Guest Editorial

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Mobile and portable communications services rely by nature on radio technology. There is increased interest in providing wireless (radio) local access to the public network. This includes land mobile communication for metropolitan and suburban areas, mobile satellite communication for rural areas, and, of more recent interest, wireless communication between buildings or within buildings. The last application is an area of current, widespread interest and could eliminate the need for running cords and cables within buildings.

Providing wireless local access to the public network, and in particular digital voice or data transmission within buildings via radio, is the core of the special series starting in this issue.

Since indoor radio communication is a rather new application, we start the series with two articles in this issue on propagation measurements and channel modeling that are essential to a better understanding of the in-building medium. They present two somewhat different views of the model. It is amazing how little we know about the propagation characteristics of the buildings we live in or work in. We continue the series with an article on the important topic of the local wireless access interface and its relationship to Cellular Access Digital Networks (CADN). We then offer systems- and technology-related articles concerned with the methodologies touched upon as follows.

As with other types of radio communication, there are regulatory issues of bandwidth allocation, transmission power, and interference with other services. At the present time it is not clear what the regulatory climate will be for wireless communication within buildings. According to one school of thought this application should be unregulated and similar to microwave ovens and residential cordless phones, with the transceivers required to operate on a non-interfering basis. Advocates of unregulated usage of spectrum recommend radio techniques that enable transmission at low spectral density over the relatively small coverage area of a building (low power per Hertz per volume), for example, by spread spectrum techniques. More conservative individuals believe in spectrum management and efficient use of the limited radio band. They recommend more conventional methods, such as, digital walkie-talkies. A third group consists of those who are fed-up with the regulatory issues and would like to do away with it all by translating their transmission bands to infrared or by transmitting in the visible light part of the frequency spectrum.

In this special series we have collected works from advocates of each of these approaches. The entire group of articles was requested from various world technically recognized organizations that are presently involved in local radio communication research and are willing to disclose the results to the public at this time. Sessions on Local Wireless Communication have appeared at recent IEEE-sponsored ICC and GLOBECOM Conferences. The authors of papers in these sessions are in large part the authors of articles in the series. To all the authors and the magazine staff I extend my sincerest thanks for what I am confident will be an interesting and useful series of articles.

I would also like to acknowledge the help and cooperation of L. J. Greenstein and S. B. Weinstein. I am grateful to Tetsuya Miki of NTT Japan who patiently coordinated and gathered the contributions from Japan.

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During 1977-78, he worked at Fairchild Industries. He then joined GTE (Satellite and Laboratories) and stayed until 1981. Since then he has been with AT&T Bell Laboratories, where he works in the Communications Systems Research Lab at Crawford Hill, Holmdel, NJ. He has worked on modulation, coding equalization, spread spectrum, satellite communications, packet switching networks, digital radio for line-of-sight multipath channels, local wireless communication, and portable and mobile radios. Currently he is working on optical communications problems. He has published over 35 papers and has several patents issued or pending in these fields. He has taught part-time at Northeastern University, Boston, MA, and Lowell University, Lowell, MA.

Dr. Kavehrad is an Editor for the *IEEE Transactions on Communications* and a former Technical Editor for the *IEEE Communications Magazine*. He established and was the Chairman of the IEEE Communications Chapter of New Hampshire in 1984. He has organized and chaired sessions at a number of international meetings. He has also been a member of the Technical Program Committee for the International Conference on Communications. He is a member of Sigma Xi. ■