Annex B – COMMERCIAL PRODUCTS

Find below a non-exhaustive list and short description of a few commercial systems that claim partial compliance with 802.16, or have plans to migrate to become compliant in the future.

WESTERN MULTIPLEX TSUNAMI MULTIPOINT

Tsunami Multipoint offers up to 60 Mbps per base station, and up to six base stations per hub site (or 360 Mbps total capacity). The system scales to support more than 6,000 subscriber units per hub site over an eight mile (13 kilometer) radius.

The new Western Multiplex[1] Tsunami multipoint system[2] features include:

- 360 Mbps Time Division Duplex throughput per cell site for maximum capacity.
- More than 6,000 subscribers per cell site for scalable growth.
- 5.8 GHz frequency band operation.
- Audible beeper alignment and auto-configuration for simple installation.
- Interference rejection option for optimal service reliability.
- Near LOS (line of sight) for maximum service coverage.
- Tsunami Multipoint functionally complies with the emerging IEEE 802.16 standard for broadband wireless access.

MOTOROLA CANOPY

The Motorola Canopy system features are[3]:

- Bandwidth: The system bit rate is 10 Mbps. The measurable throughput is a 7.5 Mbps point-to-point, 6.2 Mbps point-to-multipoint.
- Latency Control: support QoS VoIP, delivers consistent packet latency of 20 ms, regardless of loading.
- Range: The point-to-multipoint range is 10 miles (16 km) and the point-to-point range is 35 miles (56 km).
- Users per AP: Supports 200 Subscriber Modules per AP and 1200 per 6 sector AP cluster.
- Offers 7 non-overlapping channels of operation (3 at 5.2 GHz and 4 at 5.7 GHz) and uses three non-overlapping channels two times in every AP cluster to support 6 APs.
- Can support two (2) six-sector AP clusters and a 5.7 GHz backhaul at a single physical site.
- Offers Dynamic Bandwidth Control on a per AP or a per user basis.
- GPS Synchronization to reduce interference.

Motorola is planning to make Canopy 802.16 compatible.

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[1] Note: On March 26, 2002, Western Multiplex merged with Proxim Inc. to create Proxim Corporation.

[2] http://www.wmux.com/company/news/2001/091001Multipoint.html

[3] http://www.motorola.com/canopy

HARRIS CLEARBURST SYSTEMS

The Harris' ClearBurst family of point-to-multipoint broadband wireless access solutions[4] support wireless data and telephony that works across the frequency spectrum from 2 to 40 GHz.

The wideband ClearBurst MB solutions employ FDD technology and support ATM, IP and Ethernet interfaces to help bring up to 28 Mbps of voice, data and e-commerce to small offices and home offices.

The broadband ClearBurst GB solutions employ TDD technology and support ATM, IP and TDM interfaces to help deliver up to 180 Mbps of voice, high-speed data, video conferencing and high-speed Internet access to medium and large companies.

Harris has a migration plan to make these systems fully 802.16 compatible in the future.

BROADSTORM

The Broadstorm system[5] comprises both wireless base stations and compact customer terminals utilizing Broadstorm's OFDMA (orthogonal frequency division multiple access) airlink technology called CelerFlex. The system architecture is all-IP and is aligned with the 802.16a standard. Broadstorm incorporates OFDMA and TDD (time division duplexing) technologies and can provide fixed, portable, or fully mobile solutions to large numbers of customers – up to 3,000 per base station. Broadstorm system can deliver rates up to 8 Mbps per user and total throughput of 48 Mbps per base station.

DRAGONWAVE

DragonLink[6] outdoor radios interface with the customer's indoor networking equipment using either a DOCSIS, 802.16, DAVIC or Proprietary IF interface. The air interface uses FDD or TDD Duplexing with Co or Cross polarization to maximize frequency reuse. DragonLink operates over the bands from 2.0 – 63.0 GHz adaptable to most licensed band allocations around the world.

RUNCOM 802.16 CHIPSETS, MODEMS AND MAC SOFTWARE MODULES

RN-BS22PM Base Station Module[7]

Runcom's RN-BS22PM offers a cost effective module solution for Base Station modem developers of Broadband Wireless Access (BWA) and MMDS applications. The base station module complies with IEEE 802.16a standards and uses OFDMA technology to leverage broadband wireless communication in both downstream and upstream transmissions.

RN-2234 CPE Modem Chip[8]

Runcom's RN-2234 System-On-a-Chip offers a cost effective solution for Customer Premises Equipment (CPE) manufacturers and Subscriber Unit (SU) modem developers of Broadband Wireless Access/MMDS

[4] http://www.microwave.harris.com/products/clearburst/

[5] http://www.broadstorm.com/index.html

[6] http://www.dragonwaveinc.com/products/dl1.htm

[7] http://www.runcom.com/product_page.asp?info_id=48

[8] http://www.runcom.com/info_page.asp?info_id=44

applications. The modem chip complies with IEEE 802.16a standards and uses OFDMA technology to leverage broadband wireless communication in both downstream and upstream transmissions.

MAC Software modules for 802.16 Standard[9]

The RNBS22MAC SW and the RN-2234MAC SW packages are a set of SW modules that provide the functionality required from an IEEE 802.16 standard compliant base-station hub and subscriber units. The SW package supports the core MAC functions defined by the IEEE 802.16 standard air-interface specification and their extension required to support an OFDM/OFDMA PHY as defined by the evolving 802.16a standard supplement.

RunCom also sells Reference Design for 802.16a.

REDLINE COMMUNICATIONS

Redline Communications[10] is developing an AN50 Wireless Access Node that can be operated in the 5 – 8 GHz LE band. This Redline system is based on the emerging IEEE 802.16a standard with the goal of being completely 802.16a compatible once the standard is finalized. The unit is currently a point-to-point system, but development is under way to convert it to a point-to-multipoint one.

The Access Node 50 (AN-50) is a non-line-of-sight, fixed wireless system utilizing advanced orthogonal frequency division multiplexing (OFDM) technology. The AN-50 is configurable to function as a high-speed point-to-point system, operating at up to 72 Mbps over the air per link with up to 16 links per location. The system operates in the license-exempt UNII band of 5.8 GHz and supports ranges beyond 30 miles. The system also features dynamic adaptive modulation in both the upstream and downstream directions, automatically selecting BPSK, QPSK, 16 or 64 QAM, depending on propagation conditions. The system features several antenna options to address deployment ranges of over 50 km.

[9] http://www.runcom.com/info_page.asp?info_id=148

[10] http://www.redlinecommunications.com/