IEEE P802.15  
Wireless PANs

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| LB 93 Comment Resolution for Clause 21.2.4.2 | | | | |
| Date: 2014-04-22 | | | | |
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|  |  |  |  |  |

Abstract

This submission proposes resolutions for comments in clause 21.2.4.2 of TG4n Draft 0 with the following CIDs:

56,147,194

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TG4n Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TG4n Draft (i.e. they are instructions to the 802.15 editor on how to merge the text with the baseline documents).***

***TG4n Editor: Editing instructions preceded by “TG4n Editor” are instructions to the TG4n editor to modify existing material in the TG4n draft. As a result of adopting the changes, the TG4n editor will execute the instructions rather than copy them to the TG4n Draft.***

24.3.6 Timing-related parameters

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CID | Page | Sub-clause | Line | Comment | Proposed Change | Response |
| 56 | 12 | 21.2.4.2 | 25 | 50ppm, really? Based on what century is this a valid frequency tolerance? Such a loose spec requires receivers to open up the capture window very wide, effectively limiting performance. Unless there is a valid technical reason such a loose spec is required this just junks up the implementations (well not really - whomever is tasked with verifying conformance will be likely to just ignore irrational specs). | Replace with a number more realistic for 2014. |  |
| 147 | 25 | 21.2.4.2 | 13 | Frequency tolerance is +/- 50 ppm. Why? At 619 MHz this is greater than the peak frequency deviation of Modes #1 and #5 and would require the use of AFC for Modes #2 and #3. The cost differential between 20 ppm and 50 ppm xtals is negligible and would be a more realistic value | Amend: The maximum single-sided clock frequency tolerance T at the transmitter shall be +/- 20 ppm |  |
| 194 | 25 | 21.2.4.2 | 13 | "Technical issue  To explain this specification, the character "T" may not be needed because "T" is not used anywhere in this draft. | Remove the character "T." |  |

**Discussion:***.*

As CID 56 and 147 mentioned, +/-50ppm is too loose from receiver performance point of view because of the following reason.

The following table shows calculation results of frequency deviation for each data rate.

Table1 Frequency deviations for data rates

|  |  |  |
| --- | --- | --- |
| Data Rate  [kbps] | Modulation Index | Frequency Deviation  [kHz] |
| 100 | 0.5 | 25 |
| 1 | 50 |
| 200 | 0.5 | 50 |
| 1 | 100 |
| 50 | 1 | 25 |

Therefore, frequency error should be around half of the minimum frequency deviation shown in table 1 (the above table) to detect receiver signal correctly without using automatic frequency error correction technique. This means that

Frequency error ≈ 25kHz/2 = 12.5kHz.

Since frequency error becomes the maximum value when center operational frequency is highest listed in the spec; fc = 629.75MHz when CMB GFSK is used, the frequency error should be as below.

12.5kHz / 629.75MHz ≈20ppm

And “T” written in line 13 of page 15 should be removed as CID194 mentions because “T” has no relationship with radio frequency torelance.

Based on this discussion, subclause 21.2.4.2 of the spec draft 0 should be revised as below.

**Proposal**

**21.2.4.2 Radio frequency tolerance**

**Instruction to TG4n Editor: Romve “T” in line 13 of page 25 and replace +/- 50 ppm in line 13 of page 25 with +/- 20ppm.**