Introduction to SDR

SDR IS COMMONLY KNOWN AS

Software-defined radio

What is a SDR

- A SDR receives radio waves from the air and convert them into ones and zeros. And passed these ones and zeros to your computer. That is all a SDR does.

The Real Magic

The Programs on the computer takes the ones an Zeros and does all of the Magic (converting)

to sounds we know.

SDR Categories

- There are many Categories of SDRs
- We will Talk about two Categories Today

First Category

The first is the dongle Category

generation 7

- There is a new dongle on the market
- But the chip it is based on is rumored to be a one time run of them, there are to be no more made.
- This makes it a very limited time item

The new generation 7

- The new dongle is called RTL-SDR V4

generation 7

It may be found on Amazon at the time of making this presentation for $31.95 If you are going to get One, Do it soon!

generation 7

- Most SDR dongles will receive VHF and UHF easily. BUT NOT easily receive (HF) high frequency bands.
- The RTL-SDR V4 has an up converter circuit, built in. This allow the unit to somewhat more easily receive high frequency signals. This dongle requires software packages such as free software like SDR#, HDSDR, SDR-Radio, GQRX or SDR Touch on Android.

SDR dongle links

- https://www.rtl-sdr.com/
- www.nooelec.com.

Mid-grade Category

- The next step up are the Mid-grade SDRs.

The Airspy and The Sdrplay are two of the most popular in this Category. They run about $100.00 to 150.00 each for their newest models. A good but little older model is about $100.00

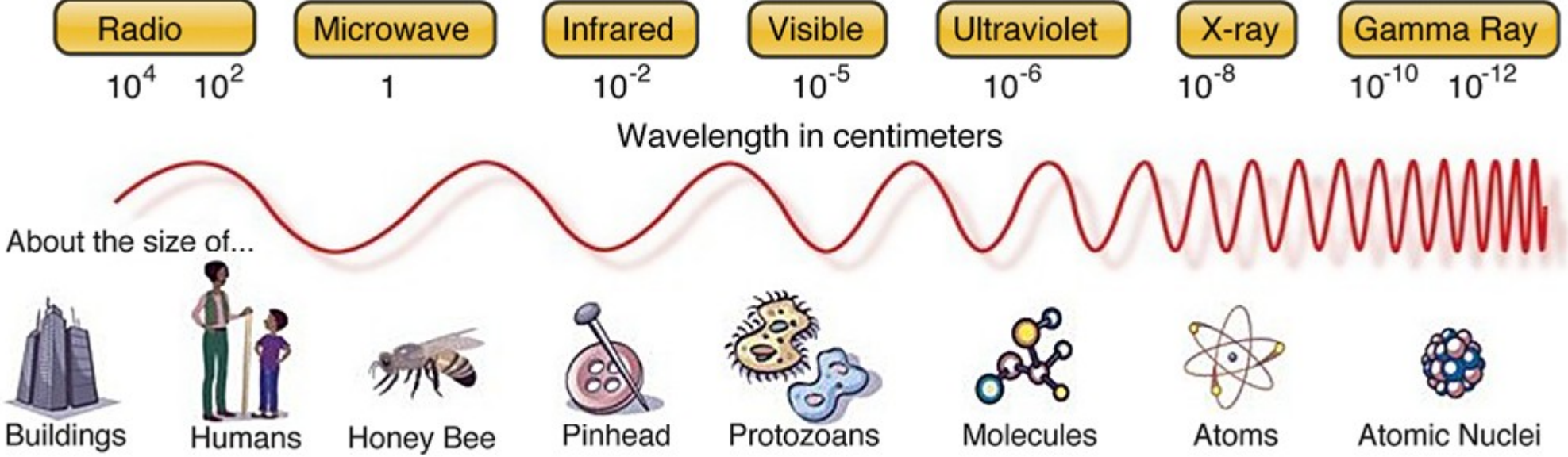
THE BIG TWO

- Airspy

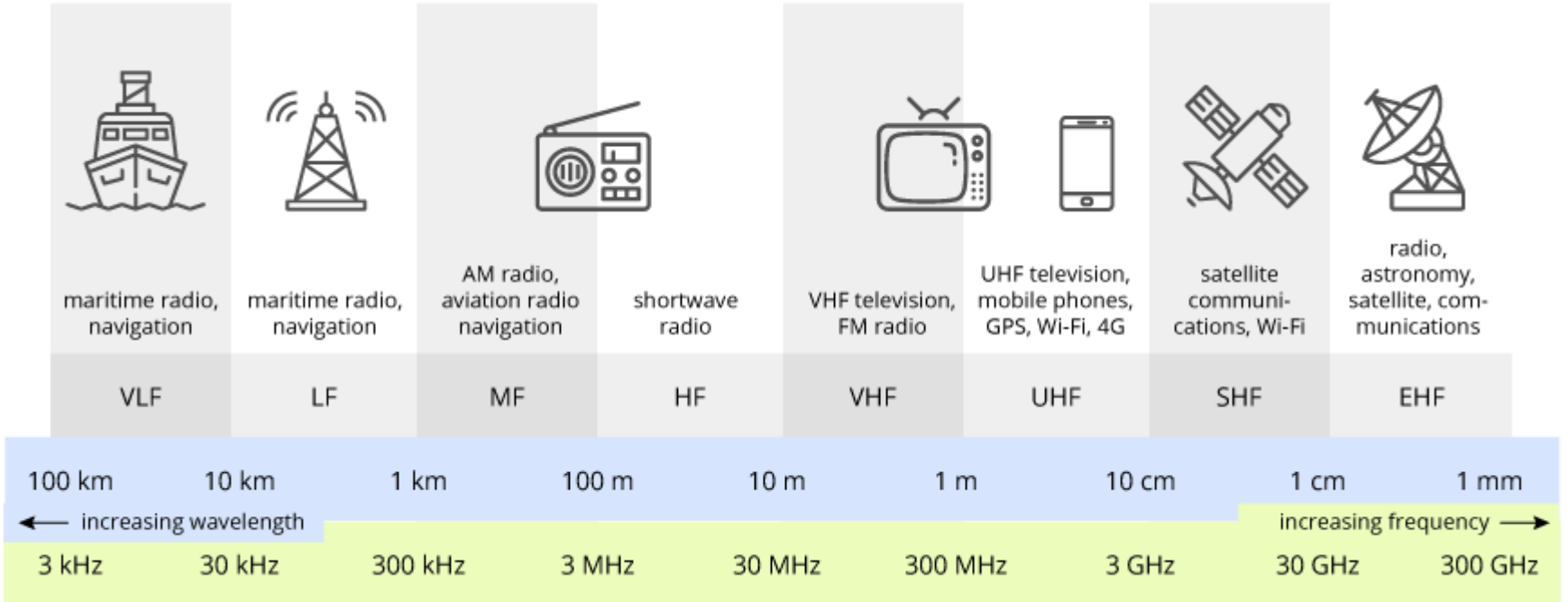
Sdrplay rspdx

expensive sdr?

- Why buy an expensive sdr?
- It is an old saying in the Short Wave Listening (SWL) World, “They receive from DC to Daylight.” This is not really true, but it conveys the ideal. For example my Sdrplay receives from about 100kHz to 2 GHz with no breaks.
- 24 bits Sample Rate


Radio
Microwave
Infrared
Visible
Ultraviolet
X-ray
Gamma Ray
10^{4} 10^{2}
1
10^{-2}
10^{-5}
10^{-6}
10^{-8}
10^{-10} 10^{-12}
Wavelength in centimeters
About the size of...
Buildings
Humans
Honey Bee
Pinhead
Protozoans
Molecules
Atoms
Atomic Nuclei

What can a SDR hear?



Things I have received

- These are some of the things that this range allows me to receive: messages to submarines under the sea, Ships at sea, Foreign broadcasts (commercial, private and government), Domestic broadcasts (commercial, private and government), Clandestine broadcasts, Pirate radio stations, Vehicles tire Pressure, even email from Vehicles to their operators.

  Turner, Sardine and anchovies fishermen off the coast of Spain and Portugal. Beacon on nets and long fish hook lines in the Mediterranean Sea.

- 

Clandestine broadcasts

A Popular Short wave Listener (SWL for short) pastime is logging number stations. There are many. You make also hear Drugs dealers in South America from time to time.

What is a numbers station

A **numbers station** is a shortwave radio station characterized by broadcasts of formatted numbers,which are believed to be addressed to

intelligence officers operating in foreign countries Most stations have set time schedules, or schedule patterns; however, some appear to have no discernible pattern and broadcast at random times.

It is belived they use one time key each transmistion.

Where to find Number stations

- https://priyom.org/number-stations
- https://www.hfunderground.com

The Drone Scare

- During the recent Drone Scare I have seen a few drones but were easy to Identify them with a application called Virtual Radar.

Virtual Radar.

Virtual Radar receives the aircraft's radio beacon. This beacon includes the aircraft's tail number and GPS coordinates.

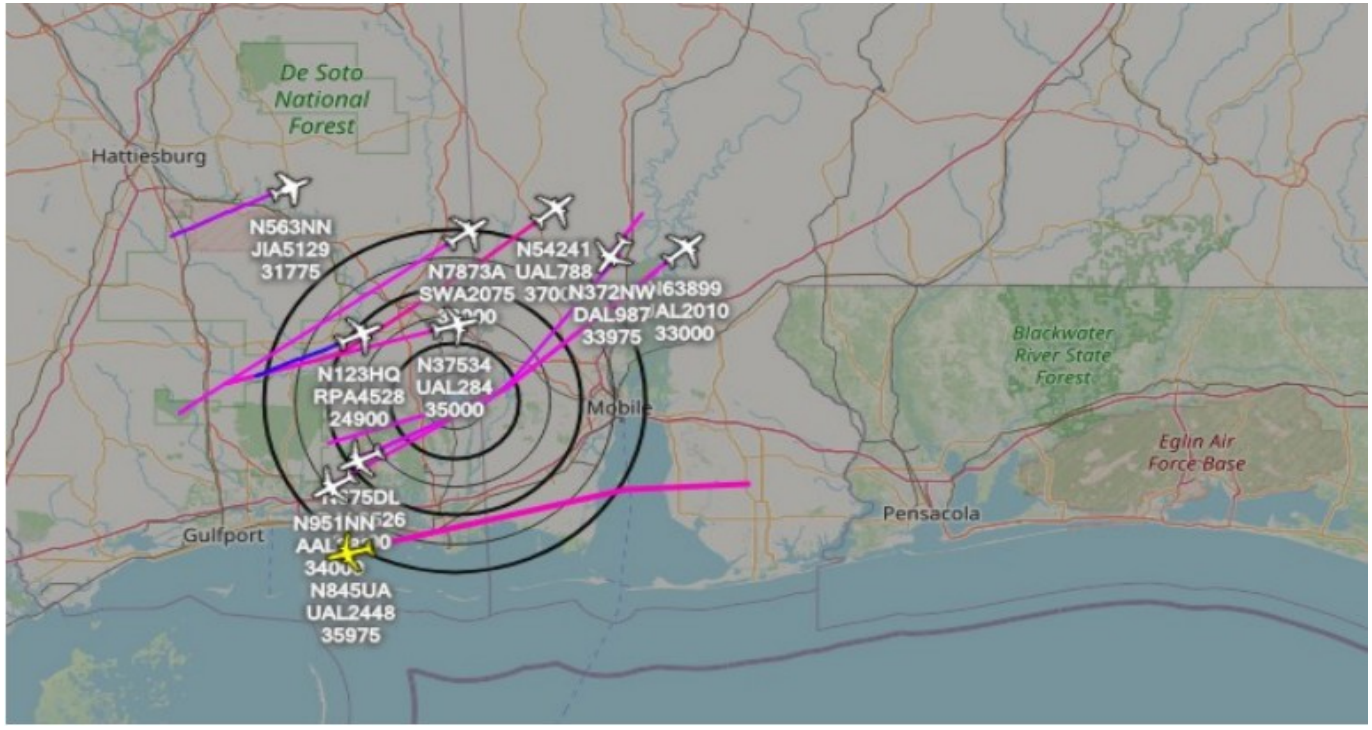
Virtual Radar then downloads a map from google and plots the aircraft, using this data. It calculates the aircraft's velocity, height and heading. Then displays all on the screen.

It uses the tail number to find any flight plan.

It uses online FAA and Insurance databases to check to see who it is registered to and a photo of the craft. All of this is displayed on the screens in real time.

Virtual Radar from my shack

How it looks



Monitor EAMs

In the United States military's strategic nuclear weapon nuclear command and contro l (NC2) system, an **Emergency Action Message** (**EAM**) is a reformatted message that directs nuclear-capable forces to execute specific Major Attack Options (MAOs) or Limited Attack Options (LAOs) in nuclear war. to execute specific Major Attack Options (MAOs) or Limited Attack Options (LAOs) in a nuclear war via the the "High Frequency Global Communications System" (HFCS) .These are in plain text but are use code words. Don’t be overly concerned if you hear one because they are usually are just a test of the net or a alert status, or even sometime saber rattling.

HFCS Frequencies:(all in MHz) USB MODE

4.724 6.712 6.739 8.992 11.1750 13.200 15.016

Try them for free

Go to http://kiwisdr.com/public/

- Then click the Kiwimap button

  you will be taken to a world Map
- Were there are SDRs already set up and running that you and use over the internet

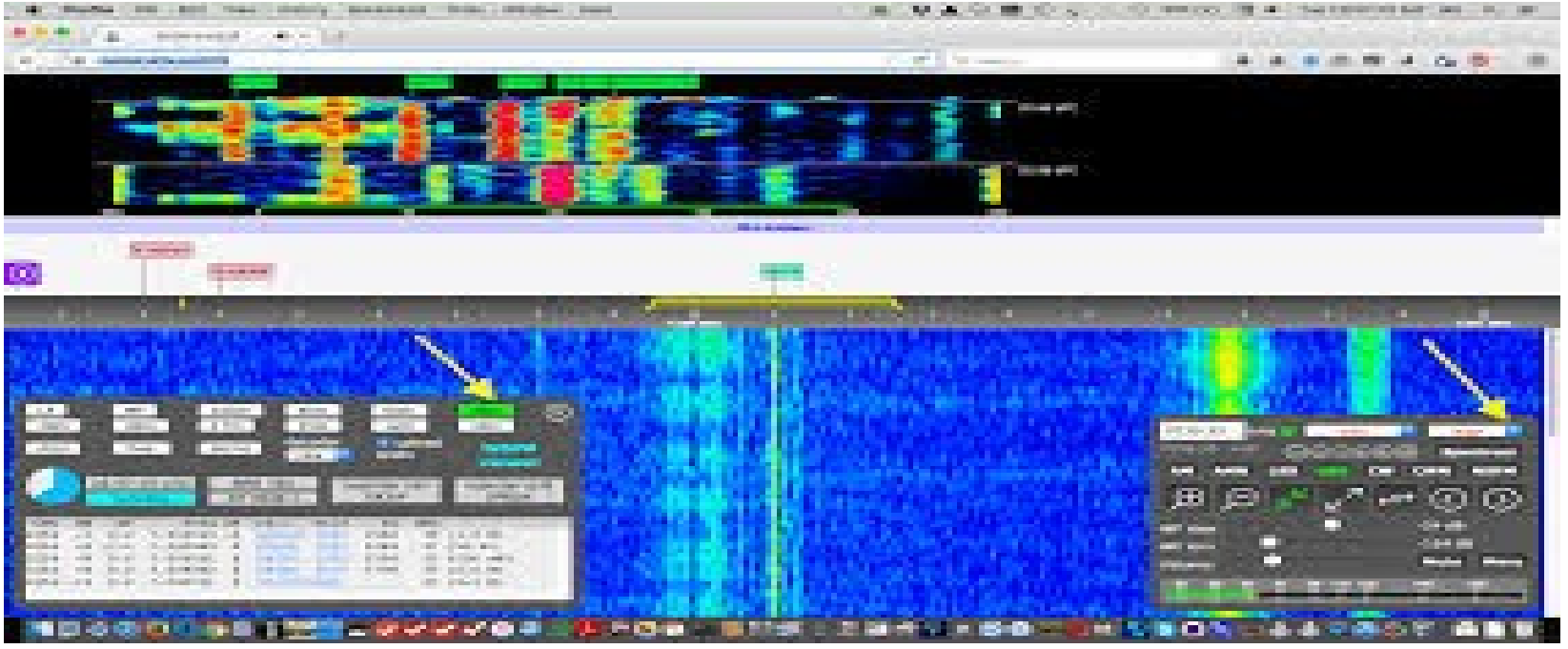
Kiwi sdr

- If you go to this web site you will see a world map with free online SDRs all over the world.
- Click on one of the Sdr pins and it will take to to that SDR.
- You can then control that SDR for free.

  You can play with that sdr and see if you like it before buying one. Or just use these free SDRs
-

Kiwi SDR Screen

- The Screen



Marine Frequency to monitor (all in MHz)

- Distress Marine Channel 156.800 MHz
- Seventh Distric Frequencies:
- Charleston, Jacksonville, Key West Miami, San Juan
- St. Petersburg Sectors
- 162.325 163.050 163.1375
- 164.900 165.3125 165.3125 171.2375 411.7875 41.975
- 413.000 413.025

Eighth Marine Sector

- Corpus Christi, Galveston, Mobile,
- New Orleans, Ohio Valley, Lower Mississippi River Frequencies Sectors (all in MHz)
- 162.325, 163.050,163.1375, 164.550, 164.550, 164.900, 165.3125, 171.2375, 411.7875, 412.975, 413.000, 413.025

Last Minute News

- Breaking news! SDR innovations for 2025.
- New SDRs FOR 2025 incorporate “AI” or Artificial Intelligence. So far the AI filters and drastically reduces noise and interference.
- Maybe even picking out a signal below the noise level.

The Ends

I hope to go into all of these in more details if you like.With future Preseetation If the groupe like. Any questions?

- You can email me at jeanlafitte@gmail.com