

Subcommittee #3 Update

Interference Prevention, Detection, and Resolution (IPDR)

CSMAC Meeting

July 30, 2020

Subcommittee members

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NTIA IPDR question

- How could the NTIA's and the FCC's equipment authorization rules be modified to require that all transmitters use a unique identifier?
- What are the barriers to doing so?

Status updates

- Subcommittee call; decision made to conduct a literature review on unique identifiers (Sep. 25, 2019)
- Literature review on unique identifiers circulated to subcommittee; technical overview of unique identifiers and unlicensed devices shared with subcommittee (Dec. 13, 2019)
- Subcommittee call seeking feedback on literature review and technical paper, proposed outline for draft report, and volunteers for drafting; noted ongoing efforts to set up calls with IPDR experts in the field (Dec. 20, 2019)
- Subcommittee call to discuss any other outside experts on IPDR the subcommittee should speak with (noting that efforts to secure previously identified individuals were not successful) (Feb. 25, 2020)
- Subcommittee call with expert Jay Jacobsmeyer of Pericle Communications Company (Mar. 23, 2020)
- Draft IPDR report circulated for CSMAC review (Apr. 17, 2020)
- Subcommittee call with expert Milo Medin, Vice President of Access Services at Google, Inc. (May 19, 2020)
- Subcommittee call with expert Rhett Butler, Project Manager at Comsearch (June 3, 2020)
- Subcommittee call with expert Paul Denisowski, Project Engineer at Rohde & Schwarz (June 3, 2020)
- Revised draft report circulated for CSMAC review meeting (July 21, 2020)

Recommendations

- The administrative path for modifying the FCC's and NTIA's equipment authorization rules to require that transmitters have a unique identifier – whether band-by-band or more broadly – appears to be straightforward.
- There are likely specific bands and use cases where a unique identifier may be a viable and effective regulatory tool.
- The challenges with implementing any such a requirement on a ubiquitous basis would be complex and multifaceted.
- The Subcommittee recommends approaching the question of unique identifiers through a band-by-band or use case approach rather than some broader mandate in the equipment authorization rules.

FCC unique identifier 'takeaways'

- The FCC's decisions point to several considerations that have guided when the unique identifiers have been required by the agency.
 - Where licenses operate on shared channels, the FCC is more likely to require transmission identifiers and to ensure that licensees who experience interference will be able to identify the source of interference (i.e., not permitting digital transmissions where those receiving interference would be unable to use the digital call sign transmission to identify the source of interference).
 - Where interference would occur to critical/government users, the FCC has taken steps to require unique identifiers that can be used in interference detection and resolution.
 - Where licensees can readily be identified based on service area information contained in the Commission records or other publicly available sources, the FCC has declined to impose transmission identifier requirements.
 - Where the FCC does not believe an identification signal will be of significant value in identifying the source of or resolving interference that devices may cause (e.g., requiring personal/portable devices to transmit identifying information when operating, may not be helpful because such devices move around), it has declined to require transmission identifiers.
 - Where industry standards do not exist or do not seem likely to develop, the FCC has declined to impose transmission identifiers.
 - Where a rule requiring the transmission of unique identifiers is likely to restrict the development of a technology or ecosystem, the FCC has expressed reluctance to mandate use of a such an identifier.
 - Where the characteristics spectrum make the occurrence of interference less likely, relative to other bands, the FCC has declined to require transmission identifiers.

Unique identifier 'takeaways' from expert discussions

- It is easier to build requirements for unique transmit identifiers into new bands and services than to retroactively require devices to begin transmitting unique identifiers
 - All experts agreed that it would be complicated and costly to retrofit existing devices to broadcast a unique identifier
 - Difficulties arise in the transmission, modulation and decoding of the identifiers
 - The CBRS framework is an example of a regulatory and technological model that largely addresses many interference concerns (although the CBRS band has not been fully tested in the real world yet)
- Experts noted that unique identifiers may not help in all circumstances. Several experts indicated that more than half the cases of interference come from unintentional radiators (such as air conditioning units, streetlights, microwave ovens, etc.) that are emitting unmodulated signals, and in such cases, a transmitted unique identifier could not be used to expedite interference location process
- There are competitive and security harms that could arise if authorization to decode identifiers is not managed carefully

Requiring unique identifiers

- Three gating questions could assist policymakers in deciding which bands or services are good candidates to explore the use of unique identifiers are:
 - (1) how often will/does harmful interference occur;
 - (2) how consequential would the harmful interference be to affected users; and
 - (3) how difficult will it be to identify and remedy the cause of the interference.
- The more often the interference occurs and the harder it is to remediate with other tools (for example, database registration where devices are fixed), the stronger the case for exploring whether requiring devices to transmit unique identifiers is the right policy tool.

Barriers to unique identifiers

- Standards development and technology changes
- Device capabilities
- Privacy and security concerns
- Impact on innovation and investment

Next steps

- Finalize and adopt subcommittee report