two places?

Nevertheless, I decided it was time to move into the 21st century and jump on the smartphone bandwagon, and last week went to my AT&T store and bought a basic smartphone, with a pay as you go plan. I am amazed at the technology. Compared to other cell phones I have owned, which I didn't have the patience to figure out, the Android operating system is extremely intuitive.

So, in addition to email, Internet, GPS navigation and the usual apps, I wondered if there were any apps that might be of use for the VLF or Natural Radio hobby. Now, for those of who haven't advanced to the 21st century yet, "app" is short for application. This is a software program installed on the phone that performs a specific task such as email, GPS navigation, games and so on. Many apps are free, but even most of the ones that you purchase sell for a dollar or two.

Since this is unfamiliar territory for me, I posted on the VLF_Group and asked if anyone had any favorite apps that they used for Natural Radio or Low Frequency radio. From this group of about 1500 members, I got an overwhelming response of 0. I wondered if the question was so obvious that it got ignored, or if maybe a lot of people don't have smartphones or hadn't considered using them in conjunction with their radio listening. After all, I've only had my phone for a short time, so maybe many others are in the same situation.

There are two main types of smartphones, those running the Google Android operating system and Apple's iPhones, running their own operating system. There are a few other phones out there, such as Blackberry, with their own OS, but they are in the minority.

When I talk about specific apps, they will be Android apps, since that is what I am familiar with, but since Apple has an overwhelming share of the market, it's likely that Apple will have the same or similar apps. Also, my phone is really an entry level phone with a single 600 mhz. processor, and minimal memory, so if the app will run on my phone it will probably run on most Androids. Apps also run on tablet computers and some of the design apps like Electrodroid might be easier to use on a tablet, because of the larger screen.

A smartphone is more than just a phone with a computer. What makes these devices so powerful is the wide array of sensors they contain, such as GPS, accelerometers, gyroscope, proximity detector, ambient light sensor, microphone, still and video camera and last but not least a magnetometer. That's right, your smartphone can

measure the earth's magnetic field in three dimensions. The next generation phones will have even more sensors such as an altimeter and possibly a heart rate monitor to help you exercise optimally.

One possible downside is that many apps require an Internet connection over the 3G or 4G network, so if you are doing field listening far away from the cellular network, certain apps may not work.

As I said at the beginning of the article, I've only had the phone for a short time, so I haven't used most of these apps extensively, but here's an overview of what's available. Search the Internet or the app store on your device to find similar apps.

General use applications may have come preloaded on your device and their use should be somewhat obvious. A mapping application such as Google Maps can help you get to a listening location. When you open the app, it is centered on your current location, thanks to the GPS. You can document your setup and location with the camera, and post pictures directly to a photo sharing site if you so desire. A voice recorder app will let you document your setup or highlights of your listening without having to resort to pencil and paper – quite handy in the pre-dawn hours.

There are specific informational apps such as NASA SWx, Space Weather Now, and Astra Space Weather, that will give you easy access to NASA and NOAA real-time data and images. I have an app called TPE that gives me sunrise & sunset, moonrise and moonset as well as their compass direction for any location or date. Sensor Kinetics by Innoventions Inc. will let you view real-time readout from your device's sensors, most notably the magnetometer. You can watch the progress of a geomagnetic storm on your phone.

If you are looking up at the night sky while you are listening, Star Chart will let you hold your phone up to a portion of the sky, and thanks to the GPS and gyroscope, you'll get a star chart with labels and info for that portion of the sky. Flybys will alert you to visible satellite passes, and you can even set the app up to remind you of upcoming passes.

There are recording apps like RecForge and there are Spectrum Analysis apps. If your SD card is large enough, the phone could be used as a Natural Radio recording device. Interestingly, I am told that the credit card scanners that plug into smartphones are a passive magnetic head that connects to the microphone input of the device. It would seem possible that one could plug a loop or long wire into the input of the device and create a really minimalist Natural Radio receiver. I'm not sure that this would be ideal, but it's likely possible. I'm guessing that the mike preamp on a smartphone is not a particularly low-noise device, but only experimentation will tell.

Finally, on the hardware side, there are a variety of design apps available. Electrodroid has lots of component data and calculations available as well as a circuit simulator. There are several Scientific Calculator apps and other Circuit Analysis programs. The eBay app can help you compare prices at a hamfest, and a barcode scanner app can help you compare prices on new items.

Keep me posted if you find anything particularly useful, and we'll publish it in a future column.