**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | **D4 Comments Resolution Based PHY PIB Attributes** |
| Date Submitted | September, 2017 |
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| Re: | PHY PIB attributes specification revision to Use of over-the-air PHY frame configuration is forbidden for PHY types IV, V and VI |
| Abstract | Details of Resolutions regarding to the submitted Comments on D4 are suggested for PHY PIB Attributes Specification Revision to use of over-the-air PHY frame configuration is forbidden for PHY types IV, V and VI. The proposed method is designed to operate on the application services like LED ID using Color/QR Code, etc, LBS, Emergency EXIT Signage, LED-IT and Digital Signage with Advertisement Information etc. |
| Purpose | D4 Comments Resolutions and Editorial Revision. |
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**I. PHY TYPE IV PHY PIB Attributes**

# **1. PHY PIB Attributes for Offset-VPWM**

The PHY PIB attributes for Offset-VPWM is presented in the Table 179 —PHY PIB attributes (continued for Offset-VPWM).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute** | **Identifier** | **Type** | **Range** | **Description** |
| ~~phySMFlashLIGHTApplicationSpecificMode~~ | ~~0x10~~ | ~~Unsigned~~ | ~~0~255~~ | ~~This attribute specifies the application specific PHY mode.~~~~0 : Normal Data (Media Content, Information Content based on the Application used)~~~~1 : ID Data~~ ~~2 : Authentication Data~~ |
| phyOffsetVPWMStdPERIOD | 0x11 | Integer | 0-65535 | This attribute specify the standard PWM period used to transmit the data (in micro secs) |
| phyOffsetVPWMOffsetPERIOD | 0x12 | Integer | 0-65535 | This attribute specify the Variable offset PWM period used to transmit the data (in micro secs) |

Table 179 — PHY PIB attributes (continued for OffsetVPWM)

**II. PHY TYPE VI PHY PIB Attributes**

# **1. PHY PIB Attributes for VTASC**

The PHY PIB attributes for VATSC is presented in the Table 179 —PHY PIB attributes (continued for VTASC).

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| **PHY PIB Table 188 Additions** |
| **Attribute** | **Identifier** | **Type** | **Range** | **Description** |
| phyVTASCTxMode | 0x10 | Unsigned | 0-255 | This attribute indicates the VTASC PHY transmission modes.0 : VTASC Mode1 : SS VTASC Mode |
| ~~phyVTASCApplicationSpecificMode~~ | ~~0x10~~ | ~~Unsigned~~ | ~~0~255~~ | ~~This attribute specifies the application specific PHY mode.~~~~0 : Normal Data (Media Content, Information Content based on the Application used for)~~~~1 : LED ID Data~~ ~~2 : Authentication Data~~ |
| phyVTASCTxCameraEnable | 0x92 | Unsigned | 0-255 | This attribute indicates the Transmitter is Enabled with Camera or not for Interactive Receiver distance specific data transfer control.0 : Camera not connected1 : Camera connected |
| phyVTASCRxDistance | 0x93 | Unsigned | 0-255 | This attribute notify the Receiver distance from Transmitter |
| PhyVTASCFreq | 0x11 | Unsigned | 0~255 | This attribute specify the frame rate of VTASC sequence Transmission |
| phyVTASCCodeArea | 0x12 | Unsigned | 0~255 | This attribute specify the coded area of the IDE0 : Full Screen1 : Partial Screen2~255 : Reserved |
| phyVTASCCodeLocation | 0x13 | Unsigned | 0~255 | This attribute specify the Coded Location of the VTASC0 : Center1 : Bottom Right2 : Bottom Left3 : Top Right4 : Top Left5~255 : Reserved |
| phyVTASCTLevel | 0x14 | Unsigned | 0~255 | This attribute specify the transparency Level of the VTASC0 : One Level (100 % transparency)1 : Two Level (100 % & 50 % transparency)2~255 : Reserved |
| phyVTASCALevel | 0x14 | Unsigned | 0~255 | This attribute specify the block size of the VTASC0 : One Level 1 : Two Level 2 : Three Level 3 : Four Level 4~255 : Reserved |
| phyVTASCSLevel | 0x14 | Unsigned | 0~255 | This attribute specify the number of shapes used in the VTASC0 : One Shape 1 : Two Shapes 2: Three Shapes 3 : Four Shapes 4~255 : Reserved |
| phyVTASCCLevel | 0x14 | Unsigned | 0~255 | This attribute specify the number of colors used in the VTASC0 : One color 1 : Two colors2 : Three colors3 : Four colors4 : Five colors5 : Six colors6 : Seven colors7 : Eight colors4~255 : Reserved |
| phyVTASCSModel | 0x17 | Unsigned | 0~255 | This attribute specify the block shape Type used in the VTASC0 : Square1 : Circle3 : hexagon4 : star5~65535 : Reserved |
| phyVTASCAHSize | 0x15 | Unsigned | 0~255 | This attribute specify the no of Horizontal Blocks in the VTASC |
| phyVTASCAVSize | 0x16 | Unsigned | 0~255 | This attribute specify the no of Vertical Blocks in the VTASC |
| phyVTASCScalRateCtrl | 0x18 | Unsigned | 0~255 | This attribute specify the Scalable Rate control mode0 : No Scalable Bitrate control1 : Multirate Scalable Controller2: Distance Adaptive Scalable Controller3: Distance adaptive with multirate scalable controller |
| phyVTACScalRegion1OpticalClockRate | 0x19 | Unsigned | 0~255 | This attribute specify the scalable optical clock rate of VTASC region 1 |
| phyVTACScalRegion2OpticalClockRate | 0x1A | Unsigned | 0~255 | This attribute specify the scalable optical clock rate of VTASC region 2 |
| phyVTACScalRegion3OpticalClockRate | 0x1B | Unsigned | 0~255 | This attribute specify the scalable optical clock rate of VTASC region 3 |
| phyVTACScalRegion4OpticalClockRate | 0x1C | Unsigned | 0~255 | This attribute specify the scalable optical clock rate of VTASC region4 |
| phyVTACScalRegion1DistanceRange | 0x19 | Unsigned | 0~255 | This attribute specify the distance adapted on VTASC region 1 |
| phyVTACScalRegion2DistanceRange | 0x1A | Unsigned | 0~255 | This attribute specify the distance adapted on VTASC region 2 |
| phyVTACScalRegion3DistanceRange | 0x1B | Unsigned | 0~255 | This attribute specify the distance adapted on VTASC region 3 |
| phyVTACScalRegion4DistanceRange | 0x1C | Unsigned | 0~255 | This attribute specify the distance adapted on VTASC region 4 |
| PhySSCode1Len | 0x1D | Unsigned | 0~255 | This attribute specify the spreading code length for SS Code 1 |
| PhySSCode2Len | 0x1E | Unsigned | 0~255 | This attribute specify the spreading code length for SS Code 2 |
| PhySSCode3Len | 0x1F | Unsigned | 0~255 | This attribute specify the spreading code length for SS Code 3 |
| PhySSCode4Len | 0x20 | Unsigned | 0~255 | This attribute specify the spreading code length for SS Code 4 |
| PhySSCode1FP00 | 0x21 | Integer | 0~65535 | This attribute specify the SS Code 1 pair code 0  |
| PhySSCode1FP01 | 0x22 | Integer | 0~65535 | This attribute specify the SS Code 1 pair code 1 |
| PhySSCode2FP00 | 0x23 | Integer | 0~65535 | This attribute specify the SS Code 2 pair code 0  |
| PhySSCode2FP01 | 0x24 | Integer | 0~65535 | This attribute specify the SS Code 2 pair code 1 |
| PhySSCode3FP00 | 0x25 | Integer | 0~65535 | This attribute specify the SS Code 3 pair code 0  |
| PhySSCode3FP01 | 0x26 | Integer | 0~65535 | This attribute specify the SS Code 3 pair code 1 |
| PhySSCode4FP00 | 0x27 | Integer | 0~65535 | This attribute specify the SS Code 4 pair code 0  |
| PhySSCode4FP01 | 0x28 | Integer | 0~65535 | This attribute specify the SS Code 4 pair code 1 |
| phyVTASCCValue | 0x29 | Unsigned | 0~255 | This attribute specify the no of Colors used in the VTASC |
| phyVTASCTxHSize | 0x3A | Integer | 0-65535 | This attribute specify the no of Horizontal Pixel in the 2D Display Transmitter |
| phyVTASCTxVSize | 0x3B | Integer | 0-65535 | This attribute specify the no of Vertical Pixel in the 2D Display Transmitter |

Table 179 — PHY PIB attributes (continued for VTASC)

# **2. PHY PIB Attributes for SS2DC**

The PHY PIB attributes for SS2DC is presented in the Table 179 —PHY PIB attributes (continued for SS2DC).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute** | **Identifier** | **Type** | **Range** | **Description** |
| phySS2DCTxMode | 0x10 | Unsigned | 0-255 | This attribute indicates the Sequential Scalable 2D Code PHY transmission modes.0 : SS2DC Mode1 : SS SS2DC Mode |
| ~~PhySS2DCApplicationSpecificMode~~ | ~~0x10~~ | ~~Unsigned~~ | ~~0~255~~ | ~~This attribute specifies the application specific PHY mode.~~~~0 : Normal Data (Media Content, Information Content based on the Application used for)~~~~1 : ID Data~~ ~~2 : Authentication Data~~ |
| phySS2DCTxCamerEnable | 0xA2 | Unsigned | 0-255 | This attribute indicates the Transmitter is Enabled with Camera or not for Interactive Receiver distance specific data transfer control.0 : Camera not connected1 : Camera connected |
| phySS2DCRxDistance | 0xA3 | Unsigned | 0-255 | This attribute notify the Receiver distance from Transmitter |
| PhySS2DCCodeArea | 0x11 | Unsigned | 0~255 | This attribute specify the coded area of the IDE0 : Full Screen1 : Partial Screen2~255 : Reserved |
| PhySS2DCCodeLocation | 0x12 | Unsigned | 0~255 | This attribute specify the Coded Location of the SS2DC0 : Center1 : Bottom Right2 : Bottom Left3 : Top Right4 : Top Left5~255 : Reserved |
| phySS2DCTHSize | 0x13 | Unsigned | 0~255 | This attribute specify the no of horizontal blocks in the SS2DC |
| phySS2DCTVSize | 0x14 | Unsigned | 0~255 | This attribute specify the no of vertical blocks in the SS2DC |
| PhySS2DCCODEHSIZE | 0x15 | Unsigned | 0~255 | This attribute specify the horizontal size of the 2D code in the SS2DC |
| PhySS2DCCODEVSIZE | 0x16 | Unsigned | 0~255 | This attribute specify the vertical size of the 2D code in the SS2DC |
| phySS2DCTFrequency | 0x17 | Unsigned | 0~255 | This attribute specify the frame rate of SS2DC sequence Transmission  |
| PhySS2DCTxHSize | 0x18 | Integer | 0-65535 | This attribute specify the no of Horizontal Pixel in the 2D Display Transmitter |
| PhySS2DCTxVSize | 0x19 | Integer | 0-65535 | This attribute specify the no of Vertical Pixel in the 2D Display Transmitter |

Table 179 — PHY PIB attributes (continued for SS2DC)

# **3. PHY PIB Attributes for IDE**

The PHY PIB attributes for IDE is presented in the Table 179 —PHY PIB attributes (continued for IDE).

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| **PHY PIB Table 100 Additions** |
| **Attribute** | **Identifier** | **Type** | **Range** | **Description** |
| phyIDETxMode | 0x10 | Unsigned | 0-255 | This attribute indicates the Invisible Data Embedding transmission modes.0 : IDE-BLENDING1 : IDE-WATERMARK 2 : SS IDE-BLEND3 : SS IDE-WATERMARK  |
| ~~phyIDEApplicationSpecificMode~~ | ~~0x11~~ | ~~Unsigned~~ | ~~0~255~~ | ~~This attribute specifies the application specific PHY mode.~~~~0 : Normal Data (Media Content, Information Content based on the Application used for)~~~~1 : ID Data~~ ~~2 : Authentication Data~~~~3~255: Reserved~~ |
| phyIDETxCamerEnable | 0x12 | Unsigned | 0-255 | This attribute indicates the Transmitter is Enabled with Camera or not for Interactive Receiver distance specific data transfer control.0 : Camera not connected1 : Camera connected |
| phyIDERxDistance | 0x13 | Unsigned | 0-255 | This attribute notify the Receiver distance from Transmitter |
| phyIDEModulation | 0x14 | Unsigned | 0~255 | This attribute specifies the modulation.0 : M-FSK1 : HYBRID-MPFSK 2 : 2D Binary Code3~255: Reserved |
| phyIDENoFrequency | 0x15 | Unsigned | 0~255 | This attribute specifies the number of frequency used in M-FSK and Hybrid-MPFSK |
| phyIDENoPhase | 0x16 | Unsigned | 0~255 | This attribute specifies the number of phase used in Hybrid-MPFSK |
| phyIDEFreqBase | 0x15 | Unsigned | 0~255 | This attribute specifies the base frequency used in M-FSK and Hybrid-MPFSK |
| phyIDEFreqSeparation | 0x16 | Unsigned | 0~255 | This attribute specifies the frequency difference used in M-FSK and Hybrid-MPFSK |
| phyIDEPhaseBase | 0x15 | Unsigned | 0~255 | This attribute specifies the base Phase used in Hybrid-MPFSK |
| phyIDEPhaseSeparation | 0x16 | Unsigned | 0~255 | This attribute specifies the Phase difference used in Hybrid-MPFSK |
| phyIDECodedArea | 0x17 | Unsigned | 0~255 | This attribute specify the coded area of the IDE0 : Full Screen1 : Partial Screen2~255 : Reserved |
| phyIDECodedLocation | 0x18 | Unsigned | 0~255 | This attribute specify the Coded Location of the IDE0 : Center1 : Bottom Right2 : Bottom Left3 : Top Right4 : Top Left5~255 : Reserved |
| phyIDEHSize | 0x19 | Integer | 0-65535 | This attribute specify the no of horizontal pixel in the display  |
| phyIDEVSize | 0x1A | Integer | 0-65535 | This attribute specify the no of vertical Pixel in the display  |
| phyIDEENCHozAreaSize | 0x1B | Integer | 0-65535 | This attribute specify the no of horizontal pixel area to Encode  |
| phyIDEENCVerAreaSize | 0x1C | Integer | 0-65535 | This attribute specify the no of horizontal pixel area to Encode |
| phyIDEMxNBlockSize | 0x1D | Unsigned | 0~255 | This attribute specify the no of Horizontal pixels in Blocks in the IDE0 – 16x16 pixels1 – 32x32 pixels2 – 64x64 pixels3~255: Reserved |
| phyIDEFrequency | 0x1E | Unsigned | 0~255 | This attribute specify the frame rate of IDE sequence Transmission  |
| PhyIDETxHSize | 0x1F | Integer | 0-65535 | This attribute specify the no of Horizontal Pixel in the 2D Display Transmitter |
| PhyIDETxVSize | 0x20 | Integer | 0-65535 | This attribute specify the no of Vertical Pixel in the 2D Display Transmitter |

Table 179 - PHY PIB attributes (continued for IDE)