

# WavePoint 900 MHz Broadband Module

Part of FreeWave's Comprehensive  
Wireless M2M Communications Solution

## Solution Highlights

WavePoint 900 MHz Broadband Module delivers connectivity using license-free radio spectrum in the 900 MHz band

Up to 54 Mbps with low latency to aggregate voice, video and last mile infrastructure delivering industrial grade M2M Broadband network connectivity

Self organizing, self healing network with relay, mesh and redundant links

High security radio links with WPA2 and 128 bit AES

Capable of very long range links with excellent propagation, foliage, and building penetration

Over the Air software upgrades and management

Professional services available for network design, path studies, and on-site support

FreeWave's award-winning customer support services and 1-year warranty

The FreeWave Technologies' WavePoint™ 900 MHz Broadband Module is part of a comprehensive, industrial grade, wireless machine-to-machine (M2M) communications platform that delivers secure, high-speed wired and wireless communications.

WavePoint networks securely aggregate SCADA and M2M telemetry over a wireless broadband network, adding video surveillance, remote Wi-Fi access, and VoIP capabilities. This makes WavePoint very well suited for a broad range of applications in agriculture, utilities, government, industrial, surveillance, enterprise, public safety, and military.

## Fast, Flexible and Secure

The 900 MHz Broadband Module delivers high-speed, very secure, reliable and resilient communications to remote sites along with industry standard security and flexible link routing. It operates in the 900 MHz unlicensed band with channels up to 20 MHz wide.

The 900 MHz Broadband Module is an option for the WavePoint 10e base unit, which supports up to 4 Broadband Modules internally. It can be configured with multiple radios used for back-to-back repeating for link extension; or for multicarrier very high speed connectivity.

It is able to operate over very long ranges due to the excellent propagation of 900 MHz spectrum. It can penetrate building walls with minimal loss, deal with seasonal foliage, and divert around some obstacles.

When the 900 MHz Broadband Module is being operated using 20 MHz wide channels over short ranges without interference, data rates as high as 54 Mbps can be obtained. In more typical environments, link speeds will commonly be in the range of 10 to 15 Mbps. Path studies are essential to calculate the expected data rates for any given wireless link.

Adaptive link management monitors the RF environment for sources of interference and for unrecognized or unfamiliar devices, and adjusts the data rate and modulation to optimize link performance in order to retain reliable, scalable communications under changing conditions. The over-the-air radio link is secured with WPA/WPA2, TKIP using 128-bit AES, WPA2 Enterprise, and 802.11i.

The 900 MHz Broadband Module is compliant with emission regulations throughout ITU Region 2, which is comprised of North, South and Central America, as well as the Caribbean and some Pacific islands.



# WavePoint 900 MHz Broadband Module: Technical Specifications

## MODULE SPECIFICATIONS

Network Configurations	PTP, PMP, Fixed Point Mesh, Mobile Mesh
Frequency Band	ISM 902 to 928 MHz UHF (ITU Region 2)
Modulation	OFDM: BPSK, 16-QAM, 64-QAM
Channel Size	20 MHz
Over-the-air Security	WPA, WPA2, WPA2-Enterprise, AES-128, 802.11i
Wireless Approvals	FCC Part 15.247

# WavePoint 900 MHz Broadband Module: Data Rates and Link Budget

Channel Size	Data Rates (max)	Transmit Power <sup>1</sup> (dBm)	Receiver Sensitivity <sup>2</sup> (dBm)
20 MHz	6 Mbps – BPSK	30	-91
	24 Mbps – 16 QAM	30	-81
	54 Mbps – 64 QAM	24	-72

<sup>1</sup>Tolerance on transmit power levels is  $\pm 2$  dBm, <sup>2</sup>Tolerance on receiver sensitivity is  $\pm 2$  dBm.

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