

7300 Series

802.16e-2005

Stationary and Mobile WiMAX Subscriber Stations

Harris Stratex Networks' 7300 series is a portfolio of subscriber stations which can meet the requirements of state-of-the-art 802.16e-2005 WiMAX mobile networks. The subscriber stations can be deployed for servicing fixed, portable, or nomadic, as well as mobile applications. The subscriber stations are available for outdoor and indoor use. Indoor SS is available in a tabletop independent variant also as various forms of dependent devices like PCMCIA, PC-express formats for use with laptops and PDA devices.

Key Features

- WiMAX Forum Wave 2 based (IEEE 802.16e-2005)
- MIMO 2x2 A/B support
- Indoor, outdoor, PCMCIA and Express Card Form Factors available
- Multiple interoperability with other vendors
- Remotely managed SS safe/over-the-air software upgrade
- Various services – VLAN, NAT, Firewall NAT, IP Filtering, DNS, DHCP, Bridging Mode
- Integrated options: VoIP, WiFi, 4 port Ethernet switch
- Configuration via web-based GUI

Overview

Harris Stratex Networks' 7300 series of Subscriber Stations (SS) are fully compliant with the IEEE 802.16e-2005 standards, and conform to WiMAX forum Wave 2 interoperability specifications.

The system uses S-OFDMA radio technology, for robust performance under adverse conditions and NLOS operation, easy installation, improved coverage, and high spectral efficiency. Coding and modulation can be adapted per burst to optimize link efficiency, depending on prevailing link conditions.

The 7300 subscriber stations support a wide range of network services, including Internet Access and Voice over IP, for residential, SOHO, SME, large enterprise and multi-tenant applications, as well as support for fixed, nomadic, portable and mobile services.

The 7300 supports the 2.5-2.7 GHz and 3.3-3.6 and 2.3-2.4 GHz frequency bands. However, actual operating frequencies will be dependent upon applicable radio regulations, license conditions, and the specific deployment requirements.

The Subscriber Station equipment provides a platform for a wide range of services, with data bridging functionality, traffic shaping, and classification through the 10/100 Base-T Ethernet ports, WiFi access point and POTS/SIP interface.



WiMAX 16e Indoor Subscriber Station, with Integrated Directional Antennas

7310

- Wave 2 ready, MIMO A/B Mobile WiMAX-compliant SS
- Compact desktop design for full indoor NLOS deployment
- Zero installation effort
- Stationary and portable usage scenarios
- LED signal strength indicator
- Over-the-air, fail-safe download of software upgrades
- Optional IEEE 802.11b/g WiFi AP, 4 port Ethernet switch and 2 x POTS VoIP interface

The 7310 subscriber station is a desktop version, designed for full indoor operation. It does not have any outdoor parts. The 7310 comes in a slim white package with two integrated directional antennas and external power supply.

An optional IEEE 802.11b/g WiFi Access point, four port Ethernet switch and two port POTS VoIP interface are available.

WiMAX 16e Outdoor Subscriber Station with Integrated Antennas

7360

- Wave 2 ready, MIMO A/B Mobile WiMAX-compliant SS
- Small, robust housing
- Integrated high-gain antenna
- Hardened, weather-proof construction
- Use in urban, suburban and rural areas
- Roof-top mounting
- Over-the-air, fail-safe download of software upgrades

The 7360 Subscriber Station is an outdoor version, designed for full outdoor operation. It comes with an integrated antenna, which is located under the cover of the unit. SS has Installed Beeper and requires only a CAT5e cable to the rooftop outdoor unit for effortless installation and alignment.

The 7360 Subscriber Station is a cost-effective and high performance solution for business and residential users requiring the longer range and throughput of an outdoor unit.

WiMAX 16e PCMCIA Card Mobile Station

7370

- Wave 2 ready, MIMO 2x2 A/B Mobile WiMAX-compliant device
- Allows integration with any PCMCIA / PC Express host device
- Mobility support enables global inter- and intra- country roaming
- Low power consumption, below 2.5W, power saving modes as per 802.16-2005
- Small and light form factor

The 7370 is a Mobile WiMAX CPE to be used with laptop PCMCIA card slots or PDA devices. PCexpress derivative is also available for integration into USB 2.0 PC-express hosts. Low power consumption and advanced power saving options enable long operational readiness of the 7370 devices. Small and weightless form factor allows a true mobile WiMAX experience.

The 7370 supports IEEE 802.16e-2005 state-of-the-art Scalable OFDMA-based technology. It provides a seamless broadband wireless access, video streaming at home, office or on the move. To protect information transmitting through a wireless network, standard security Sublayer PKMv2 EAP-based user authorization / authentication and 3DES / AES for data encryption are supported.

The device is completely plug-and-play and requires almost zero installation effort by the end user. An easy-to-use Windows XP-based utility provides the graphic user with an interface for system/link status, configuration and firmware upgrade.



Multiple Quality of Service Support

Harris Stratex Networks provides QoS mechanisms at all levels in the network using standards based on IEEE 802.16e-2005 service flows, IP Differentiated Services Code Point (DCSP) mechanisms and all five IP QoS. This enables implementation of a wide range of data services such as:

- Unsolicited grant service (e.g. VoIP)
- Real-time polling service (e.g. streaming audio or video)
- Extended real-time polling service (e.g. voice with activity detection (VoIP))
- Near real-time polling service (file transfer protocol (FTP))
- Best effort service (data transfer, web browsing etc.)

The 7300 series of subscriber stations enables service providers to offer various kinds of service for maximum commercial returns. In addition Harris Stratex Networks provides mechanisms for radio modulation techniques based on reach, bandwidth and equal sharing.

Mobility Solution (Support for Different Handover Scenarios)

Initial, handover mechanisms are implemented on the SS/MS side to meet mobile user scenarios.

Within mobile services the 7300 series devices will support handover and roaming functionality as defined by WiMAX.

Harris Stratex Networks supports an application-specific and traffic-sensitive handover mechanism that makes different decisions depending on the applications running, type of subscriber and traffic that is flowing at the consideration time.

Advanced Radio Features and Performances

The main attributes desired in a modern communication system are high spectral efficiency and data rate along with high QoS. However, wireless channels present a very hostile and difficult environment for provision of such attributes. The 7300 series incorporates advanced antenna technologies which are key for improving WiMAX link budget and enables a profitable WiMAX business model with greater user coverage and satisfaction. This improves especially the characteristics of PDA type devices which are low power and restricted in antenna gain.

MIMO features are supported in downlink, both two-antenna spatial diversity (Matrix A) and spatial multiplexing (Matrix B), including advanced algorithms for adaptive modulation and adaptive switching between MIMO modes.

Benefits achieved are diversity gain, spatial multiplexing and array gain in NLOS environment. The gains achieved in Harris Stratex Networks field tests are typically between 5 and 12 dB.

Security and Authentication

To protect information transmitting through a wireless network, standard security Sublayer PKMv2 EAP-based user authorization and AES data encryption are supported. The security features involve:

- Secure key exchange between BS and SS over WiMAX air interface
- Encrypted management data flow over WiMAX air interface
- Encrypted user data flow over WiMAX air interface
- SS authentication at BS for WiMAX service
- SS authorization at provisioning system (e.g. AAA) for Access NW services
- SS lock mechanism for theft protection

X.509 certificates are provided with SS/MS and are used for authentication and avoidance of MAC spoofing. Planned features include EAP-TLS, EAP-SIM, EAP-AKA.

Operation, Maintenance and Subscriber Provisioning

The ASN network controls and manages Harris Stratex Networks MS/SS remotely, over the air. MSs/SSs support automatic, controlled and failsafe upgrade from the TFTP/FTP server.

Each SS can have specific service profile which will detail all of the SS service parameters like QoS, access lists, radio parameters, SNMP parameters, etc. Each SS is uniquely identified by MAC address and serial number. Entering this information into our NMS/PS would result in provisioning the SS. On network entry, these parameters are applied to the SS via the BS or directly over SNMP.



7310



7360



7370

Specifications

General	7310	7360	7370
RF PHY	SOFDM		
Frequency Bands	2.3-2.4 GHz, 2.5-2.7 GHz, 3.3-3.6GHz		
Channel Size	5 MHz (512 FFT) 10 MHz (1024 FFT) - S/W configurable; Other Bandwidths available on request		
Duplex Method	TDD		
WiMAX			
WiMAX Specification	IEEE 802.16e-2005, WiMAX forum Wave2 compliant		
Adaptive Modulations Supported	64QAM 5/6ctc, 64QAM 3/4ctc, 64QAM 2/3ctc, 16QAM 3/4ctc, 16QAM 1/2ctc QPSK 3/4ctc, QPSK 1/2ctc, (Rep2, Rep4, Rep6)		
Tx Power Maximum (typical)	+24 dBm, QPSK @ antenna port		+23 dBm, QPSK @ antenna port
Rx Sensitivity (typical)	-99 dBm @ 5MHz (QPSK 1/2)		Meet IEEE 802.16e Specification
Subchannelization Support	UL, DL		
Configurable Cycling Prefix	1/8 Other available on request		
Enhanced WiMAX Features	ARQ, HARQ, Packing, PHS		
Multiple Antenna Systems			
MRC Receiver	Two Antennas	One Antenna	Two Antennas
DL MIMO Matrix A	Yes		Yes
DL MIMO Matrix B	Yes		No
UL Collaborative for External Antenna	Yes	No	Yes
Antenna			
Antenna Type	Integrated directional cross polarized	Integrated directional cross polarized	Integrated and antenna connector
Connector for External Antenna	No	No	Yes
Mobility			
Supported Usage Scenarios	Fixed, Portable, Nomadic, Mobile		
Handover Support	intra-ASN, inter-ASN		
Provisioning Manager			
Service Flows, averages	32 per SS		
WiMAX QoS	BE, rt-PS, nrt-PS, ert-PS UGS		
Voice QoS	Yes		
VPN	Yes		
Access Control Lists	Yes		
Data Rate Limiting	Yes		
Minimum Data Rate	Yes		
Security	Data: DES, AES, 3DES; Authentication: (X.509 certificate), EAP		
Packet Priority	802.1p, IP ToS/Diffserv		
Management			
ASN/CSN Managed	SNMP, Telnet CLI		
CLI Interface	Yes		
SNMP MIB and client	Yes, v2		
GUI for Management	Yes (Subscriber station HTML GUI)		
Remote Software Upgrade with Fail-Safe Mechanism	Yes		
Configuration Management			
Graphical User Interface	HTML		
Mechanical/Electrical			
Form Factor	Indoor	Outdoor	Indoor
User Interface	10/100 Base-T on RJ-45, (Optionally 2xanalog voice port on RJ-11, WiFi 802.11 b/g and 4x 10/100 Base-T on RJ-45)	10/100 Base-T on RJ-45 (Optionally WiFi 802.11b/g)	PCMCIA card bus
Power Consumption typical/maximum	7W / 11.5W	7W/11.5W	Below 2.5W
Dimensions (height-width-depth)	190mm (7.5 in) x 40mm (1.6 in) x 200mm (7.9 in)	190mm (7.5 in) x 190mm (7.5 in) x 70mm (2.8)	10mm (.4 in) x 60mm (2.4 in) x 130mm (5 in)
Weight (typical)	0.60 kg (1.3 lb)	2.40 kg (5.3 lb)	0.10 kg (.2 lb)
Temperature	0°C to +55°C (+32°F to +131°F)	-40°C to +55°C (-40°F to +131°F)	0°C to +45°C (+32°F to +113°F)
Humidity	10% - 90% (non condensing)	0% - 100% (condensing)	10% - 85% (non condensing)
Standards and Compliance	CE Compliant, RoHS/WEEE Compliant		