**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | Text proposal for OWC with Relays | |
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| Abstract | [Proposal for OWC Relay Text] | |
| Purpose | [Inform TG13 about most recent work.] | |
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|  | The group received below comment regarding relaying.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **page (pdf)** | **Page (text)** | **Sub-clause** | **Line #** | **Comment** | | 35 | 18 | 4.5.2 | 3 | The descriptions for d) and e) with regards to relay node is missing. | | |

We suggest below text as resolution.

4.5.2.4 Data transfer from a device to a coordinator with relaying

In a beacon-enabled OWPAN, each device listens for the beacon before transmitting its data frame. When the beacon is found, the device node synchronizes to the superframe structure. In half duplex (HD) relaying, relay node also listens for the beacon and synchronizes to the superframe structure. At the appropriate time, the device transmits its data frame, using slotted random access, to the coordinator and the relay node. Relay node buffers the received frames from the device and transmits them to the coordinator at its time. In full duplex (FD) relaying, the relay simultaneously receives and transmits the frames from the device to the coordinator. The coordinator is allowed to acknowledge the successful reception of the data by transmitting an optional acknowledgment frame that is to be received by both the relay node and the device.

In a non beacon-enabled OWPAN, the device simply transmits its data frame, using unslotted random access, to the coordinator. The frame is also received by the relay node. In half duplex (HD) relaying, relay node buffers the received data frames from the device and transmits them to the coordinator using unslotted random access. In full duplex (FD) relaying, the relay simultaneously receives and transmits from the device to the coordinator. The coordinator acknowledges the successful reception of the data by transmitting an optional acknowledgment frame. The transaction is now complete.

4.5.2.5 Data transfer from a coordinator to a device with relaying

In a beacon-enabled OWPAN, when the coordinator wishes to transfer data to a device, it indicates in the beacon that the data message is pending. The device periodically listens to the beacon and, if a message is pending, transmits a MAC command requesting the data, using slotted random access. In half duplex (HD) relaying, relay also receives the request from the device and is informed. The coordinator acknowledges the successful reception of the data request by transmitting an acknowledgment frame. The relay also receives the acknowledgement frame. The pending data frame is then sent using slotted random access. Relay node buffers the received frames from the coordinator and transmits them to the device at its time. In full duplex (FD) relaying, the relay simultaneously receives and transmits the frames from the coordinator to a device. The device is allowed to acknowledge the successful reception of the data by transmitting an optional acknowledgment frame. The transaction is now complete. Upon successful completion of the data transaction, the message is removed from the list of pending messages in the beacon.

When a coordinator wishes to transfer data to a device in a non beacon-enabled OWPAN, it stores the data and waits for the appropriate device to make contact and request the data. A device is allowed to make contact by transmitting a MAC command requesting the data, using unslotted random access, to its coordinator. In half duplex (HD) relaying, relay also receives the request from the device and is informed. The coordinator acknowledges the successful reception of the data request by transmitting an acknowledgment frame. If a data frame is pending, the coordinator transmits the data frame, using unslotted random access to the device. Relay node buffers the received frames from the coordinator and transmits them to the device at its time. If a data frame is not pending, the coordinator indicates this fact either in the acknowledgment frame following the data request or in a data frame with a zero-length payload as described in 5.1.9.3. If requested, the device acknowledges the successful reception of the data frame by transmitting an acknowledgment frame. In full duplex (FD) relaying, the relay simultaneously receives and transmits the frames from the coordinator to a device.