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Title: HARQ During Sleep-Mode and Scanning

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Source(s):
- Nadav Lavi
  nadav.lavi@alvarion.com
- Vladimir Yanover
  vladimir.yanover@alvarion.com
- Giovanni Maggi
  giovanni.maggi.ext@siemens.com
- Henri Moelard
  moelard@motorola.com
- Anuj Puri
  apuri@beceem.com
- Anders Lamm
  anders.lamm@ericsson.com
- Jonathan Segev
  jonathan.segev@comsysmobile.com

Re: IEEE Std 802.16-2004/Cor2/D2

Abstract: The document contains suggestions on solving IOT issues of HARQ during sleep-mode and scanning.

Purpose: Adoption of proposed changes into Std 802.16-2004/Cor2/D1

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HARQ During Sleep-Mode and Scanning

Nadav Lavi, Vladimir Yanover - Alvarion Ltd.
Giovanni Maggi – Siemens
Henri Moelard – Motorola
Anuj Puri – Beceem
Anders Lamm – Ericsson
Jonathan Segev – Comsys

Problem definition:
The standard defines that HARQ ACK/NACK is sent in a synchronized manner. The ACKs or NACKs are sent after a pre-defined interval after the transmission of an HARQ sub-burst. On the other hand, sleep-mode allows a method for power save by defining sleep and listen periods. The listen and sleep windows can be flexibly defined. Moreover, sleep windows’ size in PSC Type 1 can change during sleep-mode (sleep windows are not fixed size).
As both HARQ and sleep-mode are essential features there is a need to clarify how the MS and BS act when HARQ transmissions are needed on a connection that is associated to an active PSC. Similar approach should be used in periodic scanning.

Suggested remedy:

In 802.16-2004/Cor2/D2, insert the following paragraph before the title of Section 6.3.17.1: 
If a Power Saving Class containing an HARQ enabled connection is active or if there is an ongoing periodic scanning procedure, then upon traffic the BS or MS may request the deactivation of the PSC or the scanning procedure, or continue with the operation of the PSC or scanning and transmit data and ACK/NACK feedback during availability intervals (in case MS is in sleep mode) or during interleaving intervals (in case MS is performing periodic scanning). The BS shall not expect the MS to transmit ACK/NACK feedback during unavailability intervals or scan intervals even in case such allocations are scheduled.