**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 | |
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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