**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 – Draft D1 Comments Resolution on Definitions, Acronyms, and Abbreviations**  |
| Date Submitted | November, 2016 |
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| Re: | Draft D1 Comment Resolution for Definitions, Acronyms, and Abbreviations |
| Abstract | Details of Definitions, Acronyms, and Abbreviations for SNUST’s proposal offset-VPWM, VTASC, Sequential Scalable 2D Code, Invisible Data Embedding related support documentation. The proposed method is designed to operate on the application services like LED ID using Color Code or VTSC or QR Code and etc, LBS, Emergency EXIT Signage, LED-IT and Digital Signage with Advertisement Information etc. |
| Purpose | D1 Comments Resolutions and Editorial Revision. |
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# 3.1 Definitions (Continued)

# Add following list in sub-clause “3.1 Definitions”

**3.1 Definitions**

**ISC/LR-PD:** A PHY and MAC layer for short-range optical wireless communications using image sensor or low date photo detector receiver

**Spread Spectrum:** Methods by which a signal distributed over a wide range frequencies

**SS Code:** Pseudo-random sequence used to spread the signal

**Gold Sequence:** SS Codes are generated by combining two PN sequences and modulo-2 adding, or XORing, the output together with specific cross-correlation properties, to allow as many users as possible, with minimum interference.

**Orthogonal Spreading Codes:** An SS Codes generated with Zero Cross Correlation

**Blending:** Process of stitching two different images as a single image

**Watermarking:** Process of hiding digital information into a digital image

**ROI:** Selected subset of an image region

**Sequential Scalable 2D Code:** A modulation scheme for visible-light communication involving multiple 2D codes sequentially assigned based on data in a 2-Dementional order with variable size, which keeps the average emitted optical color and the total optical power constant during communication as per visible light communication limits.

**Sequential Scalable QR Code:** A modulation scheme for visible-light communication involving multiple QR codes sequentially assigned based on data in a 2-Dementional order with variable size, which keeps the average emitted optical color and the total optical power constant during communication as per visible light communication limits.

**Sequential Scalable Color Code:** A modulation scheme for visible-light communication involving multiple Color codes sequentially assigned based on data in a 2-Dementional order with variable size, which keeps the average emitted optical color and the total optical power constant during communication as per visible light communication limits.

**Angle Free Communication:** The Image Sensor communication with difference angle on 2-Dimentional / Screen / Display source

**Scalable Bitrate Controller:** The Image Sensor communication with difference angle on 2-Dimentional / Screen / Display source

**Distance Adaptive Data Rate Controller:** The Image Sensor communication with difference angle on 2-Dimentional / Screen / Display source

**Variable Transparent Amplitude Shape Color (VTASC):** A modulation scheme for visible-light communication involving single / multiple light sources with variable transparent level, size, shape model, and color, which keeps the average emitted optical color and the total optical power constant during communication as per visible light communication limits.

**Spread Spectrum coded Variable Transparent Amplitude Shape Color (SS-VTASC):** A modulation scheme for visible-light communication involving data spread with SS Code and then coded using single / multiple light sources with variable transparent level, size, shape model, and color , which keeps the average emitted optical color and the total optical power constant during communication as per visible light communication limits.

**Offset Variable Pulse Width Modulation (offset-VPWM):** A modulation scheme for visible-light communication that allows time variant pulse-width control on symbol for light dimming support.

**Invisible Data Embedding (IDE):** A modulation scheme for visible-light communication where data bits are encoded on visual display content imperceptibly on visual scene.

**M-ary Phase Shift Keying (M-PSK):** A modulation scheme for visible-light communication where data bits select one of M phase shifted versions of the carrier to transmit the data.

**M-ary Frequency Shift Keying (M-FSK):** A modulation scheme for visible-light communication where data bits select one of M frequency shifted versions of the carrier to transmit the data.

**Hybrid M-ary Phase Shift Keying - Frequency Shift Keying (Hybrid-M-PSK-FSK):** A modulation scheme for visible-light communication where data bits select any one combination of M frequency shifted and phase shifted versions of the carrier to transmit the data.

**Spread Spectrum coded M-ary Phase Shift Keying (SS-M-PSK):** A modulation scheme for visible-light communication where data bits are coded with Spread Code and then spread coded data bits select one of M phase shifted versions of the carrier to transmit the data.

**Spread Spectrum coded M-ary Frequency Shift Keying (SS-M-FSK):** A modulation scheme for visible-light communication where data bits are coded with Spread Code and then spread coded data bits select one of M frequency shifted versions of the carrier to transmit the data.

**Hybrid Spread Spectrum coded M-ary Phase Shift Keying - Frequency Shift Keying (Hybrid-SS-M-PSK-FSK):** A modulation scheme for visible-light communication where data bits are coded with Spread Code and then spread coded data bits select any one combination of M frequency shifted and phase shifted versions of the carrier to transmit the data.

**2D-CODER:** A modulation scheme for visible-light communication where data bits are coded with 2D (Two-Dimensional) code in a graphical image that stores information both horizontally and vertically.

**SS-2D-CODER:** A modulation scheme for visible-light communication where data bits are coded with Spread Code and then spread coded data bits are coded with 2D (Two-Dimensional) code in a graphical image that stores information both horizontally and vertically.

# 3.2 Acronyms and abbreviations (Continued)

# Add following list in sub-clause “3.2 Acronyms and abbreviations”

**3.2 Acronyms and Abbreviations**

ISC Image Sensor Communication

LR-PD Low Rate – Photo Detector

SS Code Spread Spectrum Code

VTASC Variable Transparent Amplitude-Shape-Color

SS-VTASC Spread Spectrum-Variable Transparent Amplitude-Shape-Color

Offset-VPWM Offset Variable Pulse Width Modulation

M-PSK M-ary Phase-Shift Keying

SS-M-PSK Spread Spectrum M-ary or Multiple Phase-Shift Keying

M-FSK M-ary Frequency-Shift Keying

SS-M-FSK Spread Spectrum M-ary or Multiple Frequency-Shift Keying

Hybrid-M-PSK-FSK Spread Spectrum M-ary or Multiple Phase-Shift Keying-Frequency-Shift Keying

SS-HYBRID Spread Spectrum-HYBRID

2D-CODER 2 Dimensional Coder

SS-2D-CODER Spread Spectrum-2 Dimensional Coder

ROI Region of Interest