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Before the  
Federal Communications Commission  
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

In the Matter of )  
)  
Amendment of the Commission's Rules )  
to Provide for Unlicensed NII/SUPERNet )  
Operations in the 5 GHz Frequency Range )  
To: The Commission )

ET Docket No. 96-102  
RM-8648  
RM-8653

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REPLY COMMENTS

FIXED POINT-TO-POINT COMMUNICATIONS  
SECTION, NETWORK EQUIPMENT DIVISION  
OF THE TELECOMMUNICATIONS INDUSTRY  
ASSOCIATION

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August 13, 1996

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## SUMMARY

The Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"), supports amending the Commission's Rules to provide for unlicensed NII/SUPERNet operations. Provision of short range (i.e., 1-2 kilometers), unlicensed wireless services in the 5 GHz band clearly is in the public interest. It will help accommodate the growing demand for wireless broadband products domestically and overseas. Thus, the NII/SUPERNet will inspire U.S. investment in the design, manufacture, and export of equipment for a global economy increasingly dependent upon an emerging wireless telecommunications infrastructure.

While the NII/SUPERNet will serve the public interest, the record of this proceeding nevertheless compels the Commission to impose certain restrictions on longer range paths within the network:

- For the 5 GHz band, the Commission must not permit unlicensed point-to-point NII/SUPERNet paths to exceed 1-2 kilometers in length.
- To accommodate inter-community links supporting NII/SUPERNet, the Commission must encourage the use of licensed, longer range fixed point-to-point microwave radio service ("FS") links usable for the National Information Infrastructure in the bands at 18 GHz and above because: (i) it would be consistent with the well-established Commission policy that restricts the bands below 11 GHz to relatively short point-to-point paths; (ii) it would exploit available FS spectrum in the higher bands for inter-community links more efficiently by fully utilizing existing equipment and related technologies, which are less expensive and which provide greater capacity with higher speeds than comparable unlicensed equipment; (iii) it would create a technology platform compatible with international systems, such as the European High Performance Radio LAN ("HIPERLAN"); and (iv) it would potentially make the 5 GHz band accessible for other technologies, such as mobile-satellite services.

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REPLY COMMENTS

Pursuant to Section 1.415 of the Commission's Rules,<sup>1</sup> the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"),<sup>2</sup> hereby replies to certain comments on the above-captioned Notice of Proposed Rule Making ("NPRM").<sup>3</sup> In the NPRM, the Commission proposes amending Part 15

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<sup>1</sup>47 C.F.R. Section 1.415 (1996).

<sup>2</sup>TIA is the principal industry association representing fixed point-to-point microwave radio service ("FS") manufacturers. TIA members serve, among others, companies, including telephone carriers, utilities, railroads, state and local governments, and cellular carriers, licensed by the Commission to use private and common carrier bands for provision of important and essential telecommunications services. TIA has completed its June 1994 "Telecommunications Systems Bulletin No. 10-F, Interference Criteria for Microwave Systems" ("Bulletin 10-F"), which prescribes standards for implementing the new channel plan for the bands above 3 GHz and for establishing criteria regarding 2 GHz band PCS-to-microwave interference protection. As part of its ongoing standard-setting process, TIA is updating Bulletin 10-F, and Bulletin 10-G is in draft. Furthermore, TIA, along with the National Spectrum Managers Association, was responsible for most of the technical rule proposals recently adopted by the Commission in its consolidation of Parts 21 and 94 into new Part 101. See Reorganization and Revision of Parts 1, 2, 21 and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Report and Order, WT Dkt. No. 94-148, 2 Comm. Reg. (P&F) 541 (1996).

<sup>3</sup>The NPRM was published in the Federal Register on May 16, 1996. 61 FR 24749.

of its rules and making available 350 MHz of spectrum at 5.15-5.35 and 5.725-5.825 GHz for use by a new category of unlicensed equipment, called NII/SUPERNet devices.<sup>4</sup>

**THE RECORD SUPPORTS ESTABLISHING THE  
NII/SUPERNet, BUT WITH CERTAIN RESTRICTIONS  
ON LONGER RANGE LINKS**

In its comments, TIA generally supports the Commission's proposals set forth in the NPRM.<sup>5</sup> Most commenters agree.

There is a strong consensus in the record that the contemplated wireless network is an absolute necessity to support the National Information Infrastructure ("NII"):

[T]he Commission now has the opportunity to provide the United States with an integrated spectrum architecture to provide enhanced unlicensed digital telecommunications services, some to still be invented, to the public over the next decade. This coordinated action can encourage new investments in technological leadership for the design, manufacture and export of equipment for a global economy and repeat the unprecedented success of the Commission through its forward-looking incubation of the Part 15 industry. By reviewing the similar needs across the range of spectrum rulemakings currently in process, conservation of a precious resource can be emphasized without compromising quality of service, innovation of development, or current investments and facilities in Part 15 spread spectrum devices in the 5.8 GHz band.<sup>6</sup>

Rockwell International Corporation ("Rockwell") also justifiably praises the proposed NII/SUPERNet concept:

Existing wireless spectrum allocations are not capable of supporting the high bandwidth demands posed by today's advanced, multimedia and high speed data needs. Unlicensed wireless systems currently are limited to data rates of about 2 megabits/second, far short of the 20 megabits/second and higher data rates necessary to support many multimedia and high speed

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<sup>4</sup>NPRM at ¶1.

<sup>5</sup>TIA at 2.

<sup>6</sup>Cylink Corporation ("Cylink") at 4.

data applications. The proposed NII/SUPERNet operations would allow for wireless broadband transmission of audio, video, graphics and digital data in support of today's bandwidth-intensive applications. Demand for readily-available wireless broadband products continues to grow. Such growth in demand helps to drive the need for early deployment of the National Information Infrastructure that promises to achieve the public policy goals of bringing innovative information technologies to all segments of society.<sup>7</sup>

Notwithstanding this general support, TIA recommended that the Commission adopt the following revisions to the rules proposed in the NPRM:

- For the 5 GHz band, the Commission must not permit unlicensed point-to-point NII/SUPERNet paths to exceed 1-2 kilometers in length.
- To accommodate inter-community links supporting NII/SUPERNet, the Commission must encourage the use of licensed, longer range FS links usable for the NII in the bands at 18 GHz and above because: (i) it would be consistent with the well-established Commission policy that restricts the bands below 11 GHz to relatively short point-to-point paths; (ii) it would exploit available FS spectrum in the higher bands for inter-community links more efficiently by fully utilizing existing equipment and related technologies, which are less expensive and which provide greater capacity with higher speeds than comparable unlicensed equipment; (iii) it would create a technology platform compatible with international systems, such as the European High Performance Radio LAN ("HIPERLAN"); and (iv) it would potentially make the 5 GHz band accessible for other technologies, such as mobile-satellite services ("MSS").<sup>8</sup>

As demonstrated herein, TIA's proposed restrictions are justified. Limiting 5 GHz band unlicensed links for the NII/SUPERNet to 1-2 kilometers in length would permit users and equipment manufacturers to exploit existing spectrum in higher bands that is available for such

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<sup>7</sup>Rockwell at 2.

<sup>8</sup>TIA at 2.

applications, that is highly efficient and cost-effective, and that is compatible with international networks. Indeed, TIA's position is supported by numerous other parties to this proceeding.<sup>9</sup>

**THE NII/SUPERNet MUST NOT INCLUDE UNLICENSED 5 GHz BAND POINT-TO-POINT PATHS EXCEEDING 1-2 KILOMETERS IN LENGTH**

In its Petition for Rulemaking underlying the NPRM, Apple Computer, Inc. ("Apple") suggests that the NII/SUPERNet should include unlicensed community-wide paths exceeding 10 kilometers in length.<sup>10</sup> In the NPRM, the Commission decides it would be inappropriate to adopt Apple's proposal regarding longer range links:

We are not, however, proposing to accommodate the higher power, longer range communications links sought by the petitioners at this time. We are concerned that permitting such higher power operations would pose unacceptable interference risks to other services, such as fixed satellite service in the 5.10-5.35 GHz band, and would greatly limit the number of unlicensed operations within a local area.<sup>11</sup>

However, the Commission also finds "merit in the concept of longer range community networks" and it thus sought comment on implementing such paths.<sup>12</sup>

The Commission must not permit unlicensed, point-to-point links, which exceed 1-2 kilometers, in the 5 GHz band. If such long range unlicensed links are made available: (i) harmful interference to important licensed bands would result; (ii) existing sound spectrum usage policies in the higher bands would be affected adversely because lower cost, larger

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<sup>9</sup>Harris Corporation-Farion Division ("Harris") at 2-4; American Radio Relay League, Incorporated ("ARRL") at 8; Altstatt Associates at 1; Cylink at 1; Pacific Telesis Group ("Pacific Telesis") at 3; Larus Corporation at 2.

<sup>10</sup>Apple's Petition for Rulemaking (RM-8653) ("Apple Petition") at 18. A similar Petition for Rulemaking was filed by the Wireless Information Networks Forum ("WINForum") (RM-8648).

<sup>11</sup>NPRM at ¶47.

<sup>12</sup>NPRM at ¶48.

capacity, and higher speed inter-community links in the bands above 18 GHz would be underutilized; and (iii) compatibility with emerging international wireless telecommunications networks would be threatened.<sup>13</sup>

**A. Licensing Long Range Paths Would Protect Against Harmful Interference And Would Promote Efficient Operations.**

Establishment of unlicensed long range paths is inappropriate because they likely would cause harmful interference to important 5 GHz band licensed services and because they would not promote efficient spectrum usage. The record of this proceeding reflects these problems.

1. Harmful Interference Must Be Avoided.

In its comments, TIA identified the threat to interference management posed by unlicensed longer range 5 GHz band paths:

TIA's primary problem with the proposal is the use of a single unlicensed frequency band for both short and long distance operation. A 5-10 kilometer nondiversity path, with marginal path clearance, will require significantly more transmit power than will a transmitter intended for short distance use. The use of relatively high power for long distance paths significantly increases the risk of the long distance transmitters interfering with simple, low cost, short distance receivers.<sup>14</sup>

Several other parties express the same concern. Pacific Telesis "strongly support[s] the Commission's proposal not to accommodate higher power longer range communications" because "links longer than one kilometer in length would have the potential to cause harmful interference . . . ."<sup>15</sup> Cylink believes that prohibiting longer range unlicensed links "is

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<sup>13</sup>In its comments, TIA supported the Commission's proposed technical rules for NII/SUPERNet. TIA at 9-10. Several other parties share TIA's position. Microsoft Corporation ("Microsoft") at 3-7; Northern Telecom Inc. ("Nortel") at 5-13; Rockwell at 3-4; Motorola, Inc. ("Motorola") at 8-12.

<sup>14</sup>TIA at 8.

<sup>15</sup>Pacific Telesis at 3-4.

mandatory in order to prevent harmful interference with increasing deployments of Part 15 spread spectrum operations . . . ."<sup>16</sup> Endorsing long range community networks is, according to ARRL, "ill-advised and would go well beyond the Commission's authority . . . ."<sup>17</sup>

If 5 GHz band longer range paths for the NII/SUPERNet are not licensed, unacceptable regulatory inequities would result. Consequently, Pacific Telesis appropriately favors licensing longer range community networks:

If the Commission decides to support higher power, longer range data communications, particularly if the long-range network is interconnected to the public switched network, it should be provided on a licensed basis as the Commission suggests in its alternative regulatory structure. To do otherwise would create an inequitable regulatory structure that would have an unlicensed service offering without the common carrier obligations of a licensee competing with a licensed service offering with common carrier obligations. In some cases, the latter would be offered over spectrum for which the licensee paid large sums of money to use. There is no reasonable basis for creating such different regulatory treatments for potentially similar services.<sup>18</sup>

Under these circumstances, support for unlicensed longer range links "effectively removes any incentive for manufacturers of spread spectrum equipment to further develop spread spectrum technology."<sup>19</sup>

Not surprisingly, Apple tries to discount the potential for harmful interference from unlicensed operations:

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<sup>16</sup>Cylink at 1.

<sup>17</sup>ARRL at 8. See also The San Bernadino Microwave Society at ¶11; Northern Amateur Relay Council of California, Inc. at ¶14. Several parties also urge the Commission to ensure that any rules establishing the NII/SUPERNet protect ISM operations in the 5800 MHz band. See ReSound Corporation at 4-5; Western Multiplex Corporation at 3-4. TIA concurs.

<sup>18</sup>Pacific Telesis at 4-5 (footnotes omitted).

<sup>19</sup>Altstatt Associates at 1.

There is no reason for the Commission to destroy much of the promise of community networking by forcing it into a licensed model. Given Apple's proposed band plan, community networks do not present an unreasonable threat of interference to others using the NII/SUPERNet Band. In fact, by restricting antenna beams to a very narrow path, these links avoid many of the potential risks of interference presented by shorter range, omnidirectional systems.<sup>20</sup>

Despite its professed opposition to licensing, Apple apparently acknowledges that its approach requires application of frequency coordination, use of narrow-beam antennas and other fundamental components of licensing to succeed:

Contrary to the fears echoed in the NPRM, narrow-beam, point-to-point community networking operations present no more threat to other users of 5 GHz frequencies than presented by greater proximity of the transmitters and receivers of any mix of radio services or technologies. If anything, informal coordination or cooperation among users of community networks, motivated by "shared self-interest," can improve band conditions overall. In this respect, the fundamental difference between LANs and community networks is how antennas are allowed to be used.

\* \* \* \* \*

Relatively narrow-beam antennas such as parabolic dishes become more effective (that is provide greater "gain"), for a given physical diameter, as the radio frequency increases. At frequencies around 5 GHz, this increase does considerably more than make up for the almost unmeasurable losses at the higher band.<sup>21</sup>

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<sup>20</sup>Apple at 20.

<sup>21</sup>Apple at 9. See also Apple at 27; Nortel at 13-15.

Without doubt, Apple's approach sounds very much like the description of a licensed system.<sup>22</sup> In fact, in these statements, Apple contradicts the free access, unlicensed policies associated with and intrinsic to the Part 15 bands.<sup>23</sup>

Apple thus fails to justify its opposition to licensing. All Apple seeks is merely to avoid, without justification, the costs associated with frequency coordination and licensing.<sup>24</sup>

2. Inefficient Spectrum Usage Must Be Avoided.

If the 5 GHz band includes unlicensed longer range links for the NII/SUPERNet, efficient spectrum use would be compromised significantly. With longer range licensed systems, use of 64 and 128 QAM is quite common today, while a highly efficient 512 QAM, 7.5 bps/Hz bit rate also can be attained.

By contrast, proponents of longer range, unlicensed 5 GHz band NII/SUPERNet links favor minimal, if any, spectral efficiency requirements. Motorola and Microsoft oppose any

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<sup>22</sup>In its comments on the Apple Petition, ARRL states that the "power levels, use of directional antennas, and path lengths discussed in the Apple petition are commensurate with licensed radio service, not with unlicensed Part 15 use." ARRL Comments, filed July 10, 1995, on RM-8653, at 8.

<sup>23</sup>To ensure higher spectral efficiency, licensing and frequency coordination are indispensable. As TIA stated in its Reply Comments concerning the Commission's proposal to amend its rules for spread spectrum transmission systems in the 5725-5850 MHz band, "higher directivity (higher gain) antennas only allow greater frequency reuse if frequency coordination is done on a systematic basis." TIA Reply Comments, filed July 19, 1996, in ET Dkt. No. 96-8, at 4 ("TIA Spread Spectrum Reply").

<sup>24</sup>Apple at 19.

requirements.<sup>25</sup> Hewlett-Packard Company ("HP") supports a 0.66 bps/Hz<sup>26</sup> rate and LACE, Inc. ("LACE") recommends only 1 bps/Hz bit rate.<sup>27</sup>

These minimal requirements would result in highly inefficient use of scarce spectrum over a wide area. Currently, long distance microwave point-to-point transmission is restricted to highly efficient modulation methods to facilitate their widespread use. Use of inefficient unlicensed radios, depleting available spectrum over a wide area, is unacceptable, especially given the availability of spectrum in the higher bands for these longer range needs.

Furthermore, licensed medium-to-longer range high-speed links maximize efficiency with their trunking capabilities. A licensed trunk is ideal for inter-community applications because it could be used fully and because its maximum capacity could be expanded to meet user needs (e.g., the trunk easily could be expanded from 8 T-1 (DS-1) to 16 T-1 or from 16 T-1 to 45 Mb/s T-3 (DS-3) from time-to-time as the average network speed increases). In contrast, current unlicensed equipment only has capacity up to 4 T-1, and the proposed NII/SUPERNet system would operate at speeds of only up to 20-25 mb/s, which is more appropriate for 1-2 kilometer local paths.<sup>28</sup>

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<sup>25</sup>Motorola at 11; Microsoft at 6.

<sup>26</sup>HP at 7.

<sup>27</sup>LACE at 23.

<sup>28</sup>TIA at 7 n.15.

**B. Unlicensed Paths Exceeding 1-2 Kilometers Would Adversely Affect Spectrum Usage Policies Favoring The Higher Bands For Such Longer Range Paths.**

Unlicensed 5 GHz band point-to-point paths exceeding 1-2 kilometers must not be permitted because well-established spectrum usage policies in the higher bands would be threatened:

A basic Commission policy, that short haul "hops" should be in bands at 18 GHz and above, thereby reserving spectrum below 11 GHz for longer-range hops, would be compromised. "Hops" of up to 10 or 15 kilometers, as is being considered for the newly proposed unlicensed NII/SUPERNet operations, would be an inefficient use of valuable spectrum. For example, the licensed 18 GHz band is perfectly adapted to the 10 kilometer high-speed, high-reliability point-to-point links that might be required for inter-community communications.<sup>29</sup>

Other parties concur with TIA. In its comments, Harris emphasizes the fact that Commission policy does not support using the 5 GHz band for links exceeding 1-2 kilometers:

[T]he 5 GHz band is a valuable national resource to be used in a highly efficient manner. Use of part of this band for NII/SUPERNet devices for short range high-speed digital communications on an unlicensed basis is considered to be an efficient use. However, utilizing the 5 GHz band spectrum for "hops" of 2 to 10 (or 15) kilometers in length is considered highly inefficient. The Commission correctly made this determination when it allocated the 18 GHz, 23 GHz, and 38 GHz bands for use on short paths and reserv[ed] spectrum below 10 GHz for long "hop" microwave paths and other purposes, e.g., radionavigation and satellite services. Manufacturers, in keeping with the Commission's spectrum policy, have been producing and are already supplying equipment for short "hop" microwave links in the aforementioned higher bands.

\* \* \* \* \*

Harris urges the Commission to adhere to its policy on spectrum usage for fixed microwave links. Accommodation of NII/SUPERNET devices at 5 GHz for short transmissions of up to 1 kilometer is fine as a multitude of such operations can then be provided within the spectrum available.

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<sup>29</sup>TIA at 6.

However, the point-to-point services needed to support those very local networks should be in separate higher bands where spectrum usage would be coordinated, licensed, and where power authorizations would be sufficient to provide a quality reliable service. Operation of point-to-point services to support unlicensed local networks for distances beyond 1 kilometer would be in this category. Within the 1 kilometer limitation unlicensed mobile and transportable networks, generally described as local area networks, could function, provided EIRP limitations are established to protect equal access to all who desire to enter the unlicensed bands. As a final point, the licensed bands at 18 GHz, 23 GHz, and 38 GHz all have the capability to transport up to 155 Mb/s.<sup>30</sup>

Longer range unlicensed 5 GHz links also would result in underutilization of the lower cost, larger capacity, and higher-speed inter-community links in the higher bands:

Unlicensed NII/SUPERNet operations, as conceived in RM-8648 and RM-8653, are envisioned as being useful for very short range communications. The inclusion of paths exceeding 1-2 kilometers is inconsistent with the short range local concept that makes unlicensed operations feasible. The power requirements for 10-15 kilometer paths would preclude the local wireless operations from functioning due to harmful interference.

\* \* \* \* \*

Affordable technology already exists for longer-range FS paths, which could provide inter-community links for NII/SUPERNet. Domestic manufacturers are producing equipment for use in the 18 GHz, 23 GHz, 28 GHz, and 38 GHz bands pursuant to Commission policy on using such higher bands for these "hops."

\* \* \* \* \*

Due to the specific nature of applications and technology used at these frequencies, costs and required installation time are kept at very low levels compared with more traditional microwave systems. In fact, the cost of supplying a millimetric radio link is comparable to the cost of the corresponding unlicensed equipment alternative. Estimates range from less than \$20,000-\$25,000 per 18 GHz hop to less than \$15,000 per hop in the higher bands. In contrast, current unlicensed [4] DS-1 ("T-1") radios typically cost \$18,000 per hop (includes two terminals). Moreover,

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<sup>30</sup>Harris at 2-3.

licensed equipment in that price range is capable of operating at twice the capacity as the unlicensed equipment and is available for even higher speed applications. Further, vital short/medium-range inter-community links, using 18 or 23 GHz FS bands, would benefit from complete interference protection.

\* \* \* \* \*

No justification has been made by Apple or WINForum to duplicate these efforts with new equipment at 5 GHz. Nor have they demonstrated any valid reason for the Commission to retreat from its policy aimed at efficient use of valuable spectrum.<sup>31</sup>

Efforts by commenters to convince the Commission that unlicensed 5 GHz band long range paths are more cost-effective than licensed paths are unavailing. In its comments, Apple claims that "prices for community network equipment fall well below \$1000."<sup>32</sup> Several Internet Service Providers ("ISPs") also claim that unlicensed links would be available at a much lower cost than licensed links.<sup>33</sup>

These claims are totally unjustified. No documentation is provided to support Apple's estimate. In fact, the record of this proceeding demonstrates that network equipment for unlicensed equipment should cost approximately \$18,000 per hop. Even at this cost, such unlicensed equipment would not provide the high speed and high reliability transmission links that are available for less than \$15,000 per hop in existing licensed microwave bands above 18 GHz.

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<sup>31</sup>TIA at 6-7 (footnotes omitted). The reference to 4 DS-1 radios inadvertently was omitted in TIA's Comments.

<sup>32</sup>Apple at 19 n.24.

<sup>33</sup>See e.g., American Frontier at 1; US Net Incorporated at 1-2; Connecting Point at 1; Midcoast Internet Solutions at 1.

Moreover, "community networking" and many other NII applications already are very well covered by licensed microwave bands. Several 38 GHz band operators, such as Advanced Radio Telecom Corp. and WinStar Communications, Inc., have been marketing affordable Internet access services for more than a year<sup>34</sup> and already have entered into agreements with ISPs.<sup>35</sup>

**C. Unlicensed Paths Exceeding 1-2 Kilometers Would Threaten Compatibility With International Networks.**

A critical factor in determining the NII/SUPERNet architecture is optimizing its compatibility with international networks:

Global companies have an important need to ensure that their products can be designed, marketed and most importantly, used by consumers in all countries around the world.<sup>36</sup>

Permitting long range unlicensed 5 GHz links, however, would threaten compatibility between the NII/SUPERNet and the emerging international telecommunications infrastructure:

An architecture similar to that contemplated for NII/SUPERNet is being established in Europe. The HIPERLAN standard is being developed by the European Telecommunications Standards Institute.

\* \* \* \* \*

Both WINForum and Apple claim that NII/SUPERNet and HIPERLAN are compatible. This claim is unjustified. The maximum length for a HIPERLAN "hop" is 1 kilometer, and the typical length is no more than a few hundred meters. Thus, if the NII/SUPERNet indeed is to be

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<sup>34</sup>See National Science Foundation Wireless Field Test Project at 3 ("NSF"). NSF concluded that, for T-1 level service, microwave would cost \$31,500 less than leased lines over a 5-year period, which is very substantial for most small business ISPs. *Id.*

<sup>35</sup>TIA Spread Spectrum Reply at 3. In its comments, the Consumer Electronics Manufacturers Association ("CEMA") urges the Commission to make providers of unlicensed long range 5 GHz bands co-primary with allocated bands, but to exempt them from auctions. CEMA at 5, 7. At a minimum, this proposal is unfair to the licensed 38 GHz band operators.

<sup>36</sup>HP at 8.

compatible with HIPERLAN, TIA's proposed limit of unlicensed 1-2 kilometer hops must be adopted.

Furthermore, WINForum and Apple assert that "the similarities of their proposals to the HIPERLAN standard suggest that unlicensed wireless operations can successfully share spectrum with MSS feeder links at 5.15-5.25 GHz." Again, WINForum and Apple are wrong. Given the low EIRP needed to operate 1 kilometer long paths, there should be no problem accommodating both HIPERLAN systems and MSS feeder links on the same band. However, if the Commission permits NII/SUPERNet to include unlicensed longer range paths, the EIRP would be higher and the potential for interference with MSS feeder links would increase significantly. Consequently, the Commission's conclusion, that sharing is feasible between NII/SUPERNet and MSS feeder [links], is unjustified.<sup>37</sup>

Harmonizing the NII with HIPERLAN is essential to promoting domestic businesses in overseas markets.<sup>38</sup> As the wireless infrastructure matures, this compatibility "will allow U.S. companies to offer products outside of the U.S. market, thereby increasing U.S. competitiveness in world markets."<sup>39</sup> This compatibility will "facilitate the ability of manufacturers to serve both [domestic and foreign] markets" thereby greatly enhancing "export opportunities for American manufacturers."<sup>40</sup>

Achieving this goal is highly questionable because none of the commenters demonstrate that the proposed NII/SUPERNet architecture is compatible with international networks,

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<sup>37</sup>TIA at 8-9 (footnotes omitted).

<sup>38</sup>Very early in this proceeding, TIA member Harris applauded the potential for the eventual harmonization between U.S. networks and HIPERLAN. See Harris' Comments, filed July 10, 1995, on RM-8648 and RM-8653, at 3.

<sup>39</sup>HP at 7. See also Harris at 3-4.

<sup>40</sup>Nortel at 11 n.14.

particularly the HIPERLAN.<sup>41</sup> More importantly, it seems very unlikely that a system like the HIPERLAN, which is designed to carry 20 mb/s for no more than about 165 feet,<sup>42</sup> could become compatible with a system, like the NII/SUPERNet, which is proposed to do the same for 15 kilometers.

## CONCLUSION

TIA supports the NII/SUPERNet. Flexible, high-speed wireless networks are necessary components to establishing a viable NII and to ensuring that the U.S. can participate fully in the GII. The unlicensed NII/SUPERNet will provide the platform for developing such a needed resource.

Making the NII/SUPERNet a priority does not mean that other services or sound spectrum management principles can be ignored. The record of this proceeding, as detailed herein, proves that permitting the NII/SUPERNet to include unlicensed longer range inter-community links in the 5 GHz band, is without merit and is inconsistent with the public interest. If the Commission truly wants to promote the goals underlying the NII/SUPERNet by protecting wireless users,

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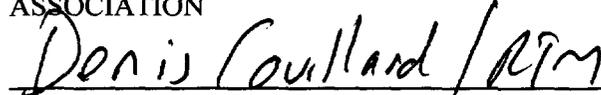
<sup>41</sup>The ITU-R recently has contributed to the ITU Joint Rapporteur Group on the Global Information Infrastructure ("GII") by describing the role of radio in the GII implementation. In its input document, the ITU-R clearly establishes the key role that licensed point-to-point and point-to-multipoint Digital Radio-Relay systems will play in the GII. See ITU-R Working Party 9B, Liaison Statement from ITU-R Working Party 9B to the Joint Rapporteur Group on GII (ITU-T SG 13), Document 9B/TEMP/21-E, March 27, 1996.

<sup>42</sup>The European Telecommunications Standards Institute ("ETSI") is developing the operational rules for use of HIPERLAN products. It has determined that the "typical range at full data rate (20 mb/s) for a HIPERLAN node will be 50 meters." ETSI ETR-069, February 1993, HIPERLAN Service Facilities Specifications.

providing high-speed, cost-efficient networking, and maximizing compatibility with international networks, it must adhere to its rejection, in the NPRM, of unlicensed longer range links.

Respectfully submitted,

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## CERTIFICATE OF SERVICE

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261345/gw03