IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolution of CID39 in CC against D2.1 | | | | |
| Date: 2022-07-13 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Volker Jungnickel | Fraunhofer HHI |  |  | [volker.jungnickel@hhi.fraunhofer.de](mailto:volker.jungnickel@hhi.fraunhofer.de) |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This contribution proposes revised working text and a graph for the mixed mode operation of the LC PHY to be embedded in 32.3.5 in D3.0. It has been prepared to assist the resolution of CID 39 in doc. 11-22-0949-01.

Rev.0: initial text for discussion

**Motivation**

It is well known from the academic literature [1] that the transparent transmission of 802.11 waveforms over the light communication channel which is used in TGbb can be used to build a very efficient hybrid RF-LC link which adds the capacity in both media and adapts instantaneously to the time-varying channel state. E.g. if the LOS in the optical link is broken, the RF link can further be used, or, the additional LC channel can be used to offload data from RF.

Proposed new text and figure to be embedded after P19 L7 in TGbb D2.1

The LC PHY supports hybrid RF-LC operation underneath single STAs with multiple transmit chains and multiple receive chains connected to either RF antennas or LC optical antennas, as shown in Figure 32-X (Hybrid RF-LC operation). Hybrid RF-LC operation shall use the same channel mapping onto LC IF channels as defined in 32.3.4 (Channel numbering) on the subset of LC optical antennas and use the subset of RF antennas on the corresponding 5 GHz or 6 GHz RF channels. Hybrid operation may use different numbers of RF antennas and LC optical antennas at both STA.



**Figure 32-X—Hybrid RF-LC operation**

[1] A. Zubow, et al., "Hy-Fi: Aggregation of LiFi and WiFi using MIMO in IEEE 802.11," in 2021 IEEE 22nd International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), Pisa, Italy, 2021 pp. 100-108.