**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **LB D0 Comment Resolution based PHY Modes TX and RX Profile Specification** | |
| Date Submitted | January 2017 | |
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| Re: | LB1 D0 Comment Resolution supportive documents for PHY Modes TX and RX Profile Specification Revision | |
| Abstract | Details of Resolutions regarding to the submitted Comments on LB D0 are suggested for PHY Modes TX and RX Profile based on Modulation Schemes. The PHY Modes TX and RX Profile Revision based on Modulation Schemes is provides the specification to design of LED ID / OCC based application services like IoT/IoL, LED ID, Digital Signage with Advertisement Information, LBS, Emergency EXIT Signage, etc. | |
| Purpose | LB D0 Comments Resolutions and Editorial Revision. | |
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# Annex H

# (Informative)

# PHY Modes TX and RX Profile

The PHY Mode TX profile defines the PHY mode specific modulation schemes based on the transmitter source classification and the RX profile defines the types of receivers supported based on the modes and modulation schemes.

**H.1 PHY Modes TX Profiles:**

The transmitter sources are classified into four different groups based on modulation schemes proposed on this standard. These source classifications are:

1. Discrete / Single Source
2. 2-Dimentsional / Multi-Source
3. Surface Source
4. Display / Screen Source

Each of these sources can be described as following.

**Discrete / Single Source:** in this type of devices, light rays emanated in all directions, originating from a single point in space. This light source can be design with a single LED or multiple LEDs but light ray emanation is consider as a single point space. This type of light source includes directional lights, point lights and spotlights.

**2-Dimentsional / Multi-Source:** In this type of devices, light rays emanated in all directions, originating from multiple points and the light rays are parallel to each other in space. This light can be design with multiple source points with each source point emanation considered as separate single source emanation.

**Surface Source:** The surface light source is a type of device in which a primary light source is disposed at the side of a light guide plate and one surface of the light guide plate serves as a luminous surface.

**Display / Screen Source:** This type of devices utilizes visual scene output surface adopting image projection technologies that show text and often-graphic images. This type includes video display terminals (VDTs), liquid crystal displays (LCDs), light-emitting diodes, gas plasmas, tablet screens, surface screens, smart phone screens, smart watch screens, and other image projection technologies.

Table H.1 shows the type of TX mainly supported by each PHY mode.

Table H.1 – ISC/L-PD PHY Modes TX Profile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Discrete (or single) source | 2-Dimensional / Multi-Source | Surface source | Display / Screen Source |
| PHY I | | x |  | x |  |
| PHY II | | x |  | x |  |
| PHY III | | x |  | x |  |
| PHY IV | UFSOOK | x |  | x |  |
| Twinkle VPPM | x |  | x |  |
| S2-PSK | x |  |  |  |
| S8-PSK | x |  |  |  |
| HS-PSK | x |  |  |  |
| Offset-VPWM | x | x | x |  |
| PHY V | NS-FSK |  |  | x |  |
| C-OOK |  |  | x |  |
| CM-FSK |  |  | x |  |
| Packet PWM/PPM |  |  | x |  |
| PHY VI | A-QL |  |  |  | x |
| HA-QL |  |  |  | x |
| VTASC | x | x | x | x |
| SS2DC | x | x |  | x |
| IDE-MPFSK-BLEND |  | x |  | x |
| IDE-2DBIN-WM |  | x |  | x |

**H.2 PHY Modes RX Profile**

The PHY Modes RX Profile gives types of decoders used for particular PHY modes. This standard includes two types of RX decoders, which are photodiode and image sensor. The photodiodes categorized into monochrome and color photodiodes. In addition, the image sensors categorized into global shutter, rolling shutter, and high-speed / ROI type cameras.

Table H.2 shows what sorts of Rx each PHY mode mainly supports. Additional details about each RX described in Annex I.

Table H.2 – ISC/L-PD PHY Modes RX Profile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Photodiode | Image sensor | | |
| Global shutter | Rolling shutter | High-speed / ROI |
| PHY I | | x |  |  |  |
| PHY II | | x |  |  |  |
| PHY III | | x |  |  |  |
| PHY IV | UFSOOK | x | x | x | x |
| Twinkle VPPM | x | x | x | x |
| S2-PSK | x | x | x | x |
| S8-PSK | x | x | x | x |
| HS-PSK | x | x | x | x |
| Offset-VPWM | x | x | x | x |
| PHY V | RS-FSK | x |  | x | x |
| C-OOK | x |  | x | x |
| CM-FSK | x |  | x |  |
| MPM | x |  | x | x |
| PHY VI | A-QL |  | x | x | x |
| HA-QL |  | x | x | x |
| VTASC |  | x | x | x |
| SS2DC |  | x | x | x |
| IDE |  | x | x | x |