**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
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| Re: | [Comment resolution of LB95] | |
| Abstract | [this document drafts the Introduction of 802.15.4q amendment for discussion and acts as the resolution to related comments] | |
| Purpose | [comment resolution] | |
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**Introduction**

This amendment specifies two alternate PHYs, ULP-TASK and ULP-GFSK, in addition to those of IEEE Std 802.15.4-2011. In addition to the new PHYs, the amendment also defines those MAC modifications needed to support their implementation. The alternate PHYs enable low cost, ultra-low power consumption and extended battery life in 2.4GHz and sub-GHz frequency bands and geographical regions under multiple regulatory domains. They also support multiple data rates up to 1Mbps.

The ULP-TASK PHY specifies a physical layer based on amplitude shift keying with ternary sequence spreading. This PHY allows implementation of transceivers with low complexity, and enables ultra-low power consumption. As an important feature, this PHY also supports communications in both coherent and non-coherent modes of reception, thereby allowing tradeoff between the receiver complexity and performance.

The ULP-GFSK PHY provides the mentioned benefits by the availability of higher data rates, reduced overhead in the PPDU, TX power control and an option to create asymmetric links. The asymmetric links allow reduction of the transmission power and receiver sensitivity in the end devices which further prolong battery life. In addition, the ULP-GFSK PHY provides options to interoperate with the existing MR-FSK PHY. A wide range of applications will benefit from the energy savings enabled by the ULP-GFSK PHY including electronic shelf labels, home area networks, smart irrigation systems and smart metering.