802.16 Physical Layer Task Group

CALL FOR CONTRIBUTIONS - Session #4

Deadline: 29 October, 1999

The Physical Layer (PHY) Task Group of the IEEE 802.16 Working Group on Broadband Wireless Access is preparing to define the PHY protocols for a broadband wireless access network specification. The specification will be developed in accordance with the "Development Plan for the 802.16.1 Air Interface Standard" (Document IEEE 802.16-99/05 <http://grouper.ieee.org/groups/802/16/docs/99/80216-99_05.pdf>). As that document details, the specification 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 2000.

The PHY Task Group invites the submission of initial contributions representing proposed PHY solutions. Contributors will be granted agenda time during 802.16 Working Group Session #4 (8-11 November 1999 in Kauai, Hawaii, USA) to present and discuss the merits of their proposals. **Only contributors to Session #4 will be eligible for invitation to submit a contribution to Session #5.**

Each proposal will be allocated equal agenda time on Tuesday, November 9. 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, DAVIC, DVB, AF-WATM 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 IP, ATM, MPEG).
- 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 106 Voting Members of 802.16 are eligible to participate in the evaluation, if present. Submitters receiving a combined score of 6 or better (out of 10) in *any criterion* in the Evaluation Table will be invited to submit more a detailed contribution for Session #5 (January 10-14 in Dallas/Richardson, Texas, USA). Note that submissions need *not* represent a complete PHY but may focus on specific components.

Contributions will be considered only if submitted using Revision 4 or higher of the 802.16 Document Submission Template <http://grouper.ieee.org/groups/802/16/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 <http://grouper.ieee.org/groups/802/16>.

Email your contribution to the 802.16 PHY Task Group Chair, Jay Klein < jay@ensemblecom.com>, with a copy to 802.16 Chair Roger Marks <marks@nist.gov>, for receipt by the deadline of 29 October 1999.

802.16 PHY Task Group: Session #4 Evaluation Table

#	Criterion	Discussion
1	Meets system requirements	How well does the proposed PHY protocol meet the requirements described in the current version of the 802.16 System Requirements (Document IEEE 802.16s0-99/n)? This document can be found at: <http://grouper.ieee.org/groups/802/16/sysreq/contributions/80216s0.pdf>
2	Spectrum efficiency	Defined in terms of single sector capacity assuming all available spectrum is being utilized (either in terms of Gbps/Available Spectrum or in terms of Mbps/MHz)
3	Simplicity of implementation	How well does the proposed PHY allow for simple implementation or how does it leverage on existing technologies?
4	CPE cost optimization	How does the proposed PHY affect CPE cost?
5	Spectrum resource flexibility	Flexibility in the use of the frequency band (i.e., minimum frequency band required to operate and migration capabilities)
6	System diversity flexibility	How flexible is the proposed PHY to any other system variations and future technology improvements or new services?
7	Protocol Interfacing complexity	Interaction with other layers of the protocol, specifically MAC and NMS
8	Implication on other network interfaces	Intrinsic transport efficiency of telecomm and datacomm services
9	Reference system gain*	Sector coverage performance for a typical BWA deployment scenario (supply, reference system gain)
10	Robustness to interference	Resistance to intra-system interference (i.e., frequency re-use) and external interference cause by other systems
11	Robustness to channel impairments	Rain fading, multipath, atmospheric effects

* In order to compare between PHY proposals, we define the reference system gain (RSG) as the output power of the transmitter minus the receiver threshold at a given working point, including back-off required for proper transmission. We will assume a 0 dBW transmitter (prior to back-off), and an ideal LNA (0 dB NF) and BER of 10^{-6} post coding.