

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON D.C. 20544**

Spectrum Policy Task Force

Seeks Public Comment on

Issues Related to

FCC Spectrum Policies

ET Docket No. 02-135

Comment on FCC Workshops by Wayne Longman

The theme for spectrum policy change was based on the apparent market success of Unlicensed Part 15 (U/L) devices such as low power garage door openers, wireless phones and LANs. These devices coexist with other services without intensive FCC participation. This approach is considered by some to be applicable to most conventional radio services, and can be coupled with spectrum markets, which are believed to alleviate the need to formally re-allocate spectrum, and greatly diminish the FCC role in spectrum regulation.

Workshop participants who favored this approach were generally academics, the U/L device industry and the FCC. Those opposed were conventional radio service providers and manufacturers, frequency coordinators, as well as a number of participants who had extensive practical experience in spectrum policy, allocation and assignment matters.

To understand how this model would apply to other radio services it is instructive to examine how it applies to U/L devices and the further changes they are seeking.

Definition of Harmful Interference

The U/L industry is seeking access to additional spectrum, which could be facilitated if the FCC specified a noise or interference floor below which no one could complain of interference. Essentially, each band would have an additional primary frequency allocation to Noise, at a specified power, which other services would have to share with. (This allocation action may not be any simpler than any other reallocation proceeding).

This quantified definition of harmful interference is seen to replace dispute mechanisms that are now used to resolve the qualitative evaluation of it, such as frequency coordination. A quantified and codified definition of harmful interference would not stop interference, but could stop formal recourse to the FCC or the courts when cooperative efforts fail to resolve it, provided the interference does not exceed the codified level. This is seen particularly useful for U/L devices owned by the “inexpert” public, and would further indemnify U/L device manufacturers from interference disputes.

Opponents were concerned that increased noise levels would affect current quality of service and prevent evolution to certain kinds of improved services in the future. There was also concern that U/L aggregate noise levels are not managed, creating a much worse environment. The current definition has much and very useful technical and legal flexibility.

On the theory that all future radio will be digital, one could imagine that conventional allocations would disappear. However, one should question the need for such a definition if the existing Part 15 standards are truly adequate, and this issue suggests they are not.

Receiver Standards

It is seen by some that a properly designed receiver would be immune to the Noise allocation. Although little opposition was seen to standards that reject out of band emissions or prevent adjacent channel taboos, there was little support from conventional system supporters for in-channel standards that would define quality of service and limit product improvement, and a general concern that standards would increase costs and obsolete legacy equipment.

It is noteworthy that the U/L industry is granted an absolution of product liability in this regard and others by the Part 15 labeling requirement:

“This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.”

Spectrum Efficiency

The discussion was divided between assigning it to the most valuable use and obtaining more throughput in a given bandwidth. The proponents of the first view were generally U/L supporters, and the latter conventional radio supporters. The most valuable use faction tended toward a qualitative assessment (any result of auction or secondary

markets, but excluding public safety or radio astronomy), while the others believed it could only be evaluated quantitatively for a specific system.

New Technologies

Software Defined Radios (SDR) are seen to be able to take advantage of unused spectrum by using sniff techniques to detect operating systems and avoid them, or by adapting the signal characteristic to be compatible with what it detects.

This may be based on an unfounded assumption that the SDR receiver is more sensitive than any conventional service receiver. A startling aspect of this was the refutation of the widespread belief that the spectrum is highly unused. Taking measurements at the rooftop level with higher gain antennas reveals that the spectrum is highly used. This seems more in touch with reality given the difficulty of finding frequency assignments in urban areas. Most importantly, the dismissal of the myth that the spectrum is largely unused undermines the hypothesis that the existing allocation and assignment processes are inefficient and require replacement.

It was pointed out that a generic SDR will always be more expensive, large, and power consuming than dedicated radios, and are not yet commercially available. There are SDR operating in conventional radio services today such as multi-band, multi-channel, multi-mode cell phones, but these are dedicated function systems.

Conventional system supporters were wary of the introduction of new technologies based simply on spectrum efficiency needs, because of the massive investments in existing infrastructure, and shared ownership issues such as in broadcast receivers. Some of the U/L proponents seemed less concerned about this, and likened

radio obsolescence to computer obsolescence – inevitable, and can be driven by the manufacturers with little concern for consumer investment.

Rights and Responsibilities

U/L proponents took a position that could be said to have a right to interfere (define harmful interference, otherwise laissez-faire) while conventional system proponents want a right to not be interfered with. There were suggestions that U/L devices be licensed on a secondary basis, which already has a defined set of rights and responsibilities vis-à-vis primary systems and other secondary systems. This would not only avoid the tedious and possibly ineffectual process of evolving new rights and responsibilities, but it would immediately open new spectrum with greater regulatory assurance, peer review and user protection.

Ways Forward

It has not been demonstrated that U/L device approaches to spectrum policy are superior to the existing process. Many of the difficulties the U/L community is finding are because they are trying to work outside of the process that applies to all other radio system operators. Conventional system operators know that others have a right to access spectrum, and the existing process allows that to happen, so will cooperate to the extent they can. The slowness of the process is something that should be separated from the process itself, and repaired.

If the process were fast enough, U/L devices could be licensed to the manufacturer on a secondary basis, and remain unlicensed to the end user. This will have several important benefits:

- the manufacturer will be liable to resolve interference (which is seen to occur as evidenced by the Part 15 disclaimer label) that is now abandoned and left to the hapless consumer and unprotected conventional system operator;
- new U/L designs can be more closely scrutinized for aggregate interference, interference to other U/L devices, and interference to actual operating systems instead of generic power levels;
- U/L devices can be tracked (at least by sales area) for interference and spectrum studies;;
- U/L can gain a secondary Table of Frequency Allocation status. In certain bands it may be possible to raise them to Primary;
- public processes such as allocation and assignment provide an opportunity for consumer protection against forced obsolescence of U/L and non-U/L devices.

Focusing all spectrum policy solutions on U/L approaches will cloud major spectrum improvements possible through eliminating U.S. jurisdictional disputes, more flexible allocations and better alignment with international spectrum use

The intent of the Commission is right – to eliminate bureaucratic sclerosis in spectrum change. But the seemingly preferred solution of market based solutions will still require FCC intervention to ensure there are no abuses, and to ensure other public policy and spectrum policy objectives are met. The proposed solutions will not eliminate all FCC slow-downs, and they will not eliminate the issues of access to government spectrum.

Vast improvements can be made to the existing system. An example is the removal of spectrum management from both FCC and NTIA, putting it in a self-funded

agency to insulate it from political interference and allowing the removal of government/non-government spectrum boundaries. This is an extreme measure, but if the spectrum is in crisis, it deserves extreme change. An important issue like this should not be hostage to bureaucratic jurisdictional disputes.

An independent spectrum agency will provide more spectrum and more efficient use of it. A non-exhaustive list of factors to consider:

- primarily a technical agency dealing with the technical aspects of spectrum use;
- constituency would consist of all spectrum users;
- elimination of opaque government/non-government processes;
- opportunity to allocate by type of use, spectrum profile, flexible band boundaries, etc. vs. type of user;
- all users have more choice of bands;
- reduction in re-allocation activity;
- focus on new/innovative entrant showing to technical demonstration of compatibility;
- opportunity to emplace spectrum rent on all users to discourage trivial use;
- opportunity for long range spectrum planning;
- spectrum “establishments” cannot end-run through Congress;
- unburdening of past FCC or NTIA mistakes;
- the FCC can continue to manage the non-spectrum business of the services

Conclusion

The system of frequency allocation and assignment has not been demonstrated to be broken, but it is rusted to the point where it is difficult to manipulate. Even the bureaucracy is searching for an easier alternative. Before discarding the old mechanism is even considered, some oil should be applied and a few parts replaced. The cost may or may not be less than a new mechanism, but the outcome will be much more predictable.

Dated this 12th day of August, 2002

/s/

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