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| Project | **IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>** |
| Title | **BELOW 11 GHz BROADBAND WIRELESS ACCESS SYSTEMS (BWAS) STANDARD** |
| Date Submitted | **2000-02-18** |
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| Re: | The January 2000 IEEE 802.16 Sub-10GHz Study Group meeting proposed to IEEE 802 a PAR for BWA Systems Operating Below 11GHz. It was further agreed by the SG that at the next IEEE 802.16 meeting (while the PAR is being considered for approval) work will be initiated on an AD-Hoc Basis on the proposed PAR BWA Operating Below 11GHz Systems |
| Abstract | It is proposed that the development of the below 11GHz Functional Requirements Document be an adaptation of the 10-66 GHz Functional Requirements Document |
| Purpose | Voice support on the IEEE 802.16 adapting the 10-66GHz Functional Requirements Document to enable earlier completion of the below 11GHz Functional Requirements Document, an earlier start (and likely earlier completion) of the below 11GHz PHY and MAC Standardization, and thus earlier availability of standard-based BWAS operating between 2 and 6 GHz and being broadly applicable to any frequency below 11GHz. |
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BACKGROUND

The January 2000 IEEE 802.16 Sub-10GHz Study Group meeting proposed to IEEE 802 a PAR for BWA Systems Operating Below 11GHz. The Scope of this PAR is to specify the PHY and MAC layers of the air interface of interoperable fixed point-to-multipoint BWAS (i.e., support data rates above T1/E1). The specification is to enable transport of data, video, and voice services. Moreover it was agreed that this specification will apply to systems operating between 2 and 6 GHz and being broadly applicable to any frequency below 11GHz.

The Purpose of the Proposed PAR was noted as,

- To enable rapid worldwide deployment of innovative, cost-effective and interoperable multi-vendor BWA products,
- To facilitate competition in broadband access by providing wireless alternatives to wireline broadband access,
- To facilitate coexistence studies, encourage consistent worldwide allocation, and accelerate the commercialization of BWA spectrum,
- Utilization of frequencies below 11GHz will address a market that includes residences, Small Office-Home Office (SOHO), telecommuters and Small and Medium Enterprises.

To guide this specification the Study Group agreed on five general criteria, and that the first step be the development of a Functional Requirements Document, to address the unique requirements of the target markets at these frequencies.

PROPOSAL

Considering

- The above SG agreements,
- That with the exception of the PHY layer, the upper-layers requirements of the target markets at these frequencies are not significantly different from those in the 10-66GHz, and
- That a Functional Requirements Document has been developed for the 10-66GHZ bands,

It is proposed that the development of the below 11GHz Functional Requirements Document be a close adaptation of the 10-66 GHz Functional Requirements Document; i.e., close adaptation means that proposals for changes and additions to the 10-66 GHz Functional Requirements Document should be required to show significant benefit justification.

Our study indicates that such approach will enable earlier completion of the below 11GHz Functional Requirements Document, an earlier start of the below 11GHz PHY and MAC Standardization, and thus earlier availability of standard-based Metropolitan Area Network (MAN) BWAS operating between 2 and 6 GHz that are broadly applicable to any frequency below 11GHz. In particular MAN/WAN BWAS equipment based on the below 11 GHz BWAS standard for the Unlicensed bands will enable network providers to quickly and efficiently initiate broadband service offerings in a new area, and adapting such MAN/WAN BWAS equipment (as the need arises) to operate in other below 11GHz bands with minimum waste of the initial investment. Moreover, this approach is expected to result in operational and equipment commonalities between the below and the above 11GHz MAN/WAN BWAS modules, that would translate into significant BS and CPE/ST cost reductions.

Earlier availability, cost-effectiveness, and operational flexibilities of the below 11GHz standard-based fixed point-to-multipoint MAN/WAN BWAS are three key benefits of this proposal, that are needed by MAN/WAN BWAS to successfully compete with copper- and cable-based access systems.

In reference to the question of whether this work should be done by 802.11 or 802.16 we strongly support the 802.16. IEEE 802.16 charter and expertise is in specifying Fixed PMP BWAS that support a wide variety of multimedia applications in a MAN/WAN environment, whereas 802.11 specification is primarily for LAN applications.

It would definitely disadvantage service providers if they could not make use of the more cost effective parts of the spectrum for all applications.

We also note that the FCC set up the U-NII to spur the introduction of BWAS that can serve a wide range of applications besides the Wireless LAN that can effectively be served by the 802.11 LAN Standard.