Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [**Comment Resolutions related to frequency deviation definition**]

Date Submitted: [January 13, 2011]

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Re: [TG4g comment resolution]

Abstract: [Comment resolutions related to the definition of frequency deviation]

Summary

This document describes the proposed resolution on the comments related to the definition of frequency deviation.

The following comment is addressed; CID #486, #487 and #488.

Comments and proposed resolutions

CID #486: In Figure 65o the units on the y-axis should be $\Delta0.5f$, $0.25*\Delta f$, $-0.25\Delta f$, $-0.5\Delta f$. On the x-axis the units should be -Ts, -0.5Ts, 0.5Ts, Ts.

CID #488: In Figure 65p the units on the y-axis should be $0.5\Delta f$, $0.25*\Delta f$, $-0.25\Delta f$, $-0.5\Delta f$. On the x-axis the units should be -Ts, -0.5Ts, 0.5Ts, Ts.

Proposed resolution (for both CID #486 and #488): Accept in principle.

Change the x-axis from "Time" to "Time (Ts)".*
For the y-axis no changes required (resolution to CID #487 to solve the issue)

*: Outcome of FSK subgroup conference call on Monday, December 13th

CID #487: In table 75c the the frequency deviation for 2-level should be $0.5*\Delta f$, $-0.5\Delta f$. For 4-level the frequency deviation should be $0.5\Delta f$, $0.3333*\Delta f$, $-0.3333\Delta f$, $-0.5\Delta f$.

Proposed resolution: Accept in principle.

Revise the table 75c as shown in the next slide (instead of using Δf, fdev is used as a unit). In addition, replace the texts in 6.12a.1.2 (Bit-to-symbol mapping) with those in slide 5.

Proposed revision: Table 75c – MR-FSK symbol encoding

Red letters *show the revised parts*

2-level	
Symbol (binary)	Frequency Deviation
0	$-1*f_{dev}$
1	$+1*f_{dev}$
4-level	
Symbol (binary)	Frequency Deviation
01	$-1*f_{dev}$
00	$-1/3*f_{dev}$
10	$+1/3*f_{dev}$
11	$+1*f_{dev}$

Proposed revision: 6.12a.1.2 Bit-to-symbol mapping

Red letters show the revised parts

The nominal frequency deviation shall be the (symbol rate) × (modulation index) / 2. The symbol encoding for both filtered 2-level and 4-level FSK modulation is shown in Table 75c, where they are described by function of the maximum frequency deviation, f_{dev}, that is equal to the nominal frequency deviation for filtered 2-FSK and is equal to (nominal frequency deviation) × 3 for filtered 4-FSK.

For filtered 4FSK modulation, two bits shall be mapped to four frequency deviation levels for the PHR and PSDU. For the SHR, bit 0 and bit 1 shall be mapped to the lowest (3*Δf) and the highest (+3*Δf) frequency deviations respectively. The symbol rate shall be the same for the entire PPDU. PPDU encoding for filtered 4FSK is shown in Figure 65n.