IEEE 802.16.3 Task Group

CALL FOR CONTRIBUTIONS: Session #10

Topic: Initial PHY Proposals

Deadline: 30 October 2000

In accordance with IEEE PAR 802.16.1, Task Group 3 of the IEEE 802.16 Working Group on Broadband Wireless Access is preparing to define the PHY protocols for a broadband wireless access network standard for licensed bands from 2-11 GHz. The standard will be based on submitted contributions, with increasing detail required as the process progresses. Mergers and improvements will be encouraged, with final selection scheduled for June 2001.

The Task Group invites the submission of initial contributions representing proposed PHY solutions. Contributors will be granted agenda time during 802.16 Working Group Session #10 (6-10 November 2000 in Tampa, Florida, USA) to present and discuss the merits of their proposals. Each proposal will be allocated equal agenda time on Tuesday, November 7. If time permits, the allocations will be 15 minutes of presentation followed by 15 minutes of discussion. Submissions must follow the guidelines below:

- Include a descriptive title.
- Include an overview and a reference model that describes functions, including interfaces to other layers.
- Describe the benefits of the proposed PHY, including any unique features.
- Describe any drawbacks of the proposed PHY.
- Explain how the submitted PHY relates to existing standards, such as ITU-R JRG 8A-9B, DOCSIS 1.1, IEEE 802.11, ETSI HIPERLAN, or others. If it is based on an existing standard, what differences occur due to BWA characteristics?
- Emphasize the scalability of the proposed PHY to deal efficiently with various data types as described in Revision 4 of the 802.16.3 Functional Requirements Document (FRD).
- Include a statement on intellectual property rights and how 802.16 may utilize the proposed PHY in a standard.

The proposals will be evaluated based on criteria in the Evaluation Table below. However, at this initial stage, contributions are not expected to address in detail the discussion items in that table, instead aiming for the more general description as outlined above. Each of the Voting Members of 802.16 is eligible to participate in the evaluation, if present. Submitters receiving a combined score of 6 or better (out of 10) in *any criteria* in the Evaluation Table will be invited to submit more a detailed contribution for Session #11 (January 22-26, 2001 in Tel Aviv, Israel). Note that submissions need *not* represent a complete PHY but may focus on specific components.

Contributions will be considered only if submitted using Revision 8 or higher of the 802.16 Document Submission Template <http://ieee802.org/16/docs/802_16_template.doc>. The template requires a cover page and a narrative. Submissions will be considered non-confidential and will be posted, as soon as possible following receipt, for public access on the 802.16 Web Site.

Email your contribution to the 802.16.3 Task Group Chair, Brian Kiernan <brian.kiernan@interdigital.com>, with a copy to 802.16 Chair Roger Marks <marks@nist.gov>, for receipt by the deadline of 30 October 2000.

Attachment: Evaluation Table

Evaluation Table

1. Meets system requirements
    - How well does the proposed PHY protocol meet the requirements described in the current version of the 802.16.3 Functional Requirements Document (FRD)?

2. Channel spectrum efficiency - defined in terms of single channel capacity (TDD or FDD) assuming all available spectrum is being utilized (in terms of bits/sec/Hz). Supply details of PHY overhead.
    - Modulation Scheme
    - Gross Transmission Bit Rate
    - User information bit rate at PHY-to-MAC Interface
    - Occupied Bandwidth

3. Simplicity of implementation - How well does the proposed PHY allow for simple implementation or how does it leverage on existing technologies?

4. SS cost optimization - How does the proposed PHY affect Subscriber Station cost?

5. BS cost optimization - How does the proposed PHY affect Base Station cost?

6. Spectrum resource flexibility
    - Flexibility in the use of the frequency band (i.e. channelization, modularity, band pairing, and Upstream/Downstream data asymmetry)

7. System service flexibility
    - How flexible is the proposed PHY to support FRD optional services and potential future services?

8. Protocol interfacing complexity
    - Interaction with other layers of the protocol, specifically MAC and Network Management. Provide the PHY delay.

9. Reference system gain
    - Sector coverage performance for a typical BWA deployment scenario (supply reference system gain). Provide practical link budget analysis.

10. Robustness to interference
    - Resistance to intra-system interference (i.e., frequency re-use) and external interference caused by other systems.
    - Provide co-channel, adjacent channel interference levels and spectral spillage resulting from modulation.

11. Robustness to channel impairments
    - Small and large scale fading (Rain fading, multipath, N (non or near) LOS, LOS, Foliage effects, frequency-selective fading, atmospheric effects, etc.)

12. Robustness to radio impairments
    - Specify the degradation due to radio impairments such as phase noise, group delay of filters, amplifier non-linearities, etc.