

Software Defined Radio Basics

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Agenda:

- *Software Defined Radio (SDR) Concepts*
 - *Examples of SDR Products*
 - *Free (open source) Software*
 - *Examples of SDR in Use*
- 

What exactly is an SDR?

A software-defined radio system, or SDR, is a radio communication system where components that have been typically implemented in hardware (*e.g. mixers, filters, amplifiers, modulators/demodulators, detectors, etc.*) are instead implemented by means of software on a personal computer or embedded system.

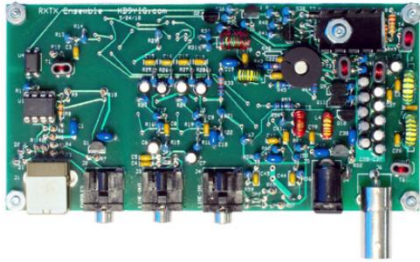
What exactly is an SDR?

A basic SDR system is comprised of:

- *Personal Computer equipped with a Sound Card*
- *RF Front End (the SDR)*
- *Software to configure/operate the SDR*

Signal processing is managed by the computers processor, unlike a traditional radio where dedicated components perform the same functions. This methodology provides the means to operate using varying frequencies, protocols, and environments extending the life and usefulness of the system over conventional radio hardware.

Examples of SDR Systems Used



**The SoftRock RXTX
Ensemble Transceiver Kit,
a 1 watt SDR transceiver**

\$100.00



**Realtek RTL2832U + Elonics
E4000-Based SDR**

\$20.00



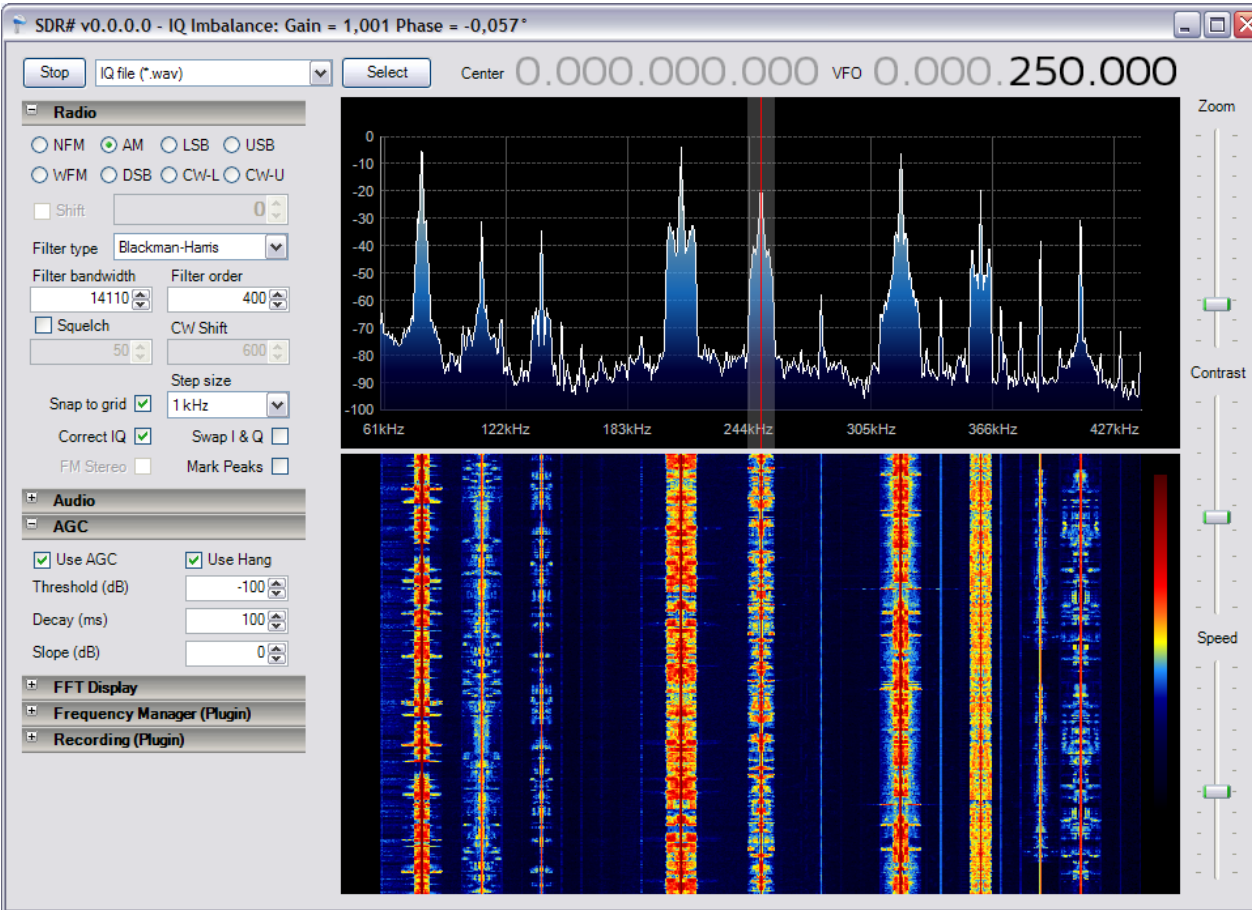
**SDR receiver good for
satellites, decode weather
images**

\$150.00

Free (open source) Software

- **SDR#** - *A high performance Software Defined Radio application*
- **ADSB#** - *A simple and cheap Automatic Dependent Surveillance-Broadcast (ADS-B) receiver using RTL-SDR captures aircraft transponder data*
- **SDR-RADIO.com** - *A Windows console for Software Defined Radio (SDR) receivers and transceivers*

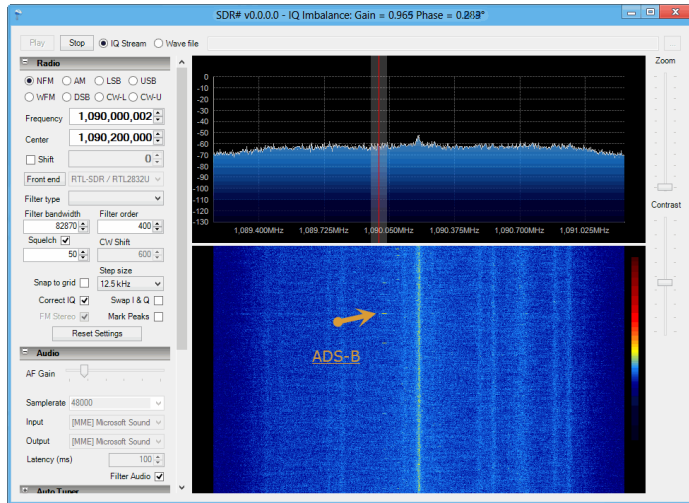
Examples of SDR – Amateur Applications



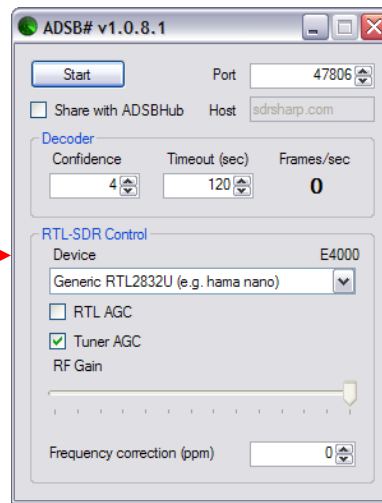
SDR# Software
Screen Sample
250Khz AM
mode

Examples of SDR – Amateur Applications

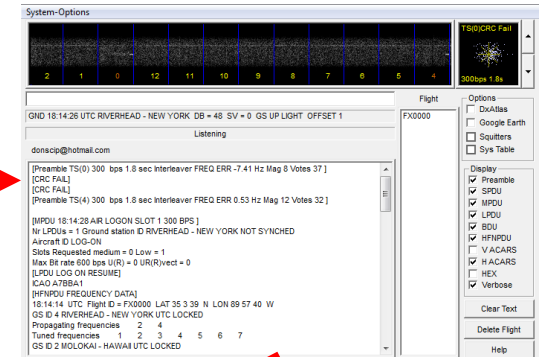
SDR# Software



ADSB# Software



HFDL Software



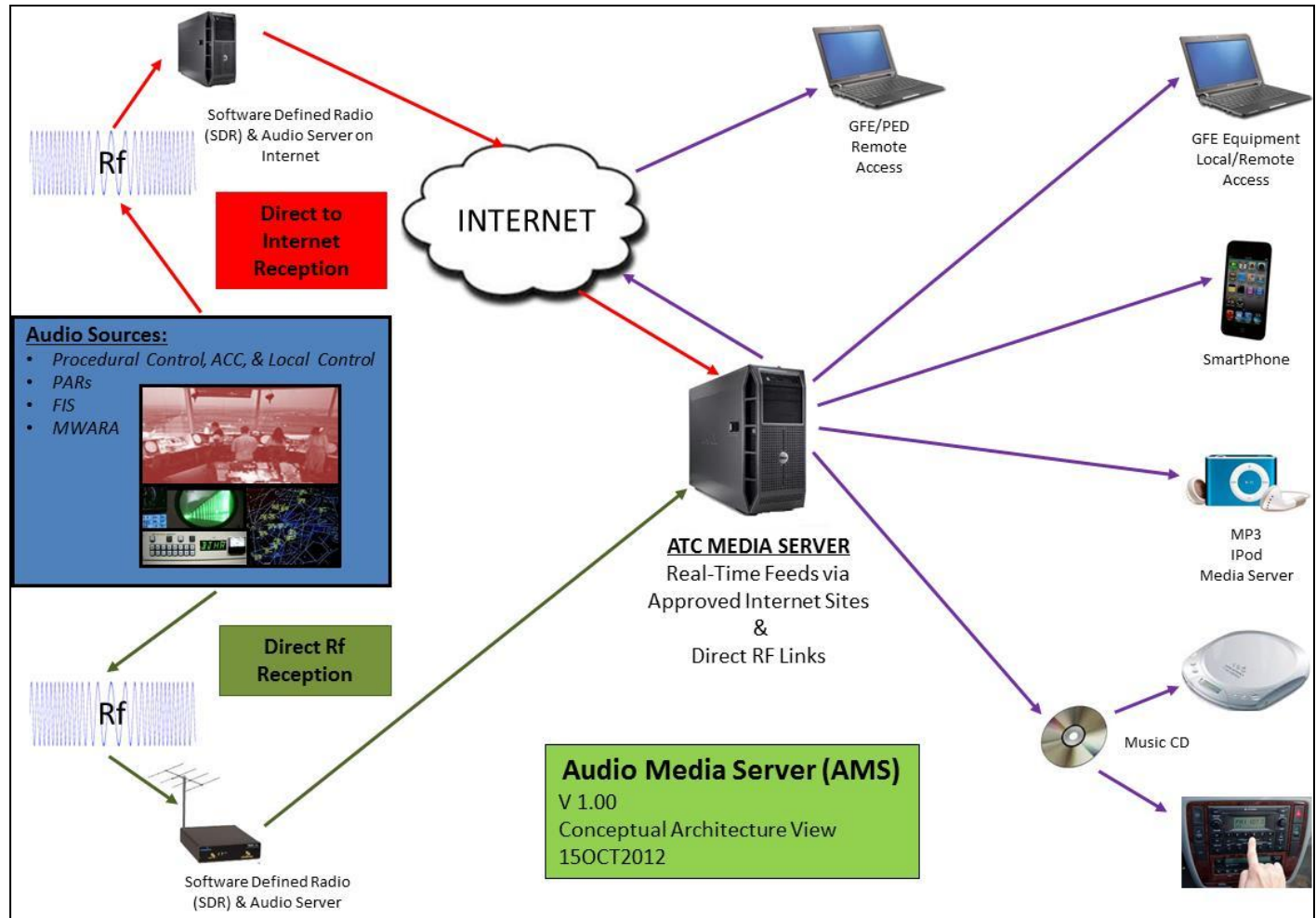
ADSB# Software
Screen Sample
1090Mhz



Google Earth
Software

Examples of SDR – Commercial Applications

**SDR Solution
Developed for
Federal
Government
Client, October
2012**



Questions?

