

## Extending Superior Performance

The DV WiMAX modems enable WiMAX Operators to deliver wireless broadband to residential and enterprise users. It features high transmission output power and high gain antenna to tackle the issue of insufficient indoor coverage. DV indoor modems integrate VoIP services to provide quality IP-based voice transmission, offering WiMAX Operators an opportunity to increase revenue.

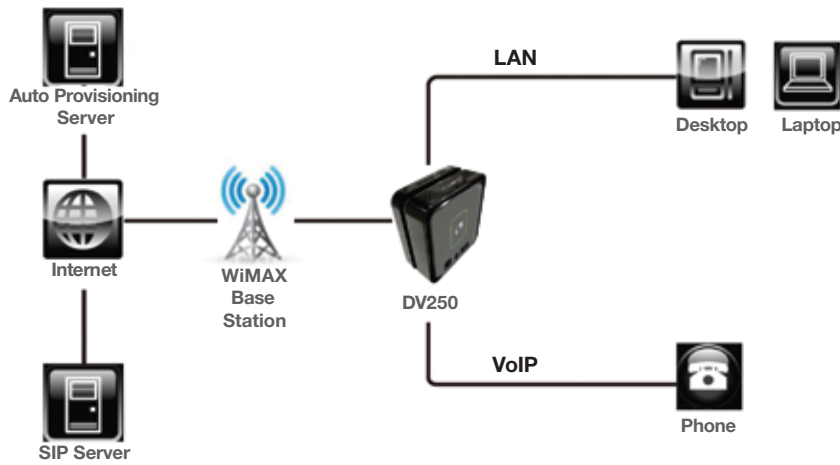
## Key Features

- IEEE 802.16e Standard Compliant (Mobile WiMAX)
- TDD OFDMA
- Operates within 2.5GHz to 2.7GHz Frequency Range
- 5, 7, 10MHz Channel Bandwidth
- Up to 27dBm Transmission Power
- 6dBi Antenna Gain
- Up to 20Mbps Throughput\*
- One 10/100 Base-T LAN
- IP Router with Security
- 5 Classes of QoS Support
- Supports TR069 Protocol for Device Management
- Auto Provisioning
- Over-the-air Firmware Upgrade
- VoIP with 1 FXS Ports
- Smart QoS for VoIP Packets

*\* Subject to field conditions.*



# Benefits



## Plug and Play

This device is designed to self-install when plugged in for the first time. The Receiving Signal Strength Indicator LED will guide users to position the modem correctly to receive the best signal strength. This reduces the need for onsite installation services which contributes to high maintenance and support overheads.

## Quality Voice Service

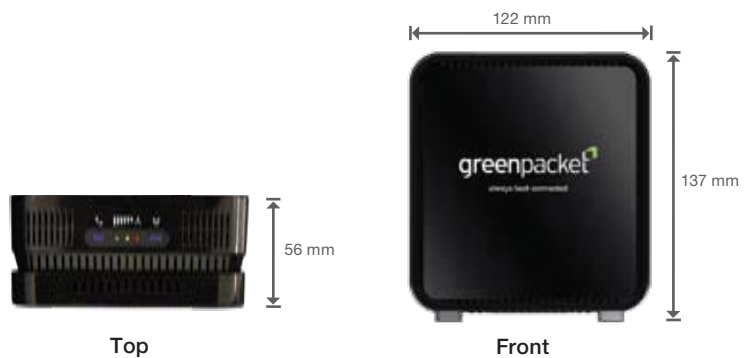
DV modems are incorporated with WiMAX SIP VoIP QoS and standard SIP protocol. This helps to sustain the voice transmission during packet loss and limited bandwidth availability, which translates to improved voice quality. WiMAX Operators can leverage on this feature to increase revenue by offering quality voice services to subscribers.

## Climatic Reliability

In addition to its internal design that provides superior performance, the exterior of DV250 is specially designed for reliable performance as it is built to withstand ambient operating temperatures of up to 50°C. As such, DV250 can be deployed in extreme heat conditions, particularly in tropical climates.

## Package Contents

- 1 x DV250 WiMAX Indoor VoIP Modem
- 1 x Power adapter 100V~240V AC-In, 12VC/1.5A DC-Out
- 1 x 2M RJ45 Network Cable
- 1 x Quick Installation Guide





# Technical Specification

## Physical Layer

<b>Standard</b>	• IEEE 802.16e-2005 (WiMAX)
<b>RF Access Scheme</b>	Scalable OFDMA
<b>Duplexing</b>	TDD
<b>Data Rate</b>	<ul style="list-style-type: none"> <li>• Up to 20Mbps (DL), 6Mbps (UL)</li> <li>• 6 - 9Mbps at QPSK</li> <li>• 12 - 18Mbps at 16QAM</li> <li>• 20+ Mbps at 64 QAM (DL only)</li> </ul>
<b>Frequency Range</b>	2.5GHz ~ 2.7GHz
<b>Channel Bandwidth</b>	5, 7, 10MHz
<b>Adaptive Modulation</b>	<ul style="list-style-type: none"> <li>• QPSK 1/2, 3/4</li> <li>• 16QAM 1/2, 3/4</li> <li>• 64QAM 1/2, 2/3, 3/4, 5/6 (DL only)</li> </ul>
<b>Frame Size</b>	5ms
<b>Maximum RF Transmit</b>	27dBm
<b>Power</b>	
<b>Antenna Type</b>	Integrated panel antenna (6dBi)
<b>Receive Sensitivity</b>	5MHz Bandwidth Receive Sensitivity: <ul style="list-style-type: none"> <li>• -97.5dBm @ QPSK 1/2</li> <li>• -94.1dBm @ QPSK 3/4</li> <li>• -91.8dBm @ 16QPSK 1/2</li> <li>• -87.7dBm @ 16QPSK 3/4</li> <li>• -86.6dBm @ 64QAM 1/2</li> <li>• -83.5dBm @ CTC-64QAM-2/3</li> <li>• -82.4dBm @ CTC-64QAM-3/4</li> <li>• -80.5dBm @ CTC-64QAM-5/6</li> </ul> 10MHz Bandwidth Receive Sensitivity: <ul style="list-style-type: none"> <li>• -94.5dBm @ QPSK 1/2</li> <li>• -91.1dBm @ QPSK 3/4</li> <li>• -88.8dBm @ 16QPSK 1/2</li> <li>• -84.7dBm @ 16QPSK 3/4</li> <li>• -83.6dBm @ 64QAM 1/2</li> <li>• -80.5dBm @ CTC-64QAM-2/3</li> <li>• -79.4dBm @ CTC-64QAM-3/4</li> <li>• -77.5dBm @ CTC-64QAM-5/6</li> </ul>
<b>Cyclic Prefix</b>	1/4, 1/8, 1/16, 1/32
<b>Smart Antenna System / RF Path Diversity</b>	STC and MRC
<b>Channel Coding</b>	CC, CTC
<b>Power Control</b>	Open and closed loop power control (Adaptive Modulation)
<b>Sub-carrier Allocation</b>	PUSC, FUSC

## Electrical, Mechanical & Environmental

<b>Dimensions (L x H x W)</b>	122mm x 137mm x 56mm
<b>Weight</b>	450g
<b>MTBF</b>	At least 50,000 hours
<b>Power Supply</b>	AC 100 ~ 240V 50 / 60Hz 0.7A, DC 12V / 1.5A
<b>Power Consumption</b>	<15W
<b>Temperature</b>	<ul style="list-style-type: none"> <li>• 0°C ~ 45°C (Operating)</li> <li>• -20°C ~ 70°C (Storage)</li> </ul>
<b>Humidity</b>	95% Non-condensing
<b>Material</b>	RoHS compliant

## MAC Layer

<b>Convergence Sub-layer Service</b>	Packet over Ethernet/802.3, IPv4 over 802.3, VLAN
<b>Convergence Sub-layer Classification</b>	<ul style="list-style-type: none"> <li>• Traffic priority marking, per flow, multimedia queuing</li> <li>• Traffic conformance metering, soft rate limiting</li> <li>• Traffic shaping</li> </ul>
<b>Packet Classification</b>	<ul style="list-style-type: none"> <li>• Layer 2: 802.3 address and type, 802.1Q, 802.1D (802.1p)</li> <li>• Layer 3: IP address and protocol, differentiated Services Codes Point / TOS</li> <li>• Layer 4: Port number and / or range</li> </ul>
<b>Service Flow Support</b>	Each SS supports multiple classes of service
<b>QoS Scheduler Options</b>	<ul style="list-style-type: none"> <li>• Advanced scheduling algorithm with full QoS support</li> <li>• Unsolicited grants (UGS)</li> <li>• Enhanced real time polling (ertPS)</li> <li>• Real-time polling (rtPS)</li> <li>• Non-real-time polling (nrtPS)</li> <li>• Best effort (BE)</li> </ul>
<b>Radio Optimization</b>	<ul style="list-style-type: none"> <li>• ARQ and HARQ</li> <li>• Payload header suppression</li> <li>• Robust header compression</li> </ul>
<b>Security Options</b>	<ul style="list-style-type: none"> <li>• EAP client TLS and TTLS</li> <li>• End-to-end PKMv2</li> <li>• Authentication based on X.509 certificate</li> </ul>

## Interface

<b>Multimedia Basic Package</b>	10/100 Base-T (RJ-45) x 1
<b>VoIP Gateway Package</b>	POTS (RJ-11) x 1

## Networking

<b>WAN Protocols</b>	IPv4, PPTP (Pass Through)
<b>Bridging</b>	802.1d and STP (between LAN and WiFi)
<b>Routing</b>	Static, RIPv1/2
<b>DNS</b>	DNS Relay, DNS Client, DDNS (DynDNS, TZO)
<b>NAT</b>	<ul style="list-style-type: none"> <li>• NAT / PAT</li> <li>• DMZ Host</li> <li>• Virtual Server</li> <li>• Port Trigger</li> <li>• ALG (SIP, H.323, FTP, PPTP, etc)</li> </ul>
<b>DHCP</b>	<ul style="list-style-type: none"> <li>• DHCP server / client</li> <li>• DHCP client support or static configuration for WAN</li> <li>• DHCP server support for local host IP configuration</li> </ul>
<b>VPN</b>	VPN (IPSec, PPTP Pass Through), AES, DES, 3DES
<b>Firewall</b>	<ul style="list-style-type: none"> <li>• SPI</li> <li>• DoS/DDoS Prevention</li> <li>• IP/TCP/UDP Filter</li> </ul>
<b>Management Interfaces</b>	<ul style="list-style-type: none"> <li>• HTTP / HTTPS / FTP / TFTP client</li> <li>• SSL v2/3 / TLS 1.0</li> <li>• Web GUI (HTTP, HTTPS, HTML)</li> <li>• CLI (Telnet, SSHv2)</li> <li>• UPnP</li> </ul>
<b>Remote Configuration and Management Protocols</b>	TR069 SNMP v2c
<b>Local Configuration Management</b>	Web browser access, CLI, Telnet
<b>Software Maintenance</b>	OTA (Over-the-air) software upgrade



# Technical Specification

## VoIP

<b>Caller ID</b>	Caller ID generation
<b>Voice Enhancement</b>	<ul style="list-style-type: none"> <li>• VAD</li> <li>• CNG</li> <li>• LEC</li> <li>• Jitter Buffer</li> <li>• Packet Loss Concealment</li> <li>• DTX</li> <li>• AGC</li> </ul>
<b>DTMF</b>	DTMF Tone Detection / Generation
<b>Signalling</b>	<ul style="list-style-type: none"> <li>• SIP v2</li> <li>• URI - RFC 2396</li> <li>• HTTP - RFC 2617</li> <li>• DTMF - RFC 2833</li> <li>• SIP Info Method - RFC 2976</li> <li>• SIP Protocol - RFC 3261</li> <li>• Offer-answer model - RFC 3264</li> <li>• Event packages - RFC 3265</li> <li>• HTTP digest authentication using Authentication and Key Agreement (AKA) - RFC 3310</li> <li>• A Privacy Mechanism for the Session Initiation Protocol (SIP) - RFC 3323</li> <li>• Short term requirements for network asserted identity - RFC 3324</li> <li>• Private extensions for SIP for asserted identity within trusted networks - RFC 3325</li> <li>• Reason Header - RFC 3326</li> <li>• SIP REFER method - RFC 3515</li> <li>• Extension to the Session Initiation Protocol (SIP) for Symmetric Response Routing - RFC 3581</li> <li>• Message Summary and Waiting Indication Event for SIP - RFC 3842</li> <li>• SIP INFO DTMF type audio / telephone - event</li> </ul>
<b>Codec</b>	<ul style="list-style-type: none"> <li>• G711 (a-Law &amp; <math>\mu</math>-Law)</li> <li>Optional: <ul style="list-style-type: none"> <li>• G.729 (a / b)</li> <li>• G.726</li> <li>• G.723.1</li> <li>• iLBC</li> </ul> </li> </ul>
<b>Voice Processing</b>	<ul style="list-style-type: none"> <li>• Echo cancelling</li> <li>• Voice activity detection</li> <li>• Comfort noise generation</li> </ul>
<b>QoS</b>	IP TOS

\* Product specifications are subject to change without prior notice.

For more information on Greenpacket's products and solutions, please contact us at [marketing.gp@greenpacket.com](mailto:marketing.gp@greenpacket.com)

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