

# Ka-Band BUC

## TSA-211026 / TSA-210152

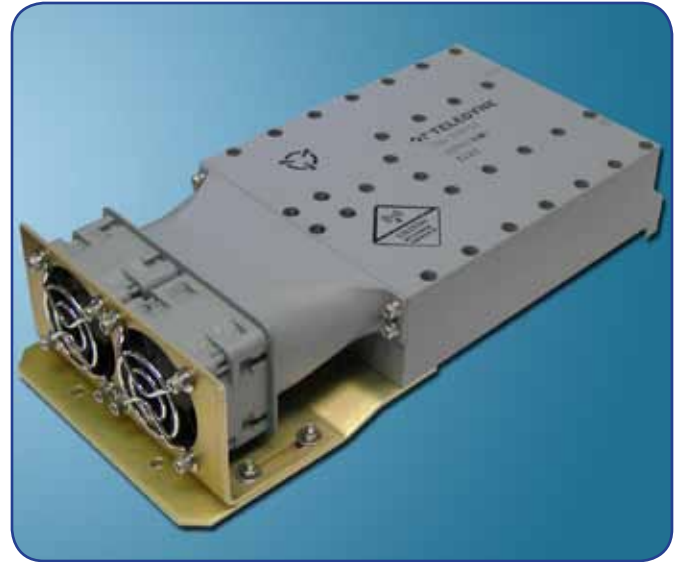
### INTRODUCTION

This product is designed to meet the growing market needs for an L-band to Ka-band upconverter. Its input is an L-band signal in the 1-2 GHz range. The upconverter translates the signal to Ka-band 30-31 GHz (TSA-211026) or 29-30 GHz (TSA-210152). It maintains high quality signal integrity due to the low noise characteristics of its local oscillator and the linearity of the components used in the conversion, filtering and amplification processes.

The IF section includes amplification and attenuation for gain setting and stability over temperature. After upconversion internal filtering is provided to eliminate unwanted spurious mixing products and the LO signal.

The local oscillator is a high performance phase locked oscillator, which is locked to the reference signal. Reference signal is multiplexed onto the input IF signal. The technology employed in the phase locked oscillator utilizes low noise VCO's followed by multiplication. The result is a mechanically robust unit which operates well over wide temperature ranges and severe environments.

This product is part of the complete range of commercial products available from Teledyne Microwave including L-Band, C-Band, S-Band & Ku-Band Synthesizers as well as Ku-Band & K-Band LNB's.



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### SPECIFICATION

Parameter	Condition	Value	Parameter	Condition	Value
Input Freq. Range	Upstream	1.5 +/- 0.5 GHz	Harmonic Emissions	Linear transmit carrier harmonics	-60dBc min.
Input Power	1.5:1 Source VSWR	+5.0 dBm max.	LO Leakage	Linear gain, 32dBm output	-65dBc min.
Input Instantaneous Bandwidth	Upstream	120 MHz max.	Transmit Thermal Noise	Input terminated, passive 50 ohms	-100dBm/Hz max.
Output Frequency Range	Fixed LO, Low side	30 to 31 GHz (TSA-211026) 29 to 30 GHz (TSA-210152)	LO Frequency	Fixed LO, Low side	29 GHz (TSA-211026) 28 GHz (TSA-210152)
Output Power, Psat	1.6:1 Load VSWR	39 dBm min.	Reference Clock Input Freq.	Multiplexed on RF Input Coax	10.00000 MHz
Conversion Gain	25C	30 dB, typical	Reference Clock Input Level	25C	0+/-3dBm
Spectrum Inversion	Transmit	None	Reference Clock Waveform	50 Ohm load	Sinusoidal
VSWR Input	N/A	2.0:1	Reference Clock Phase Noise	10Hz Offset	-120dBc/Hz
VSWR Output	N/A	2.0:1		100Hz Offset	-145dBc/Hz
Noise Figure	25C	18 dB, typical		1KHz Offset	-165dBc/Hz
Gain Variation	Over any 120 MHz IF bandwidth	2.0 dBp-p	Input Voltage	Two wire harness.	+6.75 to 7.25 VDC
Gain Variation with Temperature	-40 to +70C	+/-2.0dB	Input Current	Not including fan cooling	10A max.
OIP3	Linear gain, 32 dBm output	44 dBm	Cooling	Forced air (two fans) with plenum	10.8 CFM
Phase Noise	10 Hz Offset	-32 dBc/Hz	Fan Power	Two wire harness.	12V @ 1.0 Amps
	100 Hz Offset	-62 dBc/Hz	Input Connector	MIL-PRF-39012	SMA-F
	1 KHz Offset	-72 dBc/Hz	Output Interface	Waveguide Facing Mounting Surface	WR28
	10 KHz Offset	-82 dBc/Hz	Size	Includes fins, not fan	6.0"x4.0"x1.5" (lwxhx) or plenum
	100 KHz Offset	-92 dBc/Hz	Weight	Aluminum Chassis, 6061-T6	1.5 lbs max.
	1 MHz Offset	-102 dBc/Hz	Finish	Body	Electroless Nickel
	10 MHz Offset	-112 dBc/Hz		Mounting Surface	Chem. Film
Intermodulation Products	Linear gain, 32 dBm output	-25 dBc min.		Waveguide Flange surface	Chem. Film
Spectral Regrowth	QPSK @1.5x, Linear Power	-30 dBc	Operating Temperature	Consistent with iConnex e850mp	-30 to +60C
AM/PM Conversion	Linear gain	2.0 deg/dB	Altitude	Operational (eg. e850mp)	10,000 feet
Group Delay	25 C	2 nS		Non-operational (eg.30,000 feet e850mp)	
In-Band Spurious (TSA-211026)	>=29.3 GHz, </=31.6 GHz, linear	-60 dBc min.	Relative Humidity	Non-condensing (eg. e850mp)	92% max.
In-Band Spurious (TSA-210152)	>=28.3 GHz, </=30.6 GHz, linear	-60dBc min.	Shock	Mil-STD-810E	10g, 11ms Half Sine
Out of Band Spurious (TSA-211026)	</=29.3 GHz, >=31.6 GHz, linear	-65dBc min.			
Out of Band Spurious (TSA-210152)	</=28.3 GHz, >=30.6 GHz, linear	-65dBc min.			