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

In the Matter of	)	
	)	
	)	
Amendment of Parts 2 and 15 of	)	ET Docket No. 96-8
the Commission's Rules Regarding	)	RM-8435
Spread Spectrum Transmitters	)	RM-8608
	)	RM-8609
	)	
To: The Commission	)	

REPLY COMMENTS

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

[1]47 C.F.R. Section 1.415 (1996).

[2]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).

[3]Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters, Notice of Proposed Rule Making, 11 FCC Rcd 3068 (1996) ("NPRM"). The NPRM was published in the Federal Register on April 5, 1996. 61 FR 15206. TIA did not file comments on the NPRM.

regarding the operation of spread spectrum transmission systems in certain bands, including the 5725-5850 MHz band.[4] In addition, the Commission proposes eliminating the limit on directional gain antennas for fixed point-to-point spread spectrum transmitters operating in the 5800 MHz band.[5]

In general, TIA supports adoption of the proposed rules. Availability of state-of-the-art spread spectrum technology is in the public interest. As the Commission acknowledges in the NPRM, spread spectrum systems can be developed for myriad users, such as manufacturing and service companies, oil and gas pipeline companies, public safety services, and government agencies, without "having to go through a frequency coordination and licensing process" so that "rapid setup of the system and reduce[d] costs to the user" can be achieved.[6]

As demonstrated herein, however, the proposals in the NPRM for longer reach, unlicensed systems in the 5800 MHz band are unnecessary. Longer range paths for National Information Infrastructure ("NII") use already are available in the 18, 23, and 38 GHz bands on a licensed basis. Moreover, these links are quite cost-efficient and provide high-speed, large capacity capabilities needed to support the emerging NII.

THE NEED FOR UNLICENSED, LONG RANGE POINT-TO-POINT LINKS IN THE 5800 GHz BAND IS HIGHLY QUESTIONABLE

In its comments on the NPRM, Apple Computer, Inc. ("Apple") attempts to convince the Commission that it should encourage the use of narrow-beam antennas in the 5800 MHz band to accommodate "longer-reach unlicensed communications" services:

> As the Commission is aware, longer-reach unlicensed communications are of primary importance to Apple, the computer and information industries, and a large number of citizens who wish to take full part in the use of the Internet

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[4]NPRM, 11 FCC Rcd at 3068.

[5]NPRM, 11 FCC Rcd at 3068-69.

[6]NPRM, 11 FCC Rcd at 3069.

> and other elements of the National Information Infrastructure. For this reason, the Commission's proposal to eliminate the restriction on directional antennas employed in the 5800 MHz band is of great interest to Apple. This is particularly true because one of the frequency ranges proposed for the NII/SUPERNet Band includes the 5800 MHz "spread spectrum band" addressed in the instant NPRM. Although the instant NPRM would not provide for the entire range of functionalities sought for the NII Band, this proposal represents a first step toward that goal, and any decision reached in this proceeding regarding the circumstances under which directional antennas may (and may not) be used is directly relevant to the Commission's consideration of community networking in the NII/SUPERNet proceeding.
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> * * * * * * * *
>
> The general approach proposed by the Commission and petitioners Western Multiplex and Cylink, and the reasons for that approach, closely match some of the goals for the NII Band. That is, unlicensed transmitters employing directional narrow-beam antennas can enable rapid setup, lower costs, greater frequency reuse and a higher information capacity. The Commission has agreed that these functions "could be critical in emerging situations," and that "the 5800 MHz band is ideal for fixed, point-to-point wideband microwave operations."[7]

TIA submits that the Commission already has provided for "longer reach" NII links by establishing the short to medium range licensed bands at 18, 23 and 38 GHz. As TIA demonstrates in the current NII/SUPERNet rule making proceeding, high speed and high reliability transmission links are available for less than $15,000 per hop in existing microwave bands above 17.7 GHz.[8] Actually, "community networking" and many other NII applications already are very well covered by licensed microwave bands:

- Several 38 GHz operators, such as Advanced Radio Telecom Corp. and WinStar Communications, Inc., have been marketing affordable Internet access services for more than a year and already have entered into agreements with Internet Service Providers.

- 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

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[7]Apple at 6 (footnotes omitted).

[8]See July 15, 1996, TIA Comments on ET Docket No. 96-102 at 7.

> GII implementation. In its input document,[9] 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.[10]

Thus, the Commission first should look to the licensed bands for longer range links to support NII needs.

APPLE'S CLAIMS REGARDING FREQUENCY REUSE ARE UNSUPPORTED

Apple claims that "unlicensed transmitters employing directional narrow-beam antennas can enable . . . greater frequency reuse and higher information capacity."[11] Until it is demonstrated that a workable and available alternative exists, TIA considers that higher directivity (higher gain) antennas only allow greater frequency reuse if frequency coordination is done on a systematic basis. This would contradict the free access, unlicensed philosophy intrinsic to the Part 15 bands.

When a technology becomes available, alternatives to coordination should be considered to expedite implementation. Under such circumstances, to accommodate the use of high gain antennas, TIA would support "modifying any portion of the spread spectrum rules [provided that] the Commission should guard against bestowing a competitive or technical advantage on any single spread spectrum technology."[12]

As for the enabling of higher information capacity, it is clear that a principal characteristic or advantage of an unlicensed technology is not its high transmission capacity. Rather, the ability to carry medium or high capacity data is a traditional characteristic of licensed microwave systems.

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[9]See attached 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.

[10]Similarly, Rockwell International Corporation ("Rockwell") agrees with the Commission's conclusion that there are better alternatives than the ISM bands for wireless delivery of wideband data. Rockwell at 2.

[11]Apple at 6.

[12]See Rockwell at 2.

Up to 155 Mb/s links are available at 18 and 23 GHz. Present 38 GHz systems offer 45 Mb/s speeds while 155 Mb/s systems are foreseen. This is another reason to favor these bands over the 5 GHz band for longer range NII links.

LICENSED BANDS COVER THE NEED FOR LONGER-RANGE EQUIPMENT

In its comments, Apple also claims that:

> a variety of users could benefit from the use of directional, longer-range unlicensed transmitters, including manufacturing and service companies, oil and gas pipeline companies, mobile and SMR operators, common carriers, public safety services, state and local governments and the U.S. Government.[13]

All these users already have well established access to longer range communication links in the licensed lower 6 GHz and upper 6 GHz bands. In fact, even if they could, many of these users would hesitate before using any unlicensed band since the critical nature of the services they provide demand the protection which is granted along with a microwave license. Both public interest and efficient use of the spectrum would be served better by pursuing the following objectives:

- Rejecting any rule change that could jeopardize the unlimited, uncoordinated access to unlicensed bands by any Part 15 system. After all, this is what makes these bands unique.

- Simplify and shorten the licensing process used in traditional microwave bands. The recent release of new Part 101 and the establishment of an electronic license application filing system by the Commission will contribute towards a better, faster and simplified licensing process.

Furthermore, the Commission's proposal totally disregards the benefits associated with reallocating the 5800 GHz band to provide for licensed fixed point-to-point systems. In comments on one of the petitions for rulemaking underlying the NPRM,[14] a TIA member, Alcatel Network

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[13]Apple at 7.

[14]Petition for Rule Making filed by Western Multiplex Corporation (RM-8435).

Systems, Inc. ("Alcatel"), expressed concern that adoption of new spread spectrum rules would foreclose the availability of needed spectrum for FS users:

> Fixed point-to-point microwave users (i.e., non-spread spectrum) could operate in the 5725-5850 MHz band under the same technical parameters proposed by Western Multiplex. However, fixed point-to-point microwave licensees could use this band much more efficiently than unlicensed spread spectrum users. For example, [Alcatel] estimates that fixed point-to-point microwave licensees could provide up to 79 times greater capacity in the same spectrum occupied by a 1 DS-1 radio (the radio Western Multiplex proposes) than the unlicensed spread spectrum users could provide. Moreover, 1 DS-1 (i.e., 24 voice frequency channels) channel loading comprises only 16% of the approximate 29,000 licensed 2 GHz fixed point-to-point microwave frequencies. Thus, restricting access to the 5725-5850 MHz band to less efficient, low capacity systems seriously would handicap the other 84% of the 2 GHz licensees trying to relocate.[15]

TIA agrees with Alcatel. Having been evacuated from the 2 GHz band to clear spectrum for personal communications services ("PCS"), and facing the potential additional displacement from the 2 GHz band to accommodate mobile-satellite service ("MSS") users,[16] FS licensees need spectrum. This need cannot be ignored. Public health and safety users depend upon reliable and available FS frequencies for delivery of their services to the public. Local exchange carriers and new Competitive Access Providers, cellular telephone companies, utilities, railroads, petroleum companies, financial institutions, and federal, state and local governments use FS to support their network operations. Emerging wireless telecommunications, especially PCS, will rely upon FS users for spectrum to

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[15]Alcatel Comments on Petition for Rule Making (RM-8435), dated March 18, 1994, at 2-3 (footnotes omitted). Alcatel also acknowledged that the only condition to permitting fixed point-to-point users in the band is to require prior frequency coordination so that harmful interference is avoided. Id. at 3.

[16]Redevelopment of Spectrum to Encourage Innovation In the Use of New Telecommunications Technologies, Second Report and Order, ET Docket No. 92-9, 8 FCC Rcd 6495, 6519-20 (1993), modified, Memorandum Opinion and Order, 9 FCC Rcd 1943 (1994), aff'd sub nom. APSCO v. F.C.C., 76 F.3d 395 (D.C. Cir. 1996); Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, Notice of Proposed Rule Making, 10 FCC Rcd 3230, 3232 (1995).

provide their services and will rely upon FS facilities in other bands to support their operations. These FS users frequently are the cornerstone of supervisory and operational programs designed to deliver essential products and services to the public. Thus, FS users serve specific industrial, public safety, and commercial requirements of many companies and public agencies that constitute much of this nation's infrastructure.

Unfortunately, as demand for these essential FS services increases, available spectrum does not. The bands designated for the relocating 2 GHz FS users, primarily the 6 and 11 GHz bands, already are quite congested, and no relief is in sight.[17]

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[17]These bands could become largely unusable since the upper 6 and 18 GHz bands recently were reallocated at WRC-95 so that FS users are co-primary with non-geostationary ("NGSO") MSS feeder links. Final Acts of the World Radiocommunication Conference (WRC-95), Geneva, 1995 at Article 55. Needed relief from this spectrum congestion is not provided in other recent Commission allocation decisions. Newly available spectrum in the 4 GHz band from the federal government will not be allocated so that this band is feasible as a substitute for the FS users being migrated off the 2 GHz band. Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, First Report and Order and Second Notice of Proposed Rule Making, 10 FCC Rcd 4769 (1995). Availability of the 18 GHz band could be diminished as the result of the recent reallocation resulting in it being shared with government users. Amendment of Part 2 of the Commission's Rules to Allocate Spectrum for the Fixed-Satellite Service in the 17.8-20.2 GHz Band for Government Use, Memorandum Opinion and Order, 10 FCC Rcd 9931 (1995). Current plans to use the 18.8-19.3 GHz band for NGSO fixed satellite service are likely to decrease FS use of that band. Both the 23 GHz and 26 GHz bands are becoming much less available to FS users due to restrictive demands of Inter-Satellite Link and Data Relay Satellite Services. A currently pending proposal to channelize the 27.5-29.5 GHz band for the co-primary FS users is unlikely to be adopted because the Commission has proposed reallocating the 28 GHz band only for LMDS systems, Fixed Satellite Service and MSS system feeder links. See Rulemaking to Amend Parts 1, 2, 21 and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, Third Notice of Proposed Rulemaking, 11 FCC Rcd 53 (1995). Availability of needed spectrum in the 37-40 GHz band also is problematic. See Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40 GHz Bands, Notice of Proposed Rule Making and Order, 11 FCC Rcd 4930 (1996). Finally, it is unclear if spectrum above 40 GHz ever will be allocated for FS users. See Amendment of Parts 2 and 15 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Notice of Proposed Rule Making, 9 FCC Rcd 7078 (1994); Amendment of Parts 2, 15, and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, First Report and Order and Second Notice of Proposed Rule Making, 11 FCC Rcd 4481 (1995).

ANTENNA RESTRICTIONS SHOULD NOT BE RELAXED IN THE 2450 MHz BAND

In the NPRM, the Commission concludes that it should not relax restrictions on directional antennas in the 2450 MHz band.[18] Apple disagrees.[19] For the reasons set forth below, the Commission's conclusion is correct:

- Rockwell correctly states that, "[t]he projected wide proliferation of wireless LAN systems in the 2450 MHz ISM band also could be adversely affected by the deployment of high gain antennas."[20] Any modification to the spread spectrum rules should not limit the use of a diversity of future spread spectrum technologies or have a negative impact on the existing ones. Access to Part 15 bands should remain opened.

- The 2450-2500 MHz portion of the band is shared with Auxiliary Broadcast services (ENG) in the U.S. and in Canada, while the 2400-2450 MHz portion is shared with existing microwave systems in Canada.

CONCLUSION

TIA supports adoption of the new spread spectrum rules, with the caveats set forth above. The Commission must not take precipitous action with respect to permitting longer range unlicensed point-to-point links in the 5 GHz band, especially when such links already are available for NII applications in the licensed bands.

More importantly, the Commission must consider seriously the needs of utilities, PCS licensees, telephone companies, government agencies and other users by making the 5800 MHz band available for the licensed point-to-point services that support their operations. This need is particularly compelling since FS users are being forced to relocate from the 2 GHz band so that

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[18]NPRM, 11 FCC Rcd at 3072-73.

[19]Apple at 8.

[20]See Rockwell at 3.

spectrum is available for PCS and MSS. The 5800 MHz band would be ideal for providing FS users spectrum to replace the 2 GHz band.

Respectfully submitted,

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INTERNATIONAL TELECOMMUNICATION UNION

RADIOCOMMUNICATION
STUDY GROUPS

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ITU-R Working Party 9B

LIAISON STATEMENT FROM ITU-R WORKING PARTY 9B TO THE JOINT RAPPORTEUR GROUP ON GII (ITU-T SG 13)*

1 Introduction

This contribution lists the comments of Working Party 9B with regard to the January version of the Study Group 13 Report COM 13-R 59 on the Global Information Infrastructure (GII).

2 Comments on Annex 1 (ITU-T and ITU-R standardization issues)

Working Party 9B suggests the following changes or additions:

- The title of Annex 1 ("ITU-T standardization issues") should be changed to take into account the broader range of regulatory bodies (i.e. ITU-R, ISO/IEC, other...) that will have to address the displayed list of GII related issues.
- Under the "ITU-R" column, add "SG 9" to Sections 3, 8, 9, 10 and 15 of the table.
- Replace the first column (Category) of Section 15 by the following text:

"**15.0 Fixed-radio and satellite networks**

15.1 Radio-relay networks and techniques

Backbone networks

Access networks

- Point-to-point
- Point-to-multipoint
- Broadband distribution systems
- RLAN
- Fixed WLL

Radio-frequency band management

HF systems

* This liaison statement is also brought to the attention of ITU-R Study Groups 4, 8, 10 and 11 for consideration and possible comments.

15.2 Satellite networks and techniques"

- Under the "ITU-R" column, add "SG 9" to Sections 16 and 17 of the table.
- It is suggested that, on the first column (Category) of item 17, a new bullet be created on the subject of "Network performance and reliability".
- Under the "ITU-R" column, add "SG 9" to Sections 18 and 19 of the table.

3 Comments on Annex 4 (Scenario Methodology - Example of Use)

The following proposed modifications and additions will ensure that the role of radio-relay systems in the implementation of GII will be fully understood:

3.1 List of scenarios (end of page 37 of COM 13-R 59)

- Change title of 6) to: "Radio In the Local Loop".
- Add new point 7) reading "Radio Backbone and Broadband Access Networks".
- Change point 7) to point 8).

3.2 Figure 4 (page 40 of COM 13-R 59)

This figure mainly focuses on B-ISDN. It is suggested that, for the purpose of this drawing, the various links that are described (especially the one between the ATM Switch and the Residence), should be clearly made media independent. We suggest that the first line of the explanatory text (bottom of page) be modified to read as such:

"Figure 4 illustrates B-ISDN direct to the home using, copper pairs, coaxial cable, fibre, fixed-radio or satellite".

3.3 Figure 6 (page 42 of COM 13-R 59)

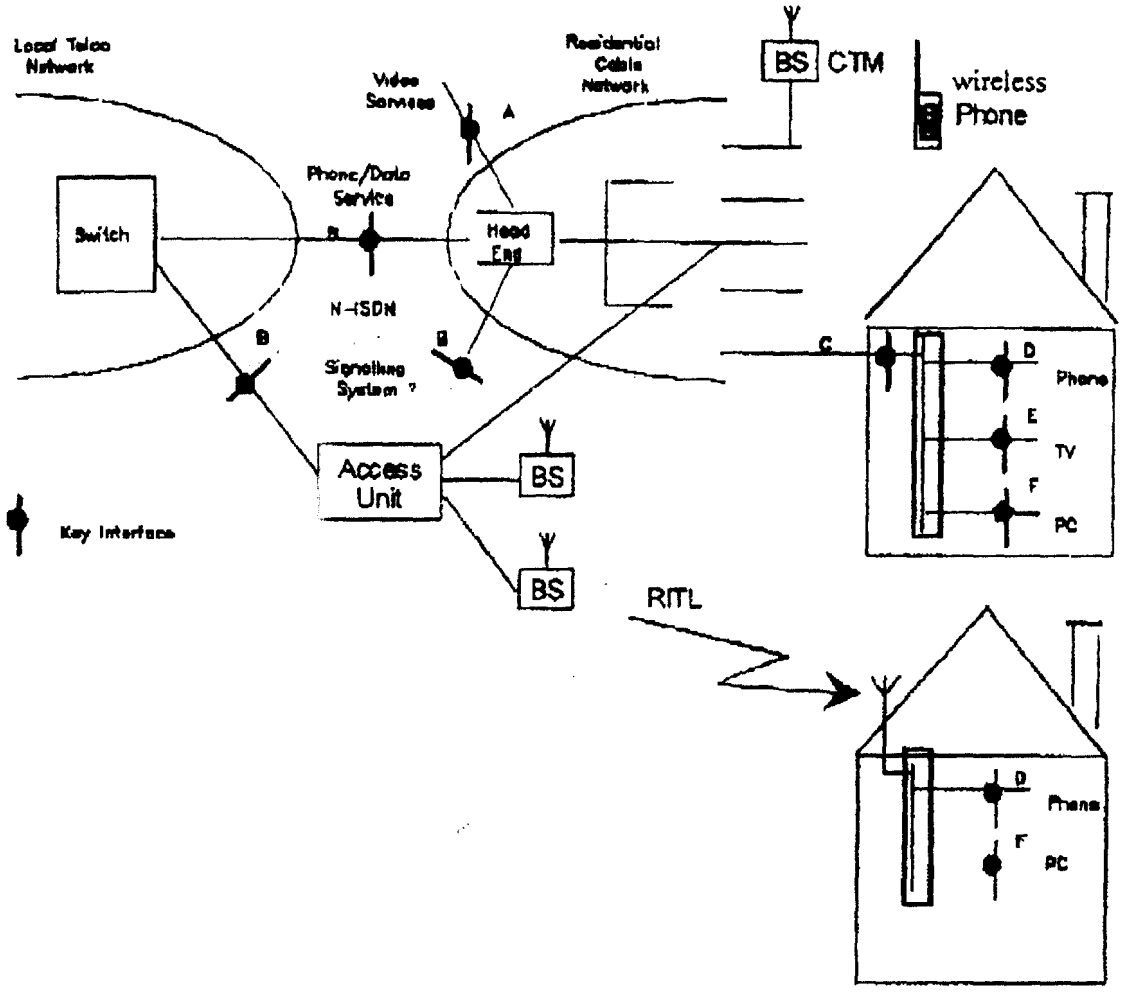
We believe this figure describes the possible role of radio in the Local Loop. It should be modified to:

- clearly show that the link between the Access Unit and the BS (radio Base Station) can also be provided by a radio-relay link;
- add a second residence at the bottom left of the drawing and linked to the bottom BS. This would better express the concept of a point-to-multipoint WLL system. That additional residence should also show a phone-only connection (instead of Phone and Data) to better represent the idea of flexibility of services provided; both residences should show directional antennas;
- all radio links should be represented with double arrows to confirm the idea that they provide bidirectional services, in opposition to a simple distribution service.

A modified Figure 6 is attached to this text. The explanatory text of the figure has also been updated to better describe the Fixed WLL scenario.

Proposed new Figure 6

Scenario 6 - The use of Radio in the Local Loop



BS: Based Station

FIGURE 6

The use of Radio in the Local Loop

Figure 6 shows the voice and data services from a telco being extended to the user via a cable network and radio. Questions that arise from this scenario include whether BRI/PRI or SS7 could be used at the interface point labelled B and the resulting implications for interface at points C, D and F. Interface B may use BRI or PRI. The Head End may include switching then it becomes an Access Unit with V5.x for control, in which case V5.x may also be a candidate for control/signalling transported on the appropriate transmission system.

CTM - Cordless Terminal Mobility

- Restricted mobility (for pedestrians)
- Short range
- IN Mobility and services
- ISDN capability
- Wireless phone

Fixed WLL - Fixed Wireless Local Loop

- Radio to the home
- Short/medium range
- Point-to-Multipoint
- ISDN capability

3.4 New Figure 7 on Radio Backbone and Access Networks

A new Figure 7 is proposed that covers the most typical broadband radio-relay access applications. The proposed Figure also presents some of the possible radio-relay backbones and RLANs applications that will contribute to the successful implementation of the GII.

A proposed Figure 7 is attached to this text.

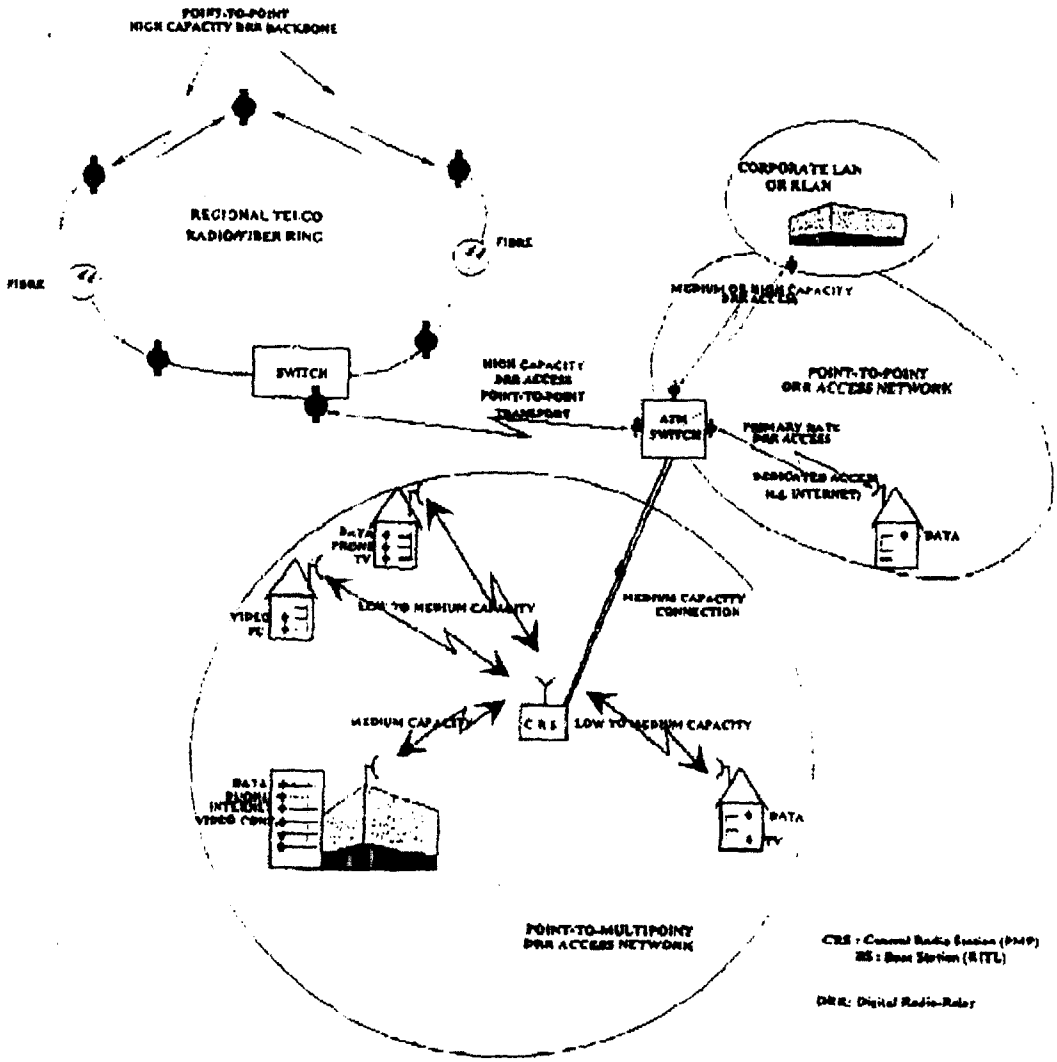


FIGURE 7

The use of Radio in Backbone and Broadband Access Networks

3.5 Replace existing Figure 7 in Report of first meeting of JRG on GII by new Figure 7 of this Liaison

4 General comment on Document COM 13-R 59 (January 1996)

We note that subjects such as SDH, PDH or ISDN are not specifically covered in COM 13-R 59. Should the JRG choose to better cover these issues in the context of GII, Working Party 9B would like to be involved in the corresponding discussions.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Reply Comments was sent via first class mail, postage prepaid, to the following parties on the 18th day of July, 1996.

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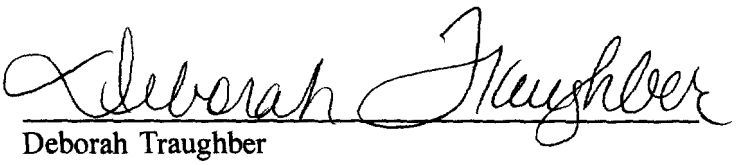
Dated: July 18, 1996



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