

Spectrum Management Working Group

"Toward More Efficient Spectrum Management"

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Spectrum Management: future is shared spectrum

Future is (increasingly) wireless → RF spectrum scarcity!!!

Need commercialize Dynamic Spectrum Access (DSA) technology, *business models and policy* to support novel ways to share spectrum in multiple ways...

- National Broadband Plan ([March2010](#)): “500MHz additional spectrum for mobile BB”
- Spectrum Act ([Feb2012](#)) : legislative mandate for FCC
- PCAST report ([Jul2012](#)) : government spectrum sharing
- FCC Initiatives: [600MHz](#) (Incentive Auctions), [TVWS](#), [3.5GHz](#), [5GHz](#), etc.
- CFP Spectrum WG
 - LSA/ASA CFP Spectrum WG (Feb2014)
 - LTE-U (Mar2014+)



Toward More Efficient Spectrum Management

New Models for
Protected Shared
Access

[\(CFP White Paper\)](#)

Spectrum Working Group
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Licensed Shared Access (LSA)/Authorized Shared Access (ASA)

- New licensing regime (between licensed & unlicensed)
- Protected sharing with Incumbent (e.g., government spectrum)
- Standards, Business/technology, & Policy reforms...
- EU: 2.3GHz, US: 3.5GHz, 1.7/2.1GHz, *5GHz, 600MHz/TVWS*

3.5GHz Proceeding

- **FCC GN Docket 12-354**
 - up to 150 MHz of spectrum @ 3.55-3.70GHz, partially shared with DoD radar
 - Small Cells, but also other uses (backhaul, rural access)
 - Timeline: launched 2012, FNPRM (April 2014)
 - 3 Tiers Usage: (a) Incumbent, (b) Priority Access, (c) General Auth Access
 - PA = LSA/ASA, GAA = Unlicensed*
- **Spectrum Access System**
 - Priority Access Licenses (PAL): granular time/geo, tradable
 - Unlicensed (GAA): everywhere else
 - Competing SAS: models, sensing, etc.
- **Why important?**
 - *Small cells!*
 - New model for sharing spectrum, especially between govt & commercial users
 - More dynamically flexible spectrum mgmt process
 - Dynamic Spectrum Access (DSA) compatible framework... (leverages TVWS)

5GHz Proceeding

- **FCC ET Docket 13-49**
 - Add 195 to current 555MHz of 5GHz available for unlicensed use.
 - Spectrum shared with Radar, Satellite, DoD airborne.
 - Unlicensed uses Dynamic Frequency Selection (DFS) to share (aka, LBS).
 - Timeline: 300MHz (1997), +255MHz (2003), +195MHz (2013)
 - R&O adopted March 31, 2014
- **“Gigabit” WiFi (802.11ac)**
 - Higher power for 5GHz unlicensed devices & Outside uses.
 - In-home 5GHz coverage ~ 2.4GHz
 - Global harmonization, simpler rules → lower equipment costs
 - WISP backhaul (point-to-point) and public hotspot access
- **Why important?**
 - Small cells
 - Unlicensed spectrum
 - 802.11ac is big jump for WiFi (40->160MHz channels, 64->256QAM, 4->8xMIMO)

LTE-U – started in March

LTE over Unlicensed

- **Can LTE-U match WiFi economics?**
- **LTE-U co-existence with unlicensed?**
- **Roadmap/barriers/opportunities/forecasts?**
- **Co-existence of “WiFi” (user-deployed) & “LTE” (MNO)??**
 - Small cells
 - Spectrum access
 - Service control (source-based routing, multihoming, etc.)

And, continue to track....

5GHz

3.5Ghz

1.7/2.3GHz

600MHz

etc.

Spectrum WG : spectrum sharing policy

- Biweekly WEBEX calls (Thursday 10am EDT, -4GMT)
- CFP members + invited guests
- Website for sharing links, notes, drafts
- Email list for announcements, discussions
- Deliverables: white paper, presentations, research, workshops....

For more information:

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