

# Telecom: Ka-band Compact Frequency Receiver and Converter

RUAG Space novel Compact Frequency Receiver and Converter for Ka-band payloads meet the highest performance and reliability requirements. Application of new technology enables small size, low mass and efficient manufacturing.



## HERITAGE

RUAG Space has been supplying high performance and highly reliable microwave communication equipment for telecom satellites for more than 35 years. Delivery record for telecom payloads:

- > 1000 FSS/BSS Units delivered
- > 700 Ka-band Channels delivered
- > 10 000 years acc. op. time in orbit

## Compact frequency Receiver and Converter for Ka-band payloads

The Compact Ka-band Frequency Receiver and Converter for 30 GHz-to-20 GHz Conversion (and 24-to-17 GHz) includes internal LO generation and EPC for most satellite Bus standards. The equipment is built using the latest MMIC technologies for excellent RF performance. The Compact design facilitates low cost adaptation to LO frequencies up to 12 GHz.

## Modularity

The modular design allows the equipment to be configured for different frequency plans as well as for a variety of DC and TM/TC interfaces.

## Compacts design

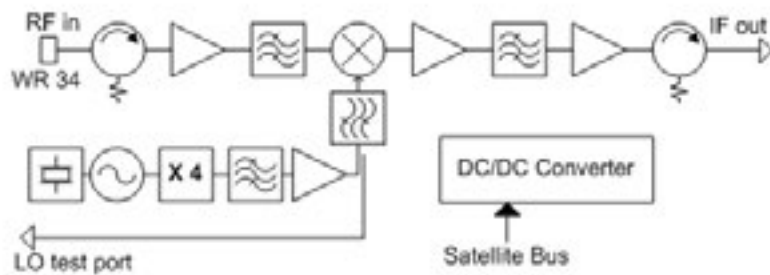
Extensive use of MMIC and miniaturization technologies are employed to give small size and low mass. The high level of integration result in improved producibility and short lead times.

- RF input: WR34 or WR28 Waveguide (or coaxial with adapter)
- RF output: K-connector
- DCR TM/TC: MDM-25

## Production

- Well-known technologies and established processes
- Extensive clean-room facilities
- Highly automated testing and data collection
- Inhouse facilities for environmental testing

## Compact Receiver and Converter block diagram



## Technical Data

| Parameter                      | Typical Performance   |
|--------------------------------|---|
| <b>Frequency range, Input</b>  | 24.5 - 25.5 GHz (24/17 Converter / Receiver)<br>27.5 - 31.0 GHz (30/20 Converter / Receiver)    |
| <b>Frequency range, Output</b> | 17.3 - 17.8 GHz (24/17 Converter / Receiver)<br>17.7 - 21.2 GHz (30/20 Converter / Receiver)    |
| <b>LO Frequency range</b>      | 7 - 12 GHz  |
| <b>Input Power:</b>            | Converter: -20 dBm (nom/carrier)<br>Receiver: -50 dBm (nom/carrier)                             |
| <b>Gain</b>                    | Converter: 27 - 33 dB (Optimum RF performance)<br>Receiver: 58 - 54 dB (Optimum RF performance) |
| <b>Transmit Band Gain</b>      | Converter <-20 dB<br>Receiver: < 0 dB   |
| <b>OIP3</b>                    | 30 dBm (24/17 Converter / Receiver)<br>32 dBm (30/20 Converter / Receiver)                      |
| <b>Noise figure</b>            | < 2.3 dB Receiver<br>< 14 dB Converter  |
| <b>Temperature range</b>       | -20°C to + 70°C   |
| <b>Supply Voltage</b>          | 28-100 v (regulated or unregulated)   |
| <b>Power consumption</b>       | 10W   |
| <b>Mass</b>                    | 0.77 kg   |
| <b>Size</b>                    | 142 x 104 x 54 mm   |