

# VALIANT COMMUNICATIONS LIMITED



## VCL - 16 x E1 Digital Microwave Radio

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### Product Brochure & Data Sheet

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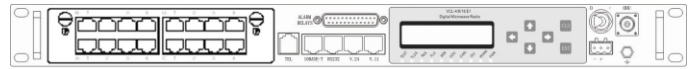
**Website:** <http://www.valiantcom.com>

## Product Description

### E1 Digital Microwave solution for wireless transmission

Valiant's offers a rugged and a very reliable Wireless Digital-Microwave solution which may be used to transmit up to 16 E1 channels (or E1 channels plus an Ethernet Channel) up to a distance of 40 KM in a "line-of-sight" installation.

### VCL - 16 x E1 Digital Microwave Radio



**Front View**

Valiant's Digital-Microwave Radio solution consists of a 1U, 19-Inch Rack-Mountable Indoor Unit (IDU) and a very compact, pole-mountable Out-Door Unit (ODU).

The 1U, 19-Inch Rack-Mountable Indoor Unit (IDU) may be powered from a nominal - 48V DC power input (acceptable DC voltage input range is - 40V DC to - 60 V DC).

The ODU (Out-Door Unit) is packaged in a weather-proof, rugged pole-mountable units which is powered from the IDU (Indoor Unit) through it's single antenna cable.

Valiant's Digital-Microwave Radio solution is provided with advanced internal diagnostics capabilities which enables it to offer reliable performance even under the most difficult and harsh conditions. The equipment is also available (optionally) in a 1+1 protected package.

## Features

- Available in the 2.4GHz, 7GHz, 8GHz, 13GHz and 15GHz frequency bands
- Scalable transmission capacities from 2Mbps (one E1) to upto 34 Mbps (sixteen E1s)
- Offers 2xE1, 4xE1, 4xE1+ Ethernet, 8xE1 + Ethernet and 16 x E1 network interfaces via flexible plug-in modules
- User Programmable Output Power Level
- Software-selectable frequency, ungradable capacity
- Adaptive Reed-Solomon Forward Error Correction (FEC) to ensure error-free transmission
- Automatic Transmit Power Control (ATPC)
- Integrated WEB server
- SNMP based Network Management System
- Comprehensive, integrated performance monitoring and logging
- Available in 1+1 protected, or 1+0 unprotected configurations
- Reliable Link performance
- High reliability

**Technical Specifications:****General Specifications:**

Radio Type	VCL- 16 x E1 Digital Microwave Radio
Frequency Source	Synthesizer
System Configuration	Non-Protected (1+0) 1+1 hot standby system Space and frequency diversity
RF Channel Selection	IDU Controlled, or via NMS
Modulation	QPSK and 16 QAM
Modulation Option #1	QPSK
Modulation Option # 2	16 QAM
User Interface options	E1- 75 Ohms - Un-balanced E1 - 120 Ohms - Balanced E3 - 75 unbalanced (BNC Connector) Ethernet -10/100BASE-T (RJ-45 Connector)
Intermediate Frequency	310MHz / 70MHz
Unfaded BER	$10^{-11}$ or better
Loopback Test Options	Port Loopback, Frame Loopback, Interface Loopback, Remote Line Loopback
Alarm Input	4 x TTL Inputs
Relay Output	5 x Form "C" Relays
MTBF	180,000 Hours
Frequency Options	2.4GHz, 7GHz, 8GHz, 13GHz, 15GHz

**Spectrum / Bandwidth Requirements:**

Transmission bandwidth requirement with <b>QPSK</b> modulation option	<b>Modulation - QPSK</b> 2xE1 4xE1, or 1/2 / 4E1 + Fast Ethernet 8xE1, or 1/2 / 4E1 + Fast Ethernet 16xE1	<b>Required Spectrum</b> 3.5 MHz 7 MHz 14 MHz 28 MHz
Transmission bandwidth requirement with <b>16QAM</b> modulation option	<b>Modulation - 16QAM</b> 2xE1 4xE1, or 1/2 E1 + Fast Ethernet 8xE1, or 1/2 / 4 E1 + Fast Ethernet 16xE1	<b>Required Spectrum</b> 1.75 MHz 3.5 MHz 7 MHz 14 MHz

**Transmit and Receive Power:**

<b>Transmitter</b>	
Output Power	2.4GHz,13GHz,15GHz: 20dBm/23dBm 7GHz, 8GHz: QPSK 27dBm 7GHz, 8GHz: 16QAM 23dBm
Frequency Stability	± 5ppm
ATPC Range	20dB
<b>Receiver</b>	
Noise Figure	< 4.0 dB
Overload	-10 dBm
Receiver threshold ( $1 \times 10^{-6}$ BER)	QPSK Modulation - Receiver threshold: 2xE1 - 90 dBm 4xE1 - 87 dBm 8xE1 - 84 dBm 16xE1 - 81 dBm
Receiver threshold ( $1 \times 10^{-6}$ BER)	16QAM Modulation - Receiver threshold: 2xE1 - 87 dBm 4xE1 - 84 dBm 8xE1 - 81 dBm 16xE1 - 78 dBm

**Mechanical:**

Dimension	Indoor Unit: 482mm x 44mm x 265mm Outdoor Unit: 265mm x 265mm x110mm
Weight	Indoor Unit: 3.5 kg Outdoor Unit: 5.5 kg
Indoor Unit - Outdoor Unit Interconnection	Single Cable, RG-8 Type, 50 Ohms - unbalanced Recommended Cable: Times-Microwave LMR400, or Belden 9913 Maximum Distance: Up to 1000 Ft. (300 m) Outdoor Unit Connector Type: "N" Male Indoor Unit Connector Type: "TNC" Male

**Operating Conditions - Environmental:**

Temperature Range	Operating Temperature Range: Indoor Unit: -5~+50°C Outdoor Unit: -33~+65°C
Relative Humidity	Relative Humidity (non-condensing): Indoor Unit: 20%~90% Outdoor Unit: 0%~100%

**Service Channels - Voice:**

Engineering Order Wire (EOW)	Frequency Response: 300-3400 Hz Impedance: 600 balanced Interface RJ-11: RJ-11
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**Service Channels - Data:**

Digital Data Channel 1	0~9600bps, RS232C Serial Interface: (RJ-45 Connector)
Digital Data Channel 2	0~9600bps, RS422 Interface Serial Interface: (RJ-45 Connector)

**Management Interfaces:**

NMS - Data Channel 1	Serial Interface - 9600bps, RS232C Interface (RJ-45 Connector)
NMS - Data Channel 2	Ethernet Interfaces - 10Mbps, 10BASE-T Interface (RJ-45 Connector)

**Power Supply:**

Input DC Voltage	- 48V DC Volts +/- 24V DC Volts (Optional)
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**Power Consumption:**

Power Consumption	Indoor Unit    10 Watts Outdoor Unit    25 Watts
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Notes : \_\_\_\_\_

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Technical specifications are subject to changes without notice.  
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