

PRELIMINARY



ERZ-BUC-2750-3100-43

The ERZ-BUC-2750-3100-43 is a Block Up Converter (BUC) operating in the full Ka band (27.5-31 GHz) providing a maximum output power of 20 W (Psat) and 10 W in linear. Its reliable design is based in latest GaN technology, optimizing power consumption in a compact and rugged enclosure.

Main Features:

- RF output: 27.5 to 31 GHz
 - Electronically Selectable
- IF input: 950 to 1950 MHz
- Instantaneous BW: 1 GHz
- Output Power:
 - 43 dBm (Psat) 40 dBm (Plin)
- Adjustable gain: 45 to 75 dB
- Internal PLL
- RF connectors (I/O): SMA (F) / WR-42
- Compact aluminum housing
- Hi-reliability and dedicated screening

Typical applications:

- Satcom Ka-band
- Airborne platforms

Electrical Specifications at 25°C

| Parameter | Value | | | Units |
|---|-------|------|-------|-------|
| | Min | Typ | Max | |
| Input Frequency Range | 0.95 | - | 1.95 | GHz |
| Bandwidth | - | 1000 | - | MHz |
| Output Frequency Range | 27.5 | - | 31 | GHz |
| Output Plin (ACPR of 20 dBc in BPSK) | 39 | 40 | 41 | dBm |
| Output Psat | 40 | 42 | 44 | dBm |
| Adjustable Gain range | 45 | - | 75 | dB |
| Gain adjustment step | - | 0.25 | - | dB |
| Gain flatness per sub-band at Plin | - | +/-2 | - | dB |
| Total gain flatness at Plin | - | +/-3 | - | dB |
| Internal LO Frequency range | 26.55 | - | 29.05 | GHz |

Specifications at a case temperature of 25°C

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Electrical Specifications (cont)

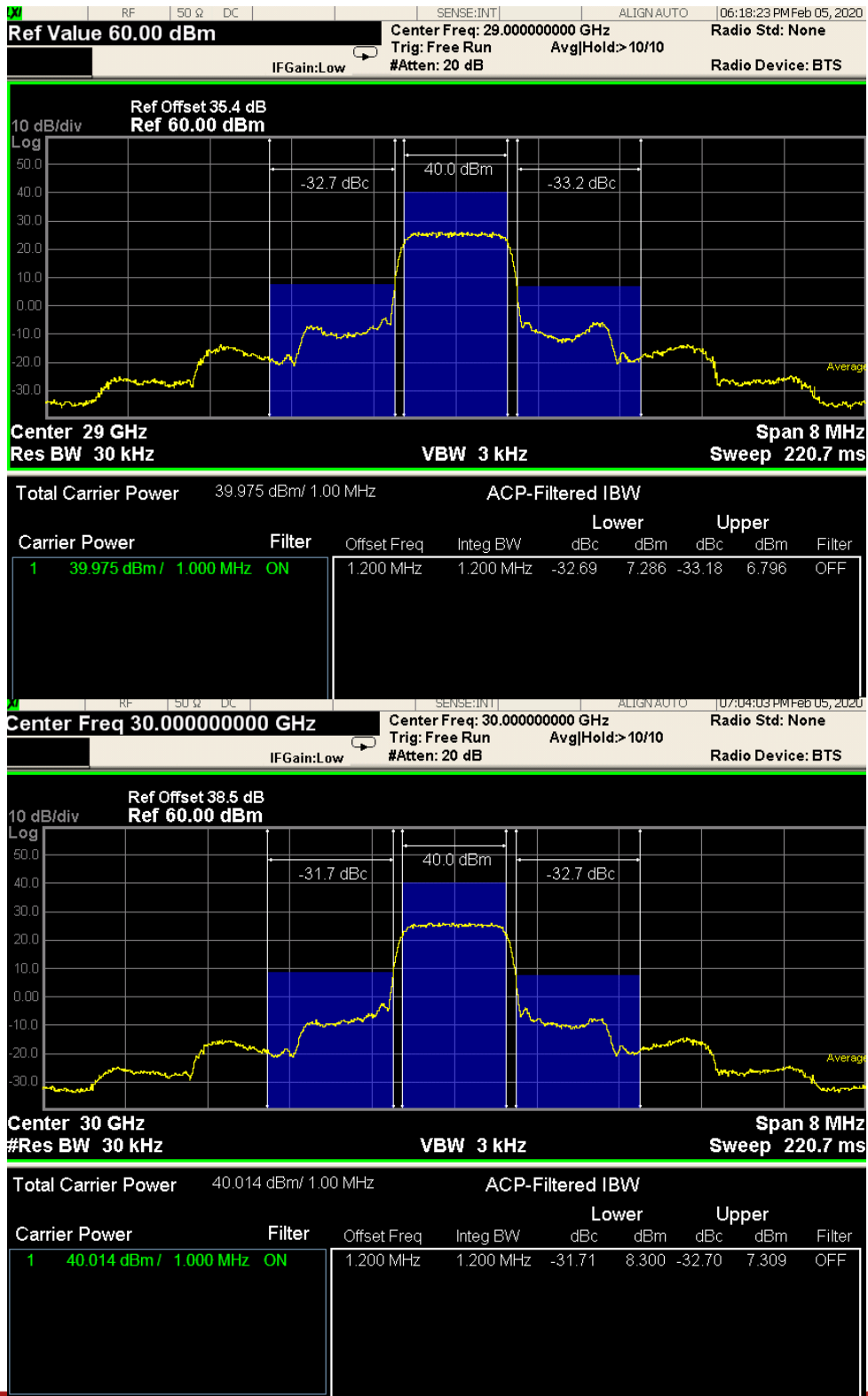
| Parameter | Value | | | Units |
|---|-------|---|-------|--------|
| | Min | Typ | Max | |
| Input VSWR | - | 1.4:1 | 1.8:1 | - |
| Output VSWR | - | 1.3:1 | 1.5:1 | - |
| Input Voltage | - | 24 | 32 | V |
| Power Consumption At Plin At Psat | - | 90 130 | - | W |
| Phase Noise | - | -70 @ 100 Hz -85 @ 1KHz -85 @ 10 KHz -92 @ 100KHz -110 @ 1 MHz -125 @ 10 MHz | - | dBc/Hz |
| External Reference (Trough IF connector) | - | 50 10 (Optional) | - | MHz |
| REF Input Level | -5 | 0 | 10 | dBm |
| Internal reference (optional) | - | - | - | - |
| Spurious at Plin | 40 | - | - | dBc |
| Image Rejection | 50 | - | - | dB |
| IF Rejection 30 dB | <800 | - | >2300 | MHz |
| LO Rejection at Plin | 35 | - | - | dBc |
| Reverse Power | 33 | - | - | dBm |
| Dimensions | | 170 x 115 x 23 | | mm |

Specifications at a case temperature of 25°C

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Output Power

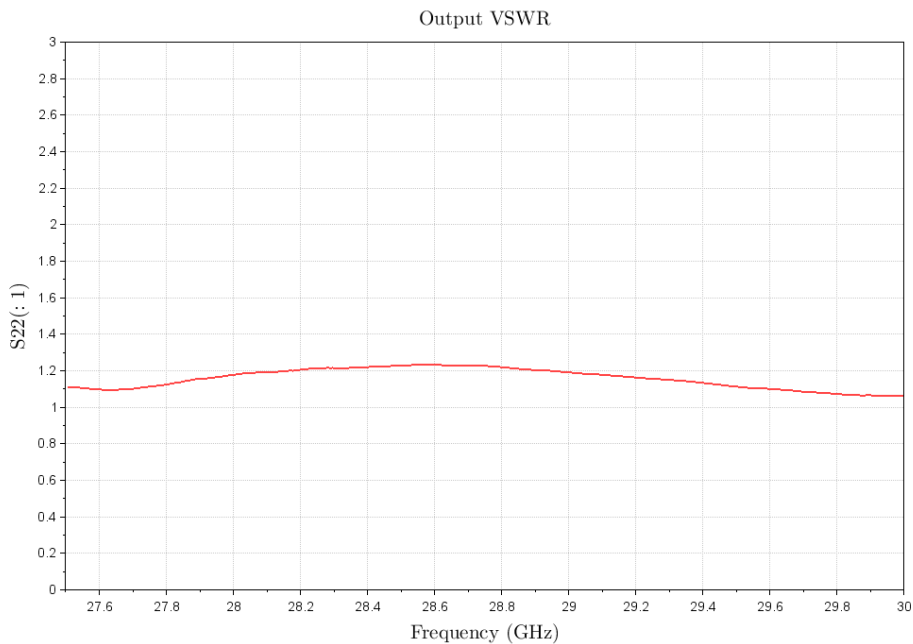
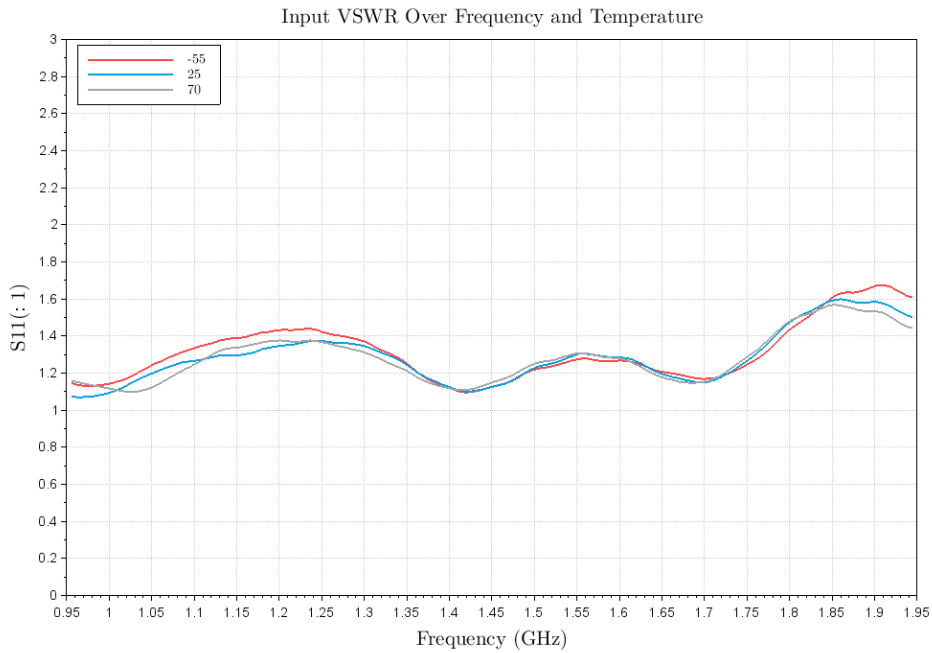
The following plot shows output power of 40 dBm at 29 GHz and 30 GHz and ACPR using BPSK, 1 Msps, $\alpha=0.2$.



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Input and Output Matching

The following plot shows small signal gain, noise figure and input and output matching, as a function of frequency at room temperature (25°C).



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Electrical Interfaces

| Interface | Value |
|-----------------------|--|
| RF input | SMA |
| IF output | WR-28 waveguide with O-Ring |
| DC input | Dedicated MIL type connector |
| Ext. Ref input | Through IF input connector |
| Control and Telemetry | Serial RS422 interface (dedicated MIL type connector) |

Table 1: ERZ-BUC-2750-3100-43 Electrical Interfaces

Telemetry & Command

Channel selection and attenuation set is done through a serial RS422 protocol injected on the IF port. Optionally, it can be coded in a separated digital connector.

| Parameter | Value | | | | Units |
|-------------------|------------------------------------|-------|-------|-------|-------|
| Channel Selection | #1 | #2 | #3 | #4 | |
| | 27.5 – 28.5 | 28-29 | 29-30 | 30-31 | GHz |
| Attenuation set | 0 to 31.5 in 0.25 steps | | | | dB |
| Alarms | Temperature alarms | | | | - |
| Sensors | Temperature and current monitoring | | | | - |
| Lock | PLL Lock monitoring | | | | - |
| Mute | Mute ON/OFF | | | | - |
| Detector | Power detector | | | | dBm |
| Band Status | Band #1 to #4 | | | | |

Table 2: ERZ-BUC-2750-3100-43 Telemetry & Command

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Absolute Maximum Ratings

| Condition | Value |
|---------------------------------|---------------|
| DC Voltage | +18 VDC |
| Maximum Input Power (CW) | 0 dBm |
| Operation temperature (at case) | -55 to 70 °C |
| Storage temperature | -55 to 125 °C |
| Altitude | 55000 ft |

Table 3: ERZ-BUC-2750-3100-43 Absolute Maximum Ratings

- Stress above these ratings may cause permanent damage to the device.
- It is final user responsibility to maintain the amplifier within the specified ranges.

Environmental Specifications (By Design)

| | | |
|------------------------|----------------------|------------------------------|
| Operating Temperature: | -55 to +85 °C | (MIL-STD-810F, method 520.2) |
| Storage Temperature: | -55 to 125 °C | (MIL-STD-810F, method 520.2) |
| Vibration: | 8g rms | (MIL-STD-810F, method 514.5) |
| Shock: | 20g, 11ms, saw-tooth | (MIL-STD-810F, method 516.5) |
| Acceleration: | 15g | (MIL-STD-810F, method 513.5) |

RoHS & REACH Compliance

This part is compliant with EU 2011/65/UE RoHS (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) and REACH (Registration, Evaluation, Authorization and restriction of Chemical substances) directives.



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