IEEE P802.11
Wireless LANs

|  |
| --- |
| PDT PHY Coordinated Spatial Reuse |
| Date: Feb. 10, 2025 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Genadiy Tsodik | Huawei |  |  | genadiy.tsodik@huawei.com |
| Jason Yuchen Guo | Huawei |  |  | guoyuchen@huawei.com |
| Ross Jian Yu | Huawei |  |  | ross.yujian@huawei.com |
| Alice Chen | Qualcomm |  |  | alicel@qti.qualcomm.com |
| Sameer Vermani | Qualcomm |  |  | svverman@qti.qualcomm.com |
| Insik Jung | LG |  |  | insik0618.jung@LGE.COM |
| Hank Hyeonjun Sung | WILUS |  |  | hank.sung@WILUSGROUP.COM |
| Rui Yang | InterDigital |  |  | Rui.Yang@InterDigital.com |
| Yuxin Lu | TCL |  |  | eeluyx@GMAIL.COM |
| Brian Hart | Cisco |  |  | brianh@cisco.com |
| Yue Qi | Samsung |  |  | yue.qi@IEEE.ORG |
| Insun Jang | LG |  |  | insun.jang@lge.com |
| Yaoshen Cui | TP-Link |  |  |  |
| Yusuke Tanaka | Sony |  |  | Yusuke.YT.Tanaka@sony.com |
| Liuming Lu | OPPO |  |  | luliuming@oppo.com |
| Yanchun Li | Huawei |  |  | liyanchun@huawei.com |
| Yurong Qian | ZTE |  |  | qian.yurong@ZTE.COM.CN |
| Daniel Verenzuela | Sony |  |  | Daniel.Verenzuela@sony.com |
| Yun Li | ZTE |  |  | li.yun3@zte.com.cn |
| Leif Wilhelmsson | Ericsson |  |  | leif.r.wilhelmsson@ericsson.com |
| Yongho Seok | Apple |  |  | yongho.seok@gmail.com |
| Kosuke Aio | Sony |  |  | Kosuke.Aio@sony.com |
| Minotani Jun | Panasonic |  |  | minotani.jun@jp.panasonic.com |
| Anand Jee | Samsung |  |  | anandjee7@GMAIL.COM |
| Alfred Asterjadhi | Qualcomm |  |  | aasterja@qti.qualcomm.com |
| Kaiying Lu | Mediatek |  |  | Kaiying.Lu@mediatek.com |
| Wei Dong | OPPO |  |  |  |
| Hui Che | Ruijie |  |  | chehui@RUIJIE.COM.CN |
| Lyutianyang Zhang | Huawei |  |  | zhanglyutianyang@huawei.com |
| Gaurav Patwardhan | HP |  |  | gauravpatwardhan1@gmail.com |
| Yanjun Sun | Apple |  |  | yanjun.sun@apple.com |
| Leonardo Lanante | Ofinno |  |  | llanante@ofinno.com |
| Dibakar Das | Intel |  |  | dibakar.das@intel.com |
| Rubayet Shafin | Samsung |  |  | r.shafin@samsung.com |
| Vishnu Ratnam | Samsung |  |  | vishnu.r@samsung.com |
| Lei Zhou | H3C |  |  | zhou.leiH@H3C.COM |
| Shuang Fan | Sanechips |  |  | fan.shuang@SANECHIPS.COM.CN |
| Peshal Nayak | Samsung |  |  | p.nayak@samsung.com |
| Youhan Kim | Qualcomm |  |  | youhank@qti.qualcomm.com |
| GeonHwan Kim | LG |  |  | geonhwan.kim@LGE.COM |
| Xiandong Dong | Xiaomi |  |  | dongxiandong@xiaomi.com |
| Gaurang Naik | Qualcomm |  |  | gnaik@qti.qualcomm.com |
| Liwen Chu | NXP |  |  | liwen.chu@nxp.com |
| Binita Gupta | Cisco |  |  | binitag@cisco.com |
| Jeongki Kim | Ofinno |  |  | jkim@ofinno.com |
| Sindhu Verma | Broadcom |  |  | sindhu.verma@broadcom.com |
| Shubhodeep Adhikari | Broadcom |  |  | shubhodeep.adhikari@broadcom.com |
| You-Wei Chen | Mediatek |  |  | You-Wei.Chen@mediatek.com |

 Abstract

This document contains Proposed Draft Text (PDT) for the coordinated spatial reuse feature of the TGbn (UHR, Ultra High Reliability) amendment to the 802.11 standard.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Modified based on TTT comments
* Rev 2: Minor editorial changes
* Rev 3: Modified based on TTT comments
* Rev 4: Minor typo change
* Rev 5: Editorial changes
* Rev 5: Editorial changes
* **Introduction**

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbn Draft. The abstract, revision information, introduction, explanation of the proposed changes and references sections are not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbn Draft (i.e., they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

**Explanation of the proposed changes:**

The proposed changes to the 802.11 TGbn draft within this document are based on the following motions adopted by the TGbn task group:

**Relevant passed motions:**

[Motion #217]

**The maximum number of spatial streams transmitted by each AP in CSR is 4.**

[Motion #252]

**11bn defines the following modes for co-SR transmission:**

* **Mode 1: trigger + same L-SIG contents, could be different U-SIG contents.**
	+ **For UHR+EHT, or EHT+UHR or EHT+EHT co-SR transmission.**
	+ **Provided no changes to non-UHR EHT non-AP STAs are needed.**
* **Mode 2: Tigger + same L-SIG contents + same U-SIG contents**
	+ **For UHR+UHR co-SR transmission.**
* **For all modes, the two PPDUs will start and end at the same time.**
* **UHR PPDU for co-SR transmission will be used for either mode 1 or mode 2 when UHR transmission exists.**
	+ **There exists an indication in U-SIG field to indicate the UHR PPDU is a UHR PPDU for co-SR transmission.**

# Text to be adopted begins here:

***TGbn editor: Please add the following text to the 802.11bn draft D0.2***

**38.1 Introduction**

**38.1.1 Introduction to the UHR PHY**

A UHR AP may support the following features:

* Transmit DL MU PPDU using Co-SR with one of the modes as defined in 38.3.15 (UHR Preamble)

**38.3.15 UHR preamble**

**38.3.15.1 Introduction**

***TGbn editor: Please add the following text at the end of the subclause 38.3.15.1***

For an MU PPDU using Co-SR of mode 1 as defined in 38.3.22.2.1 (Co-SR mode 1), the L-STF, L-LTF, L-SIG and RL-SIG fields shall have identical content across all participating APs and shall be transmitted by all participating APs.

For a UHR MU PPDU using Co-SR of mode 2 as defined in 38.3.22.2.2 (Co-SR mode 2), the L-STF, L-LTF, L-SIG, RL-SIG and U-SIG fields shall have identical content across all participating APs and shall be transmitted by all participating APs.

The U-SIG field of the UHR MU PPDU using Co-SR transmission of either mode 1 or mode 2 shall be as defined in 38.3.15.7.2 (U-SIG Content).

**38.3.19 Transmit requirements for PPDUs sent in response to a triggering frame**

**38.3.19.1 Introduction**

***TGbn editor: Please add the following text at the end of the subclause 38.3.19.1***

A sharing AP may solicit simultaneous Co-SR transmissions from the sharing and shared APs using a triggering frame.

All the participating APs that transmit DL MU PPDUs using Co-SR shall start and end the transmission simultaneously.

***TGbn editor: Please add the following new subclauses for Co-SR to the 802.11bn draft D0.1***

**38.3.22 Coordinated spatial reuse**

**38.3.22.1 General**

Co-SR is a technique where multiple APs transmit simultaneously DL MU PPDUs using the mechanism of transmit power control as defined in (TBD).

**38.3.22.2 Supported Co-SR Modes and PPDU types**

UHR Co-SR supports two modes of operation. Mode 1 supports transmitting of UHR MU PPDU and EHT MU PPDU from participating APs. Mode 2 supports transmitting of UHR MU PPDU from all the participating APs. The content of the UHR preamble across all the PPDUs transmitted by the participating APs shall be as described in 38.3.15 (UHR Preamble).

**38.3.22.2.1 Co-SR Mode 1**

In Co-SR mode 1, the following combinations of the PPDUs are supported:

* sharing AP transmits UHR MU PPDU and shared AP transmits EHT MU PPDU
* sharing AP transmits EHT MU PPDU and shared AP transmits UHR MU PPDU
* sharing and shared APs transmit EHT MU PPDU

In this mode the L-STF, L-LTF, L-SIG and RL-SIG fields shall have identical content across all participating AP.

**38.3.22.2.1 Co-SR Mode 2**

In Co-SR mode 2, sharing and shared APs transmit UHR MU PPDU. In this mode the L-STF, L-LTF, L-SIG, RL-SIG and U-SIG fields shall have identical content across all participating APs and shall be transmitted by all participating APs

**38.3.22.3 Number of APs, STAs and spatial streams in Co-SR transmission**

The number of participating APs in Co-SR transmission shall be 2.

The number of recipient non-AP STA for each participating AP in Co-SR transmission shall be 1.

The maximum number of spatial streams transmitted by each participating AP in Co-SR transmission is 4.