

## MAKSAT Wimax CPE Indoor

Frequency 2.5GHz/3.5GHz

### Description

The MAKSAT device is one of the most advanced, low power, indoor, WIMAX CPE devices on the market today. It is IEEE802.16e compliant and is available in two models. The 2.5 GHz model operates in the licensed 2.5 GHz to 2.7 GHz band and the 3.5 GHz model operates in the licensed 3.3 GHz to 3.6 GHz band. The MAKSAT is available with three interface options: Ethernet, PCI-Express and USB.

### MAKSAT-Ethernet

The MAKSAT-Ethernet is a compact device with a standard Ethernet interface. It can be powered by either a 5V AC/DC converter or a USB cable connected to your computer. SIMO (Single Input Multiple Output) operations are supported. With W8320-Ethernet, Loop makes portable WiMAX available today on existing certified WiMAX networks. This allows operators to offer new services without waiting for WiMAX Mobile networks.

### MAKSAT-PCI-Express

The MAKSAT-PCI-Express PC card brings WiMAX services to laptops around the globe and moves today's WiMAX networks beyond the traditional residential/fixed WiMAX market. SIMO (Single Input Multiple Output) operations are supported.

### MAKSAT-USB

The MAKSAT-USB is a compact, plug and play device with a standard USB interface that connects to your PC. With MAKSAT-USB, operators can offer new services without waiting for WiMAX Mobile networks. SIMO (Single Input Multiple Output) operations are supported.

### Features:

- Inter-operational with WiMax Forum Wave 2 Base Stations
- OFDMA (Orthogonal Frequency Division Multiple Access) supports non-line of sight operation
- Supports TDD mode
- QPSK/16QAM/64QAM adaptive modulation
- Hybrid channel equalization estimation
- Full feature QoS (Quality of Service):
  - UGS
  - rtPS
  - nrtPS
  - ErtPS
  - BE
- IEEE 802.16e 2005 compliant with WiMAX Profile Wave 2
- RoHS compliant

### MAKSAT Ethernet Version

- Standard Ethernet interface
- Built-in antennas (6 dBi patch and omni chip)
- 5V powered by USB (Portable) or AC/DC converter
- Pocket size : 71 x 90 x 31 mm (WxHxD), 150 g

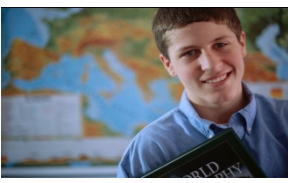
### MAKSAT PCI-Express Version

- Built-in antennas (omni chip)
- Plug and play
- Powered by PC notebook
- Size: 54 x 3 x 120 mm (WxHxD), 100 g

### MAKSAT USB Version

- Standard USB interface (plug and play)
- Built-in antennas (6 dBi patch and omni chip)
- Powered by PC notebook
- Pocket size : 71 x 90 x 27 mm (WxHxD), 150 g










## Ordering Information

**Note:** All MAKSAT devices and accessories are RoHS compliant.  
To order specify:

Model	Description	Note
<b>Main Unit</b>		
MAKSAT-freq-int-ada-G	Indoor CPE with built-in antennas. Standard package varies according to frequency and interface selected. See ordering information below.	Choose frequency, interface and power adaptor below

### Accessories

<b>User's Manual</b>		
MAKSAT-2.5-UM	Optional, paper copy of User Manual. A CD version of the manual is already included as standard equipment.	
MAKSAT-3.5-UM		
<b>AC plug-in adaptor for W8320-ETH Model</b> (All adaptors are RoHS compliant)		
ACC-ADA-USA	Plug-in adaptor for Taiwan/America	
ACC-ADA-EU	Plug-in adaptor for Europe	
ACC-ADA-UK	Plug-in adaptor for UK	
ACC-ADA-AUS	Plug-in adaptor for Australia	
ACC-ADA-CH	Plug-in adaptor for China	
<b>Cables</b> (All cables are RoHS compliant)		
ACC-CAB-RJ-100-1RJ	RJ45/Male to one RJ45/Male Ethernet Cable; Length:	For MAKSAT-ETH only
ACC-CAB-USB-40-JACK	USB to DC Jack Cable,	For MAKSAT-ETH only
ACC-CAB-USB-150-MUSB	USB to mini-USB Cable,	For MAKSAT-USB only
<b>Mounting Kit</b> (All mounting kits are RoHS compliant)		
Loop-ACC-ETH-KIT	Mounting kit (bracket and fasteners)	For MAKSAT-ETH only
Loop-ACC-USB-KIT	Mounting kit (bracket and fasteners)	For MAKSAT-USB only






#### ■ Where **freq** is used to select a frequency

2.5	Indoor 2.5 to 2.7 GHz CPE with built in antennas. Standard package varies according to interface selected. See interface ordering information below.	Choose interface and power adaptor below
3.5	Indoor 3.3 to 3.6 GHz CPE with built in antennas. Standard package varies according to interface selected. See interface ordering information below.	Choose interface and power adaptor below

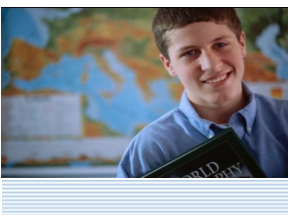
#### ■ Where **int** is used to select an interface

ETH	Ethernet Interface. Includes: one 5V AC/DC (5 Watt) converter; one one RJ45/Male to one RJ45/Male Ethernet cable; one USB to DC jack cable; one mounting kit	Receives power from PC Notebook or 5V AC/DC converter. Available for 2.5 GHz model only
PCE	PCI-Express interface.	Available for 3.5 GHz model only Receives power from PC Notebook
USB	USB interface. Includes: one USB to mini USB cable, one mounting kit	Receives power from PC Notebook

#### ■ Where **ada** is used to select a plug-in adaptor for the 5V AC/DC, 5 Watt converter (ETH model only). All adaptors are RoHS compliant

USA	Adaptor for Taiwan/America	
EU	Adaptor for	
UK	Adaptor for	
AUS	Adaptor for	
CH	Adaptor for	





## Product Specification

### MAKSAT-2.5 GHz

#### Radio Frequency

<b>Standard</b>	IEEE 802.16e 2005 with WiMAX Profile Wave 2	<b>Host Interface</b>	Ethernet RJ45 or PCI-Express or USB								
<b>Antenna</b>	ETH and USB -embedded antennas (one 6 dBi patch and one omni chip)	<b>Modulation</b>	QPSK / 16QAM / 64QAM								
<b>Signal Type</b>	OFDM 512/1024 FFT	<b>Radio Access</b>	TDD								
<b>Frequency Band</b>	2.5 GHz to 2.7 GHz	<b>Chel Bandwidth</b>	5 MHz, 10 MHz								
<b>QoS</b>	UGS, rtPS, nrtPS, ErtPS and BE	<b>ARQ</b>	Stop and Wait, Go Back N								
<b>Error Correction</b>	Reed-Soloman / Convolutional Viterbi	<b>Equalization</b>	Hybrid Chel Equalization Estimation								
<b>Up Link Chelization</b>	Per IEEE 802.16e 2005 standard	<b>Bandwidth Request</b>	Per IEEE 802.16e 2005 standard								
<b>Payload Header Suppression</b>	Ethernet, IPV4	<b>Rx Sensitivity @ BER 10e-6, 5 MHz And 10 MHz</b>	<table border="0"> <tr> <td>5 MHz:</td> <td>10 MHz:</td> </tr> <tr> <td>QPSK: -91dBm</td> <td>QPSK: -88dBm</td> </tr> <tr> <td>16QAM: -85dBm</td> <td>16QAM: -82dBm</td> </tr> <tr> <td>64QAM: -78dBm</td> <td>64QAM: -75dBm</td> </tr> </table>	5 MHz:	10 MHz:	QPSK: -91dBm	QPSK: -88dBm	16QAM: -85dBm	16QAM: -82dBm	64QAM: -78dBm	64QAM: -75dBm
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QPSK: -91dBm	QPSK: -88dBm										
16QAM: -85dBm	16QAM: -82dBm										
64QAM: -78dBm	64QAM: -75dBm										
<b>Tx Output Power</b>	20 dBm ± 2 dB										

#### Management

<b>Management</b>	SNMP v2 MIB (Phase 2), Web Page, Serial Port (Phase 1)		
<b>Security</b>	PKMv2, EAP-TLS and EAP-TTLS (Phase 2)	<b>Authentication</b>	X.509 Interface (Phase 2)

#### Electrical

<b>Power Supply</b>	5V AC/DC adaptor or USB power	<b>Power Consumption</b>	Max. 5 W
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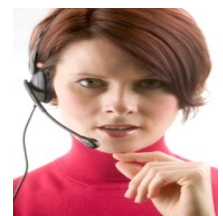
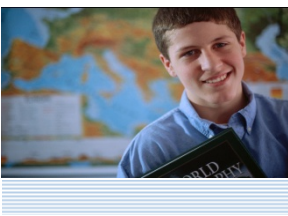
#### Physical & Environmental

<b>Dimensions (WxHxD)</b>	ETH interface – 71x90x PCE Interface- 54 x 3 x USB Interface-71 x 90 x	<b>Weight</b>	ETH interface PCE Interface USB Interface
<b>Temperature</b>	Operating : 0 to Storage : -40 to	<b>Humidity</b>	95% Condensing

#### Certification

CE (pending)





## Product Specification

### MAKSAT-3.5 GHz

#### Radio Frequency

<b>Standard</b>	IEEE 802.16e 2005 with WiMAX Profile Wave 2	<b>Host Interface</b>	Ethernet RJ45 or PCI-Express or USB
<b>Antenna</b>	ETH and USB -embedded antennas (one 6 dBi patch and one omni chip) PCE -two embedded omni chip antennas	<b>Modulation</b>	QPSK / 16QAM / 64QAM
<b>Signal Type</b>	OFDM 512/1024 FFT	<b>Radio Access</b>	TDD
<b>Frequency Band</b>	3.3 GHz to 3.6 GHz	<b>Chel Bandwidth</b>	5 MHz, 10 MHz
<b>QoS</b>	UGS, rtPS, nrtPS, ErtPS and BE	<b>ARQ</b>	Stop and Wait, Go Back N
<b>Error Correction</b>	Reed-Soloman / Convolutional Viterbi	<b>Equalization</b>	Hybrid Chel Equalization Estimation
<b>Up Link Chelization</b>	Per IEEE 802.16e 2005 standard	<b>Bandwidth Request</b>	Per IEEE 802.16e 2005 standard
<b>Payload Header</b>	Ethernet, IPV4	<b>Rx Sensitivity @ BER 10e-6, 5 MHz And 10 MHzl</b>	5 MHz: QPSK: -91dBm 16QAM: -85dBm 64QAM: -78dBm 10 MHz: QPSK: -88dBm 16QAM: -82dBm 64QAM: -75dBm
<b>Suppression Tx Output Power</b>	20 dBm ± 2 dB		

#### Management

<b>Management</b>	SNMP v2 MIB (Phase 2), Web Page, Serial Port (Phase 1)	<b>Authentication</b>	X.509 Interface (Phase 2)
<b>Security</b>	PKMv2, EAP-TLS and EAP-TTLS (Phase 2)		

#### Electrical

<b>Dimensions (WxHxD)</b>	ETH interface – 71x90x PCE Interface- 54 x 3 x USB Interface-71 x 90 x	<b>Weight</b>	ETH interface PCE Interface USB Interface
<b>Temperature</b>	Operating : 0 to Storage : -40 to	<b>Humidity</b>	95% Condensing

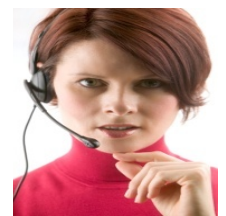
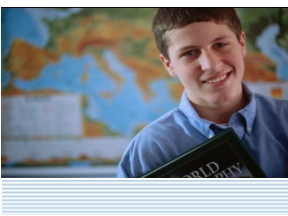
#### Physical & Environmental

<b>Power Supply</b>	5V AC/DC adaptor or USB power	<b>Power Consumption</b>	Max. 5 W
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#### Certification

CE (pending)





### Inter-operability Test

Company	Model Name	Sequans IOT Pass
Alcatel-Lucent	9710	Yes
Alcatel-Lucent	9715 Light Base Station for WiMAX (LWBSA25)	Yes
Alvarion	BreezeMAX 802.16e 2.5 GHz	Yes
Cisco Systems	Cisco BWX 8305 Basestation + TTA 2496-2620 MHz	Yes
Cisco Systems	Cisco BWX 2305 Basestation + TTA 2496-2620 MHz	Yes
Huawei	DBS3900 WiMAX	Yes
Motorola	WAP 25400	Yes
NEC	NWA-027932-001 (ODU) & NWA-024297-001 (IDU)	Yes
POSDATA	P-RAS 1002	Yes
POSDATA	FLYVO RAS6000	Yes
Runcom	RNU2000N	Yes
Samsung	SPI-2110	Yes
Samsung	WiMAX Wave2 Base Station SPI-2211	Yes
SEQUANS	SQN2130-RD	Yes
Telsima	StarMax 6022/8200-25	Yes
ZTE Corporation	ZXMBW-A250	Yes

