

# Specifications

Features	StarMAX 2130	StarMAX 2140	StarMAX 2150	
<b>General</b>	RF PHY	OFDM		
	Frequency Bands	3.30-3.40 GHz, 3.40-3.60GHz, 2.50-2.69 Ghz		
	Channel Size	1.75 / 3 / 3.5 / 6 / 7 MHz - S/W configurable; Bandwidth configurable in 250kHz steps		
	Duplex Method	TDD, H-FDD*		
<b>WiMAX</b>	WiMAX specification	IEEE 802.16-2004		
	Adaptive Modulations Supported	64QAM 3/4, 64QAM 2/3, 16QAM 3/4, 16QAM 1/2, QPSK 3/4, QPSK 1/2, BPSK 1/2		
	Tx Power max.	+20 dBm / +24 dBm **)		
	Rx Sensitivity	-100 dBm		
	Uplink Subchannelization Support	Yes		
	Configurable Cyclic Prefix	1/4, 1/8, 1/16, 1/32		
	Enhanced WiMAX Features	Packing, PHS**), ARQ**)		
	STC support	Yes		
	Gain with BS Antenna Diversity	Between 3 dB and 8 dB, typ.		
<b>Antenna</b>	Antenna	12 dBi gain integrated 4 sector switched antenna	15 dBi external (outdoor) antenna (optionally for 21 dBi or other)	18 dBi gain outdoor antenna
	Connector for external antenna	no	yes	no
<b>Services &amp; Provisioning</b>	Service Flows	up to 8 service flows per Subscriber Station		
	QoS Priorities	Up to 16 classifiers per Subscriber Station		
	Classes of Service	BE, nrt-PS, rt-PS**, UGS**)		
	Access Control Lists****)	Yes		
	Data Rate Control****)	Minimum data rate, Data Rate Limiting		
	Portability & Mobility****)	Yes, TRUFLE™ enabled		
	Security	Data: DES, AES, 3DES; Authentication: X.503 certificate		
<b>Networking</b>	IP Protocols	IPv4		
	Bridging/Routing (Subscriber Station)	Transparent L2 switch, Bridging		
	Packet handling	802.1Q VLAN, *), PHS **)		
<b>Management</b>	Management Protocol	SNMP, CLI via serial port		
	Software upgrade	Yes, software upgradeable "over the air", fail-safe		
	NMS remote management & provisioning	Yes		
<b>Configuration management</b>	Graphical User Interface	Yes		
<b>Mechanical / Electrical</b>	User Interface	10/100 BaseT on RJ-45, analog voice port on RJ-11		
	Voltage	110-230V AC, 12V DC		
	Power Consumption typ./max.	11.5W		
	Dimensions (h-w-d) / mm	190 x 90 x 200	30 x 190 x 200	320 x 320 x 80
	Weight (indoor / outdoor)	0.80kg / -	0.60kg / 1.0 kg	- / 2.9 kg
	Temperature	0°C to +55°C		-40°C to +55°C
	Humidity	10% - 90% (non condensing)		0% - 100% (condensing)
	Regulatory Compliances	CE Mark, RHoS/WEEE		

Features apply to Product Release 2.0. \*) = Preliminary Information, \*\*) = References are to Product Release 3.x, \*\*\*\*) = enabled by StarMAX Provisioning Manager

## Product Codes

<b>StarMAX 2150-3.3G</b>	Subscriber Station, full outdoor, 3.3 GHz, TDD, 18.5 dB, 30 Deg antenna, PoE, 220V power adapter
<b>StarMAX 2150-3.5G</b>	Subscriber Station, full outdoor, 3.5 GHz, TDD, 18.5 dB, 30 Deg antenna, PoE, 220V power adapter
<b>StarMAX ProVision</b>	Provisioning Management software (see StarMAX NMS/Provisioning for details)

WiMAX  
SUBSCRIBER  
STATION

# StarMAX™ 2100 Series



## Key Features

- Fully WiMAX compliant
- WiMAX Autoconfiguration
- STC/MRC support
- Subchannelization
- Remote software upgrade
- Configured via Provisioning Server
- Graphical User Interface
- 3.3 / 3.5 / 2.5 GHz, TDD, H-FDD

Telsima's StarMAX 2100 series of Subscriber Stations (SS) are fully compliant with the 802.16-2004 standards. They are matched to the frequencies and WiMAX enhanced features supported by the Telsima StarMAX Base Station (BS) system. When deployed in networks based on the StarMAX BS, they provide optimal performance in line-of-sight (LOS), near-line-of-sight (NrLOS) and non-line-of-sight (NLOS) applications. Use of intelligent antenna systems and advanced WiMAX features is what allows the StarMAX SS to offer market-leading performance. The three variants available here, the StarMAX 2130, 2140 and 2150 cover indoor, semi-outdoor and outdoor deployments.

## Target Applications

- Wireless Broadband Internet Access
- VoIP
- VLAN service

## Target Markets

- Enterprise/Small Office
- Retail/Residential DSL Alternative
- Urban, Suburban and Rural

## Deployment Modes

- Fixed/Portable/Mobile
- Non Line of Sight (NLOS)
- Near Line of Sight (NrLOS)
- Line of Sight (LOS)

## Standards compliant for investment protection

All StarMAX SS are fully compliant with IEEE 802.16-2004 specifications. This assures network operators of compatibility with any WiMAX certified BS, protecting their infrastructure investments.

## Enhanced Features for Superior Coverage and Throughput

The StarMAX SS implement several enhanced modes of WiMAX for performance differentiation. These include:

- Uplink Subchannelization for link budget gains of up to 12 dB
- Space Time Coding (STC) receive diversity gains - combined with Maximum Ratio Combining (MRC) receive diversity on Base Station - for typically 3 to 8 dB of added gain in uplink and downlink.
- Payload Header Suppression (PHS) for increasing IP payload throughput

## Ease of Installation and Operation

The StarMAX 2100 series SS contain a self-install WiMAX modem with automatic frequency selection, WiMAX initial ranging and WiMAX certificate based authentication.

The Telsima StarMAX ProVision Mobility & Provisioning Manager controls the user authorization and IP network access and service grants. Service grants are configurable service flows that allow multiple users and applications of each SS to be assigned individual service levels, such as different levels of QoS or bandwidth.

The built-in web interface allows users to access WiMAX and network parameters which is essential for support when no WiMAX service is available. Depending on the requirements of the service provider, the level of access to the SS system settings by the subscriber can be controlled. Each SS is accessed from a central provisioning manager that remotely controls and configures all service and operation parameters. The StarMAX 2100 series also supports over-the-air software download allowing for ease of upgrades to the SS in a network.





## WiMAX Outdoor Subscriber Station

### StarMAX™ 2150

- 18 dBi outdoor antenna
- Hardened, weather proof construction
- Enterprise / SOHO Customers
- Residential / Retail Customers
- Urban, Suburban and Rural
- Roof-top mounting

The Telsima StarMAX 2150 is an outdoor SS in a weatherproof enclosure consisting of the modem and an 18dBi antenna in one unit. It is typically used in fringe and suburban/rural locations where LOS operation is required or in NrLOS/NLOS cases where the outdoor antenna enables service in locations with difficult access.

The customer equipment connects directly via an Ethernet cable to the StarMAX 2150. Power is supplied to the SS via the same Ethernet cable using power-over-ethernet.



## WiMAX Semi-outdoor Subscriber Station

### StarMAX™ 2140

- Indoor modem and outdoor/indoor antenna
- Designed for Near Line of Sight (NrLOS) operation
- Non Line of Sight (NLOS), indoor use

The Telsima StarMAX 2140 SS consists of a compact, low cost indoor unit that connects to an external antenna via a coax cable. The external antenna provides a gain of 15dB and can be installed outside the building in order to provide better reception.

It is an ideal solution for residential and enterprise customers seeking service in WiMAX network layouts that provide umbrella coverage for a larger area or in deployments where indoor attenuation limits the use of complete Indoor SS.



## WiMAX Indoor Subscriber Station

### StarMAX™ 2130

- Built-in 12 dBi intelligent antenna
- Non Line of Sight (NLOS), indoor use

The Telsima StarMAX™ 2130 SS is designed for indoor use under NLOS conditions. It has an integrated dynamically switching 4 sector antenna that delivers 12 dBi of gain while reducing interference. The StarMAX™ 2130 is typically used in dense urban/suburban environments where cell sizes are smaller to accommodate higher density of subscribers.