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# IEEE P802.18
## Radio Regulatory Technical Advisory Group (RR-TAG)

| Revised IEEE SA Spectrum Policy Statement | | | | |
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| Post IEEE Stakeholder review | | | | |
| Date: 2023-09-01 | | | | |
| Author(s): | | | | |
| Name | Company | Address | Phone | email |
| Amelia Andersdotter | Self | | | amelia.ieee@andersdotter.cc |

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4      This contribution shows the revised IEEE 802 Spectrum Policy Statement following IEEE stakeholder review rounds.

IEEE Standards Association *DRAFT* Position Statement

# Spectrum Management and Allocation Policies ~~and Management~~

*xx July 2023*

**Introduction**

The IEEE Standards Association (IEEE SA) supports the position that spectrum policies and management are needed for both licensed and license-exempt technologies to meet the explosive growth in demand for wireless communication, to support emerging technology and enable new applications. IEEE SA is a major contributor to the standardization of leading wireless technologies and has an important role ~~to play~~ in the development of spectrum allocation and management based upon transparent, standardised rules.

Spectrum management is a vital component of our digital society. Radio frequencies enable a multitude of existing services and emerging technologies~~, such as autonomous vehicles, and IoT devices~~. Transparent and efficient management of spectrum is essential for societal and economic progress.

IEEE SA recognizes that the ~~The~~ IEEE 802 Standards Committee, through its volunteers, is a major contributor to the standardisation of leading wireless technologies. ~~Participation is open to any individual.~~ The committee develops the IEEE 802.11(™) Wireless Local Area Network (LAN) family of standards (~~in many cases marketed as~~ Wi-Fi) and IEEE 802.15(™) Wireless Speciality Networks (built into other systems). The standards are primarily designed for use of shared and licence-exempt operation and enable an ecosystem in which many independent entities can contribute and enable an ever-expanding communications infrastructure.

**Importance of Spectrum Policy to enable current and future ~~Main priorities for IEEE 802~~ Wireless Technologies based on IEEE 802 standards ~~in spectrum policy~~**

A core principle of IEEE 802 wireless standards is to enable spectrum sharing by using appropriate co-existence techniques. The co-existence technique or mechanism might change depending on the standards in use and the regulatory requirements. ~~The~~ IEEE SA, given its history of being a neutral and collaborative standards development organisation, can facilitate the development of where these common rules and technologies can be standardised.

~~Devices in proximity using the same standard use mechanisms defined in the standard to share spectrum.~~

Devices using different standards (e.g., IEEE 802.11(™), various 802.15(™) standards, or technologies developed by other organisations) must be able to share spectrum. Additionally, licence-exempt use by devices has been allowed in bands allocated to a primary service while protecting the primary from interference. Such efficient spectrum utilisation does not require re-farming of the spectrum or migration of primary services to other bands.

Spectrum policies need to consider~~The main priorities for IEEE 802 wireless technologies in spectrum policy are listed below~~:

1. The increasing demands for wireless spectrum should be met by introducing flexibility into the use of lightly used spectrum. This includes spectrum that is being used sparsely on a geographic or temporal basis.

2. Expanded global availability of the 6 GHz band (5925 MHz to 7250 MHz) for license-exempt shared use (indoor and outdoor) is critical to IEEE 802 wireless technologies. aAccommodateing multiple wide channels. This is important key for the next generation IEEE 802.11 technologies to meet the growing demand for connectivity and to achieve the performance required by new applications.

2.3. Regulatory certainty is needed to further the benefits enjoyed by users of IEEE 802 wireless technologies around the world.

3.4. Global convergence on policies for the sub-1 GHz bands is needed to enable wider deployment of technologies already developed by IEEE 802. For example, sStandards-based systems operating in sub-1 GHzthese bands make efficient and effective use of the spectrum. Allowing expanded use would further increase the economic and social value of sub-1 GHz spectrum.

**Current and future state of IEEE 802 wireless technology development**

Wireless technology contributes sSignificant economic value is provided by IEEE 802-based systems today. Wi-Fi technology, based on the IEEE 802.11(™) standard, has an estimated 18 billion devices in use world-wide, with over 4 billion devices added annually.[1] The current deployments of IEEE 802.15(™) devices are found in markets ranging from consumer devices to industrial plants, automobiles to buildings and agriculture to space. Some examples of devices which implement IEEE 802.15.4 technologies are TV remote controls, lighting, windows, door locks, heating and air conditioning systems, alarm systems and remote medical monitoring. The introduction of IEEE 802.15 UWB-enabled devices in smartphones and laptops puts forecasts at more than 1 billion devices shipped annually worldwide by 2025.[2] IEEE 802(R) wireless technologies are a critical part of the modern communications infrastructure, benefiting billions of people, governments, and businesses every day.

**A vision for social and economic development through flexible spectrum management**

Technologies which are designed to use license-exempt and shared spectrum have made a tremendous positive impact on the world and will continue to benefit humanity profoundly in the years to come.

IEEE SA urges encouragesWe encourageglobal regulators and administrations to adopt policies that encourage technology neutrality and flexible shared spectrum usage with maximum flexibility to create social and economic benefit advantages for all. The IEEE 802 wireless community provides the basic elements for such an ecosystem.

*This statement was developed by the IEEE Standards Association and represents the considered judgement of a group of IEEE standards participants with expertise in the subject field. The position*

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[1] Wi-Fi Alliance: Value of Wi-Fi. Available online [accessed: 31 August 2023]
[2] Some examples of devices which implement IEEE 802.15.4 technologies are TV remote controls, lighting, windows, door locks, heating and air conditioning systems, alarm systems and remote medical monitoring. The introduction of IEEE 802.15 UWB-enabled devices in smartphones and laptops puts forecasts at more than 1 billion devices shipped annually worldwide by 2025 (FiRA Consortium, August 2022).

84     *taken by the IEEE Standards Association does not necessarily reflect the views of IEEE or its other*
85     *Organisational Units.*

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87     **ABOUT IEEE**

88     The IEEE is the world's largest professional association advancing innovation and technological
89     excellence for the benefit of humanity. IEEE and its members inspire a global community to innovate
90     for a better tomorrow through its highly cited publications, conferences, technology standards, and
91     professional and educational activities. IEEE is the trusted "voice" for engineering, computing, and
92     technology information around the globe.

93     There are more than 420,000 IEEE members in more than 160 countries. IEEE publishes a third of the
94     world's technical literature in electrical engineering, computer science, and electronics, and is a
95     leading developer of international standards that underpin many of today's telecommunications,
96     information technology, and power generation products and services.

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98     ***ABOUT THE IEEE STANDARDS ASSOCIATION***

99     *The IEEE Standards Association, a globally recognized standards-setting body within IEEE, develops*
100    *consensus standards through an open process that engages industry and brings together a broad*
101    *stakeholder community. IEEE standards set specifications and best practices based on current*
102    *scientific and technological knowledge. The IEEE-SA has a portfolio of over 1,250 active standards*
103    *and over 650 standards under development. For more information visit [http://standards.ieee.org](http://standards.ieee.org).*
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106                                          **Addendum**
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108                              **IEEE 802 Background**
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112    • **IEEE 802.11**

113    Today, Wi-Fi networks based on IEEE 802.11 standards are found in residential, office, and industrial
114    environments, in public and private settings. Users in an array of industries[3] rely on these cost-
115    effective, energy-efficient technologies. Underserved communities stand to gain from IEEE 802
116    wireless technologies. They are used in community networks both to empower and provide an
117    opportunity for education. IEEE 802 wireless technologies are in the forefront as an enabler of
118    emerging applications such as augmented and virtual reality (AR/VR).

119    Each new generation of IEEE 802.11 technologies continues to improve efficiency, reliability, latency,
120    throughput and determinism. IEEE 802.11 supports operation in several frequency bands,[4] including
121    the 6 GHz (5925 MHz to 7250 MHz) band, with significant deployments underway.[5]

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123    • **IEEE 802.15**

124    Technologies based on 802.15 standards are embedded in an increasing number of devices. For some
125    applications, such as cars or utilities, industry consortia exist to manage deployments. For other
126    applications, proprietary protocols are used in conjunction with 802 standards. IEEE 802.15.4 can
127    operate in many frequency ranges[6] and supports data communication, location discovery and device
128    ranging. IEEE 802.15.6 is specialised for short range communication in the vicinity of, or inside, a
129    human body. For high-speed, low-latency media transfers, IEEE 802.15.3 provides a speciality
130    solution. IEEE 802.15.16 accommodates the needs of some utility networks.

131    Many IEEE 802.15 standards, as well as the IEEE 802.11 standard, support operation on frequencies
132    lower than 1 GHz. the IEEE 802 wireless community has been able to provide solutions for
133    underserved communities and IoT applications. The IEEE 802.19 Wireless Coexistence Working
134    Group published best practice co-existence mechanisms for sub-1 GHz technologies in 2021.[7]

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[3]   Leisure (gaming, multimedia, browsing), education, health, transportation, and public services are just a few examples.
[4]   IEEE 802.18 Wireless Standards Table of Frequency Ranges, 27 Sep 2022. Available online [accessed: 16 March 2023]
[5]   Wi-Fi Alliance: Wi-Fi 6E momentum underscores need for entire 6 GHz band  Available online [accessed: 16 March
      2023]
[6]   IEEE 802.18 Wireless Standards Table of Frequency Ranges.
[7]   IEEE Std 802.19.3-2021