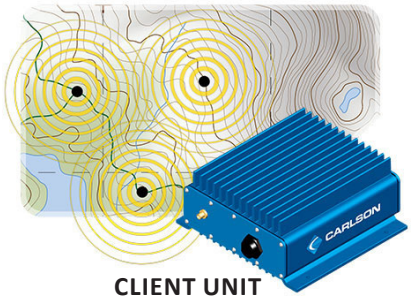
CarlsonWireless.com

CARLSON BROADBAND AND VOICE PRODUCTS

Available in US Only under FCC-Approved Experimental Licenses!

RuralConnect® Generation II



CLIENT UNIT

FASTER SPEED, BETTER COVERAGE and LOWER COST

TV WHITE SPACE BROADBAND RADIO

Imagine rural broadband where it's never been before, bringing telemedicine, distance learning and residential connectivity to last-mile locations. RuralConnect® II uses vacant TV frequencies (TV white space) to bring wireless broadband to homes, businesses, and municipal sites. TV frequencies penetrate foliage and weave around hills and other barriers that render microwave or Wi-Fi inoperable.

ACCESS POINT

APPLICATIONS:

- Rural Broadband Internet Access
- Community Hotspots
- Mobile Broadband
- VoIP/SIP Networks
- Video Surveillance & Security
- Mobile Command Unit
- Wi-Fi Hotspot Backhaul
- Home Networks
- M2M SCADA Communications:
  - Smart Grid & Metering
  - Traffic Signal Communications
  - Oil & Gas Well and Pipeline Monitoring
  - Wind Farms

FEATURES:

The Beachfront Spectrum Advantage
The RuralConnect® II is a software-defined radio designed to support access to vacant television bands. In 2010, the FCC made these unoccupied TV channels available for unlicensed broadband with range and propagation superior to microwave.

Greater Throughput, Lower Latency and Higher Reliability
With OTA speeds up to 16 Mb/s, RuralConnect® II offers the throughput necessary for today's Internet needs. Advanced receiver technology blocks nearby high-power cellular TV signals from interfering. Breakthrough equalization alogorithms resist fading, and in point-to-point configuration, the frequency division duplexing (FDD) option allows for higher throughput and very low latency.

Flexible Configuration
RuralConnect® II offers a variety of user-configurable data rates, channel bandwidths and operating frequencies.

Multiple Applications
The RuralConnect® II can be used to create point-to-point and point-to-multipoint networks with priority-routing support for voice, data and video traffic.

Remote Management and Diagnostics
The base unit's browser-based graphical user interface (GUI) provides extensive online diagnostics that can be accessed from any radio within the wireless network or through the Internet. This powerful tool can be used to detect problems before they affect user traffic.

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The RuralConnect® device is intended for use as a Part 15 TV band device (TVBD) for fixed wireless operations in compliance with rules adopted by the FCC (See http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0923/FCC-10-174A1.pdf). TVBDs have been deployed under FCC experimental licenses in multiple communities since March 2010. By law, the FCC must certify TVBDs before they can be imported into or marketed within the United States.

Under FCC rules, the RuralConnect® device may not be sold or leased, or offered for sale or lease, or imported, shipped or distributed for the purpose of selling or leasing or offering for sale or lease, until the FCC certifies this TVBD. Accordingly, a conditional sales contract between manufacturers and wholesalers or retailers is permitted under FCC rules provided that delivery is contingent upon compliance with the applicable equipment authorization and technical requirements. In addition, this TVBD may be offered for sale solely to business, commercial, industrial, scientific or medical users for TVBDs that are in the conceptual, developmental, design or pre-production stage prior to equipment authorization by the FCC.

The purchaser is hereby informed that the equipment is subject to the FCC rules and the equipment will comply with the appropriate rules before delivery to the purchaser or to centers of distribution.

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GSA GS-35F-0454S Made in the USA

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SYSTEM SPECIFICATIONS

Frequency Bands	UHF 470-786 MHz (US and ETSI)
Channel Spacing	6 MHz (US), 8 MHz (ETSI)
Bandwidth	100 kHz (M2M) to 4.5 MHz (Rural BB)
Modulation	QPSK, 16QAM
Data Rates	4, 6, 8, 12, and 16 Mb/s
Data Rate Control	Dynamic or fixed
Receive Interface	Proprietary technology is used to reduce co-channel interference
RX Sensitivity	-89 dBm for 10-6 BER using QPSK 1/2 -86 dBm for 10-6 BER using 16QAM 1/2
RX Blocking Resistance	-50dBm TV transmission on chan N+2 -20 dBm cellular station transmissions
RX Max Signal	-16dBm with full linearity
Operating Mode	TDD (Time Division Duplexing)
User Ports	10/100 baseT Ethernet

NETWORK SPECIFICATIONS

Multipoint Client Capacity	4096
Typical Client Loading	40 clients with 3Mb/1Mb residential SLA
Management	Web-based browser using https interface
End-to-End Latency	30-100 ms typ.

REGULATORY SPECIFICATIONS

ACP and Spectrum Mask	Meets FCC and Ofcom specifications -55 dBr +/- 3 MHz relative to 12.2 dBm (measured at 100 KHz increments)

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-30° to 55° C
Operating Humidity	Up to 95%, non-condensing
Shock and Vibration	MIL-STD-810

SECURITY

Security Mechanism	WPA2/AES-128 bit shared secret key

BASE STATION

RF Transmit Power	+28dBm level across band within +/- 1dB
Antenna System	SISO with MIMO Space Diversity option
Antenna Connector	"F" type female 75 Ohms

MECHANICAL SPECIFICATIONS

Unit Dimensions	19.6" x 6" x 1.75"
Enclosure Material	Painted steel
Weight	5 lbs
Mounting	19 inch EIA 2 unit rack

POWER - INDOOR RACK MOUNT

Voltage	100-240 VAC, 50-60 Hz or 12 VDC
Current	Tx: 30W, Rx: 15W, Idle: 13W
Connector	POE

CPE TERMINAL

RF Transmit Power	+27dBm level across band within +/- 1dB
Antenna System	SISO (1 antenna used)
Antenna Connector	"F" type female 75 Ohms

MECHANICAL SPECIFICATIONS

Unit Dimensions	9.20" x 7" x 1.6"
Enclosure Material	Painted aluminum
Weight	3 lbs 12 oz
Mounting	Outdoor on mast or wall

POWER - OUTDOOR TOWER MOUNT

Voltage	100-240 VAC, 50-60 Hz or 12 VDC
Current	Tx: 24W, Rx: 10W, Idle: 8W
Connector	POE

Below are examples of different distances and modulation settings to show thoughputs and link margin.

Downlink TCP/IP	OTA rate in Mb/s	Modulation	Distance in mi	Base Ant Gain in dBi	CPE Ant Gain in dBi	RF Cable loss in dB	Frequency in MHz	ERP in dBm	Rx Threshold in dBm	Link Margin in dB
2.5	5	QPSK 1/2	7.6	4.8	12.0	3.0	473	36	-89	28.1
3.5	6	QPSK 3/4	6.2	4.8	12.0	3.0	573	36	-87	26.2
4.5	8	QPSK	5.3	4.8	12.0	3.0	473	36	-85	27.2
4.5	8	16 QAM 1/2	6.8	4.8	12.0	3.0	695	36	-86	22.7
7	12	16QAM 3/4	5.2	4.8	12.0	3.0	590	36	-84	24.5
10	16	16 QAM	3.8	4.8	12.0	3.0	490	36	-82	26.8

Model No.	Beamwidth	Polarity	Frequency	VSWR	Gain	Impedance	Connector	Weight	Dimensions
053-470-786-6-2B-V	360 Deg	Vertical	470-786 MHz	1.5:1	6 dBi	75(f)	F	25 lbs	42" x 6" dia.
057-470-786-F	45 Deg	Vertical	470-786 MHz	1.5:1	9 dBi	75(m)	F	2 lbs	14" x 15"
052-470-786-F	40 Deg	Vertical	470-786 MHz	1.5:1	12 dBi	75(m)	F	7 lbs	12" x 60"
053-470-786-50-10	90 Deg	V or H	470-786 MHz	1.5:1	10 dBi	75(m)	F	8 lbs	14" x 36"

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Specifications subject to change without notice

US Patent Pending

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