

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

In the Matter of)	
)	
Amendment of Part 2 of the Commission's)	ET Docket No. 00-258
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)	
)	
Amendment of Section 2.106 of the Commission's)	ET Docket No. 95-18
Rules to Allocate Spectrum at 2 GHz for Use)	
By the Mobile-Satellite Service)	
)	
The Establishment of Policies and Service Rules)	IB Docket No. 99-81
for the Mobile-Satellite Service in the 2 GHz Band)	
)	
Petition for Rule Making of the Wireless)	RM-9498
Information Networks Forum Concerning the)	
Unlicensed Personal Communications Service)	
)	
Petition for Rule Making of UTStarcom, Inc.,)	RM-10024
Concerning the Unlicensed Personal)	
Communications Service)	

COMMENTS OF THE TDD COALITION

The TDD Coalition ("Coalition") hereby submits the following comments to the Further Notice of Proposed Rulemaking ("Further Notice") in the above-captioned matter.

1. About the TDD Coalition

The Coalition is a not-for-profit corporation organized to represent the interests of its members, which consist of providers of fixed and mobile wireless voice and data communications products and services in the United States and abroad. Among the Coalition's purposes are to promote time division duplexing ("TDD") technology for wireless broadband products and services; to inform the industry about TDD technology and its benefits to the global broadband wireless industry; to develop common marketing approaches as they relate to TDD; to

provide information to international and national regulatory bodies in furtherance of adopting technologically neutral rules that allow economical deployment of TDD technology for broadband wireless access; to develop implementation guidelines that will facilitate TDD deployments and ensure harmonious coexistence of TDD with other duplexing systems; and to foster the support of TDD technology within global, regional and national standards organizations.

2. The Coalition's Interest in the Captioned Proceeding

The Coalition supports the initiative of the Federal Communications Commission ("FCC") to explore frequency bands for the introduction of new advanced mobile and fixed terrestrial wireless services, including third generation ("3G") and future generations of wireless systems. As a general matter, the companies represented by the Coalition are interested in the development of a plan to allocate frequencies for advanced wireless communications services in a way that is technology-neutral and harmonized with global spectrum allocations for those services. Specifically, the Coalition seeks an allocation of spectrum that will permit the introduction of TDD technology as a robust competitor to frequency division duplexing ("FDD") technology. Such an allocation, particularly if done in a way that is harmonized with global 3G spectrum allocations, would assist the growth of the U.S. wireless communications market and bring enormous benefits to consumers, operators and manufacturers.

TDD technology is particularly well-suited to the high-speed wireless data transmission with which 3G communications systems are associated. This technology enables transmit and receive functions to operate on the same frequency, but at different times on a fixed interval. Because it efficiently matches the way in which data is sent and received, TDD is particularly effective in handling asymmetric traffic. TDD can also be implemented in a way to respond to

the time-varying nature of the ratio of asymmetry between upstream and downstream transmission. FDD systems, on the other hand, use two distinct upstream and downstream frequency bands. As such, they are satisfactory for voice transmissions but can result in a reduced efficiency in spectrum usage when the respective volumes of upstream and downstream data traffic differ from the FDD channel design assumptions, or when the ratio of asymmetry varies in time.

While FDD will certainly have its role in the advanced mobile picture, it is clear that much of the data transmitted on 3G systems will consist of uplink and downlink traffic that is likely to be asymmetrical and of a dynamically changing nature. TDD systems are suitable for voice traffic, but it is in the realm of data transmission that TDD technology shows clear advantages. Considering the data-centric nature of the services contemplated in the instant proceeding, it is crucial that TDD be given a fair chance to compete. Moreover, TDD systems require only one frequency band for both upstream and downstream transmissions, while FDD systems require paired spectrum. Thus, TDD provides regulators with increased flexibility to create band plans that are spectrally efficient.

Today, the U.S. terrestrial mobile environment is virtually all FDD. Spectrum is auctioned on a paired basis: one side of the pair for base station transmission, the other side for mobile/portable transmission. The Coalition urges the Commission to consider a more technology-neutral band plan model when allocating spectrum for advanced wireless services. A continuation of rigidly defined, paired bands would unduly favor FDD at the expense of TDD. While TDD systems can operate effectively within the FDD framework of paired frequencies, the lower permissible power limits of the mobile/portable frequency portion would render the latter largely unusable for TDD unless changes are made to the technical parameters.

The Coalition would like the Commission to adopt band plan rules that allow the implementation of FDD or TDD duplexing technologies. Further, interoperability rules should be adopted to define such characteristics as power limits, adjacent channel interference, and spectral masks such that FDD and TDD systems could coexist in the same frequency ranges.

By providing equal footing for both TDD and FDD technologies, a technology-neutral spectrum allocation would be consistent with international allocations for new advanced wireless communications services. The Commission has previously observed that the IMT-2000 radio interfaces incorporate both TDD and FDD technologies, and several spectrum allocations in Europe have included both paired and unpaired spectrum.¹ Moreover, it is crucial that this technology-neutral allocation be harmonized with similarly allocated spectrum across the globe.² In addition to the increased competition and spectral efficiency that would likely result from the allocation urged herein, harmonization of the designated spectrum would bring enormous benefits in the form of lower costs, more rapid innovation, improved roaming and customer convenience, and accelerated market growth.³

3. Toward Technological Neutrality

Overall, the Coalition has been pleased with the scope and depth of the issues explored in

¹ 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, Notice of Proposed Rule Making and Order, 16 FCC Rcd 596, 608 (¶ 29) (2000) (“NPRM”).

² See Memorandum for the Heads of Executive Departments and Agencies (Oct. 13, 2000) (President's 3G Memo) (directing federal agencies to identify spectrum for advanced mobile communications and emphasizing, inter alia, that the federal government must “remain technology-neutral, not favoring one technology or system over another, in its spectrum allocation and licensing decisions” and “support industry efforts . . . to harmonize spectrum allocations regionally and internationally.”).

³ See Cellular Telecommunications and Internet Association Ex Parte Presentation, ET Docket No. 00-258; RM-9920; RM-9911 at 2 (filed Sept. 6, 2001).

this proceeding. Particularly encouraging were the statements by the Commission in the NPRM emphasizing the need for flexibility and technological neutrality.⁴ The Coalition vigorously concurs with these statements. As described above, the Commission's existing policy of allocating spectrum on a paired basis heavily favors FDD systems, thus foreclosing the introduction of a spectrally-efficient TDD technology as a viable alternative. The NPRM and some of the subsequent comments suggested that there is emerging support for a frequency allocation policy that would level the technological playing field by allowing operators to bid on unpaired spectrum if they choose.⁵

In the Further Notice, the Commission laudably continues in its efforts to identify possible uses of spectrum for 3G and other new advanced wireless services and extends this useful inquiry into additional frequency bands. Nevertheless, the Coalition believes that the Commission has edged away from the goal of a spectrum allocation policy that promotes competition and technological neutrality. Having initiated a dialog about the merit of sparking competition between TDD and FDD systems in the NPRM, the Commission now raises the possibility of pairing scenarios which would permit the use of paired or unpaired spectrum for advanced wireless services, and give a provider of TDD-based services options as to the optimal use of its spectrum.⁶ It is encouraging that the Commission specifically referenced the comments of Siemens Corporation, which urged the allocation of both paired and unpaired spectrum.⁷

⁴ NPRM at 602, 606 (¶¶ 13, 21).

⁵ Id. at 608-09 (¶ 29); Comments of Qwest Wireless, LLC, ET Docket No. 00-258 at 4-5 (filed Feb. 22, 2001); Comments of Siemens Corporation, ET Docket No. 00-258 at 25-26 (filed Feb. 22, 2001).

⁶ See Further Notice at ¶¶ 42-44.

⁷ See id. at ¶ 44; Comments of Siemens Corporation at 25-26.

However, without a set of rules governing the interoperability of FDD and TDD systems, the array of options discussed in the Further Notice would continue to favor FDD licensees over those using competing technologies.

The Coalition urges the Commission to resume its pursuit of technological neutrality. By adopting policies that remove the disproportionate advantage enjoyed by FDD technologies, the Commission would further its clearly stated objectives of promoting competition and encouraging the development of emerging telecommunications systems.⁸ Although there are multiple frequency bands under consideration, the Coalition does not, at present, seek the designation of any particular band for TDD systems. Instead, the Coalition believes that the Commission should allocate spectrum in such a way that provides equality of opportunity to TDD systems and harmonization with global allocations for advanced wireless communications. Specifically, the Coalition requests that the Commission permit operators the option of bidding on unpaired spectrum instead of being forced to accept an unwanted half of a frequency pair. Further, the Coalition believes that the Commission should commence a rulemaking to develop a set of clear interoperability rules to govern the implementation. In addition to facilitating the efficient use of spectrum allocated to new advanced wireless services, such a policy would ensure that the U.S. spectrum allocations will keep pace with global identification of spectrum for these services.

⁸ See Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium, Policy Statement, 14 FCC Rcd 19868 (1999).

4. **Conclusion**

For the foregoing reasons, the TDD Coalition respectfully requests that the Commission pursue its goal of promoting technology-neutral band plans for allocating frequencies for new advanced wireless communications services.

Respectfully submitted,

TDD COALITION

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