ERZIA

DATASHEET

Ka-Band Block Up Converter

ERZ-BUC-2750-3100-43

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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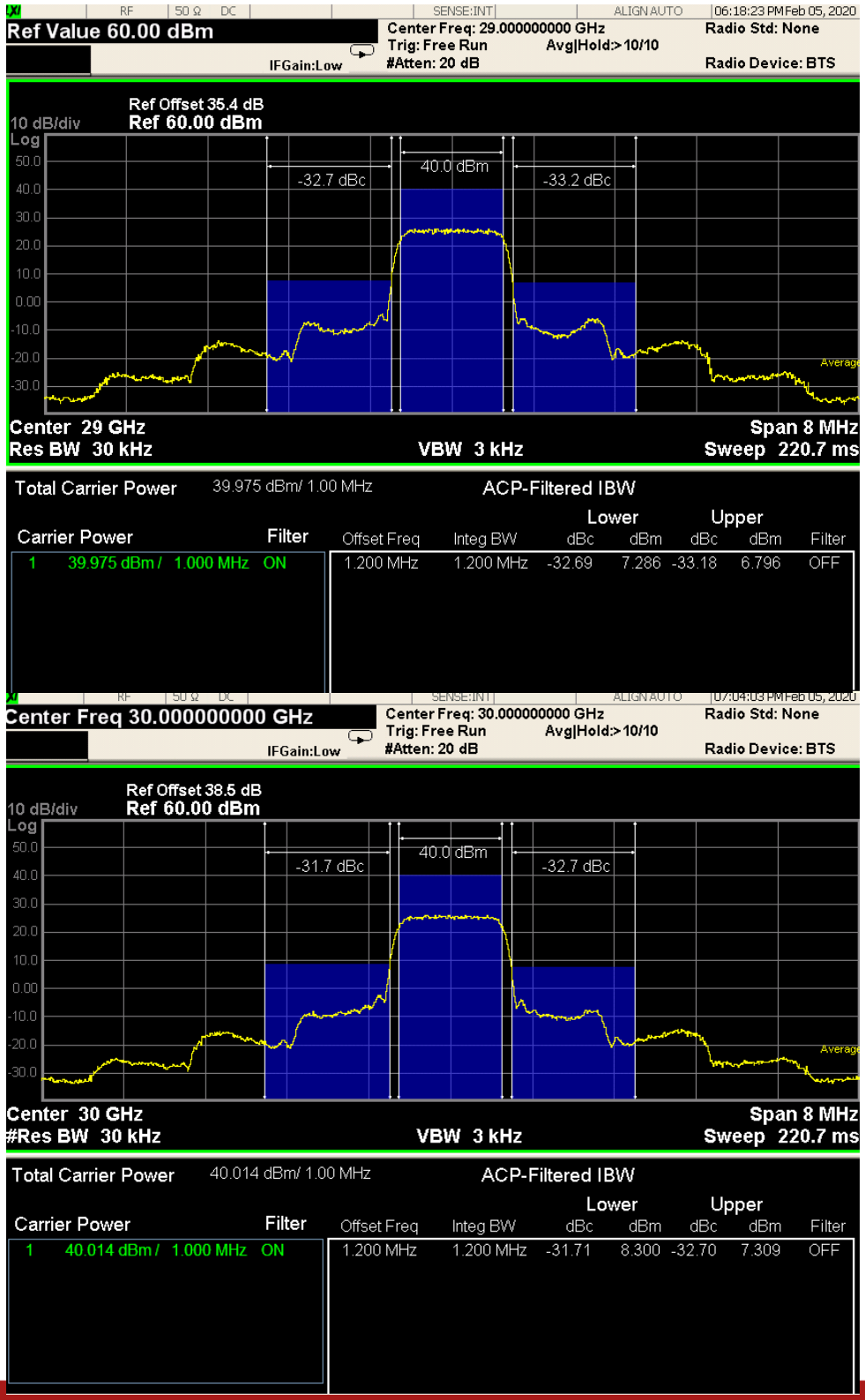
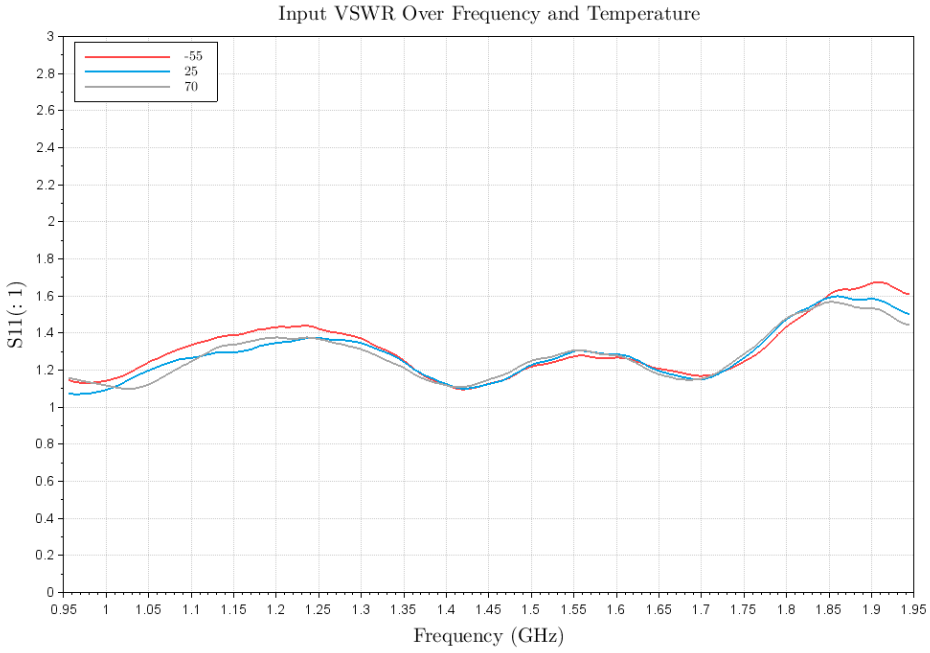
Output Power

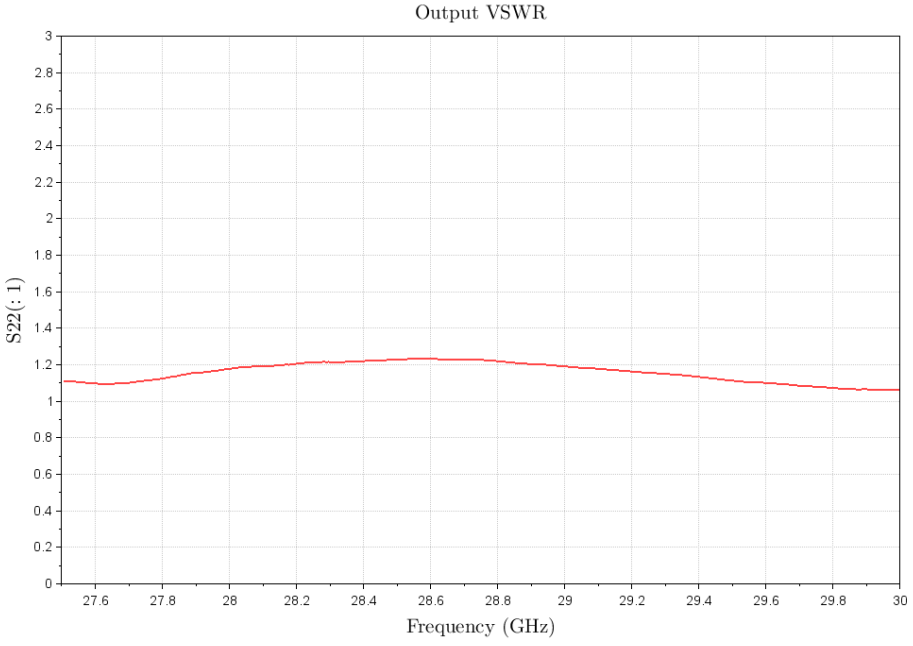
The following plot shows output power of 40 dBm at 29 GHz and 30 GHz and ACPR using BPSK, 1 Msps, α=0.2.



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).





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 Inerfaces

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
Altittue	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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