**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 - VTASC Related Draft D1 Comments Resolution on Super Frame Structure and PHY Dimming**  |
| Date Submitted | November, 2016 |
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| Re: | Draft D1 Comment Resolution for VTASC |
| Abstract | Details of Resolutions regarding to the submitted Comments on D1 are suggested for VTASC Super Frame Structure and PHY Dimming. The VTASC method is designed to operate on the application services like LED ID, Digital Signage with Advertisement Information etc. |
| Purpose | Draft D1 Comments Resolutions and Editorial Revision. |
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# **1. PHY DIMMING FORMART FOR VTASC**

# **VTASC 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 Display Light Pattern based Transmitter with VTASC for OCC uses the visibly embedding the data on Video display frame. The function description of proposed PHY model is given in Figure 3-1.

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**Figure 3-1 – Display Transmitter Functional Block Diagram**

The Smart Device Camera Capture Visual Frame from Screen is shown Figure 3-2.

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**Figure 3-2 – Receiver Functional Block Diagram**

The ROI of Screen Visual Area is extracted from the captured visual frame and then apply the VTASC detector based on mapping scheme applied on the transmitter. The data recovered by applying SS on the data decoded.

The PHY VI for Display Light Pattern based Transmitter with VTASC designed with built-in Scalable bitrate Controller by controlling the Video display refresh rate or by frames in which data to be encoded repeatedly.

# **2. SUPERFRAME STRUCTURE FOR VTASC**

# **VTASC Superframe Structure**

The Display Light Pattern Based Transmitter with VTASC uses the unslotted ALOHA; that is, when the Display Light Pattern Based Transmitter with VTASC uses 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 PHY without beacon is shown in Figure 6-1.



**Figure 6-1 – PHY Superframe Structure without Beacon**

The super frame structure for PHY with beacon is shown in Figure 6-2.

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**Figure 6-2 – PHY Superframe Structure with Beacon**