

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
Authorization and Use of) ET Docket No. 00-47
Software Defined Radios)
)

COMMENTS OF AT&T WIRELESS SERVICES, INC.

Pursuant to Section 1.415 of the Commission’s Rules, 47 C.F.R. § 1.415, AT&T Wireless Services, Inc. (“AT&T”) hereby submits its comments on the Notice of Proposed Rulemaking issued in the above-captioned proceeding.^{1/} AT&T submits these comments to assist the Commission in establishing and implementing policies to help ensure that software defined radios (“SDRs”) are regulated in accordance with sound spectrum management and engineering principles.^{2/}

^{1/} In the Matter of Authorization and Use of Software Defined Radios, Notice of Proposed Rulemaking, FCC 00-430, ET Docket No. 00-47 (rel. Dec. 8, 2000) (“NPRM”).

^{2/} AT&T initially commented in an earlier stage of this proceeding, noting that SDRs were ill-defined and “not a panacea for the problems of spectrum scarcity and frequency sharing that the Commission currently faces.” See Inquiry Regarding Software Defined Radios, Notice of Inquiry, FCC 00-103, ET Docket No. 00-47 (rel. March 21, 2000) (“NOI”); Reply Comments of AT&T at 1. AT&T therefore opposed the initiation of a proceeding specifically to authorize SDRs.

I. AT&T GENERALLY SUPPORTS CLASS III PERMISSIVE CHANGES

The NPRM proposes to permit “Class III Permissive Changes”^{3/} to SDRs, under the condition that the applicant submit test data demonstrating compliance with the technical criteria applicable to the frequency band at issue.^{4/} The Commission proposes to approve Class III Permissive Changes by letter to the applicant.

AT&T supports the Commission’s proposals, but makes the following proposals. First, as suggested in the NPRM, the Commission should restrict the availability of Class III Permissive Changes to the grantee of the equipment authorization for the SDR.^{5/} Such a limitation is consistent with existing Commission precedent,^{6/} and would help ensure that no unauthorized modifications are made.

Second, AT&T urges the Commission to announce any changes to a previously-authorized SDR (Class III Permissive Changes or new applications) by descriptive public notice with sufficient detail concerning the nature of the changes made to the SDR.^{7/} Such “openness” in the equipment approval process would serve several important goals. As an initial matter, public notice of such

^{3/} Proposed rule section 2.1043(b)(3) defines a Class III Permissive Change to include only those software changes that “affect the frequency, modulation type, output power, or maximum field strength.” NPRM at Appendix A. The Commission should therefore avoid confusion that may result from its use of the generic term “software” and clarify that software changes that are content-oriented only (e.g., insertion of electronic games or customized ring tones) are Class I Permissive Changes that do not require prior Commission approval, if made by the original grantee. See NPRM at n.43.

^{4/} NPRM at ¶ 25.

^{5/} NPRM at ¶ 26; see also NPRM at Appendix A (proposed rule section 2.1043(b)(4)).

^{6/} 47 C.F.R. § 2.1043(b)(3) (2000).

^{7/} The Commission should, for the same reasons, issue public notices specifying the initial equipment approval for SDRs.

applications, while perhaps not affording complete intervention rights to third parties, would enable licensees and unlicensed wireless service providers to assess the possible impact of the SDR in question. The issuance of a public notice would similarly enable service providers to ensure that their field and sales personnel are able to activate new customers employing the SDR. Finally, public notices would permit interested third parties, such as the SDR Forum, to monitor the deployment of SDRs.

In this regard, the Commission should carefully consider the ramifications of permitting non-grantees to submit new applications to modify software for already-approved SDRs.^{8/} Permitting third parties to secure rights to make operating software changes to those devices without the original grantee's approval or knowledge could enable those third parties to disrupt quality controls and similar "name brand" protections vis-à-vis the grantee's customers. Such customers, unlike personal computer users for example, do not anticipate that a particular mobile telephone's hardware platform and software platform might be provided by different parties. Indeed, the Commission recognized the inherent connection between the hardware and software component of SDRs when it proposed to approve them together.^{9/}

Finally, AT&T urges the Commission to clarify that changes in an SDR's software that do not affect the radio's technical parameters would not require approval or authorization by the Commission. While the Commission acknowledges that "operating" software is an integral part of

^{8/} The NPRM does not solicit comment on this issue, but nevertheless suggests it is a possibility. See NPRM at ¶ 29 ("This would provide a method to re-label equipment in the field if a new approval were obtained by a third party for a previously approved device.").

^{9/} NPRM at ¶ 18.

an SDR, it should ensure that its rules do not interfere with the ability of manufacturers and service providers to offer content-related software to customers expeditiously and cost effectively.

II. THE COMMISSION SHOULD ACTIVELY DISCOURAGE FRAUD

The NPRM states that the Commission's policy with respect to SDRs will be "to avoid unauthorized modifications to software that could affect the compliance of a radio."^{10/} The Commission, however, declines in the NPRM to propose a specific authentication standard that would prevent end users or other third parties from unilaterally and illegally modifying an SDR's frequency assignments, output power, or similar technical parameters. Instead, the NPRM simply states that the grantee shall be responsible for ensuring the integrity of its SDR, and cautions manufacturers that it will revoke equipment authorizations for security lapses.^{11/}

AT&T supports the Commission's proposal and general intentions regarding unauthorized operations. Nevertheless, mere revocation of an equipment authorization is not a complete remedy for serious rule violations related to SDRs because, by the time such a revocation is issued, it is likely that the SDR in question will have already penetrated a significant portion of the end user market -- the damage will have been done. Therefore, the Commission should also issue monetary forfeitures to manufacturers that negligently market or sell SDRs whose security features are easily bypassed. Only serious enforcement action will deter the deployment of SDRs with poorly-designed security features.^{12/}

^{10/} NPRM at ¶ 31.

^{11/} Id.

^{12/} The Commission should not forget that the cellular industry previously lost untold amounts of money and time combating handset "cloning." SDRs should not be permitted to enable cloning thieves to bridge the digital divide.

Finally, the Commission should clarify that no policies adopted in this proceeding would shield an equipment manufacturer from civil liability from service providers or other harmed persons in the event that a manufacturer were to negligently introduce an SDR that was easily manipulated and caused damage to a service provider's wireless network. While the Commission may justifiably be hesitant to adopt a government-mandated authentication standard for SDR technology, its actions should not on the other hand be perceived as creating a liability shield. In other words, Commission "approval" of a particular SDR should not be considered a finding that the security features of the SDR meet applicable negligence standards. Even in cases in which federal law provides an applicable standard of care (which the Commission does not propose to do here), compliance with that standard, while certainly relevant in determining the duty of care and any breach thereof, does not provide an absolute defense to claims of negligence.^{13/} Finally, the potential availability of a private remedy for persons harmed by SDRs would encourage more robust security associated with SDRs. The Commission should clarify this matter.

III. THE INITIAL ROLE OF TELECOMMUNICATIONS CERTIFICATION BODIES SHOULD BE CONSTRAINED

The Commission proposes in the NPRM that Telecommunications Certification Bodies ("TCBs") not be permitted to certify SDRs "for at least six months after the effective date of final rules adopted in this proceeding."^{14/} The Commission's rationale is that SDRs are new and, therefore, interpretive issues and similar questions may arise which must be resolved by the

^{13/} See, e.g., Jackson v. New Jersey Mfrs. Ins. Co., 400 A.2d 81, 87-88 (N.J. Super. 1979) (compliance with OSHA regulations and ANSI code does not preclude finding of negligence).

^{14/} NPRM at ¶ 33.

Commission. AT&T agrees with the Commission's rationale,^{15/} but suggests that the Commission simply specify an indefinite time period during which only the agency may certify SDRs. A specified six-month time period may or may not be adequate to protect the public interest; therefore, the Commission should simply permit TCBs to certify SDRs when that time is appropriate.

IV. THE POTENTIAL DEVELOPMENT OF SDR TECHNOLOGY SHOULD NOT AFFECT THE COMMISSION'S SPECTRUM ALLOCATION POLICIES

The Commission tentatively concludes in the NPRM that SDRs may promote spectrum sharing and otherwise enable the efficient use of spectrum.^{16/} However, the NPRM also states that a majority of NOI commenters agreed that the Commission should not change its spectrum allocation and management policies to account for SDRs.^{17/} AT&T supports this approach.

"Spectrum sharing" is an ambiguous term, and could refer to leasing arrangements, under which a Commission licensee expressly consents to the use of its frequency assignments by another entity. However, "spectrum sharing" can also refer to a more troublesome concept, suggested by some in this proceeding,^{18/} in which a Commission licensee's exclusively-issued frequency assignments are fair game to any user or provider whose SDR is able to detect an operating "window" that would

^{15/} The Commission obviously will have no experience in reviewing SDR certification applications when the new rules become effective. Even after six months has passed, it is possible that not a single SDR application would have been submitted. Time is only a cheap proxy for experience. Further, because the security issues associated with SDRs are subject to a vague standard, NPRM at ¶ 31, there will clearly be a need for the Commission to develop case law on what security measures are adequate.

^{16/} NPRM at ¶¶ 14-15.

^{17/} Id.

^{18/} See Ex Parte Comments of The Dandin Group at 5 (stating that spectrum management principles must move from a "real estate" model to an "open range" model).

purportedly permit operation of the SDR without interference to the Commission licensee's system.

The Commission should reject such an "open range" approach to spectrum management, at least with respect to SDRs. The Commission has always carefully studied situations in which unlicensed or shared uses of frequency assignments make sense. For example, higher-power unlicensed operations are permitted under Part 15 of the Commission's rules for certain frequency bands only.^{19/} Further, the Commission clearly designates those frequency bands that are available for shared use on a licensed basis.^{20/} These common-sense, rule-based limitations have served the Commission well and should not be abandoned simply because of potential promises of new technology.

Proponents of SDRs have not demonstrated any need for the Commission to upset the business plans and expectations of licensees that previously secured the use of exclusive spectrum assignments on a licensed basis.^{21/} Part 15 unlicensed operations on a non-interfering basis have always been permissible in nearly every frequency band;^{22/} the introduction of SDRs, however, should not compel the Commission to alter its case-by-case review of spectrum allocations, determining the appropriateness of the regulated use, whether licensed or unlicensed, exclusive or

^{19/} 47 C.F.R. § 15.205(a) (2000).

^{20/} See e.g., 47 C.F.R. § 90.173(a) (2000).

^{21/} Implementation of Section 302 of the Telecommunications Act of 1996, Report and Order and Notice of Proposed Rule Making, 11 FCC Rcd 14639, ¶ 25 (1996) ("[T]here is a strong public interest in establishing some level of certainty in providers' expectations with respect to their ability to retain channel capacity once allocated, and in consumers' expectations of uninterrupted service.").

^{22/} 47 C.F.R. § 15.209 (2000).

shared. Moreover, while the Commission has previously acted to license frequencies exclusively to a particular entity, the Commission should leave the decision of whether and how to permit additional, non-interfering use of those same frequency assignments to the licensee.^{23/}

^{23/} Promoting Efficient Use Of Spectrum Through Elimination Of Barriers To The Development Of Secondary Markets, Notice of Proposed Rule Making, FCC 00-402, WT Docket No. 00-230 (rel. Nov. 27, 2000) (“[W]e propose to allow licensees greater flexibility, consistent with the public interest and statutory requirements, to subdivide and apportion the spectrum and to lease their rights to use it to various third party users – in any geographic or service area, in any quantity of frequency, and for any period of time during the term of their licenses – without having to secure prior Commission approval.”).

CONCLUSION

AT&T urges the Commission to act on the issues raised in the NPRM consistent with the foregoing comments.

Respectfully submitted,

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