

WIRELESS MEDIUM ACCESS CONTROL AND CDMA, 3G AND 4G COMMUNICATION

Lesson 15

Ultra Wide Band Broadband Wireless Access (BWA)

ULTRA-WIDE BAND (UWB)

- The ultra-wide band (UWB) means WS transmission of pulses at high or low rates with wide bandwidth either more than 500 MHz or maximum 20 per cent of the band central frequency.

UWB CHARACTERISTICS

- 1. High-bandwidth due use of more than 500 MHz spectrum consisting of large number of narrow-band frequencies
- 2. Negligible multi-path fading
- 3. Can be used at a very low energy level for a short-range Gbps transmission

UWB CHARACTERISTICS

- 4. Narrow-band interference greatly reduces due to use of very wide band similar to in case of spread spectrum, and is, thus, used for longer range required in radar and imaging systems
- 5. Enables efficient use of radio bandwidth for use in WPAN
- 6. Low-data-rate applications

3G

- IEEE 802.16 standard defines the standards for wireless broadband (WiBB), also called Broadband Wireless Access (BWA)
- MIMOs and OFDM used

BWA FEATURES

Property	Description
Application	1. Wireless High speed Internet 2. High speed Data network 3. Mobile TV and video calls
Instantaneous Bandwidth	Greater than 1 MHz (speed equivalent or greater than a cable modem or ADSL)
Data transfer rates	IEEE 802.16 standard rate greater than nearly 1.5 Mbps;
Downlink	FCC standard 2010, defines data transmission speeds of at least 4 Mbps (from the Internet to user's computer or mobile)

Continued

BWA FEATURES

Property	Description
Uplink	1 Mbps (from the mobile or user's computer to the Internet)
High data rate Technology	MIMO-OFDM technique in which multiple antennae are used for inputs and outputs.
Wireless Internet Services	<ol style="list-style-type: none">1. Dishes for communication for 2.400–2.500 GHz or 3.650 GHz, Download speeds greater than 100 Mbit/s; Range 50 km; Example: Three 45 Mbps wireless dishes2. 902–928 MHz Cellular network transmitters3. Broadband mobile Internet using HSPA or CDMA EV-DO or WiMax Rel 2

SUMMARY

- Broadband Wireless Access used for Mobile TV and Video calls
- Minimum 4 Mbps Internet to User Computer or Mobile
- MIMOs and OFDM

End of Lesson 15

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