TV White Space Spectrum Technologies: Regulations, Standards, and Applications

From CRC Press

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Although sophisticated wireless radio technologies make it possible for unlicensed wireless devices to take advantage of un-used broadcast TV spectra, those looking to advance the field have lacked a book that covers cognitive radio in TV white spaces (TVWS). Filling this need, **TV White Space Spectrum Technologies: Regulations, Standards and Applications** explains how white space technology can be used to enable the additional spectrum access that is so badly needed.

Providing a comprehensive overview and analysis of the topics related to TVWS, this forward-looking reference contains contributions from key industry players, standards developers, and researchers from around the world in TV white space, dynamic spectrum access, and cognitive radio fields. It supplies an extensive survey of new technologies, applications, regulations, and open research areas in TVWS. The book is organized in four parts:

1. *Regulations and Profiles*?Covers regulations, spectrum policies, channelization, and system requirements
2. *Standards*?Examines TVWS standards efforts in different standard-developing organizations, with emphasis on the IEEE 802.22 wireless network standard
3. *Coexistence*?Presents coexistence techniques between all potential TVWS standards, technologies, devices, and service providers, with emphasis on the Federal Communications Commission’s (FCC) recent regulations and policies, and IEEE 802.19 coexistence study group efforts
4. *Important Aspects*?Considers spectrum allocation, use cases, and security issues in the TVWS network

This complete reference includes coverage of system requirements, collaborative sensing, spectrum sharing, privacy, and interoperability. Suggesting a number of applications that can be deployed to provide new services to users, including broadband Internet applications, the book highlights potential business opportunities and addresses the deployment challenges that are likely to arise.

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Editorial Review

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Rashid A. Saeed received his BSc in Electronics Engineering from Sudan University of Science and Technology (SUST) and his PhD in Communication Engineering from Universiti Putra Malaysia (UPM). He served as a senior researcher at MIMOS Berhad and then at Telekom Malaysia R&D, where he was awarded the Platinum Badge for Outstanding Research Achievement Award. Dr. Saeed is currently with the Sudan University for Science and Technology (SUST).

Rashid has published and is responsible for over 70 research papers, tutorials, talks, and book chapters on the topic of UWB, cognitive radio, and radio resources management. He was awarded two US patents and has filed for eight more. Rashid is a certified WiMAX engineer (RF and core network) and is a Six Sigma–certified Black Belt, based on DMAIC++ from Motorola University. He is one of the contributors of IEEE-WCET wireless certification in its earlier stages, and is a senior member of the IEEE, IEM Malaysia, and Sigma Xi.

Stephen J. Shellhammer leads a cognitive radio project within the Qualcomm Corporate Research and Development Department. He is currently the chair of the IEEE 802.19 working group on wireless coexistence, leading a project on TV white space coexistence. He was also the technical lead on spectrum sensing within the IEEE 802.22 working group. He is currently a member of the IEEE 802 executive committee and was also the chair of the IEEE 802.15.2 task group on wireless coexistence. Before joining Qualcomm, he was the Director of the Advanced Development Department at Symbol Technologies, and later worked at Intel in its wireless local area network division. Stephen has a BS in Physics from the University of California, San Diego; an MSEE from San Jose State University; and a PhD in Electrical Engineering from the University of California, Santa Barbara. He was an adjunct professor at SUNY Stony Brook, where he taught graduate courses in electrical engineering. He is a senior member of the IEEE.

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