**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **D2 Comments Resolution Based PHY VI Super Frame Structure, Dimming, and PPDU Format Specification Revision** | |
| Date Submitted | August, 2017 | |
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| Re: | Draft D3 Comment Resolution based PHY VI Super Frame Structure, Dimming and PPDU Format Specification Revision | |
| Abstract | Details of Resolutions regarding to the submitted Comments on D3 are suggested for PHY VI Super Frame Structure, Dimming and PPDU Format Specification Revision. The PHY VI is designed to operate on the application services like LED ID, LiFi/CamCom, Digital Signage with Advertisement Information etc. | |
| Purpose | Draft D3 Comments Resolutions and Editorial Revision. | |
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# **1. PHY VI SUPERFRAME STRUCTURE**

# **VTASC Superframe Structure**

# The VTASC display transmitter schemes use unslotted ALOHA; that is, when the VTASC display transmitter has a packet to send, it just sends it. This support with beacon and without beacon support and the transmitter does not do a listen before talk channel activity check.

# **SS2DC Superframe Structure**

The SS2DC display transmitter schemes use unslotted ALOHA; that is, that is, when the SS2DC display transmitter has a packet to send, it just sends it. This support with beacon and without beacon support and the transmitter does not do a listen before talk channel activity check.

# **IDE Superframe Structure**

# The IDE display transmitter schemes use unslotted ALOHA; that is, when the IDE display transmitter has a packet to send, it just sends it. This support with beacon and without beacon support and the transmitter does not do a listen before talk channel activity check.

# **2. PHY VI DIMMING**

# **IDE Dimming**

The display to camera communication dimming control is depending on the mode of invisible embedding data on display system, rate at which data is repeatedly coding on video frame, and rate at which data refresh on display. The IDE based display transmitter for optical camera communication uses the invisibly embedding the data on video display frame by overlaying patterns on displays visual area using alpha blending and watermarking. Dimming is supported by controlling visual scene high frequency background color.

# **VTASC Dimming**

The display to camera communication dimming control is depending on the mode of visible embedding data on display system, rate at which data is repeatedly coding on video frame, and rate at which data refresh on display. The VTASC based display Transmitter for optical camera communication uses the visibly embedding the data on Video display frame by overlaying patterns on displays visual area at optical clock rate from 1Hz to 30Hz that is perceptible by human eyes, dimming is not supported.

# **SS2DC Dimming**

The display to camera communication dimming control is depending on the mode of visible embedding data on display system, rate at which data is repeatedly coding on video frame, and rate at which data refresh on display. The SS2DCbased Display Transmitter for optical camera communication uses the visibly embedding the data on Video display frame by overlaying patterns on displays visual area at optical clock rate from 1Hz to 30Hz that is perceptible by human eyes, dimming is not supported.

# **3. PHY VI PPDU Format**

**8.6.1.4.1 IDE Preamble Field**

The SHR is used by the transceiver to obtain optical clock synchronization with an incoming message is called Preamble. The standard defines one fast locking pattern (FLP) followed by choice of four topology dependent patterns (TDPs) for the purposes of distinguishing different PHY topologies is shown in Table 86.

**8.6.1.4.4 SS2DC Preamble Field**

The SS2DC preamble field follows the Invisible data embedding preamble field mode. Refer 8.6.1.4.1 for more details.

**8.6.1.4.5 VTASC Preamble Field**

The VTASC preamble field follows the Invisible data embedding preamble field mode. Refer 8.6.1.4.1 for more details.

**8.6.2.4.1 IDE Header Field**

The IDE Header Field is described as shown in Table 97 and shall be transmitted with data to identify the PHY Mode, Data rate, and PSDU length to identify the transmission specification.

**Table 97 – PHY Header**

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Burst Mode Field: The burst mode bit indicates that the next frame following the current frame is part of the burst mode. The Burst Mode bit shall be set TRUE if the burst mode is being used otherwise, the Burst Mode bit shall be set FALSE.

Channel Number Field: The channel number field for PHY shall be the band plan ID of the lowest wavelength. Refer to 9.3.1 for more detailed information.

MCS ID Field: The modulation and coding scheme (MCS) ID shall be indicated in the PHY header based on Table 83.

PSDU Field: The PSDU length field specifies the total number of octets contained in the PSDU.

**8.6.2.4.4 SS2DC Header Field**

The SS2DC header field follows the Invisible data embedding header field mode. Refer 8.6.2.4.1 for more details.

**8.6.2.4.5 VTASC Header Field**

The VTASC header field follows the Invisible data embedding preamble field mode. Refer 8.6.2.4.1 for more details.

**8.6.5.4.1 IDE PSDU Field**

The IDE PSDU field has a variable length and carries the arbitrary number of payload bits based on the block selection. The structure of the PSDU field is as shown in Figure 153.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Block 1 | Block 2 | … | Block N-1 | Block N |
| Data Bits | Symbol 1 | Symbol 2 | … | Symbol N-1 | Symbol N |

**Figure 153 – IDE PSDU Field Structure**

Where the block is MxN pixels and the bits per symbol is as per modulation mode description in clause 15 PHY VI Specifications.

**8.6.5.4.4 SS2DC PSDU Field**

The SS2DC PSDU field follows the Invisible data embedding PSDU field mode. Refer 8.6.5.4.1 for more details.

**8.6.5.4.5 VTASC PSDU Field**

The VTASC PSDU field follows the Invisible data embedding PSDU field mode. Refer 8.6.5.4.1 for more details.