IEEE P802 Request for World-Wide Coordinated Radio Frequency Spectrum for Local Area Computer Communications

Summary

IEEE P802 is seeking your support in the allocation of radio frequency spectrum for equipment that conforms to the proposed wireless Local Area Network (LAN) standard. To meet reasonable cost objectives, IEEE P802 recommends that this spectrum be allocated between 1 and 3 GHz. Pending the result of standards development, IEEE P802 estimates up to 140 MHz of spectrum will ultimately be required to satisfy user demands for performance and systems throughput. Understanding that contiguous spectrum may not be immediately available, smaller segments may be useful in the short term.

In view of the explosive growth of computer technology, IEEE P802 also encourages immediate authorization for unlicensed use of wireless LAN applications in the 2.4 GHz and 5.8 GHz bands assigned for Industrial, Scientific and Medical (ISM) uses. However, due to the bandwidth constraints of current ISM allocations and in view of the expected interference levels in these bands, IEEE P802 considers allocation of the spectrum for high speed wireless LAN communications to be imperative.

IEEE P802 encourages your organization to actively support worldwide coordination of the spectrum allocations indicated above.

What is IEEE P802

The Institute of Electrical and Electronics Engineers, Inc (IEEE) is a USA-based international professional organization with more than 300,000 members representing a broad segment of the computer and communications industries. More than 58,000 members are from outside the USA.

The IEEE P802 LAN Standards Committee (IEEE P802) is chartered by the Computer Society of the IEEE to produce standards for Local Area Networks (including Integrated Voice/Data Local Area Networks). The local area network standards provide for data transfer between computers and/or computer terminals at data rates of greater than 1 Mbit/s utilizing wire, optical and radio media. The International Organization for Standardization (ISO) has adopted several IEEE P802 standards as International Standards.

IEEE P802 now has work underway to prepare a Wireless Local Area Network (WLAN) standard for data communication over a radio medium. In addition to a basic standard for specifying a protocol for Media Access Control and for the Physical Layer, IEEE P802 will also develop a standard for conformance testing. The conformance testing standard will be in line with the requirements set by ISO's Open Systems Interconnection standards and helping to provide globally unified test results. The project plan calls for proposing these standards as ISO standards.

There is a strong interest in wireless local area networking as evidenced by the number of individuals and corresponding company sponsors in the

IEEE P802 working group on wireless LANs. This working group has 68 voting members and a total mailing list exceeding 300 individuals. The international membership includes participants from several European countries (United Kingdom (UK), Netherlands, Germany, Italy, Spain, and Sweden), Australia and Japan.

The Need for Wireless Local Area Networks

IEEE P802 observes that computers are rapidly becoming both smaller and more powerful. In addition, it observes that computer prices are decreasing, leading to the possibility that in the relatively near term a large majority of workers in every industry will have their own computers. As computers and computer technologies become more ubiquitous in the workplace, there is a correspondingly greater need to connect those devices together in local area networks. Wireless technologies will allow this connectivity without the constraints of location, costs and inefficiencies associated with LAN cabling.

Untethered computer use that provides access to powerful new applications involving multiple media (e.g. image and data) creates an urgent demand for high-speed, high-quality wireless communication. IEEE P802 is acutely aware of the economic and social benefits of the synergy of information access by the mobile workforce and wireless local area networking. Therefore, IEEE P802 believes that wireless LANs are needed in addition to other radio-based systems.

Economic Benefits of Standardization

In the current absence of adequate regulations, voluntary partial solutions will evolve in an effort to satisfy the market. The members of IEEE P802 believe there is strong economic motivation, driven by perceived user needs and desires, to market and deploy worldwide high performance LANs conforming with non-binding international standards.

Economics of Spectrum Allocations

Adequate coverage, low power consumption and optimal use of scarce radio spectrum are important objectives of the IEEE P802 wireless LAN effort. These characteristics are essential to the new generation of low cost, high volume personal data devices. Frequencies below 3 GHz are consistent with these objectives.

Urgency for Providing Wireless Communications

It is the position of IEEE P802 that there is an urgent need for an immediate allocation of spectrum to WLANs. IEEE P802 is on record supporting such spectrum allocations in the United States (see IEEE P802 reply comments to FCC GEN Docket No. 90-314, RM-7140, RM-7175).

The requirement for immediate allocation is driven by the need to make investments today in the creation of wireless LANs with high signaling rates.

World Administrative Radio Conference 1992

Wireless local area networking is one of the applications of short reach radio where international compatibility is of value to all countries. The high intrinsic value of the portable computing device with its personalized software and information makes it impractical to change devices when moving across boundaries of different regulatory jurisdictions.

IEEE P802 believes that time is of the essence in defining wireless LAN spectrum through appropriate channels to the World Administrative Radio Conference (WARC) (such as CCIR TG 8/1). When the WARC considers personal communications, the important part that portable computers will play should be fully considered.

Wireless LANs and Other Radio-Based Systems

Computer users throughout the industrialized world have made huge investments in installations and applications. Wireless LANs are required that offer seamless integration with wire based installations in terms of performance, network protocols, application support and management facilities. Therefore, IEEE P802 believes that wireless LANs are needed in addition to other radio based systems primarily designed for voice and circuit-switching communications.

Recommendations

1. In view of the explosive growth of computer technology, IEEE P802 encourages immediate authorization for unlicensed use of wireless LAN

applications in the 2.4 GHz and 5.8 GHz bands assigned for Industrial, Scientific and Medical (ISM) uses.

2. However, due to the bandwidth constraints of current ISM allocations and in view of the expected interference levels in these bands, IEEE P802 further recommends an eventual allocation between 1 and 3 GHz of appropriately regulated spectrum for high speed wireless LAN communications. Pending the result of the standards development, IEEE P802 estimates up to 140 MHz of spectrum will ultimately be required to satisfy user demands for performance and systems throughput. Understanding that contiguous spectrum may not be immediately available, smaller segments may be useful in the short term.

Conclusion

Existing and projected personal telecommunication networks can meet some of the need for data services. At the same time portable computer capabilities are increasing, which creates need for yet higher speed and higher capacity wireless networks. IEEE P802 respectfully requests that these vital spectrum needs be considered and provided as soon as possible.

Respectfully submitted,

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Dated

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