

5-Channel Q- to L-Band Block Downconverter ODU

High performance outdoor unit designed to simultaneously translate up to five Q-band input channels into L-band outputs using a robust dual-stage frequency conversion architecture. Five channels are provided as the standard configuration, with options to support configurations ranging from one to five channels.

The unit accepts Q-band inputs through a standard WR19 waveguide interface and delivers L-band outputs (1150–2150 MHz per channel) via 50 Ω SMA or N-type connectors. Each channel is independently downconverted from defined Q-band frequency blocks spanning approximately 37.5 GHz to 42.5 GHz. Engineered for reliable field deployment, the unit is housed in an IP65-rated enclosure, providing protection against dust and water ingress, while maintaining stable RF performance across demanding environmental conditions.



RF Parameters (1/2)

| | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Capacity | Q-band IN 5 L-band channels OUT (Configuration options available for 1 to 5 L-band channels) |
| Input Port | Waveguide: UG383 – WR19 |
| Output Ports | Five 50Ω SMA or N-type (L-band channels, DC blocked) |
| Input Frequency Range | Channel 1: 37500 - 38500 MHz Channel 2: 38500 - 39500 MHz Channel 3: 39500 - 40500 MHz Channel 4: 40500 - 41500 MHz Channel 5: 41500 - 42500 MHz |
| Output Frequency Range | Channel 1: 1150 - 2150 MHz Channel 2: 1150 - 2150 MHz Channel 3: 1150 - 2150 MHz Channel 4: 1150 - 2150 MHz Channel 5: 1150 - 2150 MHz |



| RF Parameters (2/2) | | |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------|
| Mean Conversion Gain | Max. 30 ± 2 dB Min. 5 ± 2 dB | |
| Gain Steps | 0.25 ± 0.15 dB | |
| Gain Flatness | Full Band over 5GHz: ± 2.0 dB Over Each 1 GHz Channel: ± 1.5 dB Any 40 MHz in a Channel: ± 0.50 dB | |
| Input Return Loss | Typ. -12 dB Max. -10 dB | |
| Output Return Loss | Typ. -15 dB Max. -12 dB | |
| Noise Figure (at max gain) | Typ. 16 dB Max. 18 dB | |
| Operational Input Level | -75 to -30 dBm | |
| OP1dB (at max gain) | Typ. 15 dBm Min. 10 dBm | |
| OIP3 (at max gain) | Typ. 25 dBm Min. 20 dBm | |
| Group Delay (max pk-pk/1000MHz) | <3 ns | |
| Internal Reference Stability | ± 5 × 10 ⁻⁸ (Over -20 to 60°C) | |
| Phase Noise (Typical values when supplied with a high quality external reference and measured at 0 dBm output) | @ 10Hz Offset | -40 dBc/Hz |
| | @ 100Hz Offset | -60 dBc/Hz |
| | @ 1kHz Offset | -80 dBc/Hz |
| | @ 10kHz Offset | -90 dBc/Hz |
| | @ 100kHz Offset | -95 dBc/Hz |
| | @ 1MHz Offset | -105 dBc/Hz |
| Spurs In-band (At -5 dBm output) | Carrier Related (> 1MHz offset) | < -60 dBc |
| | Non-carrier Related | < -60 dBm |
| Spurs Out-of-band (At -5 dBm output) | Carrier Related | < -60 dBc |
| | Non-carrier Related | < -60 dBm |
| Image Rejection | Typ. > 60 dB | |
| LO Breakthrough | Max. -60 dBm | |
| Number of Conversion Stages | Dual | |
| External Reference Input Freq | 10/100 MHz (Auto detection) | |
| External Ref Input Level | +0 dBm ± 5 dB | |
| Spectral Inversion | Non-inverting | |
| Mute | 60 dB | |
| Isolation | 50 dB (Min. between any two L band channels in.) | |



| System Control & Monitoring | |
|-----------------------------|-------------------------------------------------------------------------------------------------------|
| RF Redundancy | Supported - Option for two units can be paired with redundancy switches to offer RF redundancy system |
| User Alarms | RF Power detect, PSUs |
| Remote Control & Monitoring | Ethernet via RJ45, 10BaseT/100BaseTx ETL TCP/IP protocol SNMP v3 Built-in Web Server (HTTPS) |
| Local Control & monitoring | No local control, power and summary alarm status LEDs on connector face. |
| LNB Power | None. |

| Physical & Environmental | |
|--------------------------|---------------------------------------------------------------------------------------------|
| Dimensions | 450mm x 450mm x 200mm maximum |
| Weight | 15Kg |
| Unit Finish | RAL9003 (Signal White) Clear chemical conversion coating to MIL-DTL-5541F Typell Class 3 |
| Temperature | Operating: -20°C to 50°C / Storage: -30°C to +75°C |
| Location | Outdoor / Indoor - IP65 (Appropriate mating connectors used) |
| Humidity | 40 to 90% non-condensing |
| Altitude | 10,000ft AMSL (Operational) 30,000ft/10,000m AMSL (Transport) |
| Spec. Version | 0.4 |

Note 1: Typical parameters are guide figures and measured data may deviate from the quoted figures. ETL endeavours to exceed the quoted typical parameters where practically possible.

Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.

Note 3: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.