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## Real Time, Low Cost SDR for the Classroom

- The RTL-SDR brings low cost SDR to everyone!
- \$15 per USB radio (inc. antenna!) and widely available.
- Designed for Digital TV, but now useable as a tunable SDR.
- Well known and used in SDR & Ham Radio Communities.
- Now in the classroom, home, and engineer's desk.

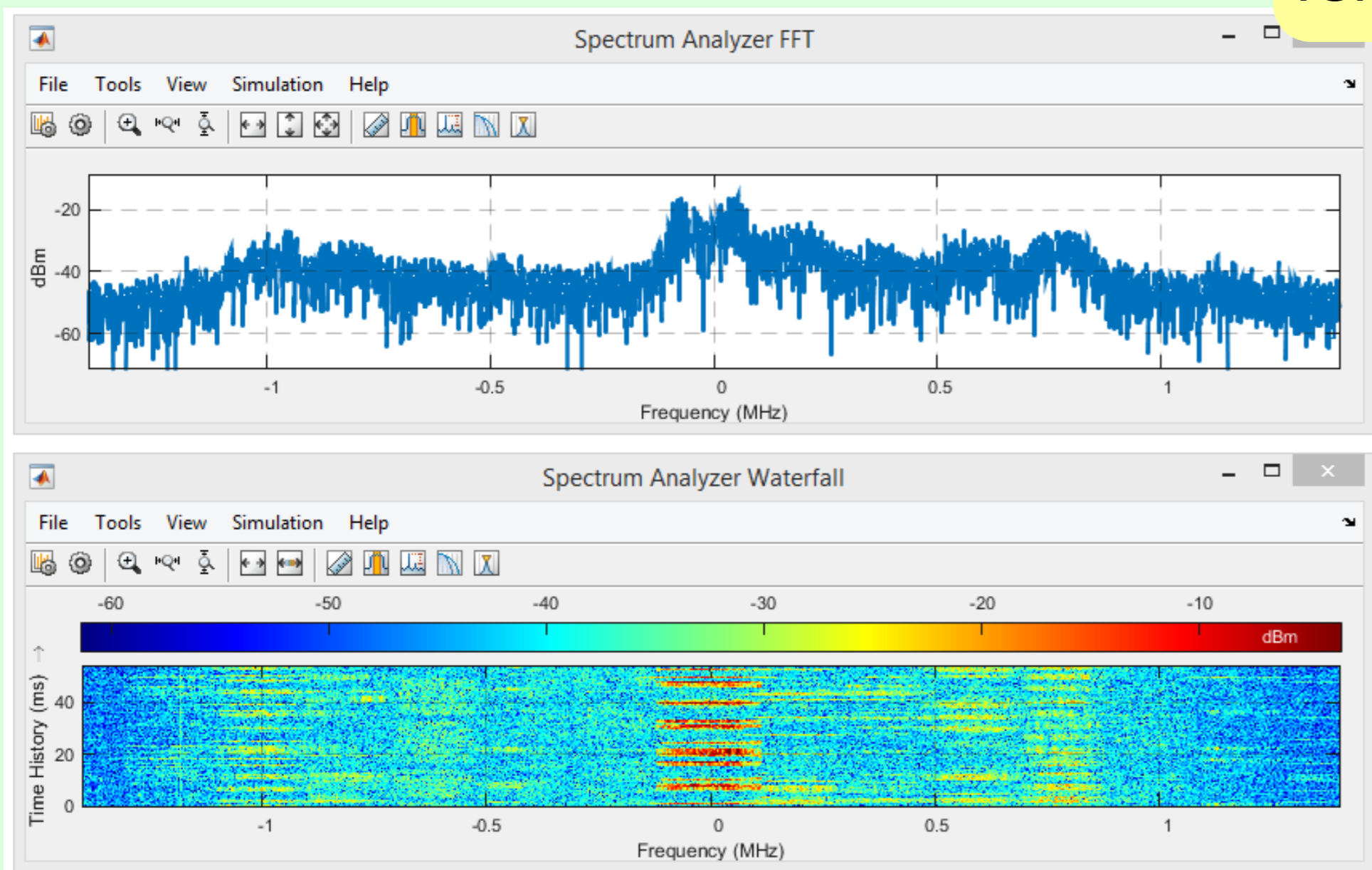


## Off Air Spectral Viewing

- Tunable range 50MHz to 1.7GHz
- Baseband sampling at up to  $f_s = 2.8\text{MHz}$
- Almost 8 bits I/Q receiver resolution
- Analyse time and frequency domains.

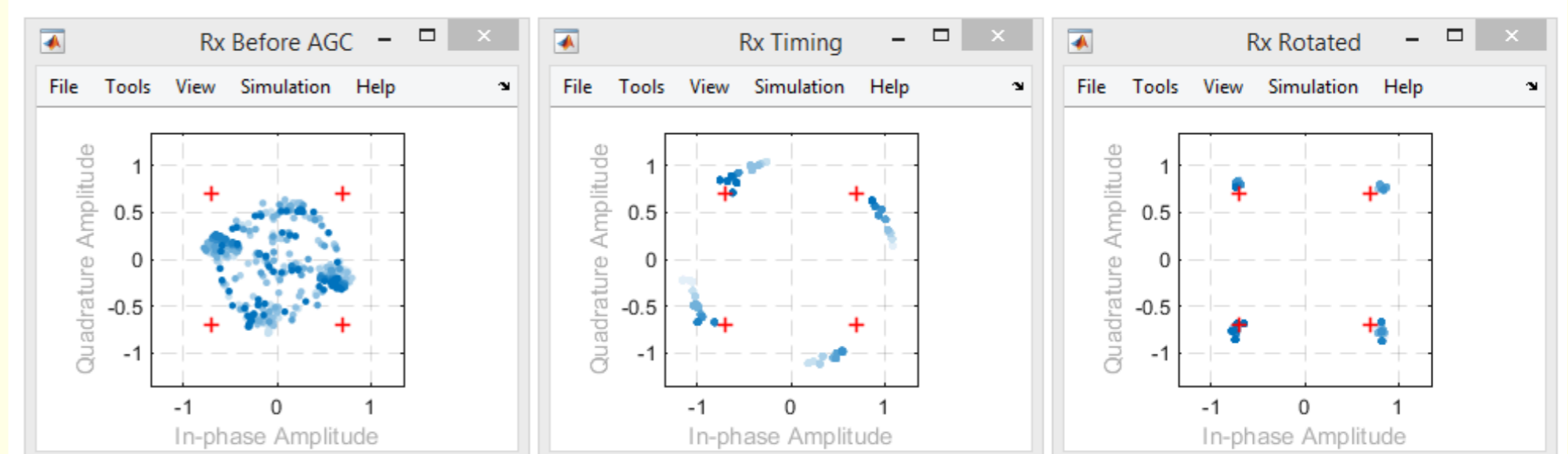
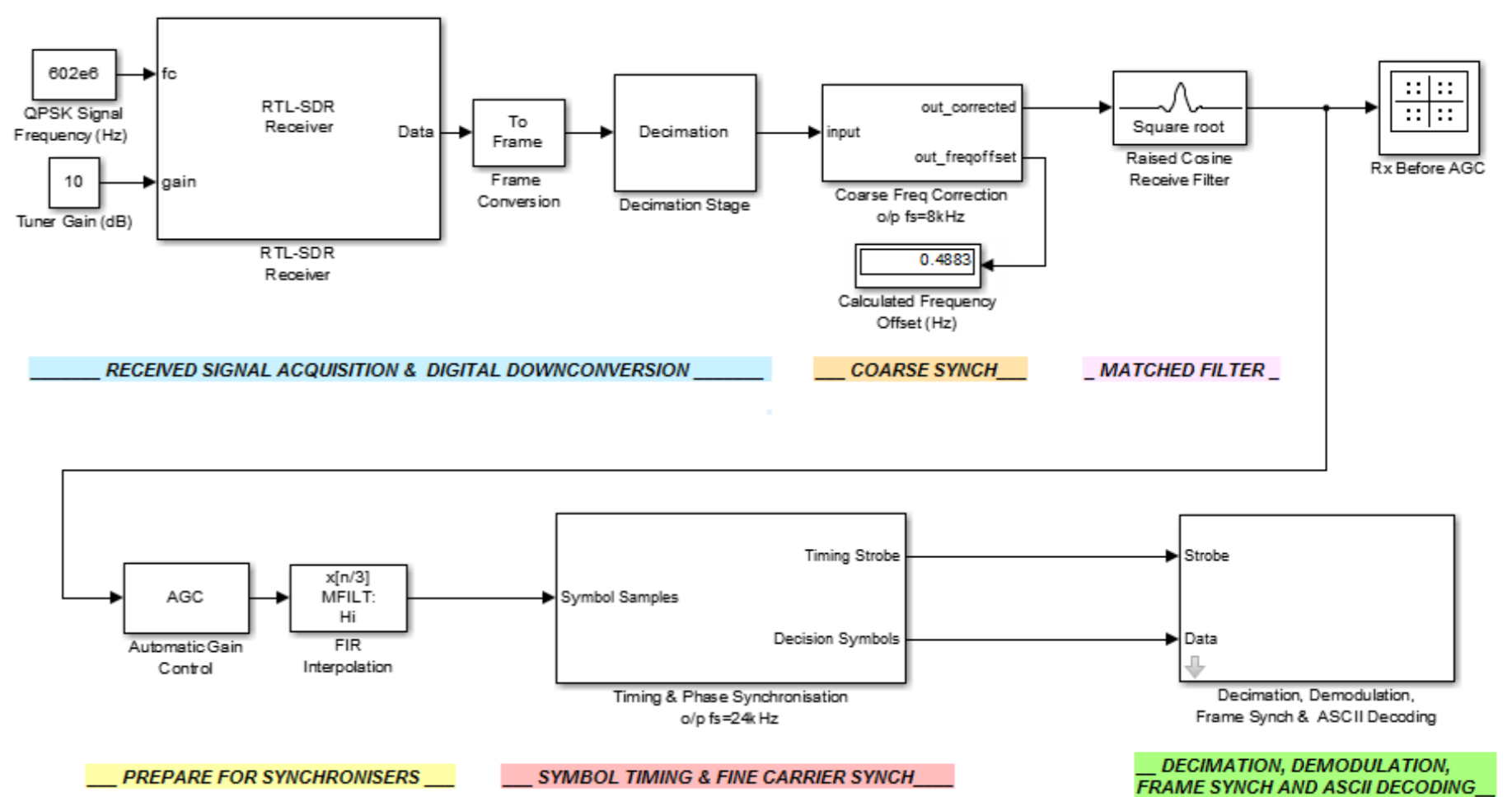
Radio Beacons  
AM & FM  
GPS  
GSM  
Satellite  
LTE  
ISM band

Off-Air 945MHz GSM Signal with 200kHz Channels



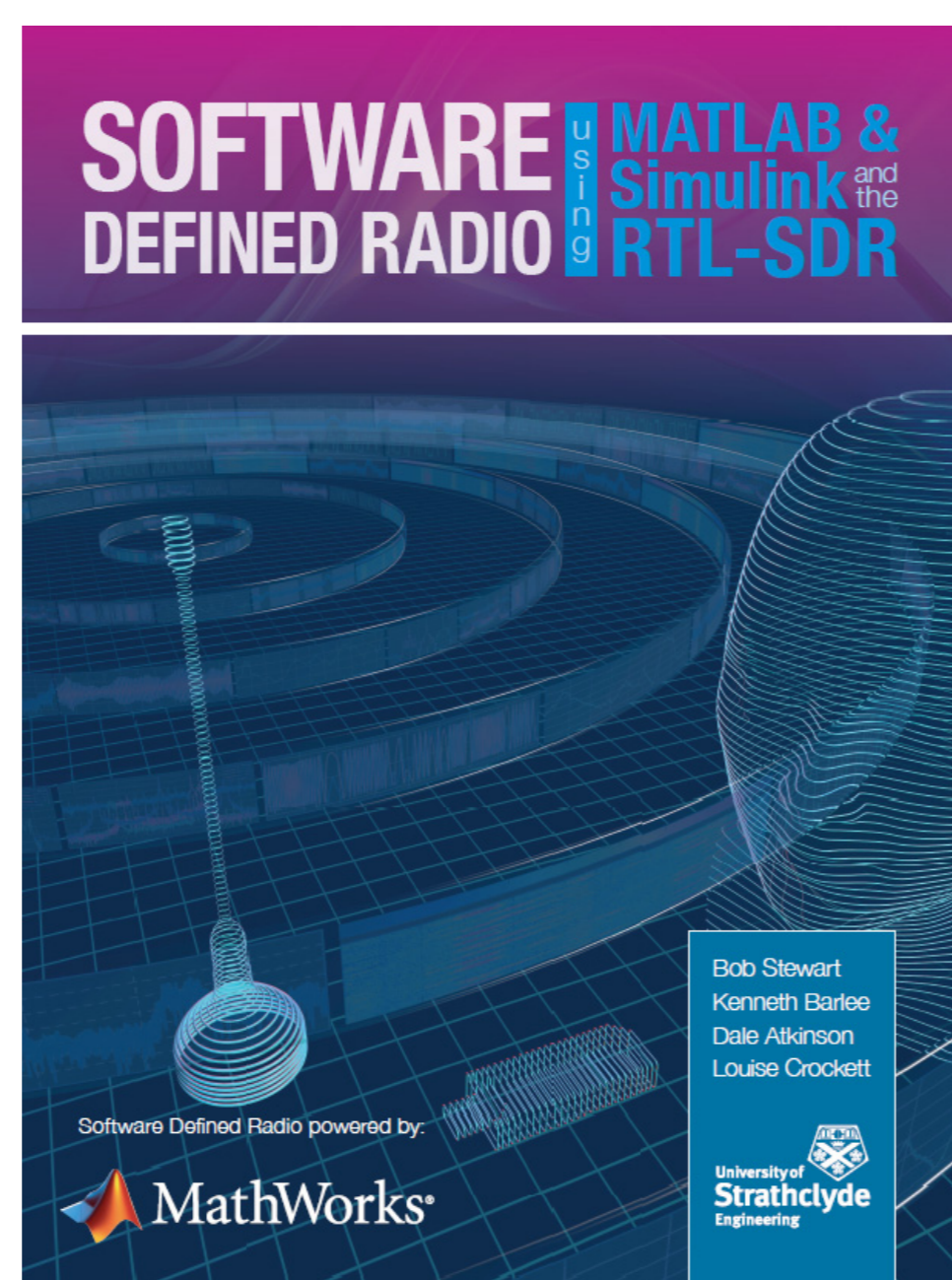
## MATLAB & Simulink Designed SDR

- Open the box and you are 'SDR'ing' in 30 mins!
- Compatible with MATLAB & Simulink 2014b+ with
  - DSP Systems Toolbox
  - Communications System Toolbox
  - RTL-SDR Hardware Support Package
- Professional, Student or Home Editions
- SDR running real-time on the MATLAB desktop
- Floating point implementations
- Real time, first principles DSP-SDR designs



## Coming July 2015...

- A 640 page textbook
- More than 100 hands-on RTL-SDR receiver examples
- **Free** to download book, examples and support files.
- Full colour print available from *Amazon.com* & bookstores.
- Tried and tested on ugrad labs and student projects.



## For a few dollars more... Desktop Tx and Rx

- Design \$15 AM transmitters using low cost components and transmit on ISM 433MHz.
- Use a \$10 FM RF transmitter & implement PHY & MAC Tx/Rx for data, audio, image transmission.
- With a USRP Tx at the front of the classroom and students receive and decode digital comms.