

Commerce Spectrum Management Advisory Committee (CSMAC) Update

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What is CSMAC?

- CSMAC is a Federal Advisory Committee that advises the Assistant Secretary for Communications and Information at NTIA on a broad range of spectrum policy issues.
- Committee members offer expertise and perspective on reforms to enable new technologies and services, including reforms that expedite the American public's access to broadband services, public safety, and long-range spectrum planning.
- CSMAC is generally chartered for a two-year term.
- During each term, CSMAC works within subcommittees on a set questions regarding topics and issues of interest to NTIA.
- Subcommittees study the topics and questions and deliberate to develop recommendations in reports.
- Full CSMAC meets quarterly to hear from subcommittees and discuss preliminary findings and recommendations (most recent meeting on Dec 9).
- CSMAC website (<https://www.ntia.gov/category/csmac>).

Current CSMAC Subcommittees

- 6G
- Electromagnetic Compatibility Improvements
- Ultra-Wideband
- Lessons Learned from CBRS in Federal/Non-Federal spectrum sharing

6G

- **Background:** Industry research and planning is well underway for 6G, expected to be the next major evolution of commercial wireless technology. The current interest and expectation for the U.S. to be a world leader in 5G will only increase for 6G, such that while deployment in earnest may be years out (2030 often cited as a target), the USG and the industry ecosystem must take steps now to lay the foundation for success. The scope should concentrate on 6G services only. This effort should consider generally the benefits to federal government user, the positives for the federal government as a user or federal equities, and how federal agencies can benefit broadly from 6G.
- Questions:
 - NTIA would like the CSMAC to consider use cases beyond traditional wireless communications including safety, sensor, radar, space and other scientific applications and address 6G's potential impact on federal government users.
 - When considering spectrum bands that could be used to support 6G, NTIA observes that the THz bands (>95 GHz) have been identified for potential use. How would such use impact government users in that range and what recommendations could be made to help prepare for this
 - Are there other spectrum bands that may be appropriate for 6G and beyond use, such as mid-band (5-16 GHz) use and impact to government users in that range?

Electromagnetic Compatibility Improvements

- **Background:** As the spectral environment continues to become more congested and spectrum sharing becomes more common, the potential for adjacent channel interference scenarios remains a limiting factor in expanding access to spectrum. In particular, government radar bands increasingly are being identified for sharing with commercial or other government systems.
- **Questions. To increase the efficient use of the spectrum resource:**
 - How can radar and other systems better co-exist in co-channel and non-co-channel relationships?
 - How should statistical risk-based analysis techniques in spectrum modeling analyses be used to characterize operational impact to federal systems?
 - What improvements in propagation modeling would increase the accuracy?
 - What role should NTIA play in ensuring the independent and timely analysis of these potential interference scenarios?
 - Other improvements suggested by CSMAC.

Ultra-Wideband

- **Background:** An increasing number of wireless devices employ Ultra-Wideband (UWB), a radio-based communication technology for short-range data transmission, mainly using pulse or impulse modulated waveforms. UWB is often used in location and distance measurements. Since the inception of the rules, an increasing number of wireless devices are employing UWB at higher frequency ranges. The NTIA Redbook mirrors the FCC's rules for Ultra-Wideband. With greater UWB use, more potential users have approached the FCC with waiver requests, which are then coordinated between FCC and NTIA.
- **Questions:**
 - What recommendations can the CSMAC make for NTIA to consider in terms of potential modifications to the UWB rules that would increase usage while adequately protecting incumbent services, including critical federal systems?
 - As an initial matter, is it possible to make changes to the rules governing UWB operation in federal government bands without the FCC making similar changes to its rules or would any changes need to be made in coordination with the FCC?
 - What areas of minor potential changes could be explored such as power limits, definitions, or application categories, including harmonizing to many international regulations?
 - Could NTIA modify some restrictions or include new ones or expand existing frequency bands?

Ultra-Wideband Recommendations to NTIA

- NTIA / FCC should collaborate on UWB waiver process
- NTIA should provide guidance on federal use characteristics that UWB waiver applicants can use to compose technical studies and improved waiver requests
 - NTIA should extend its Spectrum Compendium at least to 10 GHz to assist in the assessment of UWB waiver requests and to inform applicants in advance of filing.
- NTIA should identify a set of waiver characteristics that are associated with lower risk and therefore can receive expedited treatment—this will reduce the burden on both NTIA and federal agency resources.
- NTIA should identify a set of waiver characteristics that are associated with higher risk requests and where NTIA will need to concentrate its review and analysis and where those providing waiver requests should expect delays or denials.
- NTIA should put in place a process to track whether any changes resulting from these recommendations produce better outcomes and/or address NTIA's concerns.

Ultra-Wideband Recommendations to UWB Community

- Applicants should meet with NTIA early in the process rather than waiting until FCC seeks interagency coordination.
- Based on this discussion, applicants should prepare a technical report on the potential impact of requested waiver on federal users.
- Applicants should consider NTIA-identified items that will likely delay waiver approvals if included in the waiver application.
- Applicants that can demonstrate that the proposed system will result in no greater impact on incumbent systems than systems complying with the existing regulations should expect a lower risk of delay or denial.

Ultra-Wideband Recommendations to NTIA/FCC/UWB Industry Collaboration

- NTIA should work with UWB groups to identify a set of generic industry studies that would provide better information/tools to NTIA when it reviews future waiver applications.
- NTIA should work with UWB groups to identify a limited set of discrete changes to FCC's rules where general waivers have already been issued, or otherwise demonstrate that this limited set of changes would not negatively impact federal users with the goal of updating the rules and reducing need for waivers.
- NTIA should use the NTIA/FCC MOU to work with the FCC to address enforcement of UWB rules—rules without enforcement are ineffective.

Lessons Learned from CBRS in Federal/Non-Federal Spectrum Sharing

- Note, subcommittee starts meeting in 2023.
- **Background:** There has been increasing spectrum sharing between federal and non-federal users. In 2020, federal and non-federal users started dynamically sharing the 3550-3650 MHz portion of the Citizens Broadband Radio Service (CBRS) band. The foundation of CBRS is a novel sharing framework that includes a three-tiered licensing scheme that grants corresponding levels of protections from other users, including fully protecting incumbent operations including those of federal entities, and employs multiple Spectrum Access Systems (SAS) and an environmental sensing capability (ESC) network). After initially enabling General Authorized Access (GAA), the FCC's auction of Priority Access Licenses (PALs) for the CBRS band concluded approximately two years ago and it completed granting licenses one year ago, on December 9, 2021. NTIA would like to learn what, at this stage, is working well and what may not be with this leading example of federal government/commercial sharing; what, if anything, could/should be improved for CBRS; and to what extent CBRS can and should inform our efforts to explore and advance spectrum sharing in other bands.
- **Questions:**
 - What are general and specific lessons learned from the CBRS framework for commercial operations sharing with federal incumbents - both positive and negative?
 - How could the commercial-federal sharing in CBRS be improved?
 - What from this CBRS spectrum sharing experience should be considered for implementation in other bands/cases
 - What from this CBRS spectrum sharing experience should be avoided in other bands/cases?

CSMAC Members

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Thanks!