

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

**Submission Title:** [Resolutions to MR-FSK Comments on filtered FSK]

**Date Submitted:** [November 2010]

**Source:** [Steve Shearer, Cristina Seibert] Company [Silver Spring Networks]

**Re:** [Resolutions to MR-FSK Comments on filtered FSK]

**Abstract:** [Resolutions to MR-FSK Comments on filtered FSK]

**Purpose:** [802.15.4g Comment Resolution for LB59.]

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# Overview

- Filtered FSK Definition
- Replace GFSK with Filtered FSK
- General Filtered FSK
- Filtered FSK Modulation

# Filtered FSK Definition

- CID 24
  - Filtered FSK is used consistently (sic) within Table 1 without any definition of what the level of filtering is
  - Define the filtering level for Filtered FSK modulations
  - A/P Filtering is defined in 6.12a.1, Insert footnote(s) in Table 1 referring to definition in 6.12a.1.
- CID 348
  - The term filtered FSK is not defined previously.
  - There should be a foot note indicating which clause defines the term "filtered FSK" Add a foot note referring (sic) the clause defining the term "Filtered FSK"
  - A/P Same resolution as CID 24

# Filtered FSK Definition

- CID 394
  - The first occurrence of the words "filtered FSK" is here, and it has yet to be defined. Definition seems to be at line 52 on page 51 –
  - consider moving
  - A/P Same as CID 24
- CID 1090
  - Reference in Table 1a for MR-FSK PHY modulation scheme references "Filtered x-FSK". This is ambiguous and there is no reference or definition of the filtering parameter and will lead to confusion and may reduce interoperability amongst "compliant" solutions
  - Define both modulation schemes for constant MR-FSK PHYs as FSK (for legacy system implementation) and GFSK with BT = 0.5 or 1.0 for future SUN systems
  - A/P Definition is given in 6.12a.1. Comment withdrawn

# Replace GFSK with Filtered FSK

- CID's 360, 361, 368 ,370, 371, 591, 659, 664, 951, 953, 974, 1015, 1018
  - All of the above comments address a similar theme of *"CID 360, FSK/GFSK has been replaced by Filtered FSK"*
  - A/P all, replace with "Filtered FSK" accordingly
- CID 747
  - Since we don't use the term GFSK anymore, we don't need to distinguish between the MR-FSK PHY at 950 MHz and the 15.4d PHYs.
  - The footnotes referencing subclauses 6.11, 6.7 and 6.12a are no longer necessary. Remove the three footnotes from Table 1.
  - Accept

# General Filtered FSK

- CID 347
  - The first two modes in the 950 MHz band using GFSK and BPSK are not defined later in the draft. They don't have a corresponding channel page definition in clause 6.1.2.7.2.
  - Add a channel page definition in clause 6.1.2.7.2 and add GFSK and BPSK in the lists of supported modulations, or remove these two modes.
  - A/P These are 4d modes. No change required.
- CID 507
  - Notation "+" should be placed at the leftmost column (950), rather than at Modulation columns (Filtered 2FSK), in order for OFDM and O-QPSK PHYs to be applicable to this note.
  - Change as proposed
  - Accept, modify text accordingly
- CID 548
  - It is suggested to use  $1/3$  instead of 0.33 ( $1/3$  is used elsewhere in the text).
  - Change mod index = 0.33 to mod index =  $1/3$ .
  - Accept , modify text accordingly
- CID 602
  - GFSK/FSK into 2FSK and 4FSK in Table 125b.
  - Change as commented
  - Accept , modify text accordingly

# Filtered FSK Modulation

- 374
  - The emission limits on M1 and M2 exceeds unfiltered FSK by more than 11dB. Will cause excessive interference in adjacent and alternate channels.
  - Increase both limits by 8dB.
  - A/P Topic was investigated at length and presented in docs 331r8 and 692r0. Current spec is a result of group consensus. No change required.
- 642
  - The filtering for "Filtered 2FSK" and "Filtered 4FSK" is not defined (the spectral mask seems not sufficient, and GFSK is simply a recommendation here for one band ("should be used")).
  - Specify GFSK as the filtering with appropriate band dependant parameters if necessary
  - A/P Same resolution as CID 374.
- 643
  - The spectral mask only applies at two offset frequencies in a 1kHz bandwidth, implying no restriction on emissions at other offsets.
  - Include a full spectral mask with diagram to clearly show limits across a wider range of offset frequencies
  - A/P Same resolution as CID 374.