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October 1, 1996

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FEDERAL COMMUNICATIONS  
COMMISSION  
OFFICE OF SECRETARY

VIA HAND DELIVERY

Mr. William F. Caton  
Secretary  
Federal Communications Commission  
Room 222  
1919 M Street, NW  
Washington, DC 20554

DOCKET FILE COPY ORIGINAL

Re: Petition for Allocation of Radio Spectrum in the 2 GHz Band for the Provision of Wireless Fixed Access Local Loop Services

Dear Mr. Caton:

Enclosed herewith for filing are an original and six (6) copies of a Motion to Accept Late Filed Pleading and attached Reply Comments filed on behalf of DSC Communications Corporation in the above-referenced matter.

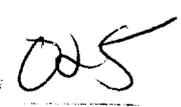
Please acknowledge receipt on the supplemental copy provided and remit same to the bearer.

Sincerely,

  
Laura S. Roecklein

LSR/gdb  
Enclosures

cc: Chief, Competitive Pricing Division  
ITS



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

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FEDERAL COMMUNICATIONS  
OFFICE OF SECRETARY

In the Matter of )  
)  
WIRELESS FIXED ACCESS ) RM-8837  
LOCAL LOOP SERVICES )  
)  
Petition for Allocation of Radio Spectrum )  
in the 2 GHz Band for the Provision )  
of Wireless Fixed Access Local Loop Services )

DOCKET FILE COPY ORIGINAL

**MOTION TO ACCEPT LATE FILED PLEADING**

DSC Communications Corporation ("DSC"), by its attorneys, hereby requests the Commission to accept the attached late filed pleading in the above-captioned proceeding. In support of its Motion, DSC hereby respectfully states that on June 10, 1996, DSC filed its Petition for Rulemaking requesting spectrum allocation for wireless fixed access local loop services ("WFA-LL") in the 2 GHz band. On July 11, 1996, the Commission issued a Public Notice requesting comments on DSC's Petition within thirty days from the Notice date. On August 12, 1996, seventeen parties filed comments in response to DSC's Petition. In answer to those comments, DSC now submits its Reply. Although DSC acknowledges that its Reply Comments are past due, DSC nonetheless moves that the Commission accept the attached pleading and for cause states that:

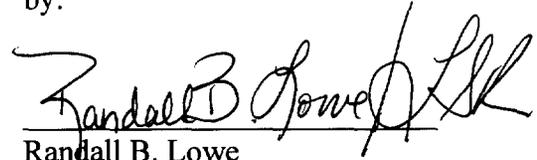
(1) DSC required the additional time in order to thoroughly consider the comments filed in the above-captioned proceeding and to develop a well-reasoned response to the parties' opinions expressed in those comments; and

(2) the parties to this proceeding would not be unduly prejudiced by the Commission's acceptance of DSC's pleading, rather they are better informed of DSC's position.

For the foregoing reasons, DSC respectfully requests the Commission to grant its Motion and to accept the attached Reply Comments for filing.

Respectfully submitted,

DSC Communications Corporation  
by:

A handwritten signature in black ink, appearing to read "Randall B. Lowe", written over a horizontal line.

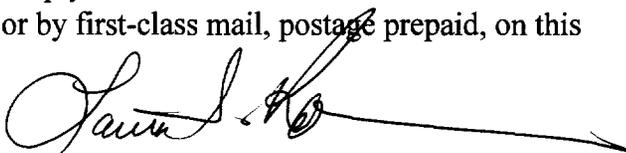
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October 3, 1996

CERTIFICATE OF SERVICE

I, Laura S. Roecklein, do hereby certify that a copy of the foregoing Motion to Accept Late Filed Pleading and attached "Reply Comments" has been served on all parties entitled thereto, via hand delivery or by first-class mail, postage prepaid, on this 3rd day of October, 1996.

By:



Laura S. Roecklein

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**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
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**REPLY COMMENTS OF  
DSC COMMUNICATIONS CORPORATION**

DSC Communications Corporation ("DSC"), by its attorneys, hereby submits its Reply Comments in the above-captioned proceeding.

**I. INTRODUCTION AND SUMMARY**

The FCC has recognized the importance of wireless local loop services in the promotion of local competition.<sup>1</sup> The Comments filed in this proceeding reflect that importance by arguing that allocation of spectrum is necessary for wireless fixed access local loop ("WFA-LL") use. Indeed, because alternative wireless architectures, such as commercial mobile radio service ("CMRS"), are not well-suited to satisfy the "full market requirements of wireline equivalent capacity, quality, reliability and transparency of services," WFA-LL technology provides the

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<sup>1</sup>See Flexible Service Offering in the Commercial Mobile Radio Services, Notice of Proposed Rulemaking, FCC 96-17 (released January 25, 1996) ¶¶ 8-9 (noting that [wireless local loop] WLL can assist in "remove[ing] barriers to competitive provision of local exchange service.").

only effective alternative.<sup>2</sup> As such, DSC petitions the Commission to allocate spectrum for WFA-LL services.

## II. SPECTRUM ALLOCATION IS NECESSARY FOR WFA-LL

### A. WFA-LL Service Provides the Most Suitable Alternative to Wireline Service

WFA-LL systems serve the primary goals of the Telecommunications Act of 1996 because they encourage facilities based local competition and provide new technologies and services to the public.<sup>3</sup> Specifically, by lowering key barriers to market entry, *i.e.*, system deployment time and expense, WFA-LL services facilitate entrance into the local market and, in the process, spur local competition.<sup>4</sup>

Economically, WFA-LL technology offers a better and more cost-effective approach to standard wireline services. In comparison to fiber and copper, for example, WFA-LL technology offers rapid deployment since it requires less planning, civil works and installation efforts.<sup>5</sup> What might normally take several years to install on a copper or fiber basis, might only take a few months with WFA-LL technology. WFA-LL technology also avoids the need for extensive rights of way negotiations and limits local government participation to simple base station

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<sup>2</sup>Northern TeleCom, Inc. ("Nortel") at 7; accord Interdigital Communications, Inc. ("Interdigital") at 5 (noting that "the spectrum allocation requested by this petition will permit broadband radio-based services not currently available for the narrowband CMRS systems currently deployed or planned to [sic] deploy[sic]."); SR Telecom, Inc. ("SR Telecom") at 8 (noting that "SR Telecom agrees with DSC that CMRS licensees providing fixed services probably will not be able to compete with the services and quality offered by wireline technologies. . . ."); Petition at 6.

<sup>3</sup>See S. Rep. No. 23, 104th Cong., 1st Sess. 1-2 (1995)(discussing the purpose of the bill to provide for a pro-competitive, de-regulatory national policy framework.).

<sup>4</sup>Petition 7; accord Nortel at 5; SR Telecom at 5; Interdigital at 5.

<sup>5</sup>SR Telecom at 6, accord Nortel at 18 (noting that WFA-LL service "can be deployed rapidly and economically, without the need to tear up the streets. The cost structure is such that even low density deployment is economical . . ."); Petition at 7.

planning issues.<sup>6</sup> Furthermore, "[b]y installing networks utilizing WFA-LL facilities in combination with copper or fiber loops, a local carrier could optimize its economics to minimize costs. While the initial phase of implementation might involve the rapid deployment of wireless loop facilities . . . later phases might see the 'back-filling' of urban and some suburban areas with copper and fiber plant."<sup>7</sup> WFA-LL technology thus rapidly promotes facilities-based competition and, in doing so, advances the public interest by offering subscribers more choices, lower prices, and better service.

In addition to offering a more cost-effective approach to traditional wireline services, WFA-LL technology is the best technological solution over other wireless alternatives. CMRS and personal communications services ("PCS"), for example, "prove woefully inadequate" in providing the range and quality of services of their wireline equivalents.<sup>8</sup> As DSC states in its Petition, "[u]nlike mobile-derived Fixed Cellular/PCS and Wireless Drop architectures, [*e.g.*, CT2 and DECT,] the WFA-LL architecture is designed to provide toll quality voice and premium services, just as the wireline infrastructure supports today."<sup>9</sup> Other such wireless services, particularly satellite services in the C-band, Ku-Band or Ka-Band, while capable of providing high quality, high data rate service, nonetheless, "suffer from high loop delay and the cost structure for satellite services," thus rendering them "inadequate substitute[s]."<sup>10</sup> The same is true for the future LMDS service at 28 GHz and point-to-point service at 38 GHz, both of which, as stated by Nortel, are economically impractical "for use for general provisioning of wireline

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<sup>6</sup>Petition at 8; accord Nortel at 17; SR Telecom at 6.

<sup>7</sup>Petition at 8.

<sup>8</sup>Petition at 6, accord Nortel at 7; Interdigital at 6; SR Telecom at 8.

<sup>9</sup>Petition at 14.

<sup>10</sup>Nortel at 14.

equivalent service. The propagation characteristics at those bands renders them unsuitable for an economical, reliable, wide-area wire-line equivalent service."<sup>11</sup> As also stated by Nortel:

In contrast to these other wireless technologies, FWA [*i.e.* WFA-LL] service would be specifically designed to serve as an efficient and economical wireline equivalent. As demonstrated by the numerous installations of FWA service in other countries such as the United Kingdom and Finland, a properly designed FWA service can serve as a complement, supplement, substitute and strong competitor to the wireline infrastructure.<sup>12</sup>

In addition to the economical and technological attributes of WFA-LL services and the advancement of local competition, WFA-LL services support another important goal of the 1996 Act by helping to promote universal service to rural and high-cost areas.<sup>13</sup> Thus, many parties' comments on DSC's Petition agreed that the "deployment of wireless local loop technology to a more widely scattered population is more cost-effective than wireline solutions. Even where rural and high-cost areas are already served by wireless technologies, the availability of WFA-LL service encourages facilities-based competition that very well might not otherwise emerge."<sup>14</sup> Indeed, the Chief of the Wireless Telecommunications Bureau recently advocated wireless local

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<sup>11</sup>Nortel at 14-15. As DSC points out, both microwave point-to-point and microwave point-to-multipoint architectures are inadequate wireless alternatives due "to the high per-line costs." Petition at 13.

<sup>12</sup>Nortel at 15.

<sup>13</sup>See S. Rep. No. 23, 104th Cong., 1st Sess. 4-5 (1995)(discussing the need to protect and advance universal service.).

<sup>14</sup>Petition at ii; see also SR Telecom at 7 (noting that "it will be much more economical to install and maintain service in rural and high-cost areas using WLL systems than copper or fiber-based technologies."); see also Nortel at 18 (noting that "given the economics of deployment of FWA service, the incumbent carriers could also use this new technology to provide service to unserved or underserved areas quickly and inexpensively, and thereby enhance universal service."); and Interdigital at 9 (stating that "in rural areas, a fixed wireless local loop service would not only bring competition to the loop but would also encourage a general improvement in the service provided.").

loop services stating that they "can be used to provide a cost effective means of connecting customers to the wireline telephone network, especially in rural areas, where the cost of installing or replacing wireline loop plant may be prohibitive."<sup>15</sup>

Other advantages of WFA-LL technology include the ability to provide efficient and viable solutions to service problems associated with natural disasters, such as hurricanes and earthquakes. WFA-LL technology is similarly effective in providing temporary local "network" service for large-scale events, such as the Olympic games or a World's Fair.<sup>16</sup> In both instances, WFA-LL services allow for immediate installation on a permanent or temporary basis. With this undeniable list of advantages associated with WFA-LL services, it is clear that WFA-LL services offer the best alternative to other wireline and wireless alternatives.

#### B. There is Wide Spread Agreement for WFA-LL Spectrum Allocation

In light of the benefits that WFA-LL services provide, the Commission should allocate spectrum for WFA-LL services. While some of the parties disagree with certain of DSC's proposed channel plans,<sup>17</sup> the record amply supports DSC's assertion that there exists a present need for spectrum allocation for wireless local loop service. For example, Lucent Technologies, Inc. ("Lucent"), acknowledges in its Comments that "with the increased development of broadband telecommunications service, as well as the expansion of local facilities-based competition resulting from the Telecommunications Act of 1996, it is questionable whether the existing CMRS frequencies will be sufficient to support the rising demand for both mobile and

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<sup>15</sup>See SR Telecom at 7 (quoting Remarks of Michelle Farquhar before the National Association of Regulatory Utility Commissioner Committee on Communications (July 23, 1996)).

<sup>16</sup>Petition at 9.

<sup>17</sup>See discussion *infra* pp. 8-11.

fixed services."<sup>18</sup> Therefore, "Lucent supports an allocation of additional spectrum for [wireless local loop] WLL as well as other future services that the marketplace may demand."<sup>19</sup> Pacific Telesis Group ("PacTel") agrees with this view and specifically requests the Commission to "allocate adequate spectrum for fixed wireless local loop service such that more than one provider - including an ILEC - may provide the service in a given area."<sup>20</sup>

Similarly, as Nortel acknowledges, "[t]here is presently a demand for such an offering that cannot suitably be met by the current (or planned) allocations, and wireline solutions are inadequate."<sup>21</sup> Concurring with DSC's position that WFA-LL technology serves to promote local competition and cost effectively provide consumers with adequate phone service, Nortel states that it "is in full agreement with the spirit (and many of the details) of the DSC proposal,"<sup>22</sup> and "Nortel urges the Commission to make spectrum available so that incumbent and new carriers can use FWA service to address new market opportunities and resolve many of the historic or projected problems and limitations of wireline networks."<sup>23</sup> Nortel also agrees with DSC in that WFA-LL offers the best technological solution. Specifically, Nortel notes that "[i]n evaluating many of the[] different markets and networks, Nortel has learned that many wireline operators expect the PCS and satellite technologies to play some role in attracting some

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<sup>18</sup>Lucent at 2.

<sup>19</sup>Lucent at 2.

<sup>20</sup>PacTel at 6. Ericsson Inc. ("Ericsson") and the Wireless Cable Association International, Inc. ("WCA") both expressed their positions of non-opposition to the concept of spectrum allocation. Specifically, Ericsson states that "Ericsson does not object to the provision of wireless local loop services. Neither does it object to an allocation of spectrum for other wireless fixed services that will allow new service providers to provide competitive-facilities based local competition." Ericsson at 1. While WCA notes that "WCA does not necessarily object to the concept of reallocating spectrum between 1.3 GHz and 2.7 GHz that could be used for WFA-LL. . . ." WCA at 3.

<sup>21</sup>Nortel at 1.

<sup>22</sup>Nortel at 4.

<sup>23</sup>Nortel at 8.

customers away from the regulated wireline services. Nortel believes, however, that PCS networks are unable to satisfy the full market requirements of wireline equivalent capacity, quality, reliability, and transparency of services."<sup>24</sup>

SR Telecom also supports the proposal for WFA-LL spectrum allocation. Concurring with DSC's Petition, SR Telecom believes that wireless local loop systems "offer the most cost-effective and efficient means of promoting facilities-based competition in the local exchange market and that deployment of WLL systems in rural and sparsely populated areas will further the Commission's universal service goals."<sup>25</sup> As such, "SR Telecom supports DSC's Petition insofar as it demonstrated the growing public need for WLL services and urges the Commission to promptly initiate a rulemaking proceeding to allocate spectrum in the 1.3 to 2.7 GHz range for those services."<sup>26</sup>

*Interdigital, a wireless technology manufacturer, offers similar support. In particular, Interdigital believes that WFA-LL service will not only "spur the innovative genius of the high technology digital radio industry," but also and perhaps more importantly, promote better quality and service to rural areas that rely on existing wireline services.<sup>27</sup> Noting the importance of developing improved telecommunications services to rural areas, Interdigital points out that "[w]ith a competitive wireless radio service with sufficient spectrum the era of the halves [sic] and have nots would be over."<sup>28</sup> As such, Interdigital advises the Commission to "follow-up on*

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<sup>24</sup>Nortel at 7.

<sup>25</sup>SR Telecom at 5.

<sup>26</sup>SR Telecom at 4-5.

<sup>27</sup>Interdigital at 6, 9.

<sup>28</sup>Interdigital at 9.

this petition to aggressively pursue a dialogue on the issues surrounding the allocation of spectrum for a wireless fixed access local loop service."<sup>29</sup>

In view of the numerous attributes of WFA-LL services over other wireless services, as well as the overwhelming support for allocation of spectrum for WFA-LL services, it is clear that the Commission should undertake the task of allocating spectrum for wireless fixed access local loop services. While DSC acknowledges that there exists a disagreement among the parties over the specific part of the spectrum to be allocated (in most cases, the objections centered on a single proposed channel plan),<sup>30</sup> and how the Commission should resolve the issue,<sup>31</sup> nevertheless, DSC urges the Commission to move forward with spectrum allocation.

### **III. 2 GHz IS THE APPROPRIATE SPECTRUM FOR WFA-LL**

As stated in its Petition, DSC proposes that the 2 GHz band of spectrum is the most suitable band for WFA-LL services. In the words of SR Telecom, the "reason for this is that, due to the propagation characteristics of frequencies above 3 GHz, it would be difficult for WLL systems operating in that part of the electromagnetic spectrum to economically provide wide area coverage."<sup>32</sup> In its Petition, DSC suggests six channelization plans for WFA-LL use, one of

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<sup>29</sup>Interdigital at 10.

<sup>30</sup>American Radio Relay League ("ARRL"), for example, objects only to the use of the 2.4 GHz band of spectrum allocation. ARRL at 4-5; see generally Metricom at 1-6 (also objecting to use of 2400 - 2483.5 MHz). Similarly, Cylink Corporation ("Cylink") states that "it advances no position on the general merits of DSC's request that spectrum be allocated for wireless fixed-access local loop operation or on the allocation of spectrum other than 2400-2439.5 for this purpose." Cylink at 1; see also George Hopkins at 1 (objecting to 2401.0-2439.5 use).

<sup>31</sup>See Lucent at 3; Interdigital at 10 (both arguing for the Commission to convene meetings to further discuss the spectrum issue) *c.f.* Nortel at 31 and SR Telecom at 16-17 (suggesting, alternatively, that the Commission move to an NPRM on this issue).

<sup>32</sup>SR Telecom at 8.

which is completely unopposed (1668.5-1700.0 MHz/1723.5-1755.0 MHz --Plan A) and another which was merely protested (2037.5-2076.0 MHz/2111.5 - 2150.0 MHz --Plan B).<sup>33</sup>

As DSC states in its allocation Plan A, "it is noted that the spectrum between 1710 - 1755 MHz, allocated for exclusive 'Government Fixed and Mobile' services is being scheduled for reallocation for exclusive non-government use in the 25 largest US cities by January 1999 with national usage completed in 2004." Continuing, DSC points out that the "1668.4-1710 MHz is presently shared between government and non-government users for radiolocation (primary) and meteorological aids."<sup>34</sup> Allocation of parts of these spectra, on a co-primary basis, as suggested in DSC's Petition, "would allow for the introduction of a WFA-LL channel plan with a complement of nine pairs of 3.5 GHz channels." Importantly, none of the commentators offered any opposition to DSC's allocation Plan A, and DSC, therefore urges the Commission to, at the very least, allocate spectrum as set forth in Plan A of its Petition for WFA-LL services.

Similarly, DSC suggests that the Commission also consider its Plan B for spectrum allocation. As stated in its Petition, channel Plan B "uses the 2025 - 2110 MHz spectrum paired with the 2110 - 2150 spectrum." A plan using this proposed plan "would consist of 11 uplink channels at 2037.5 - 2076.0 paired with 11 downlink channels at 2111.5 - 2150.0 MHz."<sup>35</sup> Although both ITS Corporation ("ITS") and the Wireless Cable Association International, Inc. ("WCA") suggest that DSC's Plan B "fails to adequately protect the wireless cable industry's use

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<sup>33</sup>Although certain parties objected to DSC's suggested plans C and D, *i.e.* the 2110-2150 MHz spectrum paired with the 2160-2200 MHz spectrum, as inconsistent with present negotiations concerning the "1990-2025 MHz and 2160-220 MHz bands for mobile satellite services," *see* MSS Coalition at i, DSC argues that the objections to DSC's channel plans C and D are mere conclusory statements, lacking explanation or substantiation. DSC is, therefore, incapable of demonstrating that WFA-LL deployment would not be inconsistent. Instead, DSC maintains that the Commission could grant use of those portions of the spectrum, as well as the spectrum bands suggested in plans E & F, which suggest using ISM band (2400-2483.5) for WFA-LL operation, on a co-primary basis, allowing any problems that may arise to be worked out between the licensees.

<sup>34</sup>Petition at 25-26.

<sup>35</sup>Petition at 29.

of [Multipoint Distribution Services] MDS licensed in the 2150 - 2162 MHz band from harmful interference,"<sup>36</sup> DSC nevertheless believes that the use of those portions of the spectrum for WFA-LL operation would not cause any "harmful interference," as discussed below.

For example, as identified by both ITS and WCA, cochannel and adjacent channel D/U radio limits are 45 dB and 0 dB, respectively.<sup>37</sup> DSC's proposed use of the spectrum between 2110 MHz and 2150 MHz produces no cochannel interference whatsoever. Regarding adjacent channel interference, the typical, maximum, per channel effective radiated power level<sup>38</sup> from DSC's WFA-LL equipment, is on the order of 800 milliwatts. By contrast, MDS signal transmission may be at a level of 2,000 Watts.<sup>39</sup> In addition to the signal level differential, there is approximately 10 dB of spectral mask attenuation at the edge of the WFA-LL channel. In the unlikely event that a WFA-LL system signal appears at an MDS receiver at a level strong enough to produce a D/U ratio of > 0 dB, either the WFA-LL channel output power can be reduced as required, a different WFA-LL frequency assignment may be employed, or, as last resort, the "adjacent" WFA-LL channel (2146.5 - 2150.0 MHz) may be removed from service and used as a guard channel. As with most RF services, there is some level of frequency coordination which must occur prior to systems implementation/operation. DSC proposes that these coordination issues be the responsibility of the WFA-LL licensee.

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<sup>36</sup>ITS at 2; see also WCA at 4-5 (noting that DSC's proposal fails to provide sufficient protection to MDS and Instructional Television Fixed Service ("ITFS") facilities).

<sup>37</sup>ITS at 5; WCA at 7.

<sup>38</sup>Maximum ERP is affected by tower height and associated antenna cable loss.

<sup>39</sup>47 C.F.R. § 21.107(b) (1996).

**V. CONCLUSION**

As evidenced by the Comments filed in this proceeding, there exists a broad consensus in the telecommunications community that allocation of spectrum is necessary for wireless fixed access local loop ("WFA-LL") services use. As demonstrated, WFA-LL technology offers numerous advantages over the traditional wireline and wireless alternatives and similarly encourages facilities-based local competition by providing new technologies and services to the public. Because of the agreement among the parties encouraging spectrum allocation, along with the fact that no one opposed DSC's Channel Plan A and the discussion supporting usage of Channel Plan B, DSC suggests that the Commission allocate spectrum for WFA-LL services in accordance with its proposed Channel Plans A and/or B.

Respectfully submitted,

DSC Communications Corporation  
by:

A handwritten signature in black ink, appearing to read "Randall B. Lowe" followed by a stylized flourish or initials.

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