



# WiMAX / OFDM BROADBAND BASE STATION MAKSAT BTS

+/- 2.5 MHz  
Channel

## MAKSAT BTS MAX BROADBAND BASE STATION

Data Rate up to 350 Mbps in 2.3--2.5Ghz and 4.9--6.1Ghz  
[ Includes ISM - 2.4Ghz Band and UNI ISM - 5.7Ghz Bands ]

4 units of 90° Panel Antennas  
covering 360° with 4 RF interfaces



MAKSAT BTS MAX balances enterprise-scale security, management and Quality of Service features with high performance.

### Features Benefits

The MAKSAT BTS MAX is a 4 Sector 360° Broad Band Base Station with Any Point to Any Point and Multipoint to Multipoint WiMAX/OFDM Technology for High Bandwidth distribution of up to 350Mbps in 2.3-2.5 GHz and 4.9-6.1Ghz bands and NLOS implementation.

### Built-in Router Specifications:

#### Basic Network Platform

TCP/IP protocol suite

#### Firewall and NAT

Packet filtering, source and destination NAT, source MAC addresses, ports, protocols, protocol options, interfaces.

#### Routing

RIP 1 / 2, OSPF v2, BGP v4, equal cost multi-path routing, Policy based routing, firewall marked packet routing

#### Bridging

Spanning tree protocol, multiple bridge interfaces, bridge firewall

#### Bandwidth Management

Per IP / protocol / subnet / port, CBQ, RED, SFQ, byte limited queue, packet limited queue

#### PPPoE

Access Concentrator (server)

#### Tunnels

IPIP tunnels, EoIP (Ethernet over IP)

#### IPsec

IP encryption (IPsec)

**VLAN**, Virtual LAN support

**DHCP** server per interface, DHCP client

**NTP** Network Time Protocol server and client

#### Monitoring/Accounting

IP traffic accounting, firewall actions logging

#### Tools

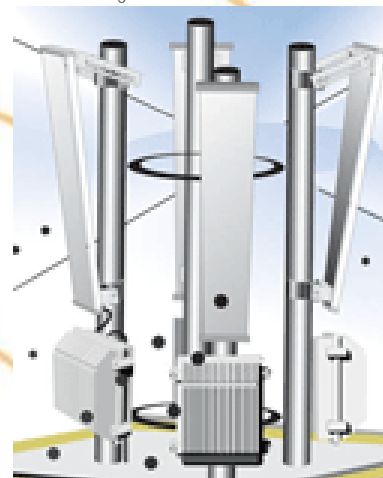
Ping, trace route, bandwidth test, ping flood, telnet

#### DNS client

Name resolving for local use, Dynamic DNS Client

#### SNMP

read only access



With inbuilt router and  
Network Management System

### Caching Features

DNS cache, SQUID caching proxy

### Administration

#### General

History, undo / redo /display, multiple administrator connections real time updates in WinBox GUI, real time Configuration

#### Web/GUI

Uses GUI tool for remote administration, graphing of traffic, statistics, and resource monitoring multiple internal configuration windows Terminal Console standard keyboard and monitor connection, scripting import /export of configuration scripts to screen / file command history, hierarchical command structure monitoring of interface status and traffic, context specific hints.

#### Telnet

All terminal console features, SSH option, cut/paste of configuration

#### FTP

For uploading upgrade packages, uploading and downloading scripts, Hot Spot authorization.

#### Upgrading

Remote upgrade by uploading the software packages to the router

#### Scripting

Scripts can be scheduled for executing at certain times, periodically, or on events. All Terminal Console commands are supported in scripts.

## Features

- Pre WiMAX / OFDM 5Mhz & 10Mhz
- Any Point to Any point and Multipoint to Multipoint.
- Supports Mesh Topology
- Seamless Roaming
- Redundant Networks
- IP Routing
- Wireless Data Rate 108 Mbps per Sector
- Ultra Secure Wireless Mechanism upto 128 bit - TKIP, AES-CCM, WEP, WAP
- GUI, Telnet, SNMP Remote Management
- QOS with Traffic Shaping
- 3 level Watch Dog Timer
- Sensitivity of (-)105 XR Rate (Best in the Industry)
- Firewall with packet filter & NAT
- Upto 76 non overlapping Channels in 2.3 to 2.5GHz (14non overlapping in ISM Band)
- Upto 237 non overlapping in 4.9-6.1 GHz
- Transmit Power Control (TPC)
- Dynamic Frequency Select (DFS)

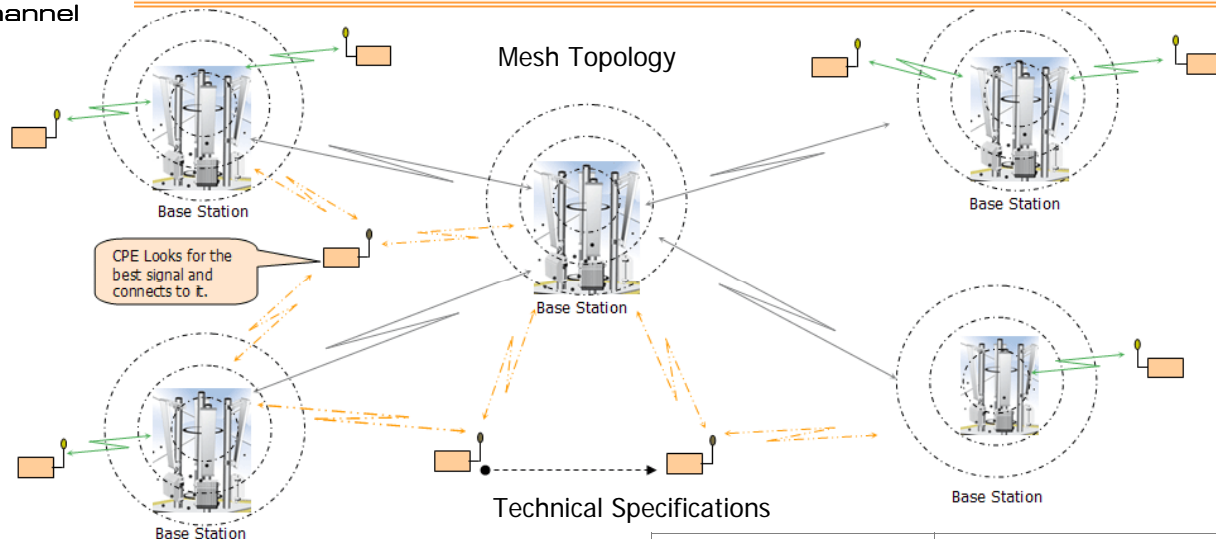




WiMAX/OFDM BROADBAND BASE STATION

# MAKSAT BTS

+/- 2.5 MHz Channel



Frequency Range	2.30 -2.50 GHz, 4.9 - 6.1 GHz
Number of Channels	76 non overlapping (2.3-2.5Ghz) 237non overlapping (4.9-6.1 GHz)
Channel Width	(+/-) 2.5 Mhz, 5 Mhz, 10 Mhz
Pre WiMax	Yes, 5Mhz & 10Mhz
Receive Sensitivity (1e-6 BER)	1 Mbps -97 dBm 2 Mbps -96 dBm 6 Mbps -94 dBm 9 Mbps -93 dBm 11 Mbps -92 dBm 12 Mbps -91 dBm 18 Mbps -90 dBm 24 Mbps -86 dBm 36 Mbps -83 dBm 48 Mbps -77 dBm 54 Mbps -74 dBm
Max Receive Level	0 dBm (no damage)
Processing Gain	> 10 dB
Antenna Connector	N Female (2 antenna connectors)
RF Interface RF Modulation Scheme	upto 4 QAM64, QAM16, QPSK, BPSK, CCK (OFDM, DSSS)
Option of Additional Ethernet 10/100 Interface	Yes, upto 3
Wireless Data Rate	54 Mbps, 108 Mbps
Super fast Mode upto 108Mbps	Yes
Modes of operation	802.11b, 802.11b/g, 802.11g, 802.11g turbo, 802.11a/turbo
Duplex Format	TDD, FDD
Certification	FCC, ISO 9001-2000
Range	Up to 15 Km
Output Power	0-23dBm
Software controllable	Yes (Steps of 1 dB)
Extended Range (XR)	Best in the industry (-) 105 dBm
Watch Dog Timer	Software/Hardware/Temperature
QOS/COS/GOS	Yes

Bandwidth Management	Yes
Router	Yes
Monitor/Control	Through Ethernet port using Winbox/Telnet
Packet Format	IEEE 802.3 and Ethernet II
Network Connection	10 /100 Base T RJ Female Ethernet Connection
Bridge Functionality	Intelligent Local Packet Filtering (self-learning), Node by node user configurable data rates (CIR and MBR)
Network Topologies	Any point-to Multipoint Multipoint-to Multipoint
Repeater Mode	Built-in Mode
RF Collision Management	Combined TDD and FEC
Data Scrambling	Security 128 bit - TKIP, AES-CCM, WEP,WAP
Data Security Password	Network attachment is password protected
Remote Management	Winbox ,Telnet
Management Port	Ethernet using Winbox, Telnet
SNMP	MIB2
Management Port Functionality	Full configuration/management from any station through a command line
Software Management	over RF for firmware updates
Power Adapter Requirement	110 VAC or 220 VAC , 7V - 18V DC
Power Consumption	Less than 20W (fully loaded)
Height x Width x Depth Weight	7" x 11" x 5" 3Kg
Operational Temperature	(-)40C to (+)80C
Humidity	Humidity 0-95% non condensing, Outdoor weatherproof enclosure





# WiMAX / OFDM BROADBAND BASE STATION MAKSAT CPE



+/- 2.5 MHz  
Channel

## MAKSAT CPE MAX

Actual Data Rate up to 20 Mbps in 2.3-2.5GHz &  
40 Mbps in 4.9-6.1GHz



MAKSAT CPE MAX Operates with the Broadband Base Station using the WiMAX/OFDM Technology with NLOS capabilities.

Different models of CPE MAX has capacity of multiple RF Interfaces for multiple operations like developing WiFi Zones and carry forward and creating a seamless network.

It offers complete network management and control features.

### **Built-in Router Specifications:**

#### **Basic Network Platform**

TCP/IP protocol suite

#### **Firewall and NAT**

Packet filtering, source and destination NAT, source MAC addresses, ports, protocols, protocol options, interfaces.

#### **Routing**

RIP 1 / 2, OSPF v2, BGP v4, equal cost multi-path routing, Policy based routing, firewall marked packet routing

#### **Bridging**

Spanning tree protocol, multiple bridge interfaces, bridge firewall

#### **Bandwidth Management**

Per IP / protocol / subnet / port, CBQ, RED, SFQ, byte limited queue, packet limited queue

#### **PPPoE**

Access Concentrator (server)

#### **Tunnels**

IPIP tunnels, EoIP (Ethernet over IP)

#### **IPsec**

IP encryption (IPsec)

**VLAN**, Virtual LAN support

**DHCP** server per interface, DHCP client

**NTP** Network Time Protocol server and client

#### **Monitoring/Accounting**

IP traffic accounting, firewall actions logging

#### **Tools**

Ping, trace route, bandwidth test, ping flood, telnet



## Features

- Pre WiMAX / OFDM 5Mhz & 10Mhz
- IP Routing
- NLOS
- +/- 2.5 MHz Channel
- Ultra Secure Wireless Mechanism upto 128 bit - TKIP, AES-CCM, WEP, WAP
- GUI, Telnet, SNMP Remote Management
- QOS with Traffic Shaping
- 3 level Watch Dog Timer
- Sensitivity of (-)105 XR Rate (Best in the Industry)
- Firewall with packet filter & NAT
- Upto 76 non overlapping Channels in 2.3 to 2.5GHz (14non overlapping in ISM Band)
- Upto 237 non overlapping in 4.9-6.1 GHz
- Transmit Power Control (TPC)
- Dynamic Frequency Select (DFS)

### **DNS client**

Name resolving for local use, Dynamic DNS Client

### **SNMP**

read only access

### **Caching Features**

DNS cache, SQUID caching proxy

### **Administration**

#### **General**

History, undo / redo /display, multiple administrator connections real time updates in WinBox GUI, real time Configuration

#### **Web/GUI**

Uses GUI tool for remote administration, graphing of traffic, statistics, and resource monitoring multiple internal configuration windows Terminal Console standard keyboard and monitor connection, scripting import /export of configuration scripts to screen / file command history, hierarchical command structure monitoring of interface status and traffic, context specific hints.

#### **Telnet**

All terminal console features, SSH option, cut/paste of configuration

#### **FTP**

For uploading upgrade packages, uploading and downloading scripts, Hot Spot authorization.

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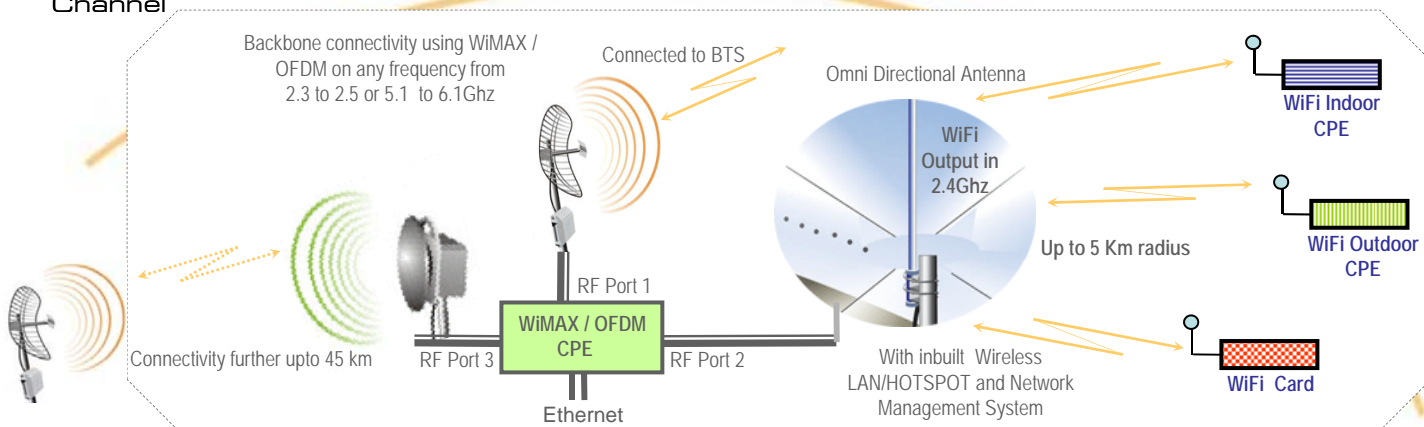


WiMAX / OFDM BROADBAND BASE STATION

**MAKSAT CPE**



+/- 2.5 Mhz Channel



**Technical Specifications**

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Option of Additional Ethernet 10/100 Interface	Yes, upto 2
Wireless Data Rate	54 Mbps, 108 Mbps
Super fast Mode upto 108Mbps	Yes
Modes of operation	802.11b, 802.11b/g, 802.11g, 802.11g turbo, 802.11a/turbo
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Certification	FCC,ISO 9001-2000
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Output Power	0-23dBm
Software controllable	Yes (Steps of 1 dB)
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