**IEEE P802.15**

**Wireless Personal Area Networks**

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| --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title |  |
| Date Submitted | [November 14, 2012 ] |
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| Re: | Proposed text on channel numbering for TVWS PHY in TG4m Preliminary Draft (Doc. 15-12-0575-00-004m) |
| Abstract | This contribution provides the text on channel numbering for TVWS PHY, which should be described in TG4m draft. |
| Purpose | This document provides the proposed text on channel numbering for preliminary draft of the IEEE 802.15.4m |
| Notice | This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |
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# Introduction

This contribution provides the proposed text on channel numbering for TVWS PHY, which is missing in the preliminary draft of TG4m [1].

# Proposed Text

*[Start of Text]*

**8.1 General Requirements and definitions**

***Insert the following items at the end of the second list in 8.1:***

* **TVWS FSK PHY:** multi-rate and multi-regional frequency shift keying (FSK) PHY operating multiple over-the-air data rates in support of various applications in TVWS, as defined in 20.1
* **TVWS OFDM PHY:** multi-rate and multi-regional orthogonal frequency division multiplexing (OFDM) PHY operating multiple over-the-air data rates in support of various applications in TVWS, as defined in 20.2
* **TVWS NB-OFDM PHY:** multi-rate and multi-regional narrowband orthogonal frequency division multiplexing (OFDM) PHY operating multiple over-the-air data rates in support of various applications in TVWS, as defined in 20.3

*[End of Text]*

*[Start of Text]*

***Modify the following subclause (8.1.2.6) as follows:***

**8.1.2.6 Channel numbering for SUN and TVWS PHYs**

The channel center frequency *ChanCenterFreq* for all SUN PHYs and TVWS PHYs, except the MR-O-QPSK PHY operating in the 868-870 MHz band, shall be derived as follows:

 *ChanCenterFreq* = *ChanCenterFreq0* + *NumChan*\**ChanSpacing*

where *ChanCenterFreq0* is the first channel center frequency in MHz, *ChanSpacing* is the separation between adjacent channels in MHz, *NumChan* is the channel number from 0 to *TotalNumChan–1,* and *TotalNumChan* is the total number of channels for the available frequency band. The parameters *ChanSpacing, TotalNumChan,* and *ChanCenterFreq0* for different frequency bands and modulation schemes are specified in Table 68a.

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In the case of TVWS PHYs, *ChanCenterFreq0* stands for the first channel center frequency from the lowest frequency of the operating TV channel in MHz. The parameters *ChanSpacing, TotalNumChan,* and *ChanCenterFreq0* for different frequency bandwidths and modulation schemes are specified in [Table 68x].

(Note : The following sentence is an alternative text of the above paragraph without [Table 68x]. Either one will be deleted after review.)

In the case of TVWS PHYs, *ChanCenterFreq0* is derived as follows:

*ChanCenterFreq0* = *BandEdge* + *ChanSpacing* /2

where *BandEdge* is the leftmost frequency of the available spectrum.

]

*[End of Text]*

*[Start of Text]*

***Insert the following items at the end of the second list in 8.1:***

**[Table 68x]—Total number of channels and first channel center frequencies for TVWS PHYs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TV Channel Bandwidth(MHz) | Modulation | *ChanSpacing*(MHz) | *TotalNumChan* | *ChanCenterFreq0*(MHz) |
| 6 | FSK mode #1 | 0.1 | [60] | [0.05] |
| FSK mode #1 and #2 | 0.2 | [30] | [0.1] |
| FSK mode #2 and #3 | 0.4 | [15] | [0.2] |
| FSK mode #3, #4 and #5 | 0.6 | [10] | [0.3] |
| OFDM Mandatory | 1.25 | [4] | [0.8] |
| OFDM Optional | 4\*1.25 | [1] | [3.0] |
| NB-OFDM | 0.4 | [13] | [1.0] |
| 7 | FSK mode #1 | 0.1 | [70] | [0.05] |
| FSK mode #1 and #2 | 0.2 | [35] | [0.1] |
| FSK mode #2 and #3 | 0.4 | [17] | [0.2] |
| FSK mode #3, #4 and #5 | 0.6 | [11] | [0.3] |
| OFDM Mandatory | 1.25 | [5] |  [1.0] |
| OFDM Optional | 4\*1.25 | [1] | [3.5] |
| NB-OFDM | 0.4 | [15] | [0.6] |
| 8 | FSK mode #1 | 0.1 | [80] | [0.05] |
| FSK mode #1 and #2 | 0.2 | [40] | [0.1] |
| FSK mode #2 and #3 | 0.4 | [20] | [0.2] |
| FSK mode #3, #4 and #5 | 0.6 | [13] | [0.3] |
| OFDM Mandatory | 1.25 |  [6] |  [0.875] |
| OFDM Optional | 4\*1.25 | [1] | [4.0] |
| NB-OFDM | 0.4 | [15] | [1.2] |

 *[End of Text]*

*Note: TV channel number or frequency in operation is not covered in this table. It should be covered in somewhere else, maybe a part of MAC layer.*

*Note: Some channels may be reserved as a guard band to comply with local regulations on TVWS.*

# References

1. Preliminary Draft for TG4m, Doc. 15-12-0575-00-004m, Nov. 2012
2. IEEE Draft Std. 802.15.4g/D7, Nov. 2011