

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

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

**SPRINT PCS REPLY COMMENTS**

Sprint Spectrum, L.P., d/b/a Sprint PCS (“Sprint PCS”), submits this brief reply to the comments filed in response to the notice of proposed rulemaking addressing software defined radios (“*SDR NPRM*”).<sup>1</sup> Sprint PCS submits this reply to make the following points.

1. The Commission must discharge its spectrum management and allocation responsibilities. Sprint PCS agrees with the Commission that SDR technology has “significant promise to improve efficiency of spectrum use in the long run.”<sup>2</sup> But as the commenters uniformly recognize, this promise will not be realized, if at all, for years to come.<sup>3</sup> Accordingly, Sprint PCS further agrees with other parties that the possibility that SDRs might improve spectrum efficiency at some unspecified time in the future provides no basis for the Commission

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<sup>1</sup> See *Authorization and Use of Software Defined Radios*, ET Docket No. 00-47, *Notice of Proposed Rulemaking*, FCC 00-430 (Dec. 8, 2000), summarized in 66 Fed. Reg. 341 (Jan. 3, 2001).

<sup>2</sup> *SDR NPRM* at ¶ 15.

<sup>3</sup> See, e.g., SDR Forum at 2; Cingular at 3 (“Based on its work with the SDR Forum, Cingular doubts whether SDR will have any impact on spectrum needs for at least a decade.”); Nortel at 2 (“There are still significant technical issues to be addressed before SDR technology plays a major role in simplifying spectrum management.”).

to change its traditional spectrum management policies and responsibilities, including the allocation or reallocation of radio spectrum.<sup>4</sup>

2. Sprint PCS supports the Commission's tentative conclusion to focus initial rule changes on the certification process. Like other commenters, Sprint PCS supports the Commission's proposal to streamline the equipment authorization procedures to accommodate SDRs.<sup>5</sup> Sprint PCS likewise agrees that it would be premature for the Commission to adopt, at this time, rules governing security and software management, including authentication, encryption, and digital signatures.<sup>6</sup> SDR technology is at a nascent stage, industry fora are already examining these security and management issues, and the premature adoption of rigid government regulations could easily have the unintended effect of stifling the development of SDRs, thereby limiting the potential benefits of this new technology.<sup>7</sup>

It is important to emphasize that the first applications of SDR technology will involve network base station equipment rather than subscriber handsets.<sup>8</sup> As Motorola notes, the "controlled environments in which commercial base stations operate provide greater inherent security, in comparison to commercial handsets."<sup>9</sup> Thus, while additional Commission SDR

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<sup>4</sup> Sprint PCS specifically agrees with AT&T that the Commission should reject the "open range" model of spectrum management that one party appears to be advocating. *See* AT&T at 6-8.

<sup>5</sup> Sprint PCS further agrees that the Commission's SDR authorization rules should expressly state that FCC approval can be obtained only upon a showing that unauthorized software modifications cannot be made. *See* Cingular at 6-7.

<sup>6</sup> *See SDR NPRM* at ¶ 31.

<sup>7</sup> *See, e.g.,* Cingular at 9.

<sup>8</sup> *See* Motorola at 3 ("[H]andheld products that are optimized for specific air interfaces . . . will remain a dominant percentage of the total market, up to and beyond the next five years.").

<sup>9</sup> Motorola at 19. *See also* SDR Forum at 9 ("Securing an SDR base station requires a different approach than does securing an SDR handset."); AirNet at 6 ("[R]equiring complex security mechanisms [for base station equipment] could add undue expense where the risk for unauthorized software activation is low."); NTIA at 11-12.

rules concerning customer handsets may be necessary in the future, there is no need to promulgate additional rules at this time.<sup>10</sup>

3. The Commission should incorporate a reexamination of SDR development in future biennial reviews. The commenters take different views regarding the details of the best SDR authorization procedures, a divergence in opinion that is not surprising, given that industry has so little experience with SDR technology. For example:

- The Commission proposes that Telecommunications Certification Bodies (“TCBs”) not be permitted to certify or approve permissive changes to SDRs for the first six months.<sup>11</sup> Some parties recommend that the Commission maintain exclusive control over the SDR authorization process for a longer period of time.<sup>12</sup> In contrast, others contend that vendors should be permitted to self-approve their own equipment.<sup>13</sup>
- Some parties favor an approach whereby at least initially software would be approved only in conjunction with the hardware in which it would be used.<sup>14</sup> Others recommend that software changes be certified without testing the associated hardware.<sup>15</sup>
- Some parties recommend that third-party developers not be permitted to certify their software, at least without the participation of the original grantee of the SDR equipment authorization.<sup>16</sup> In contrast, others contend third party

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<sup>10</sup> For example, rules that may be appropriate for subscriber handsets may not be needed for network base station equipment. *See, e.g.*, AirNet at 5-6 (labeling requirements).

<sup>11</sup> *See SDR NPRM* at ¶ 33.

<sup>12</sup> *See, e.g.*, AT&T at 5-6 (FCC should retain exclusive control for “indefinite time period”); NTIA at 6-7 (FCC should maintain exclusive control for “at least two years”).

<sup>13</sup> *See, e.g.*, Nortel at 3-4; HYPRES at 9. *But see* Cingular at 7 (It is “premature to adopt a manufacturer self-approval approach to equipment authorization.”); SDR Forum at 5 (FCC/TCB approval is “acceptable compromise” at this time); AirNet at 4 (“Although AirNet supports allowing manufacturers to self-approve SDR equipment . . . , the Class III proposal is an acceptable compromise.”); Elite Electronic Engineering at 1 (same).

<sup>14</sup> *See, e.g.*, NTIA at 3-4; SDR Forum at 3; Cingular at 5-6; AirNet at 2.

<sup>15</sup> *See, e.g.*, Vanu at 5-10 (“signal-processing software” need not be tested with hardware); Clearwire at 4-5 (same).

<sup>16</sup> *See, e.g.*, Motorola at 18; AT&T at 2-3; AirNet at 4.

developers should be able to obtain SDR authorizations independent of the Original Equipment Manufacturer (“OEM”).<sup>17</sup>

Sprint PCS agrees with the NTIA that a “cautious approach” is necessary at this time, given the nascent stage of the technology and the opportunity for SDRs to make fundamental changes to the operating characteristics of a radio.<sup>18</sup> For example, while Sprint PCS would hope that, one day, third-party developers could obtain SDR authorizations independent of the OEM, Motorola raises several important administrative issues that require resolution before the Commission should take this unprecedented step.<sup>19</sup> Sprint PCS, therefore, recommends that the Commission consider the state of SDR technology in each of its upcoming biennial reviews so that it can determine what SDR rule modifications may be appropriate based on experience and a more concrete record.<sup>20</sup>

4. The Commission should confirm that its equipment authorization process does not shield SDR grantees and others from civil liability. Sprint PCS is concerned about potential risks associated with SDRs, because it will be the network operators that will be forced to deal with any problems. There is debate over whether the Commission's current enforcement mechanisms are adequate. Sprint PCS believes that it is probably too early to make that determination before the risks associated with SDR are better understood. However, the Commission can and should make clear at this time that network operators and other persons that may be harmed by unauthorized or defective SDRs have a right to a private remedy in the civil courts. As AT&T

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<sup>17</sup> See, e.g., Intel at 7-9; Nortel at 5-6; SDR Forum at 6-7 (third-party software should be permitted with OEM's concurrence); HYPRES at 8-9.

<sup>18</sup> See NTIA at 5.

<sup>19</sup> See Motorola at 16-18.

<sup>20</sup> Section 11(a) of the Communications Act requires the Commission to review in “every even-numbered year” the continuing need of “all regulations.” 47 U.S.C. § 161(a),

recommends, the Commission should make clear that its SDR authorization process does not create 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.<sup>21</sup>

The Commission should, therefore, confirm in its SDR order that its equipment authorization rules do not preempt state or federal laws applicable to defective equipment or the inappropriate distribution of equipment.

In conclusion, Sprint PCS recommends that the Commission take action consistent with the views expressed above.

Respectfully submitted,

**SPRINT SPECTRUM, L.P., d/b/a Sprint PCS**

May 18, 2001

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<sup>21</sup> AT&T at 5.

**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing was mailed, via U.S. mail, first class, with postage prepaid and affixed thereon, on May 18, 2001, to:

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