

**IEEE Standards Interpretation for IEEE Std 802.15.4™– 2006 IEEE Standard for Information technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements--Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Low-Rate Wireless Personal Area Networks (WPANs)**

Copyright © 2011 by the Institute of Electrical and Electronics Engineers, Inc. Three Park Avenue New York, New York 10016-5997 USA All Rights Reserved.

This is an interpretation of IEEE Std 802.15.4-2006.

Interpretations are issued to explain and clarify the intent of a standard and do not constitute an alteration to the original standard. In addition, interpretations are not intended to supply consulting information. Permission is hereby granted to download and print one copy of this document. Individuals seeking permission to reproduce and/or distribute this document in its entirety or portions of this document must contact the IEEE Standards Department for the appropriate license. Use of the information contained in this document is at your own risk.

IEEE Standards Department Copyrights and Permissions 445 Hoes Lane, Piscataway, New Jersey 08855-1331, USA

December 2011

**Interpretation Request #1**

**Topic:** O-QPSK PHY Filtering Requirements

**Clause, Subclause, Annex, Figure, or Table:** 6.8.2.5, 6.8.3.2

An interpretation of IEEE Std 802.15.4-2006, 6.8.2.5 and 6.8.3.2 is requested.

While the BPSK PHY and the ASK PHY of the 868 MHz specifications use raised-cosine and root-raised-cosine pulse shape filtering to represent the baseband chips, the O-QPSK PHY uses half-sine pulse shaping for baseband-chip representation (see 6.8.2.5). Furthermore, 6.8.3.2 specifies that, using the 868 MHz band, "the signal shall be filtered" with a raised-cosine filter. Does this mean that the baseband chips are first half-sine filtered and then additionally raised-cosine filtered? Or is the raised-cosine filtering optional?

**Interpretation Response #1**

The following resolutions are the approved response from the 802.15 working group to this request for an interpretation of IEEE Std 802.15.4-2006:

Question 1 -- Does this mean that the baseband chips are first half-sine filtered and then additionally raised-cosine filtered?

Approved response: "Yes." This filtering is for pulse shaping purposes.

Question 2 – “Or is the raised-cosine filtering optional?”

Approved response: “No, this is mandatory”. This filtering is for spectral emissions purposes.