

Ka-Band BUC

TSA-211026

Preliminary

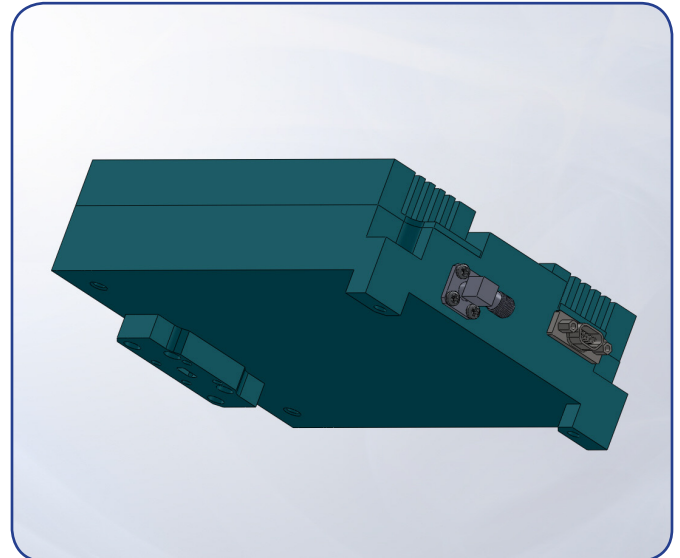
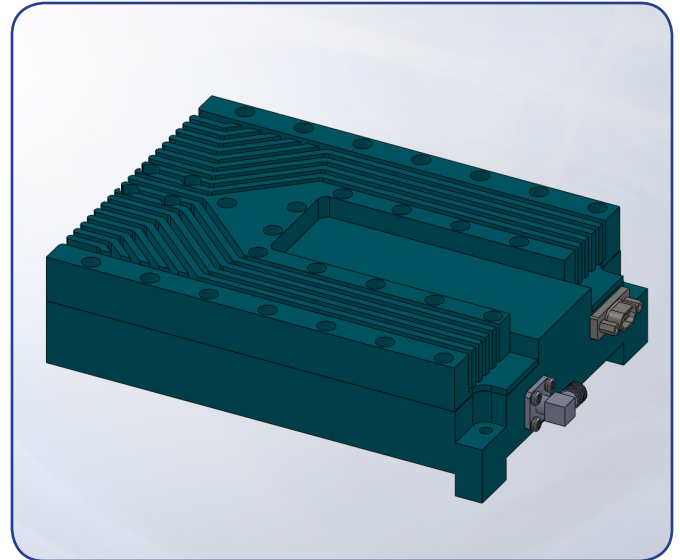
INTRODUCTION

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 in the 30-31 GHz range. 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 main elements of the upconverter are illustrated in the high level block diagram. 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 & Ka-Band Synthesizers as well as Ku-Band & Ka-Band LNB's.



Ka Band Block Upconverter

AS 9100 Rev B
ISO 14001:2008



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SPECIFICATION

Parameter	Condition	Value	Parameter	Condition	Value
Input Freq. Range	Upstream	1.5 +/- 0.5 GHz	Transmit Thermal Noise	Input terminated, passive 50 ohms	-100dBm/Hz max.
Input Power	1.5:1 Source VSWR	+5.0 dBm max.	LO Frequency	Fixed LO, Low side	29.000 GHz
Input Instantaneous Bandwidth	Upstream	120MHz max.	Reference Clock Input Freq.	Multiplexed on RF Input Coax	10.00000 MHz
Output Frequency Range	Fixed LO, Low side	30.000 to 31.000 GHz	Reference Clock Input Level	25C	0+/-3dBm
Output Power, Psat	1.6:1 Load VSWR	39 dBm min.	Reference Clock Waveform	50 Ohm load	Sinusoidal
Conversion Gain	25C	60 dB, typical	Reference Clock Phase Noise	10Hz Offset	-120dBc/Hz
Spectrum Inversion	Transmit	None		100Hz Offset	-145dBc/Hz
VSWR Input	N/A	2.0:1		1KHz Offset	-165dBc/Hz
VSWR Output	N/A	1.7:1	Input Voltage	Two wire harness.	+6.75 to 7.25 VDC
Noise Figure	25C	18 dB, typical	Input Current	Not including fan cooling	10A max.
Gain Variation	Over any 120MHz IF bandwidth	2.0dBp-p	Cooling	Forced air (two fans) with plenum	10.8 CFM
Gain Variation with Temperature	-40 to +70C	+/-2.0dB	Fan Power	Two wire harness.	12V @ 1.0 Amps
OIP3	Linear gain, 32dBm output	44dBm	Input Connector	MIL-PRF-39012	SMA-F
Phase Noise	10Hz Offset	-32dBc/Hz	Output Interface	Waveguide Facing Mounting Surface	WR28
	100Hz Offset	-62dBc/Hz	Size	Includes fins, not fan or plenum	6.0"x4.0"x1.0" (lwxhx)
	1KHz Offset	-72dBc/Hz	Weight	Aluminum Chassis, 6061-T6	1.5 lbs max.
	10KHz Offset	-82dBc/Hz	Finish	Body	Electroless Nickel
	100KHz Offset	-92dBc/Hz		Mounting Surface	Chem. Film
	1MHz Offset	-102dBc/Hz		Waveguide Flange surface	Chem. Film
	10MHz Offset	-112dBc/Hz	Operating Temperature	Consistent with iConnex e850mp	-30 to +60C
Intermodulation Products	Linear gain, 32dBm output	-25dBc min.	Altitude	Operational (eg. e850mp)	10,000 feet
AM/PM Conversion	Linear gain	1.5deg/dB		Non-operational (eg. e850mp)	30,000 feet
Group Delay	25C	2nS	Relative Humidity	Non-condensing (eg. e850mp)	92% max.
In-Band Spurious	>/=29.3GHz, </=31.6GHz, linear	-60dBc min.	Shock	Mil-STD-810E	10g, 11ms Half Sine
Out of Band Spurious	</=29.3GHz, >/=31.6GHz, linear	-65dBc min.			
Harmonic Emissions	Linear transmit carrier harmonics	-60dBc min.			
LO Leakage	Linear gain, 32dBm output	-65dBc min.			

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