IEEE P802.22
Wireless RANs

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| A-WRAN Descriptions |
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Abstract

Add descriptions for the advanced-WRAN on the Section 1.3 on the draft

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| 20 | 3 |  | T | Additional definitions on Advanced BS (A-BS) and Advenced CPE (A-CPE) are necessary. It is also necessary to clarify the diffrence of these A-BS and A-CPE from conventional BS and CPE defiend in the IEEE 802.22-2011 main standard.  | Add additional definitions on Advanced BS (A-BS) and Advenced CPE (A-CPE) . Clarification of the diffrence of these A-BS and A-CPE from conventional BS and CPE defiend in the IEEE 802.22-2011 main standard should be described. Creating additional table to show the comparison of A-BS, A-CPE and conventional BS and CPE looks desirable.  |

* 1. Reference Application

The Wireless Regional Area Networks (WRANs) for which this standard has been developed are expected to operate primarily in low population density areas in order to provide broadband access to data networks. The WRAN systems will use vacant channels in the VHF and UHF bands allocated to the Television Broadcasting Service in the frequency range between 54 MHz and 862 MHz while avoiding interference to the broadcast incumbents in these bands. A typical application can be the coverage of the rural area around a village, as illustrated in Figure 1, within a radius of 10 km to 30 km from the base station depending on its EIRP and antenna height. The MAC can also accommodate user terminals located as far as 100 km with proper scheduling of the traffic in the frame when exceptional RF signal propagation conditions are present. With the PHY implemented in this standard, WRAN systems can cover up to a radius of 30 km without special scheduling.



A base station (BS) complying with this standard shall be able to provide high-speed Internet service for up to 512 fixed or portable customer premise equipment (CPE) devices or groups of devices within its coverage area assuming different quality of service (QoS) requirements for various CPEs, while meeting the regulatory requirements for protection of the incumbents.

The standard includes cognitive radio techniques to mitigate interference to incumbents, including geolocation capability, provision to access a database of incumbent services, and spectrum-sensing technology to detect the presence of incumbent services, other WRAN systems, and IEEE 802.22.1 wireless beacons.

The Advanced Wireless Regional Area Networks (A-WRANs) for which this standard has been developed are expected to support enhanced broadband services and monitoring applications such as real-time and/or near real-time monitoring, emergency broadband services, remote medical services, etc. The A-WRAN provides all essential functionalities of PHY, MAC, security, and cognitive radio technologies defined in the IEEE 802.22 WRAN and supports an additional PHY mode and additional functionalities of multihop relay operations, multiple channel operations, multiple input multiple output (MIMO) operations, and advanced security to extend regional area broadband services to the regional monitoring applications and the enhanced broadband services.

Figure A illustrates an IEEE 802.22b A-WRAN. An advanced base station (A-BS) complying with this standard shall be able to provide broadband services for the customer premise equipments (CPEs) such as an advanced CPE (A-CPE) and a subscriber CPE (S-CPE) through direct or multihop relay connectivity. An advanced customer premise equipment (A-CPE) enables to provide multihop relay connectivity for the S-CPEs, which enables to enhance connection reliability between the A-BS and S-CPEs, reduce the network management overhead of the A-BS as well as could extend the service coverage of A-WRAN.

Figure A – An IEEE 802.22b A-WRAN with an A-BS, A-CPEs and S-CPEs