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)

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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.