FCC Receiver Workshop
Session 3: Receiver Ecosystem

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March 12, 2012

Receiver performance

- Receiver specifications and performance are derived from
  - Global standardization body (3GPP) composed of experts from 379 member companies and organizations.
    - Devices which are not compliant to 3GPP specification are not allowed by the operator.
    - *Example: Adjacent channel selectivity, blocker tolerance*
  - Competitive landscape
    - *Example: Reference sensitivity*
  - Internal design specifications
    - *Example: Internally generated spur mitigation*
  - Trade-offs against power and size
    - Over-design has undesirable costs associated with increased power consumption, cost, and size. These are among the most critical parameters for cellular handset designs.
- All parties are motivated to have a system that works!

Technology advances

- ## Receive diversity
  - Multiple receive antennas and sophisticated signal processing can enable spatial separation of received signals and selective suppression of interference

- ## Interference cancellation
  - Interfering signals with known characteristics can be partially canceled

- ## Equalization
  - Inter-symbol interference caused by the channel is reduced by equalization

- ## Signal processing capability
  - Increased computational capacity has made possible the necessary signal processing for advanced waveforms which can provide better tolerance against delay spread in a dispersive channel. Advanced error correction coding improves reliability and capacity of the channel to deliver information.

- ## RF filter
  - Improvements in filter materials and compensation techniques have improved stop-band rejection and narrowed the transition region.