

**IEEE P802.15**  
**Wireless Personal Area Networks**

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)	
Title	<b>Channel page table reformatting</b>	
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Re:	[P802-15-4g-D02.pdf]	
Abstract	[This document provides a simplification of the description of the SUN PHY channel page tables.]	
Purpose	[To simplify 802.15.4g draft.]	
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Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.	

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This resolves editorial comment 384.

## 6. PHY specification

### 6.0.0.1 Channel pages for SUN PHYs

Channel page seven is used to specify the standard-defined PHY operating modes, and channel page eight is used to specify the Generic PHY operating modes. A device that implements more than one PHY operating mode described by channel page seven may have multiple channel page seven entries in the *phySUNPageEntriesSupported* table.

The structures of channel pages seven and eight are shown in Figure 22a. For more detail on channel page seven and channel page eight, see 6.0.0.1.1 and 6.0.0.1.2, respectively.

Bits: 31–27	26–22	21–20	19–16	15–0	
Channel page seven	Frequency band	Modulation scheme = Filtered FSK	Bits 19...4 Reserved		Bits 3...0 (bitmap) FSK modes supported
		Modulation scheme = O-QPSK	Bits 19...5 Reserved		Bit 4 Spreading mode Bit 3...0 (bitmap) Rate modes supported
		Modulation scheme = OFDM	Bits 19...13 Reserved	Bits 12...9 (integer) OFDM Option 1,2,3, or 4 (range 0...3)	Bit 8...0 (bitmap) MCS values supported (for Option)
Channel page eight	Reserved		<b>Generic-PHY-defined PHY modes (see 6.0.0.1.2)</b> Bitmap, where a set bit indicates a Generic PHY mode supported by the device Each set bit position corresponds to an array in <i>phySUNGenericPHYDescriptors</i>		

**Figure 22a—Channel page structure for channel pages seven and eight**

#### 6.0.0.1.1 Channel page structure for standard-defined PHY modes

Channel page seven specifies each standard-defined SUN PHY operating mode supported by the device.

As shown in Figure 22a, channel page seven consists of the frequency band(s), modulation scheme(s), and PHY mode(s) to specify the SUN operating modes. The values used to define the frequency bands are shown in Tab. 3. 4a. The values used to define the modulation scheme are shown in Tab. 3. 4b. ~~Each bit in the PHY Mode field corresponds to a standard-defined PHY mode for the particular frequency band and modulation scheme. A bit set to zero shall indicate that a particular standard-defined PHY mode is not supported by the device. A bit set to one shall indicate that a particular standard-defined PHY mode is supported by the device.~~ A device may support more than one standard-defined PHY mode.

**Table 4a—Frequency band definitions**

Frequency band identifier (binary) (b <sub>26</sub> b <sub>25</sub> b <sub>24</sub> b <sub>23</sub> b <sub>22</sub> )	Frequency (MHz)	Designation
0 0 0 0 0	450–470 (US FCC Part 90)	450 MHz band
0 0 0 0 1	470–510 (China)	470 MHz band
0 0 0 1 0	779–787 (China)	780 MHz band
0 0 0 1 1	863–870 (Europe)	863 MHz band
0 0 1 0 0	896–901 (US FCC Part 90)	896 MHz band
0 0 1 0 1	901–902 (US FCC Part 24)	901 MHz band
0 0 1 1 0	902–928 (US)	915 MHz band
0 0 1 1 1	917–923.5 (Korea)	917 MHz band
0 1 0 0 0	928–960 (US, non-contiguous)	928 MHz band
0 1 0 0 1	950–958 (Japan)	950 MHz band
0 1 0 1 0	1427–1518 (US and Canada, non-contiguous)	1427 MHz band
0 1 0 1 1	2400–2483.5	2450 MHz band
0 1 1 0 0–1 1 1 1 1	Reserved	

**Table 4b—Modulation scheme representation**

Modulation scheme identifier (binary) (b <sub>21</sub> b <sub>20</sub> )	Description
0 0	Filtered FSK
0 1	OFDM
1 0	O-QPSK
1 1	Reserved

The FSK mode supported bitmap for each of the supported frequency bands is defined in Table 4c. For all frequency bands, the mode indicated by bit 0 is operating mode #1. The channel spacing for the FSK modes is defined in Table 75a.

For the O-QPSK SUN PHY mode, the spreading mode bit shall be set to zero for DSSS mode and shall be set to one for MDSSS mode. The allowed combination of spreading mode, frequency band and PHY modes is defined in Table 4d.

For the OFDM SUN PHY mode, the frequency band field may be set to one of the frequency bands identified in Table 1 for OFDM using the encoding given in Table 4a. The OFDM option field shall be set as indicated in Table 4e.

The MCS values supported bitmap for the OFDM SUN PHY is defined in Table 4f.

**Table 4c—FSK modes supported bitmap definition**

Band	Bit 3	Bit 2	Bit 1	Bit 0
450 MHz	Reserved	Reserved	9.6 kb/s, filtered 4FSK, mod. index = 1/3	4.8 kb/s, filtered FSK, mod. index = 1.0
470 MHz	Reserved	200 kb/s, filtered 4FSK, mod. index = 1/3	100 kb/s, filtered FSK, mod. index = 1.0	50 kb/s, filtered FSK, mod. index = 1.0
863 MHz	Reserved	200 kb/s, filtered 4FSK, mod. index = 1/3	100 kb/s, filtered FSK, mod. index = 1.0	50 kb/s, filtered FSK, mod. index = 1.0
896 MHz	Reserved	40 kb/s, filtered FSK, mod. index = 0.5	20 kb/s, filtered FSK, mod. index = 0.5	10 kb/s, filtered FSK, mod. index = 0.5
901 MHz	Reserved	40 kb/s, filtered FSK, mod. index = 0.5	20 kb/s, filtered FSK, mod. index = 0.5	10 kb/s, filtered FSK, mod. index = 0.5
915 MHz	Reserved	200 kb/s, filtered FSK, mod. index = 0.5	150 kb/s, filtered FSK, mod. index = 0.5	50 kb/s, filtered FSK, mod. index = 1.0
917 MHz	Reserved	200 kb/s, filtered FSK, mod. index = 0.5	150 kb/s, filtered FSK, mod. index = 0.5	50 kb/s, filtered FSK, mod. index = 1.0
928 MHz	Reserved	40 kb/s, filtered FSK, mod. index = 0.5	20 kb/s, filtered FSK, mod. index = 0.5	10 kb/s, filtered FSK, mod. index = 0.5
950 MHz	400 kb/s, filtered 4FSK, mod. index = 1/3	200 kb/s, filtered FSK, mod. index = 1.0	150 kb/s, filtered FSK, mod. index = 1.0	50 kb/s, filtered FSK, mod. index = 1.0
1427 MHz	Reserved	40 kb/s, filtered FSK, mod. index = 0.5	20 kb/s, filtered FSK, mod. index = 0.5	10 kb/s, filtered FSK, mod. index = 0.5
2450 MHz	Reserved	200 kb/s, filtered FSK, mod. index = 0.5	150 kb/s, filtered FSK, mod. index = 0.5	50 kb/s, filtered FSK, mod. index = 1.0

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**Table 4d—Encoding for O-QPSK SUN PHY**

Band	Spreading mode	Chip rate (kchips/s)	Rate modes supported			
			Bit 3	Bit 2	Bit 1	Bit 0
470 MHz	0	100	Reserved	Reserved	50 kb/s, no spreading, rate 1/2 FEC	12.5 kb/s, (4,1) spreading, 1/2 rate FEC
780 MHz	0	1000	500 kb/s, no spreading, rate 1/2 FEC	250 kb/s, (8,4) spreading, rate 1/2 FEC	125 kb/s, (16,4) spreading, rate 1/2 FEC	31.25 kb/s, (16,1) spreading, rate 1/2 FEC.
780 MHz	1	1000	500 kb/s, (16,8) spreading, no FEC	250 kb/s, (32,8) spreading, no FEC	125 kb/s, (32,8) spreading, rate 1/2 FEC	62.5 kb/s, (64,8) spreading, rate 1/2 FEC.
868 MHz	0	100	Reserved	Reserved	50 kb/s, no spreading, rate 1/2 FEC	12.5 kb/s, (4,1) spreading, 1/2 rate FEC
915 MHz	0	1000	500 kb/s, no spreading, rate 1/2 FEC	250 kb/s, (8,4) spreading, rate 1/2 FEC	125 kb/s, (16,4) spreading, rate 1/2 FEC	31.25 kb/s, (16,1) spreading, rate 1/2 FEC.
915 MHz	1	1000	500 kb/s, (16,8) spreading, no FEC	250 kb/s, (32,8) spreading, no FEC	125 kb/s, (32,8) spreading, rate 1/2 FEC	62.5 kb/s, (64,8) spreading, rate 1/2 FEC.
917 MHz	1	1000	500 kb/s, (16,8) spreading, no FEC	250 kb/s, (32,8) spreading, no FEC	125 kb/s, (32,8) spreading, rate 1/2 FEC	62.5 kb/s, (64,8) spreading, rate 1/2 FEC.
950 MHz	0	100	Reserved	Reserved	50 kb/s, no spreading, rate 1/2 FEC	12.5 kb/s, (4,1) spreading, 1/2 rate FEC
2450 MHz	0	2000	500 kb/s, (8,4) spreading, rate 1/2 FEC	250 kb/s, (16,4) spreading, rate 1/2 FEC	125 kb/s, (32,4) spreading, rate 1/2 FEC	31.25 kb/s, (32,1) spreading, rate 1/2 FEC.
2450 MHz	1	2000	500 kb/s, (128,8) spreading, no FEC	250 kb/s, (64,8) spreading, no FEC	125 kb/s, (64,8) spreading, rate 1/2 FEC	62.5 kb/s, (32,8) spreading, rate 1/2 FEC.

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**Table 4e—OFDM option field values for OFDM SUN PHY**

Option	Encoding, bits 12...9
1	0 0 0 0
2	0 0 0 1
3	0 0 1 0
4	0 0 1 1

**Table 4f—OFDM SUN PHY MCS values supported mapping**

Bit	Option 1	Option 2	Option 3	Option 4
0	MCS0	MCS0	MCS1	MCS2
1	MCS1	MCS1	MCS2	MCS3
2	MCS2	MCS2	MCS3	MCS4
3	MCS3	MCS3	MCS4	MCS5
4	Reserved	MCS4	MCS5	MCS6
5	Reserved	MCS5	MCS6	Reserved
6	Reserved	Reserved	Reserved	Reserved
7	Reserved	Reserved	Reserved	Reserved
8	Reserved	Reserved	Reserved	Reserved

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