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

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In the Matter of

Amendment of Part 2 of the Commission's	)	
Rules to Allocate Spectrum Below 3 GHz	)	
For Mobile and Fixed Services to Support	)	ET Docket No. 00-258
The Introduction of New Advanced	)	
Wireless Services, Including Third	)	
Generation Wireless Systems	)	

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SUMMARY

Ensuring all Americans have access to at least one broadband service offering by the end of the decade is a national imperative – and perhaps the Commission's most important policy goal. Broadband, or high speed Internet access, is the key to generating productivity gains, driving economic growth, enabling e-learning and telemedicine offerings, and unleashing the next generation in innovative Internet applications. Wherever possible, policy makers should encourage fast deployment of broadband telecommunications services to promote technological innovation, lower prices and greater consumer choice.

Through its prior decisions, the Commission has wisely and deliberately facilitated deployment of fixed wireless broadband services in the 2.5 and 2.1 GHz MDS/ITFS bands. Service providers are *currently* in the process of deploying wireless broadband services in 175 markets nationwide. In many urban areas, fixed wireless broadband offers the critical "third pipe" into the home to compete with cable and DSL. What is more, in most rural areas where consumers still await the promise of broadband embodied in Section 706, fixed wireless deployments promise to be the *only* broadband pipe for consumers.[1]

Regulatory uncertainty threatens to hobble the broadband wireless market just as it begins to deliver on its extraordinary promise. Should the FCC change the rules governing the dynamic MDS/ITFS bands so late in the game, it would upset legitimate business planning and expectations, thereby discouraging investment in new technologies and further slowing broadband deployment. The future of wireless broadband is in the Commission's hands.

Cisco's analysis of the issues raised in this proceeding has established the following:

- Advanced fixed wireless offerings in the MDS/ITFS bands promise to accelerate deployment of broadband services to all Americans.

- The emergence of this advanced service is an example of the success of the Commission's market-driven and technology neutral spectrum management policies.

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[1] Section 706 of the Telecommunications Act of 1996 provides in relevant part:

> "The Commission . . . shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing . . . measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure development."

- Segmentation of the 2.5 GHz band would present service providers with the following dilemma: limit the capacity of their networks (increasing costs to consumers and slowing data rates); deploy additional base stations (multiplying capital costs); or not deploy at all.

- Relocation of current licensees from the 2.1 and 2.5 MHz bands would subject service providers to significantly increased costs, reduced coverage in rural markets and a delay in deployment until l2002-2003.

- The time-to-market delay caused by any change would result in a corresponding loss of market share, lagging time to profitability and delay in service availability for all markets and all consumers.

- The increased cost of deployment for any change would threaten the business case for serving residential and rural markets -- *precisely* those areas the Commission recently identified as most vulnerable to a lack of broadband telecommunications access.

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FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz For Mobile and Fixed Services to Support The Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems	))))))	ET Docket No. 00-258

REPLY COMMENTS OF CISCO SYSTEMS, INC.

I. INTRODUCTION AND SUMMARY

Cisco Systems, Inc. ("Cisco"), the leading manufacturer of IP networking equipment, respectfully submits these reply comments, as provided for in the Federal Communication Commission's ("FCC") recent Notice of Proposed Rulemaking ("NPRM") in this Docket.[2]

The NPRM sought comment on possible new frequency allocations for advanced wireless services, including Third Generation systems ("3G"). Bands under consideration include those currently used for the provision of mobile services (cellular, PCS and SMR spectrum), as well as 1710-1750 MHz, 1755-1850 MHz, 2110-2150 MHz, 2160-2165 MHz and 2500-2690 MHz. Cisco's comments focus on the Multipoint Distribution Service and Instructional Television Fixed Service ("MDS/ITFS") bands at

[2] *Notice of Proposed Rulemaking and Order*, FCC 00-455 (rel. Jan. 5, 2001)("NPRM"). Cisco filed timely comments in this docket on February 22, 2001. Those comments may be accessed via the FCC's electronic comment filing system at www.fcc.gov/searchtools.html

2150-2162 MHz and 2500-2690 MHz. As a manufacturer of fixed wireless broadband networks, Cisco's initial comments provided an understanding of its network's capabilities and the devastating effect that segmentation or relocation would have on the progress and deployment of fixed wireless broadband.

In truth, the Commission has hit a home run in the MDS/ITFS band. Its policies have permitted the development of a fixed wireless broadband network economically well-suited for deployment in unserved rural and residential markets. Its licensees are about to deliver a (wireless) "third wire" to compete in the provision of broadband access. And, the free market has fostered a secondary market in which MDS licensees obtain needed capacity for broadband and ITFS non-profit educational licensees receive access to high-speed digital networks and needed funding to support long distance learning, continuing education, telemedicine and other valuable community programming.

At the dawn of these successes, as fixed wireless service providers have begun initial deployment, this proceeding has injected significant uncertainty into this market. This band has been considered because it was one of many identified as a potential home for 3G services at the World Radio Conference ("WRC") -- in all, the WRC identified nearly 750 MHz for potential consideration, acknowledging that each administration has complete control over which bands it identifies for 3G.[3]

As discussed below, the record is resoundingly clear: the Commission should reaffirm the use of the 2.1 and 2.5 MHz bands for advanced fixed wireless services,

[3] In 1992, the World Administrative Radio Conference identified the 1885-2025 MHz and 2110-2200 MHz bands. The 2000 World Radiocommunication Conference added the 1710-1755 MHz, 1755-1885 MHz, 2500-2690 MH and 806-960 MHz bands. These bands cover only potential terrestrial 3G bands.

neither relocating incumbents for new mobile entrants nor segmenting the band. The services presently provided and those now being introduced are fulfilling important policies of this Commission and mandates of the Communications Act.[4] The Commission itself has concluded that sharing is untenable; the record confirms Cisco's analysis that both segmentation and relocation would destroy the MDS/ITFS partnership and threaten to arrest fixed wireless broadband in its tracks. Cisco respectfully requests that the Commission act promptly to resolve the uncertainty.

II. THE 2.1 AND 2.5 GHZ BANDS ARE DELIVERING ADVANCED SERVICES TO UNSERVED AND UNDERSERVED AREAS, AS THE COMMISSION HAS INTENDED

It is properly acknowledged in this docket's caption: this proceeding is about fostering the introduction of advanced services for the benefit of the American public. Cisco is a vigorous supporter of this initiative, firmly recognizing the need to accommodate rapid growth and innovation in both fixed and mobile services. With dozens of testimonials from MDS and ITFS service providers, the record is clear that the MDS/ITFS spectrum is *already* being used for the provision of advanced services to communities and customers who otherwise would likely go unserved. Accordingly, Cisco firmly believes that *any* reallocation or segmentation of the bands would be contrary to this Commission's precedent and to the public interest.

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[4] *See generally*, Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions, *Report and Order*, FCC 98-231 (rel. Sept. 1998) ("Two-Way Order"); Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations, *Declaratory Ruling and Order*, FCC 96-304 (rel. July 10, 1996) ("Digital Declaratory Ruling"); Mass Media Bureau Implements Policy for Provision of Internet Service on MDS and Leased ITFS Frequencies, *Public Notice*, 11 FCC Rcd. 22419 (1996)("Internet Services PN"). *See also*, *Deployment of Advanced Telecommunications Capability: Second report*, FCC 00-290 (rel. Aug. 21, 2000).

The Commission ought to be touting the MDS/ITFS bands as a prime example of its market-driven and technology neutral spectrum management policies. In the early 1990s the MDS/ITSFS band was a one-way video services band that was underutilized because of restrictions on service offerings and transmission technologies. Through a series of proceedings, the Commission fostered growth and innovation in the band by lifting those restrictions and allowing licensees to respond to market demand.[5] MDS licensees are now in the midst of widespread deployment of fixed wireless broadband services. Sprint, for example, is providing service in 13 markets, adding several new markets each month and 2000 customers each week. The three largest providers alone have hundreds of applications for two-way authorization pending before the Commission.

The Commission envisioned – *intended* -- this future when it modified its rules. When the Commission approved two-way transmissions just three years ago, it indicated that its ruling would provide "significant benefit to consumers. A new, competitive group of players will now enter the market for high-speed two way communications service. . . . [C]onsumers will be able to take advantage of new video conferencing, distance learning and continuing education opportunities."[6] Likewise, when it approved digital modulation in 1996, the Commission observed, "[w]e expect that the introduction of digital technology will enhance the service of wireless cable operators by allowing opportunities for increased channel capacity and . . . the provision of video, voice and data services that cannot be offered currently."[7]

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[5] *Id.*

[6] *Two-Way Order* at ¶9.

[7] The Mass Media Bureau, announcing the policy to approve high speed digital data transmissions, noted the change would "enhance the ability of wireless cable operators to compete with cable operators." *Internet Services PN* at ¶5. In its *Digital Declaratory Ruling*, the Commission described its action as

These goals have been met, and surpassed. The record is replete with examples of the valuable services being provided, many is less populous areas unlikely to receive service via traditional wireline technologies.[8]

III. MANUFACTURERS AND SERVICE PROVIDERS PREFER SPECTRUM IN THE 1.7 AND 1.8 GHZ BANDS

While the lack of complete harmony in the bands advocated by mobile operators and manufacturers should not be surprising, one thing *is* clear: many oppose use of the 2.5 GHz band, and those who consider it do so as a "better-than-nothing" alternative.

Lucent and Motorola oppose use of the 2.5 GHz band in part because it would do nothing to accomplish two of the major goals in this proceeding -- global harmonization and global economies of scale. (In contrast, a number of commenters advocate for the 1.7 and 1.8 GHz bands precisely because they closely align with the European DCS 1800 band and most other allocations in the Americas.)[9] No country has yet implemented any commercial service in the band, and Motorola indicates that deployment anywhere is

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"accelerat[ing] the development of wireless cable services and advanc[ing] Congress' goal of 'promot[ing] competition . . . in order to secure lower prices and higher quality services for American telecommunications consumers." *Digital Declaratory Ruling* at ¶2, citing Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

[8] *See, e.g.*, Comments of Wireless One of North Carolina, LLC at 1-5 (Feb. 22, 2001) (developing a statewide wireless broadband network in North Carolina to provide smaller cities, rural areas and public schools with educational and commercial services); Comments of The Catholic Television Network at 2-14 (Feb. 22, 2001) (discussing plans to provide new distance learning, interactive instruction, video-on-demand, wide-area network, high-speed Internet access and other services, with special attention to underprivileged neighborhoods); Joint Comments of Arizona Board of Regents for Arizona State University, *et. al.*, at 4-19 (Feb. 22, 2001) (describing a plethora of educational, religious, government and medical programming provided via ITFS in Arizona, Atlanta, Boston, Kansas, California, Connecticut, New York, Cleveland, Kentucky, Mississippi, New Jersey, North Carolina and Florida); Joint Comments of Education Service Center Region 9 and the Texas ITFS Educational Community at 6 (Feb. 22, 2001) (describing the "UT High School" program, which offers approximately 45 courses over the Internet so that students can earn their high school diploma).

[9] Comments of Motorola, Inc. (Feb. 22, 2001); Comments of Lucent Technologies, Inc. (Feb. 22, 2001); Comments of Nortel Networks, Inc. (Feb. 22, 2001); Comments of Qualcomm Incorporated (Feb. 22, 2001).

unlikely before 2007 "at the earliest."[10] Lucent notes further that the European Union allocations indicated for UMTS at 2.5 MHZ "are not guaranteed to occur as projected and will be dependent upon business and market considerations."[11]

Nortel, a manufacturer of both fixed and mobile networks, including 3G RF technologies, notes "serious concern" with the Commissions proposal to allocate spectrum at 2.1 GHz and 2.5 GHz. "An abrupt change as would result from [an allocation at 2.1/2.5 GHz] would negate much of the work that has already occurred, and would seriously disrupt the business plans of the incumbent licensees . . . . [an] approach that would ill serve the public interest . . . .[12] Canadian manufacturers and service providers strongly advocate an allocation at 1.7 GHZ, stating that Canada and most countries in Region 2 believe new 3G spectrum should be located there, and many – such as Canada, Mexico, and Brazil – also use 2.5 GHz for MDS.

Those who continue to advocate an allocation from 2.5 do so almost casually. Voicestream simply indicates that it supports allocations from both the 1710-1850 MHz and the 2500-2690 MHz bands, with no further discussion or distinction. Cingular and AT&T Wireless clearly indicate that the 2.5 MHz band is a fall-back position.[13] Verizon does request an allocation of 30 MHz from the 2.5 MHz band, but it does so as a third request, to come after a "prompt" allocation of 1710-1755 MHz and an allocation at

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[10] Motorola at 12.

[11] Lucent at 8.

[12] Nortel at 7.

[13] Cingular Wireless, LLC explains: "*If clearing the Federal Government band proves impractical*, the bulk of 3G spectrum could be accommodated by usage of the 2500-2690 band." Comments of Cingular Wireless LLC (Feb. 22, 2001) at ii (emphasis added). Similarly, AT&T Wireless Services noted that "*to the extent the allocation of 1755-1850 MHz cannot be made*, the Commission should reallocate . . . some or

1755-1850 "as soon as practicable." Furthermore it requests this partially on the basis that "the spectrum allocated to ITFS has been largely commercialized, and is no longer used for its "primary intended purpose" of instructional programming."[14] The 132 (and growing) comments filed by educational and community service organizations belie that assumption. The truth is that MDS/ITFS licensees have created a thriving secondary market, each contributing resources to further the delivery of advanced educational services *and* broadband access.

Given the tepid interest in the 2.5 band for 3G services, the Commission would be severely misguided if it were to stifle the advanced wireless broadband services now being deployed. As one commenter explained, "the benefits that mobile service providers claim will accrue by clearing the 2.1 and 2.5 MHz bands for 3G are largely illusory, and pale in comparison to the crippling impact any forced relocation . . . would have on the deployment of fixed wireless broadband networks. . . . ."[15]

IV. RELOCATION AND SEGMENTATION WOULD UNRAVEL WHAT HAS BEEN ACCOMPLISHED AND WOULD THREATEN SERVICE TO RESIDENTIAL AND RURAL MARKETS

Cisco's analysis of the effects of segmentation and relocation is unrefuted in the record. In its initial Comments, Cisco provided an extensive description of the fallout of any infringement of the 2.1 and 2.5 MHz bands.[16] A change in or loss of spectrum would

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all of the spectrum in the 2500-2690 MHz band . . . ." Comments of AT&T Wireless Services, Inc. (Feb. 22, 2001) at 3 (emphasis added).

[14] Comments of Verizon Wireless (Feb. 22, 2001) at 23. Ericsson also proposes allocation of some portion of the 2.5 band in a second phase allocation sometime during 2005-2008.

[15] Comments of the Wireless Communications Association International (Feb. 22, 2001) at 7.

[16] Comments of Cisco Systems, Inc. (Feb. 22, 2001) at 5-15.

require significant re-engineering and increased infrastructure, a marked increase in capital and operational costs,[17] and a long delay in market entry. In short, broadband fixed wireless would suffer a dramatic change to its business case, threatening what would otherwise be the imminent deployment of service in residential and rural areas. Indeed, based on its own model and analysis, HAI Consulting resolved that

> if spectrum for an MMDS/ITFS/network is reduced, there is a direct, virtually linear, effect on capital requirements and operating expenses and a negative effect on the attractiveness of the opportunity. . . . [W]e conclude that the advanced fixed wireless broadband services currently being deployed, and planned for future development, in markets throughout the United States, will **not** be developed if the Federal Communications Commission were to reduce the spectrum available for these services as proposed.[18]

In any arena, Cisco and its service provider customers design equipment and business arrangements in good faith, based on the service rules and regulatory requirements of the FCC. With the MDS bands, our priority has been to get to market as quickly, efficiently and cost-effectively as possible. We believe we have succeeded. Yet because we planned within the dictates of efficiency and regulatory compliance, the technology is not compatible with mobile use, and it requires substantial guardbands. The engineering decisions made with respect to this broadband equipment were premised upon the Commission's stated intent to allow the growth of a fixed wireless broadband service, our belief that the Commission would not undermine that service by changing the

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[17] As explained in Cisco's initial Comments, band segmentation as proposed in the NPRM would result in a $5.19 billion increase in capital and operational expenses in the top 100 markets (Metropolitan Statistical Areas) for the first five years of deployment.

[18] HAI Consulting, Inc., *MDS/MMDS/ITFS Two-Way Fixed wireless Broadband Service: Spectrum Requirements and Business Case Analysis*, Attachment 1 to Comments of the Wireless Communications Association International, Inc. (Feb. 22, 2001) at 23, 1 (emphasis in original).

rules, and the need to compete with cable and DSL for residential customers on a cost and capacity basis.

Because of the complicated relationship between technological decisions and viable business plans, significant regulatory changes affecting one will naturally affect the other. Simply stated: there is no single common slice of spectrum from the 2.1 and 2.5 GHz bands that can be extricated without erasing the opportunity to offer fixed wireless broadband in some number of markets – particularly rural and residential markets. If enough markets are affected, the viability of the investment opportunity could be called into question. Similarly, a change requiring re-design and delay should not be considered a "simple delay" in deployment without serious consequences. Setting aside the direct capital and operating expense, changes could result in delay of 2 years or more. The loss of access to market share in that period alone would also lead to questions about the wisdom of following through on these investments.

V. CONCLUSION

The record in this docket underscores Cisco's original analysis: *any* change in the MDS/ITFS bands, whether a diminution or relocation of spectrum, would threaten the progress of broadband fixed wireless services. The economic and social benefits of broadband fixed wireless access are enormous. The Commission will achieve these benefits merely by having the courage to stay the course.

For the forgoing reasons, Cisco respectfully requests that the Commission promptly move to end the uncertainty and reaffirm the integrity of the MDS/ITFS bands.

Respectfully submitted,

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Dated: March 9, 2001

CERTIFICATE OF SERVICE

I, Karen R. Stephens, do hereby certify that on this 9th day of March 2001, I caused true and correct copies of the foregoing Reply Comments of Cisco Systems, Inc., to be served, via First-Class mail, upon the following parties:

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