**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **SNUST - Invisible Data Embedding Super Frame Structure and PHY Dimming Specification Revision** | |
| Date Submitted | January, 2017 | |
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| Re: | Draft D1 Comment Resolution based Invisible Data Embedding Super Frame Structure and PHY Dimming Specification Revision | |
| Abstract | Details of Resolutions regarding to the submitted Comments on D1 are suggested for Invisible Data Embedding Super Frame Structure and PHY Dimming Specification Revision. The Invisible Data Embedding is designed to operate on the application services like LED ID, Digital Signage with Advertisement Information. | |
| Purpose | Draft D1 Comments Resolutions and Editorial Revision. | |
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**1. PHY DIMMING FORMART FOR INVISIBLE DATA EMBEDDING**

# **Invisible Data Embedding Dimming**

The Display to camera communication dimming control is depending on the mode of embedding data (Visible or Invisible) on display system, rate at which data is repeatedly coding on video frame, and rate at which data refresh on display. The Invisible Data Embedding based Display Light Pattern based Transmitter for OCC uses the invisibly embedding the data on video display frame by overlaying patterns on displays visual area using Alpha Blending and Watermarking.

# **2. SUPERFRAME STRUCTURE FOR INVISIBLE DATA EMBEDDING**

# **5.1.2.9 Invisible Data Embedding Superframe Structure**

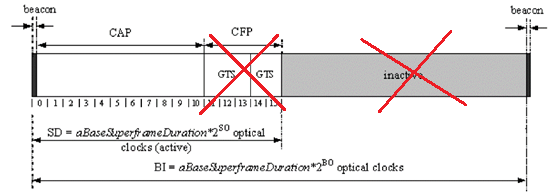
The Invisible Data Embedded Display TX Schemes use unslotted ALOHA; that is, when the Invisible Data Embedded Display transmitter has a packet to send, it just sends it. This support with beacon and without beacon support and the transmitter does not do a listen before talk channel activity check.

The super frame structure for Invisible Data Embedding PHY without beacon is shown in Figure 5-1.



**Figure 5-2 – Invisible Data Embedding PHY** **Superframe Structure without Beacon**

The super frame structure for Invisible Data Embedding PHY with beacon is shown in Figure 5-2.

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**Figure 5-2 – Invisible Data Embedding PHY** **Superframe Structure with Beacon**