Proposal for 16e PAR clarifications

IEEE 802.16 Presentation Submission Template (Rev. 8.3)

Document Number:

S802.16e-04/98

Date Submitted:

2004-05-18

Source:

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Venue:

IEEE 802.16 Interim Session #31, Shenzhen, China

Base Document:

802.16e Project Authorization Request

Purpose:

This presentation explains the issues with the current 16e PAR and proposes clarifications

Topics

- Current 802.16e PAR Text
- Issues with interpretation
- Clarifications needed
- Proposed new text

Current PAR Scope (Item #12)

The current Item 12. “Scope of Proposed Project” states

- **“This document provides enhancements to IEEE Std 802.16/802.16a to support subscriber stations moving at vehicular speeds and thereby specifies a system for combined fixed and mobile broadband wireless access. Functions to support higher layer handoff between base stations or sectors are specified. Operation is limited to licensed bands suitable for mobility between 2 and 6 GHz. Fixed 802.16a subscriber capabilities shall not be compromised (See Item #18).”**

Source: 802.16e Project Authorization Request (http://ieee802.org/16/docs/02/80216-02_48r4.pdf)

Current PAR Scope Details (Item #18)

The Item 18 "Additional Explanatory Notes: (Item Number and Explanation)" states

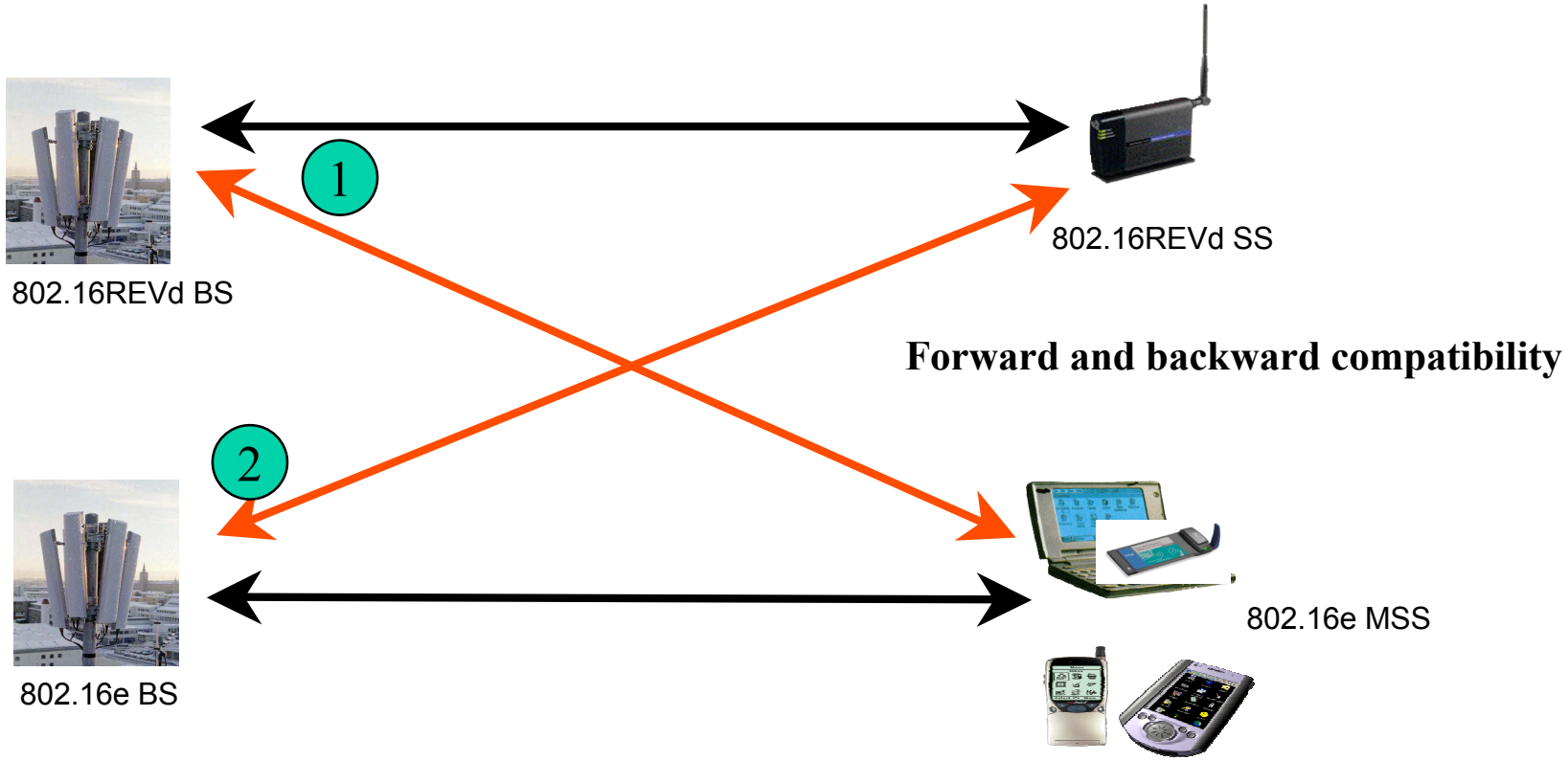
- **"Item #12 – Subscriber stations specified herein, when stationary, shall interoperate with base stations specified in IEEE Std 802.16a.** 1
- **Base stations specified herein shall interoperate with stationary subscriber stations specified in IEEE Std 802.16a.** 2
- **Because the standard will utilize the 802.16/802.16a medium access control layer, it will support multimedia services requiring differentiated Quality of Service, and it will support adaptive physical link control so that subscriber stations can receive higher-rate service when they move more slowly, include more effective antennas, or are otherwise in better link conditions."**

Source: 802.16e Project Authorization Request (http://ieee802.org/16/docs/02/80216-02_48r4.pdf)

Issues with Interpretation

- Refers to IEEE Stds 802.16 and 802.16a
  - Needs to replaced by IEEE Std 802.16-2004 based on 802.16REVd project
- Requires full backward and forward interoperability between 802.16a systems and 802.16e systems
  - There are some technical and practical limitations in interpreting these interoperability requirements
- Refers to 2GHz lower limit
  - 802.16REVd has removed this requirement in the D5 draft

Interoperability Requirements Interpretation



Issue:

-Need to clarify that the compatibility is based on a each physical layer mode

-FFT scaling of existing physical layer modes (ex: OFDMA) may not be precisely compatible (Number of active subcarriers, pilots etc.)

Proposed Changes to PAR Scope (Item #12)

- **"This document provides enhancements to IEEE Std 802.16/802.16a to support subscriber stations moving at vehicular speeds and thereby specifies a system for combined fixed and mobile broadband wireless access. Functions to support higher layer handoff between base stations or sectors are specified. Operation is limited to licensed bands suitable for mobility between 2 and 6 GHz. Fixed 802.16a subscriber capabilities shall not be compromised (See Item #18)."**

- **Changes:**
  1. **Replace 802.16/802.16a with 802.16-2004**
  2. **Replace third sentence with "Operation is limited to licensed bands suitable for mobility below 6 GHz**

Proposed Changes to Item #18:

The Item 18 “Additional Explanatory Notes: (Item Number and Explanation)” states

- **“Item #12 – Subscriber stations specified herein, when stationary, shall interoperate with base stations specified in IEEE Std 802.16a.**
- **Base stations specified herein shall interoperate with stationary subscriber stations specified in IEEE Std 802.16a.**
- **Because the standard will utilize the 802.16/802.16a medium access control layer, it will support multimedia services requiring differentiated Quality of Service, and it will support adaptive physical link control so that subscriber stations can receive higher-rate service when they move more slowly, include more effective antennas, or are otherwise in better link conditions.”**

Proposed Changes to Item #18

- **First Sentence States**
  - **"Subscriber stations specified herein, when stationary, shall interoperate with base stations specified in IEEE Std 802.16a.**

- **Change suggested:**
  - **Modify first sentence to "Subscriber stations specified herein, when stationary shall interoperate with base stations specified in 802.16-2004 that use the same physical layer mode (SCa, OFDM, OFDMA)".**

Proposed Changes to Item #18

- **Second sentence states**
  - **"Base stations specified herein shall interoperate with stationary subscriber stations specified in IEEE Std 802.16a. "**
- **Change suggested:**
  - **Modify second sentence to "Base stations specified herein shall interoperate with stationary subscriber stations specified in IEEE Std 802.16-2004 that use the same physical layer mode (SCa, OFDM or OFDMA)".**

Proposed Changes to Item #18

- **Change suggested:**
  - **Insert new third sentence.**
    - **Option 1: "Subscriber stations specified herein shall implement at least one of the physical layer modes specified in IEEE Std 802.16-2004 or at least one of the additional scaled FFT size extensions to the same mode."**
    - **Option 2: "Subscriber stations specified herein shall implement at least one of the physical layer modes specified in IEEE Std 802.16-2004 or at least one of the additional scaled FFT size extensions to the OFDMA physical layer mode."**

Recommendation

- The 802.16e PAR changes will provide clarity in interpretation and also reflects the need of the market place
- Please review and provide feedback before Thursday so that we can finalize the text