

CSMAC Unlicensed Subcommittee

Presentation of Final Report of
Recommendations

July 24, 2012

Enforcement Procedures for Federal Agencies

Question 1: Enforcement – What Procedures Should Federal Agencies Have in Place?

- i. How should Federal agencies deal with complaints of interference received by unlicensed users?
- ii. How should Federal agencies deal with interference from unlicensed users in the hands of citizens who don't understand the rules?
- iii. How should we prevent software modifications that alter the compatibility characteristics of a device?
- iv. With widely distributed products, what is the best approach to enforcing rules when the number of offenders may be significant?

Findings/Working Assumptions

With regard to how agencies should address complaints of interference received from unlicensed users, the subcommittee's work was guided by an understanding that there are different types of unlicensed operations, which generally argue for different courses of preventative measures and remedies for interference:

1. Untethered consumer devices and systems, which typically are less expensive and/or legacy devices.
2. Connected equipment that can essentially be required to “call home” periodically (e.g., to contact a spectrum management database) and take mitigation steps when interference occurs, including the possibility of automatic shut off or losing access to particular frequencies.

The cases of garage door opener interference, wireless mics and the TV white spaces band, and 5 GHz consumer devices highlight the differences between unconnected devices and connected equipment when it comes to interference and potential solutions. Manufacturers and operators may face certain requirements that can help anticipate and resolve interference issues.

Findings/Working Assumptions (Cont.)

Regarding whether it is possible to do prevention/education at the consumer level, the subcommittee's understanding was that scenarios for which Federal spectrum users may have to address complaints from unlicensed users fall into 2 categories:

1. Legacy, "untethered" Part 15 systems that do not reflect the current state of technology, and generally do not have the flexibility to respond quickly when primary users change operating conditions in a band (e.g., garage door openers.)
2. Newer unlicensed technologies (e.g., database-dependent cognitive radios) for which the implications of Part 15 rules to Federal users may require real-world operating experience to fully understand (e.g., 5 GHz Dopplers).

Both the cases of garage door opener interference and interference from unlicensed devices into 5 GHz weather radar bands underscore the limitations of consumers' ability to identify, in real-time, sources of interference.

- Going forward, most sharing opportunities are likely to involve devices that are inherently connected to the Internet in some way, or at least capable of connecting.
- Given the extent to which even less expensive unlicensed equipment is now connected to the Internet, consumer education per se will become less important if connected equipment has requirements to, for example, "call home" to proactively manage interference issues and thus prevent performance degradation in the first place.
- Technology-based solutions mean that the onus for identifying interference would not be on the consumer.
- However, in the future, sources of interference are likely to be more dispersed, complex and difficult to pinpoint.

Summary of Proposed Recommendations

Draft recommendations on enforcement were submitted by the Unlicensed Subcommittee at the March 1, 2012, CSMAC meeting and were not adopted at that time, to provide time for further inputs.

Proposed Recommendation #1: NTIA should put in place requirements, and work with the FCC on parallel measures, that reduce reliance on post-hoc regulatory enforcement of interference by turning to technology-based solutions for “connected devices.” NTIA, in coordination with the FCC, should proactively educate policymakers concerning the secondary status of unlicensed devices in shared bands and the obligation of consumers and manufacturers to accept interference.

Proposed Recommendation #2: NTIA, in coordination with the FCC, should require that in all new unlicensed bands, or in shared Federal bands designated for unlicensed access, that devices should be “connected devices,” which are required periodically to “call home” to: (1) Renew the authorization to operate in the band (2) Obtain a firmware update, to be remotely disabled in a particular frequency, and/or (3) Receive direction to move to another frequency band when necessary.

Summary of Proposed Recommendations (Cont.)

Proposed Recommendation #3: In cases when non-compliant devices do not operate within the rules to prevent interference, or when “avoidance through technology” measures fail, NTIA should consider recommending that the FCC strengthen enforcement measures to provide stronger deterrents, so that interference mitigation may be addressed more proactively than reactively.

Past Enforcement Recommendations

Regarding Recommendation #3, to address cases when avoidance through technology measures failure, the Committee endorses the earlier CSMAC recommendations regarding enforcement measures:

- Put in place streamlined interference reporting tools to complement “spot monitoring” of new operations.
- Increase penalties for violations.
- Increase budgetary resources for monitoring and enforcement.
- Per the FCC’s Fiscal Year 2011 budget proposal language to resolve “100% of nonemergency interference complaints” in one month, NTIA should encourage the FCC to expand this to a broader “shot clock” approach to responding to interference complaints so that licensees and operators of unlicensed devices have certainty on the timetable.
- Develop tools for Temporary Restraint of Interference (TRI).
- Develop and explore the use of remote shut-off technologies for resolving interference problems.
- Increase assessments/Test-Bed approach.
- More stringent equipment authorization will be an important tool in facilitating spectrally efficient equipment.
- Establish a streamlined process for the maintenance and retention of interference reporting and enforcement data.
- Explore through legislation, regulations or industry/government agreements, the ability of the Federal government to expand its enforcement of spectrum interference rules, especially as it may relate to public safety and law enforcement.

Summary of Proposed Recommendations (Cont.)

Proposed Recommendation #4: In cases when it is not a matter of unlicensed devices intentionally operating outside of the rules, but interference still occurs, manufacturers should increase consumer education efforts about the operating parameters of Part 15. NTIA should work with the FCC and with industry to ensure that consumer awareness provides an important counterpart or “backstop” to enforcement and “avoidance through technology” efforts.

Proposed Recommendation #5: NTIA, in coordination with the FCC, should further study the regulatory treatment under the current unlicensed framework for “cheap, dumb” devices. The Committee generally recommends that in the future “unconnected” devices should be restricted to legacy bands of spectrum where they are already prevalent (e.g., 900 MHz, 2.4 GHz). Policymakers should consider whether such devices should even be further restricted in the future, phasing out their access to very high-quality bands over an appropriate time period.

Possible Questions for Further Study

Subcommittee-generated Questions:

1. How to pay for Federal system relocation or other costs related to facilitating shared access for users?
2. What methods could be used to “inventory” or identify where in the spectrum specific unlicensed devices are operating?
3. Further consideration of pros and cons of setting aside new spectrum exclusively for unlicensed, and/or whether additional Federal bands should be made available for unlicensed use on a purely secondary or tertiary basis (as a non-interfering underlay)?
4. Ability of unlicensed devices to operate in Federal spectrum on a shared, non-interfering basis with Federal systems where that unlicensed access may be temporary or contingent.
5. Issues regarding international coordination – in an increasingly globalized economy for devices, how do you address requirements to “turn off” if interference is caused when you are talking about devices manufactured and sold beyond US borders?
6. The establishment of a voluntary Interference Clearinghouse website to leverage the power of “crowd sourcing” by creating a tool for consumers or government operators to file reports of interference to create a “snapshot” of where such incidents may be occurring and when.

[On the last question, this is an interesting idea, with a well-developed input, but the Subcommittee ran out of time to fully address the question in the current cycle.]

NTIA-generated Questions:

NTIA asked that the subcommittee review the entire report and, revisit Question #1 with respect to the current population of unconnected devices (“How should Federal agencies deal with complaints of interference received by unlicensed users?”)

- The subcommittee did not reach further conclusions on how to address this question regarding unlicensed devices that are not connected to the Internet.
- It also did not arrive at final recommendations for how NTIA can inventory unlicensed devices.