IEEE P802.11
Wireless LANs

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| 802.11 HEW proposed basis for PAR discussion |
| Date: 2013-11-12 |
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Abstract

This is a text basis to be used for discussion on PAR.

R0: document created.

# PAR

**P802.11**

**Submitter Email: osama53@rogers.com**
**Type of Project:** Amendment to IEEE Standard 802.11-2012
**PAR Request Date:** TBD
**PAR Approval Date:
PAR Expiration Date:
Status:** Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

**1.1 Project Number:** P802.11tbd
**1.2 Type of Document:** Standard
**1.3 Life Cycle:** Full Use

**2.1 Title:** IEEE Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications - Amendment: Enhancements for High Efficiency Wireless LANs for operation in 2.4 and 5GHz bands.

**3.1 Working Group:** Wireless LAN Working Group (C/LM/WG802.11)
**Contact Information for Working Group Chair**

**Name:** Bruce Kraemer
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**Contact Information for Working Group Vice-Chair Name:** Jon Rosdahl
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**3.2 Sponsoring Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
**Contact Information for Sponsor Chair**

**Name:** Paul Nikolich
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**Contact Information for Standards Representative Name:** James Gilb
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**4.1 Type of Ballot:** Individual
**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:**20xx-xx
**4.3 Projected Completion Date for Submittal to RevCom:**20xx-xx

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 150

**5.2.a. Scope of the complete standard: TBD**

**5.2.b. Scope of the project:**

This amendment defines modifications to both the 802.11 physical layers (PHY) and the 802.11 Medium Access Control layers (MAC) in the 2.4 and 5GHz unlicensed bands that enable a (TBD significant or X-fold) increase in (TBD average) throughput, as measured at the MAC data service access point (SAP), over all High Efficiency WLAN (HEW) stations in high density, indoor and outdoor, real-world environments, with both single and multiple management entities. Such improvements lead to significant area throughput increase.

 **5.3 Is the completion of this standard dependent upon the completion of another standard: TBD**

 **5.4 Purpose:** TBD

**5.5 Need for the Project:**TBD.
 **5.6 Stakeholders for the Standard:**TBD.

**Intellectual Property:
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No**
**6.1.b. Is the Sponsor aware of possible registration activity related to this project?:** No

**7.1 Are there other standards or projects with a similar scope?:**
TBD

**7.2 Joint Development**
**Is it the intent to develop this document jointly with another organization?:** No

**8.1 Additional Explanatory Notes (Item Number and Explanation):**

- In contrast with previously developed 802.11 standards, this amendment will use system-level metrics representative of the performance obtained by stations in real-world network conditions, as opposed to the peak theoretical throughput achieved in ideal conditions.

- Since the values of these metrics will depend on the scenario, the focus will be on the relative improvement of these metrics compared to previous 802.11 amendments (802.11n in 2.4GHz and 802.11ac in 5GHz)

- The metrics will directly correspond to the user experience in the identified scenarios, including overall throughputs, distribution of throughputs (e.g. 5th percentile of user throughput CDF), throughput under load and satisfaction of the latency/jitter/packet loss constraints of applications.

- The amendment will be evaluated with a set of real-world scenarios representative of the main expected usage models that are mainstream and expected to suffer bottlenecks in the coming years: residential, enterprise, indoor and outdoor hotspots. HEW SG has initiated the creation of a high-level simulation scenario working document (ref: XXXXrX) to model these scenarios

- These scenarios highlight three categories of objectives to improve WLAN efficiency in WLANs:

* Significantly increase airtime usage efficiency in scenarios with a high density of STAs per BSS, by enhancing the capability to handle multiple simultaneous communications in both the spatial and frequency domains, in both the UL and DL
* Significantly increase spectral reuse and manage interference between neighboring OBSS in scenarios with a high density of both STAs and BSSs, in cases where they may or may not share the same management entity
* Increase robustness to outdoor propagation characteristics and increase uplink transmission reliability

- This new amendment shall include modes of operation that ensures backward compatibility with IEEE 802.11n and 11ac devices and provide for coexistence with legacy IEEE802.11 devices in the 2.4 and 5 GHz unlicensed bands.

# Five Criteria

## Broad Market Potential

A standards project authorized by IEEE 802 LMSC shall have a broad market potential. Specifically, it shall have the potential for:

a) Broad sets of applicability.

TBD.

b) Multiple vendors and numerous users.

TBD.

c) Balanced costs (LAN versus attached stations).

TBD.

## Compatibility

IEEE 802 LMSC defines a family of standards. All standards should be in conformance : IEEE Std 802, IEEE 802.1D, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 Working Group. In order to demonstrate compatibility with this criterion, the Five Criteria statement must answer the following questions.

a)Does the PAR mandate that the standard shall comply with IEEE Std 802, IEEE Std 802.1D and IEEE Std 802.1Q?

b)If not, how will the Working Group ensure that the resulting draft standard is compliant, or if not, receives appropriate review from the IEEE 802.1 Working Group?

TBD.

## Distinct Identity

Each IEEE 802 LMSC standard shall have a distinct identity. To achieve this, each authorized project shall be:

a) Substantially different from other IEEE 802 LMSC standards.

TBD.

b) One unique solution per problem (not two solutions to a problem).

TBD.

c) Easy for the document reader to select the relevant specification.

TBD.

## Technical Feasibility

For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:

a) Demonstrated system feasibility.

TBD.

b) Proven technology, reasonable testing.

TBD.

c) Confidence in reliability.

TBD.

d) Coexistence of IEEE 802 LMSC wireless standards specifying devices for unlicensed operation.

TBD

## Economic Feasibility

For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated) for its intended applications. At a minimum, the proposed project shall show:

a) Known cost factors, reliable data.

TBD.

b) Reasonable cost for performance.

TBD.

c) Consideration of installation costs

TBD. **References:**

1. IEEE Std 802.11-2012, “… Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications”, 6 February 2012.