RF Over Fiber Systems
C-Band RF over Fiber Link

C-Band HRx OEM Module

- C-Band 3.4 – 7.1 GHz (500 MHz – 7.5 GHz)
- Excellent Wideband performance
- Up to 112 dB/Hz SFDR
- No IF down conversion required
- Lower overall CapEx
- Rack chassis card or purple OEM module
- 5-year warranty

ViaLiteHD C-Band (HRx-C) RF over fiber links have been designed for customers who need even greater dynamic range. The rack chassis card and OEM module negate the need to down convert from all downlink frequencies; allowing a direct LNB connection over long distances with no impact to cross-site link budget.

The HRx-C products use DFB Lasers with longer wavelengths making them ideal for use with multiplexers. Options for DWDM 1550 nm and 1310 nm/1550 nm 10 mW photodiodes provide deployment flexibility in a broad range of applications within Broadcast, Satcom and Military verticals, amongst others.

### OPTIONS

RF Connection: 50Ω electrical connectors: SMA
Optical connectors: FC/APC, SC/APC, E2000/APC
BiasT: Built-in LNB power through RF
LNB control circuit: 13/18 VDC & 22 kHz tone
Chassis: Module

### APPLICATIONS

- Full Satcom transponder applications
- Government Signal Intelligence (SIGINT)
- Fixed Satcom earth stations and teleports
- Telemetry
- Government installations
- Remote monitoring stations

\[ IP3 = 3.2 \text{ d} \text{B} @ 5 \text{ G} \text{ Hz} \]
\[ P1 = -4.0 \text{ dB} @ 5 \text{ G} \text{ Hz} \]
\[ \text{Noise} = 21 \text{ d} \text{B} @ 5 \text{ G} \text{ Hz} \]
\[ \text{SFDR} = 105 \text{ dB} @ 5 \text{ G} \text{ Hz} \]
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PRODUCT PERFORMANCE

C-Band: Frequency response

C-Band: Noise Figure

C-Band: S FDR

PRODUCT CONFIGURATOR

Module Types
- Material Optical/RF fiber
- Termination (RF or optical)

C-Band: Frequency (MHz)

C-Band: Noise Figure (MHz)

C-Band: S FDR (MHz)

Module Package
- Singlemode EOM
- Singlemode EOMFPC
- Singlemode EOMOM

Nominal Gain (dB)
- 0
- -15
- 0

Kx Photodiode
- InGaAs
- InP
- InGaAsP

Frequency (MHz)

Optical Connector
- Singlemode EOM
- Singlemode EOMFPC
- Singlemode EOMOM

Frequency (MHz)

Diode Options
- 0: No laser output
- 1: +5 V, 80 mA, UA/ photo diode
- 2: +5 V, 80 mA, UA/ photo diode
- 3: +5 V, 80 mA, UA/ photodiode
- 4: +5 V, 80 mA, UA/ photodiode
- 5: +5 V, 80 mA, UA/ photodiode
- 6: +5 V, 80 mA, UA/ photodiode
- 7: +5 V, 80 mA, UA/ photodiode
- 8: +5 V, 80 mA, UA/ photodiode
- 9: +5 V, 80 mA, UA/ photodiode

Current limits apply, see detailed information for each module.

Laser Wavelength

Recommended best performing DWDM channels

Recommended best performing DWDM channels

DWDM channels covered C15 to C35
DWDM wavelength range 1532 nm to 1565 nm
Laser Type: single mode, 1310 nm wavelength
Laser Output power: 1.5 W
Notes: CWDM not supported
# RF Over Fiber Systems
## C-Band RF over Fiber Link

### TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitter</td>
<td>Storage temperature range</td>
</tr>
<tr>
<td>Receiver</td>
<td>HRR-C1-8T-05-A (example)</td>
</tr>
<tr>
<td>Frequency range</td>
<td>500 – 7500 MHz</td>
</tr>
<tr>
<td>Impedance, RF connector</td>
<td>50Ω SMA</td>
</tr>
<tr>
<td>VSWR</td>
<td>1:1.5 (typ)</td>
</tr>
<tr>
<td>Link gain (Tx gain / Rx gain), default</td>
<td>0/15 dB (nom)</td>
</tr>
<tr>
<td>Tx gain adjustment range</td>
<td>15.5 dB (typ)</td>
</tr>
<tr>
<td>Tx gain adjustment from default gain</td>
<td>-12 to 3.5 dB (typ)</td>
</tr>
<tr>
<td>Rx gain adjustment range</td>
<td>15.5 dB (typ)</td>
</tr>
<tr>
<td>Rx gain adjustment from default gain</td>
<td>-9.5 to +25 dB (typ)</td>
</tr>
<tr>
<td>Gain adjustment step size Rx and Tx</td>
<td>0.5 dB (typ)</td>
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<tr>
<td>Gain stability over temperature range</td>
<td>±1 dB (max)</td>
</tr>
<tr>
<td>Nominal input signal / output signal</td>
<td>-15/0 dBm</td>
</tr>
<tr>
<td>P1dB input</td>
<td>-9 dBm (typ)</td>
</tr>
<tr>
<td>P1dB input, at maximum Tx gain</td>
<td>-4 dBm (typ)</td>
</tr>
<tr>
<td>IP3 input, at default gain</td>
<td>+3.2 dBm (typ)</td>
</tr>
<tr>
<td>Noise figure, at default gain</td>
<td>21 @ 5 GHz dB (typ)</td>
</tr>
<tr>
<td>SFDR</td>
<td>105 @ 5 GHz dB/Hz2/3 (typ)</td>
</tr>
<tr>
<td>Maximum input power without damage</td>
<td>15 dBm</td>
</tr>
<tr>
<td>LNB power</td>
<td>Internal 13/18 V (3.4 – 6 GHz) up to 700 mA (3.4 – 7.5 GHz) up to 350 mA</td>
</tr>
<tr>
<td>Optical connector</td>
<td>SC/APC</td>
</tr>
<tr>
<td>Laser type</td>
<td>DFB (Distributed feedback), thermo-electric cooled laser</td>
</tr>
<tr>
<td>Optical power output</td>
<td>10 mW (typ)</td>
</tr>
<tr>
<td>Summary alarm output</td>
<td>Open drain alarm: OPEN: Alarm, CURRENT SINK: okay</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-10 °C to +50 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C to +70 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>95% non-condensing humidity</td>
</tr>
</tbody>
</table>
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ACCESSORIES

SNMP/Web Browser Card

- Easy to use graphical user interface (GUI)
- Real time monitoring of card performance
- Alarm monitoring and event logging
- Control of gain adjustment
- Compatible with all ViaLiteHD rack chassis and modules
- Easy integration with network management systems (NMS) using management information base (MIB) tables
- Actively manage redundancy switching
- New RF cards can be automatically reprogrammed with the previous card parameters
- Remote SNMP to local SNMP connection via optical fiber
- Provides remote LAN 10/100 Ethernet link

Rack Chassis

- 3U accepts up to 13 RF or Support cards, plus an SNMP card and dual power supplies
- A 1U chassis accepts up to 3 RF or Support cards or 2 cards and an SNMP card (with dual power supplies)
- Up to 26 channels per 3U chassis (using dual RF cards) – reducing the amount of rack space required
- Blind mate option
- All modules hot-swappable and auto-reconfiguration with SNMP option
- On-card LNB and BUC power options
- Power fed through rear chassis connector to card Bias Tees
- System can be monitored and controlled remotely via SNMP using a web browser

DWDM Systems

- DWDM multiplexers
- EDFAs
- Delay lines
- Optical switches
- Dispersion Compensation
- System design and configuration
- Remote link monitoring