

7400e Series

802.16e-2005

WiMAX Base Station for Fixed and Mobile WiMAX

Harris Stratex Networks' 7400e WiMAX base station encompasses the flexibility and performance needed for a future proof 16e base station product. By delivering highly competitive and innovative mobile broadband triple-play services, it reduces your cost and increases your revenue for a faster ROI. The 7400e encompasses Harris Stratex Networks' leading mobility solution that enables nomadic and mobile services based on 802.16-2004 today, while offering a seamless migration path to 16e-2005 at the customer choice. The 7400e architecture is designed for Mobile WiMAX—and is dimensioned to fully support 802.16e-2005, MIMO and beam-forming technologies. Harris Stratex Networks' spectral resource management allows for operation of both standards in TDM parallel mode on the same frequency (D+E=>DualMode).

Key Features

- Multiple antenna system support
- VoIP, SIP support
- Scalable high-density solution (4U)
- GE and Fast Ethernet uplinks
- In-band or out-band management
- NMS –OSS integration-ready
- Provisioning manager
- Uplink sub-channelization
- 2.5 GHz, 3.3 GHz, 3.5 GHz TDD solution
- ETSI 300 mm, 19" form factor, all front I/O
- GPS TDD sync
- Optional 24/12 hour clock stability

16e Features:

- WiMAX 802.16e-2005 compliant
- MIMO 2x2 Matrix A/B
- 4 sector MIMO A/B (further upgrade options)
- PUSC, FUSC

Node Access:

- Radio access node
- Eclipse transport node





Powerful, Modular Blade Architecture

The 7400e supports up to 4 WiMAX blades plus one switch blade and one clock blade. Each WiMAX blade can either support 2 WiMAX OFDM sectors, 1 WiMAX STC/MRC sector or—in the near future—2 Mobile WiMAX OFDMA sectors (or respective diversity/MIMO options). Each WiMAX blade accepts two modules for 16d-Point-to-Multipoint (D-PMP) or 16e-Point-to-Multipoint (E-PMP). A single 7400e can support up to 8 sectors that can be configured for immediate deployments with the flexibility of accommodating future requirements.

The switch blade aggregates all traffic and offers various L2 and L3 switching and routing functions—in line with mobility architecture—for mobility and advanced Triple Play services.

A variety of connectivity options, including T1/E1, 10/100/1000 BT and wireless interfaces, provide a variety of build-in backhaul choices. This gives the operator the advantage of using the backhaul that is available at each site. The IDU Blade is software upgradable with a fail-back option.

Enhanced Features for Superior Coverage and Throughput

The IDU Blade implements several enhanced modes of WiMAX for performance differentiation. These include:

- Uplink subchannelization for link budget gains of up to 12dB
- Receive diversity through Maximum Ratio Combining (MRC) for up to 8dB of gain
- Transmit diversity through Space Time Coding (STC) for up to 8dB of gain
- Increase IP payload throughput through Payload Header Suppression (PHS)

Carrier Class Reliability

The IDU features a rugged design with hot-swappable blades and a removable cooling fan tray to ensure reliability and high performance in adverse conditions and short maintenance cycles. High reliability configurations can be built by adding redundant blades to the system. The equipment is built to meet ETSI form factor requirements for 300 mm rack depth and back-to-back mounting.



Harris Stratex Networks 16e Base Station Solution

7022 WiMAX Blade

The 7022 is a basic IDU building block for 16e Harris Stratex Networks products. It can be fitted with one or two 16e PMP daughter boards, each serving one sector with 2x2 MIMO redundancy. Up to 4 of these boards can be placed into the 7400e chassis, enabling operation of BS in eight 16e sectors, with or without MIMO. IDU/ODU connection is realized through optical interface, with a wide selection of different SFP optical modules. Optical interface offers the possibility of interconnecting the IDU and ODU over longer distances.

The 7022 also offers the special synchronization blade, the 7088. It can use different synchronization sources (GPS, 1PPS, 10MHz) and can feed 4 WiMAX blades (on backplane or in front) with adequate synchronization signal of high stability and availability, including 12 or 24 h holdover (Stratum level 2 or 3).



7022: Mobile WiMAX IDU serving 2 sectors MIMO A/B Matrix 2x2

7820 – 802.16e ODU Unit

The 7820 ODU unit serves as the 16e Radio unit. Compared to the 7810, it has higher TX power and can have two transceivers in the same housing to support 2x2 MIMO with a single ODU unit. Two separate cables are needed: one optical for IDU/ODU interconnection and one copper power supply cable for powering the ODU. Both cables have weather-proof connectors. Different optical interfaces can be used to meet different customer needs and to comply to optical interface in the IDU unit.



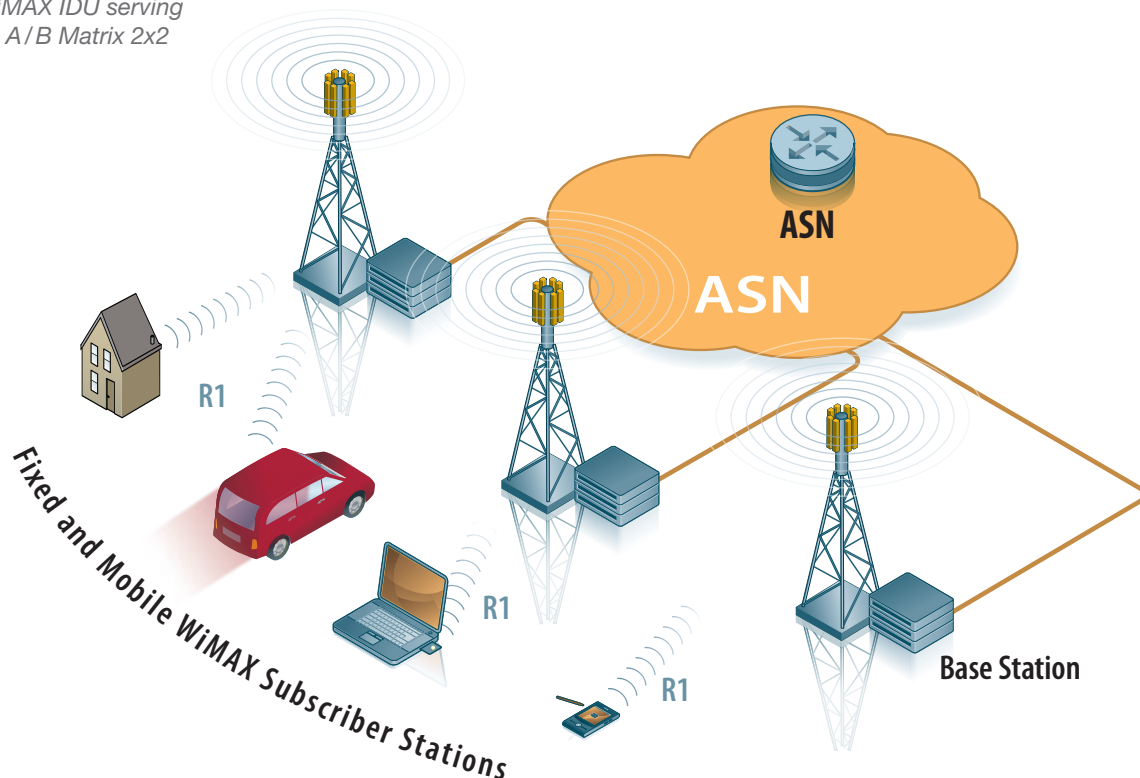
7820: Mobile WiMAX ODU with integrated 2TX and 2RX

Full-Fledged Network Management System

The Harris Stratex Networks' network management system, the 7000 NMS implements full Fault Configuration Accounting Performance Security (FCAPS) functionality and is implemented on a client server architecture based on SNMPv2. This provides easy integration of the 7000 NMS into the operator's management and billing system environment, should that be required.

Mobile WiMAX Access Service Network (ASN)

ASN NWG specifications of Mobile WiMAX, defines the interoperability between Mobile Station, Base Station, ASN infrastructure and CSN infrastructure. ASN enables control of user services and mobility management. Harris Stratex Networks' 7400e Mobile WiMAX BS supports NWG R6 interface for interoperability with operator's ASN.



16e (802.16e-2005) Base Station Specifications

Features	7400e with 7022 and 7820
General	
RF PHY	S-OFDMA
Frequency Bands	2.50 - 2.69 GHz, (2.3 - 2.4 GHz, 3.3 - 3.4 GHz, 3.4 - 3.6 GHz)
Channel BW	5, 10MHz (other on request)
Duplex Method	TDD
BS Synchronization	GPS or dedicated blade 6080
IDU-ODU Interconnection	Optical (SM or MM)
Backhaul Options	Gig Eth, 10/100 Eth, IP over 8x E1
WiMAX	
WiMAX Specification	IEEE 802.16e-2005
Dynamic Modulation Supported	64QAM, 16QAM, QPSK
TX Power Maximum	+36dBm standard (+40dBm high power on request)
RX Sensitivity (QPSK, 5MHz)	-97dBm
Cyclic Prefix	1/8 (other on request)
Diversity	2x2 MIMO (A/B), STC
Antennas	
Antenna Supported	Any (from omni to 60/90/120 deg.)
Services	
Service Flows per Subscriber	32
Service Flows per Sector	8000
QoS WiMAX	BE, nrt-PS, ert-PS, rt-PS, UGS
Packet Priority	802.1Q VLAN, Diffserv
Security	X.509 cert. PKMv2
Management	
Protocol	SNMP, CLI
SW Upgrade	Fail-save SW upgr. ; configuration file up-/ download
Network Management	FCAPS
GUI	Both EMS and NMS
Architecture	
Blade System	4 slots for WiMAX, 1 for sync and 1 for Ethernet switch
Mechanical / Electrical	
Interfaces per WiMAX Blade	
WAN interface	1 GBE and 10/100 Base-T on RJ-45 Electrical
Management Interface	10/100 Base-T and serial on RJ-45
Clock Interface	1PPS or GPS on BNC
PWR interface	dual -48V DC
IDU/ODU	optical (LC)
Voltage	-48V DC to -60V DC (-15%, +20%)
Power Consumption	250W (single sector) to 2000W (8 sectors)
IDU Dimensions (height-width-depth)	1U = 44mm (1.7 in) x 444mm (17.5in) x 230mm (9.1 in) 4U = 176mm (6.9 in) x 430mm (16.9 in) x 275mm (10.8 in)
ODU Dimensions (height-width-depth)	510mm (20.1 in) x 340mm (13.4 in) x 165mm (6.5 in)
Weight IDU	1U = 5 kg (11.0 lb) 4U = 10 kg (22.0 lb)
Weight ODU	<15 kg (< 33.1 lb)
Rack-pole Requirements	IDU = 19" and 23", ODU = up to 120 mm pole
Environmental IDU	Temperature: 0°C to 50°C (+32°F to +122°F), Humidity: 5% to 95% noncondensing
Environmental ODU	Temperature: -40°C to 50°C (-40°F to +122°F), Humidity: 0% to 100%
Regulatory Compliances	CE mark, RoHS/WEEE