IEEE P802.11
Wireless LANs

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| IEEE 802.11 IMMW Proposed CSD |
| Date: 2024-03-10 |
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Abstract

CSD document for IMMW

# 1. IEEE 802 criteria for standards development (CSD)

The CSD documents an agreement between the WG and the Sponsor that provides a description of the project and the Sponsor's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

## 1.1 Project process requirements

### 1.1.1 Managed objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

1. The definitions will be part of this project. YES
2. The definitions will be part of a different project and provide the plan for that project or anticipated future project.
3. The definitions will not be developed and explain why such definitions are not needed.

### 1.1.2 Coexistence

A WG proposing a wireless project shall prepare a Coexistence Assessment (CA) document unless it is not applicable.

1. Will the WG create a CA document as part of the WG balloting process as described in Clause 13? YES
2. If not, explain why the CA document is not applicable.

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## 1.2 5C requirements

## 1.2.1 Broad Market Potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

1. Broad sets of applicability.

TBD

1. Multiple vendors and numerous users.

A wide variety of vendors currently build numerous products for the Wireless Local Area Network (WLAN) marketplace. It is anticipated that most of those vendors, and others, will participate in the standards development process and subsequent commercialization activities.

## 1.2.2 Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

1. Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q? YES
2. If the answer to a) is no, supply the response from the IEEE 802.1 WG.

The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

## 1.2.3 Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

This project focuses on allowing Wireless Local Area Network (WLAN) non-standalone operation in unlicensed bands between 42 GHz and 71 GHz using single-user (SU) OFDM based transmissions. The amendment requires that an 802.11 device supporting this amendment also supports at least one of the 2.4 GHz to 7.25 GHz (sub-7 GHz) unlicensed bands. The new amendment focuses on leveraging or reusing existing PHY and MAC specifications defined for the operation in sub-7 GHz bands, e.g. SU transmission PPDU format and MAC frames, and multi-link operation.

There is no other WLAN standard focusing on these objectives other than this amendment.

## 1.2.4 Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

a) Demonstrated system feasibility.

The IEEE 802.11 WNG, UHR SG and IMMW SG have reviewed many presentations listing candidate features and many of them indicated that the proposed solutions are technically feasible. Based on these presentations, the study group membership is confident that there are technical features that are feasible and that allow to meet the requirements.

Here’s a list of contributions:

* <https://mentor.ieee.org/802.11/dcn/22/11-22-0030-01-0wng-look-ahead-to-next-generation.pptx>
* <https://mentor.ieee.org/802.11/dcn/22/11-22-0046-01-0wng-next-generation-after-802-11be.pptx>
* <https://mentor.ieee.org/802.11/dcn/22/11-22-1395-00-0uhr-thoughts-on-high-frequency-band.pptx>
* <https://mentor.ieee.org/802.11/dcn/22/11-22-1580-01-0uhr-aperspectiveonproposeduhrfeaturesforenterpriseusecases.pptx>
* <https://mentor.ieee.org/802.11/dcn/22/11-22-1872-00-0uhr-considerations-on-phy-designs-for-mmwave-band.pptx>
* <https://mentor.ieee.org/802.11/dcn/23/11-23-0066-02-0uhr-thoughts-on-utiliizing-mmwave.pptx>
* <https://mentor.ieee.org/802.11/dcn/23/11-23-1905-00-immw-high-level-thoughts-on-immw.pptx>
* <https://mentor.ieee.org/802.11/dcn/23/11-23-1878-01-immw-high-level-design-considerations-of-immw.pptx>
* <https://mentor.ieee.org/802.11/dcn/23/11-23-1819-01-immw-integrated-mmwave-design-considerations.pptx>
* <https://mentor.ieee.org/802.11/dcn/23/11-23-1968-00-immw-discussion-on-general-direction-of-integrated-mmwave.pptx>
* <https://mentor.ieee.org/802.11/dcn/23/11-23-2004-00-immw-technical-scope-proposal.pptx>

b) Proven similar technology via testing, modeling, simulation, etc.

IEEE 802.11 is a mature technology which has a wide variety of legacy devices and a proven track record, with several billion devices shipping each year. The increased capabilities envisioned for the MAC, baseband signal processing and RF technologies necessary to implement the proposed amendment are in line with the current progress of those technologies as demonstrated by lab testing, modeling and simulations."

**1.2.5 Economic Feasibility**

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

a) Known cost factors.

1. Support of the proposed standard will likely require a manufacturer to develop a modified radio, modem and firmware. This is similar in principle to the transition between IEEE 802.11ax and IEEE 802.11be as well as in previous iterations of IEEE Std. 802.11 enhancements. The cost factors for these transitions are well known and the data for this is well understood.
2. b) Balanced costs.
3. WLAN equipment is accepted as having balanced costs. The development of Wireless capabilities to enhance the throughput and improve latency of WLAN network deployments will not disrupt the established balance.

c) Consideration of installation costs.

Industry has recommended dual Cat6a cabling for APs for many years. The focus of this amendment is mostly on WLAN operation that requires no more than dual 10 Gbps full duplex for wired backhaul (i.e. 20 Gbps down and 20 Gbps up). Thus, for venues following this advice, the proposed amendment has no known impact on installation costs even for high end IMMW APs.

In cases with lesser backhaul capacity, for lower end APs compliant with IMMW or networks designed such that the bulk of the traffic originates or terminates at end-points cohosted with AP and non-AP STAs, the proposed amendment is not expected to impact installation costs either.

In some cases, new cabling infrastructure such as dual Cat6a is required for optimum IMMW AP performance. The cabling cost is balanced and comparable to the cost of an initial IEEE Std. 802.11 AP installation.

d) Consideration of operational costs (e.g., energy consumption).

There are billions of WLAN systems in operation around the world. WLAN systems are recognized to provide a total cost of ownership (TCO) that provides a significant operational cost benefit. This amendment is not expected to change markedly today’s operation costs and indeed a goal is to improve the TCO via enabling reduced device power consumption.

e) Other areas, as appropriate.

None.

**References:**