ERZIA

DATASHEET

Low Noise Block Down Converter

ERZ-LNB-1770-2120-75-1.5

Main Features:

- RF input: 17.7 to 21.2 GHz
- IF output: 950 to 1950 MHz
- Instantaneous BW: 1 GHz
- Noise figure: 1.5 (max) in all bands
- Adjustable gain: 45 to 75 dB
- Internal PLL
- RF connectors (I/O): SMA (F) / WR-42
- Compact aluminum housing
- Hi-reliability and dedicated screening

ERZ-LNB-1770-2120-75-1.5

The ERZ-LNB-1770-2120-75-1.5 is a **tunable Low Noise Block Down Converter** (LNB) operating in Ka band providing a noise figure below 1.5 dB in a compact and extremely reliable enclosure.

Typical applications:

- Satcom Ka-band
- Airborne platforms

Electrical Specifications

Parameter	Value			Units
	Min	Typ	Max	
Input Frequency Range	17.7	-	21.2	GHz
Bandwidth	-	1000	-	MHz
Output Frequency Range	0.95	-	1.95	GHz
Output P1dB	-	15	-	dBm
IP3	-	25	-	dBm
Adjustable Gain range	45	-	75	dB
Gain adjustment step	-	0.5	-	dB
Gain flatness per sub-band	-	+/-2	-	dB
Total gain flatness	-	+/-3	-	dB
Internal LO Frequency range	16.75	-	19.25	GHz
Noise Figure	-	1.3	1.5	dB

Electrical Specifications (cont)

Parameter	Value			Units
	Min	Typ	Max	
Input VSWR	-	1.5:1	2.0:1	-
Output VSWR	-	1.3:1	1.8:1	-
Input Voltage	-	15	18	V
Power Consumption	-	12	-	W
Phase Noise (from 17.7 to 21.2 GHz)	-	-70 @ 100 Hz -85 @ 1KHz -85 @ 10 KHz -92 @ 100KHz -110 @ 1 MHz -125 @ 10 MHz	-	dBc/Hz
External Reference (Trough IF connector)	-	10 50 (Optional)	-	MHz
REF Input Level	-5	0	10	dBm
Internal reference (optional)	-	-	-	-
Spurious	-	60	-	dBc
Image Rejection	-	40	-	dB
IF Rejection 30 dB	<550	-	>2300	MHz
RF Rejection 50 dB	<16	-	>24.0	GHz

Specifications at a case temperature of 25°C

Small Signal Gain

The following plot shows small signal gain in all bands, as a function of frequency at room temperature (25°C).

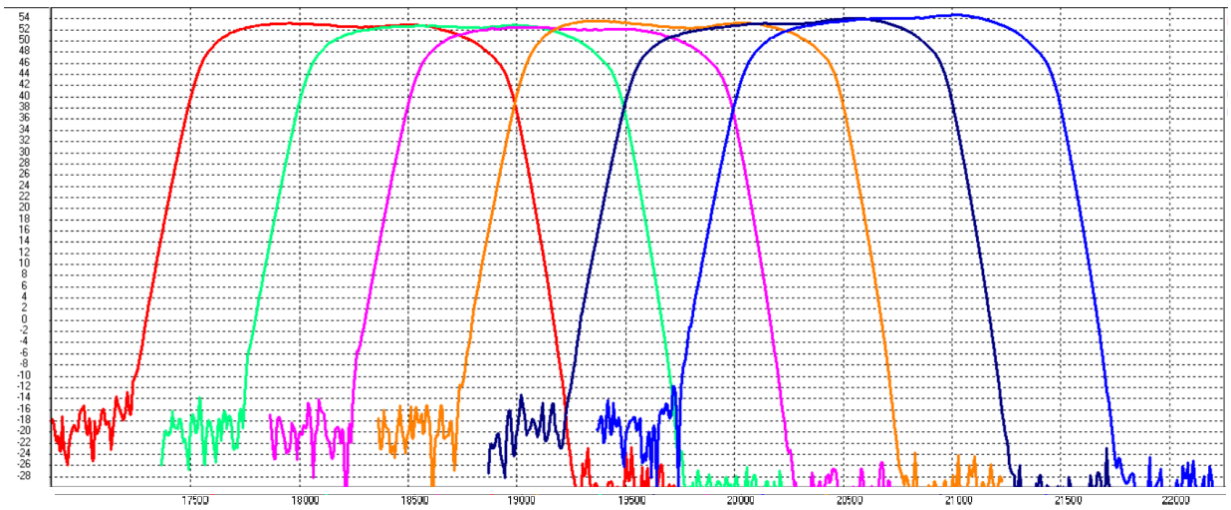

Figure 1: ERZ-LNB-1770-2120-75-1.5 Small Signal Gain

Noise Figure

The following plot shows noise figure as a function of frequency at room temperature (25°C).

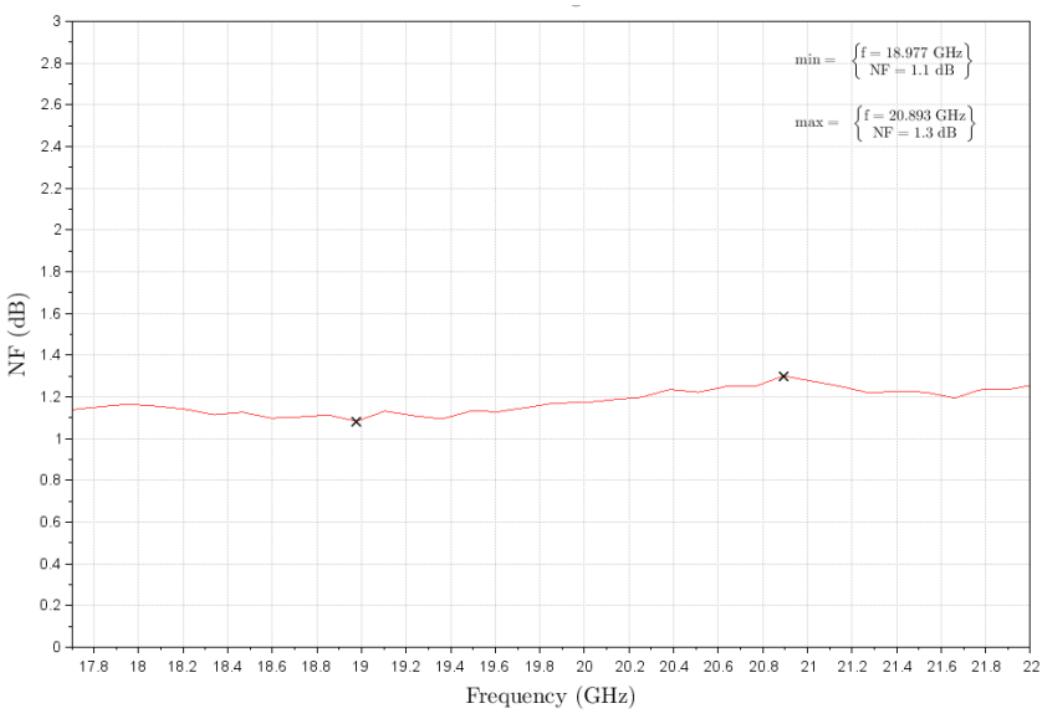

Figure 2: ERZ-LNB-1770-2120-75-1.5 Noise Figure

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).

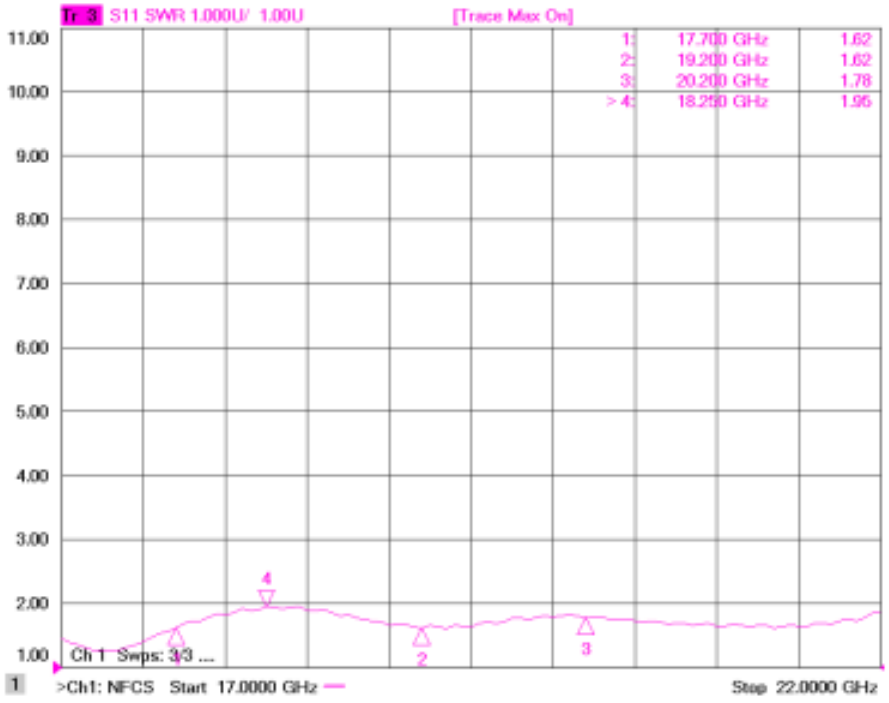

Figure 3: ERZ-LNB-1770-2120-75-1.5 Input matching

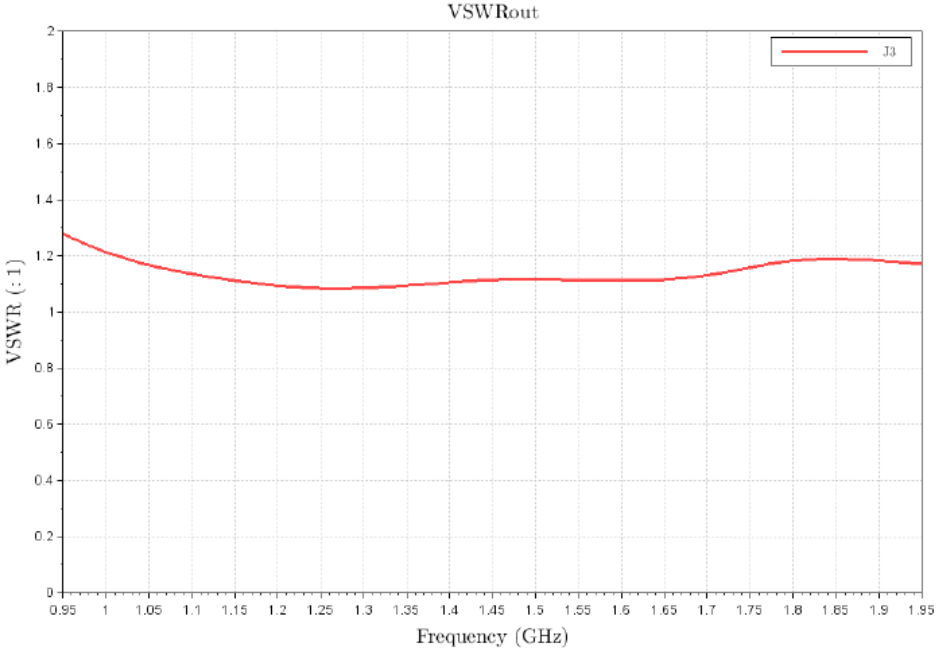

Figure 4: ERZ-LNB-1770-2120-75-1.5 Output matching

Output Power and OIP3

The following plots show output power at P1db and OIP3 as a function of frequency at room temperature (25°C).

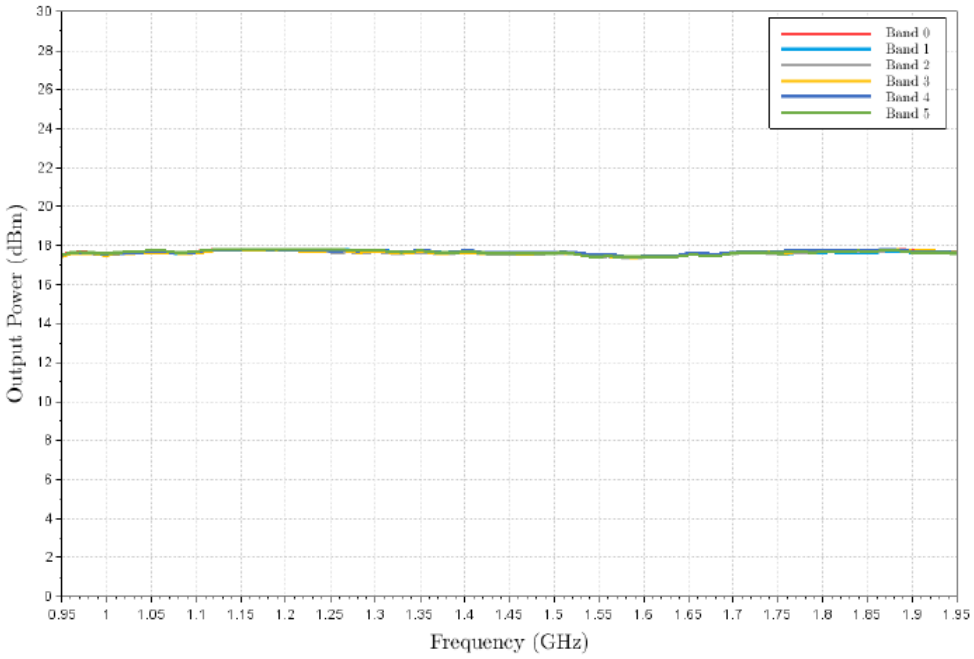

Figure 5: ERZ-LNB-1770-2120-75-1.5 Output Power at P1dB

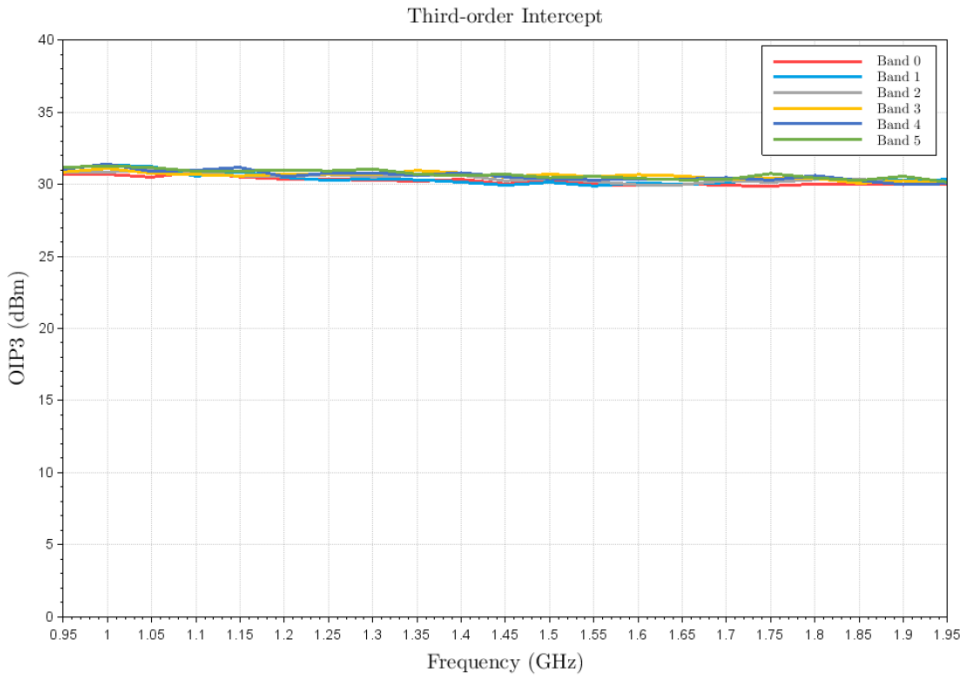

Figure 6: ERZ-LNB-1770-2120-75-1.5 OIP3

Mechanics and Housing:

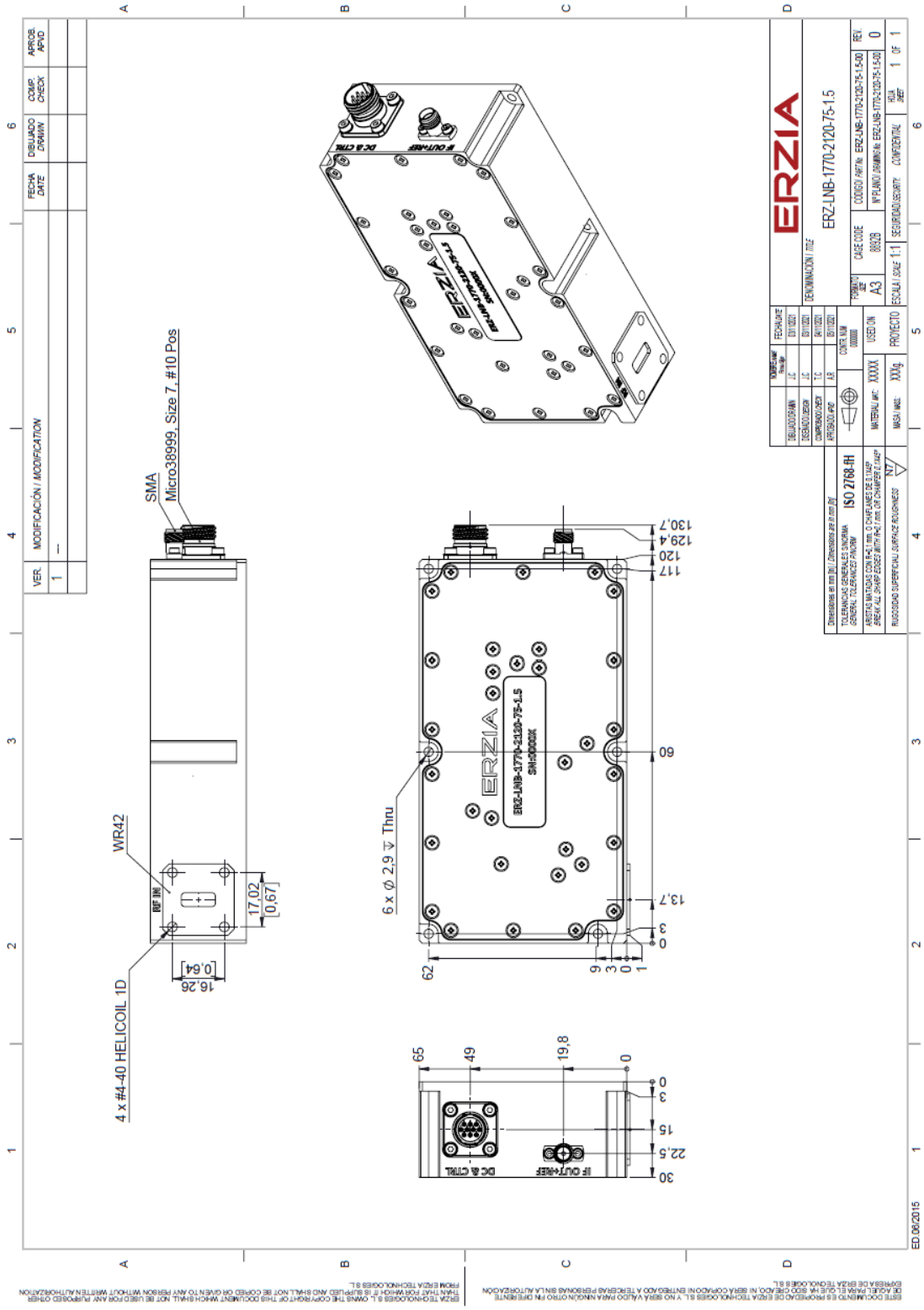

Figure 7: ERZ-LNB-1770-2120-75-1.5 Outline Drawing

Electrical Interfaces

Interface	Value
RF input	WR-42 waveguide with O-Ring
IF output	SMA (default) N-Type (option)
DC input	Dedicated MIL type connector
Ext. Ref input	Through IF output connector
Control and Telemetry	Serial RS422 interface (dedicated MIL type connector)

Table 1: ERZ-LNB-1770-2120-75-1.5 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	#5	#6	
	17.7 – 18.7	18.2-19.2	18.7-19.7	19.2-20.2	19.7-20.7	20.2-21.2	GHz
Attenuation set	0 to 31.5 in 0.5 steps						dB
Alarms	Temperature alarms						-
Sensors	Temperature and current monitoring						-
Lock	PLL Lock monitoring						-
Mute	Mute ON/OFF						-

Table 2: ERZ-LNB-1770-2120-75-1.5 Telemetry & Command

Absolute Maximum Ratings

Condition	Value
DC Voltage	+18 VDC
Maximum Input Power (CW)	0 dBm
Operation temperature (at case)	-55 to 85 °C
Storage temperature	-55 to 125 °C

Table 3: ERZ-LNB-1770-2120-75-1.5 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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