



SFC2900A

Ka-Band Synthesized Frequency Upconverter



HIGHLIGHTS

- ▶ Low-Cost and High Performance in a 1.75" High Chassis
- ▶ Local or Remote Control
- ▶ 25 dB of Gain Control at 0.2 dB Resolution
- ▶ 32 Stored Configuration Settings
- ▶ -70 dBc Spurious Suited for Large Earth Stations
- ▶ 125 kHz Frequency Resolution
- ▶ Low Phase Noise
- ▶ Low Group Delay Distortion for High Data Rates and DVB

OVERVIEW

The Radyne Model SFC2900A Ka-Band Synthesized Frequency Upconverter has been designed to provide performance that meets or exceeds industry standards. The SFC2900A features also provide ease of integration and operation.

The SFC2900A offers the highest standard output power of any rack-mount upconverter available. With an output P1 dB in excess of +10 dBm, the SFC2900A may eliminate the need for line amplifiers in your next installation.

Linearity of the converter is equally impressive. The SFC2900A boasts a two tone IMD products of -50 dBc for a combined output power of -10 dBm. Phase linearity is maintained through an internal group delay equalizer that limits parabolic plus linear group delay to less than three nanoseconds across the band. Thus, the SFC2900A is ideally suited for multiple carrier or DVB uplinks where linearity and group delay distortion becomes critical.

MONITOR AND CONTROL

All of the configuration, monitor and control functions are available at the front panel. Operating parameters such as frequency, channel, gain, gain offset and switch settings (backup only) can be readily set and changed at the front panel.

Additionally, all functions can be accessed with a terminal or personal computer via a serial link (RS-232, RS-485, or Ethernet) for complete remote monitor and control (M&C) capabilities.

Extensive fault monitoring with masking capability, along with time and date stamped event storage are available.

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SPECIFICATIONS

OUTPUT CHARACTERISTICS

Frequency:	28000 - 29100 MHz (Plan A) 29000 - 30250 MHz (Plan B) 30000 - 31000 MHz (Plan C)
Impedance:	50 Ohms
Return Loss:	≥19 dB
P1 dBm Output:	+10 dBm Minimum
Connector:	WR-28 Waveguide

INPUT CHARACTERISTICS

Frequency:	70 MHz ±18 MHz Standard 140 MHz ±36 MHz Optional
Impedance:	75 Ohms
Return Loss:	≥23 dB
P1 dBm Input:	-15 dBm
Pin Nominal:	-25 dBm
Connector:	BNC F

TRANSFER CHARACTERISTICS

Type:	Double Conversion, No Spectral Inversion
Gain:	25 dB Minimum
Gain Control:	25 dB in 0.2 dB Increments
Gain Ripple:	±0.25 dB/36 MHz Typical, ±0.50 dB Maximum
Gain Slope:	±0.02 dB/MHz
Gain Stability:	±0.25 dB/24 Hours, ± 1.5 dB; 0 to 50°C
Spurious:	-70 dBm Local Oscillator Related Spurious (In-Band) at Maximum Gain -60 dBc Signal Related Spurious (In-Band) at Minimum Attenuation
Third Order Intercept:	+15 dBm -50 dBc IMD Two Tones With 0 dBm Total Output Power

AM/PM Conversion:	0.15°/dB @ +5 dBm Output
Group Delay Linear:	0.025 nsec./MHz
Parabolic:	0.005 nsec./MHz ²
Ripple:	1 nsec. p-p
Carrier Mute:	80 dBm Minimum

FREQUENCY SYNTHESIZER CHARACTERISTICS

Resolution:	125 kHz Step Size
Accuracy:	±5 x 10 ⁻⁹
Stability:	±5 x 10 ⁻⁹ Over Temperature (0 to 50°C) ± 1 x 10 ⁻⁹ /24 Hours
Accuracy:	±5 x 10 ⁻⁹

SINGLE SIDE BAND PHASE NOISE

Offset	Ka-Band Standard
100 Hz	-60 dBc/Hz
1 KHz	-75 dBc/Hz
10 KHz	-80 dBc/Hz
100 KHz	-80 dBc/Hz
1 MHz	-100 dBc/Hz
External Reference	10 MHz, 0 dBm, 50 Ohms (5 MHz Optional)

OPERATOR INTERFACE

Front Panel: Keypad Control, LED Indicators, and LCD Indicators
Remote Interfaces: Terminal (RS-232), ASCII and RLLP (RS-232/RS-485) Serial Interfaces, and SNMP (Ethernet) 10 Base-T

Rear Panel Connections: RF Output (WR-28), IF Input (75 Ohm BNC), Operator Serial Port (DB-9 Pin), 10 MHz REF In (50 Ohm BNC), 10 MHz REF Out (50 Ohm BNC), Fault/Test (DB-9 Pin), Switch Interface (DB-15 Pin), Equipment RS-485 Interface (DB-9 Pin), IEC/EN60320/C13 Power Entry Module/Switch, #10 Ground Lug

Front Panel Test Ports: RF Monitor -25 dB (Nominal) SMA-F, IF Monitor -15 dB (Nominal) SMA-F

LED Indications: Standby, LO Fault, Ext Ref Online, Power, Fault, Event, Remote, Sig Fault

Converter Settings:

Monitored and/or controlled from the front panel or remotely, using the RS-232/RS-484 or Ethernet remote port:

- Frequency
- Current Channel
- Event Buffer
- Power Supply Voltages
- Input Attenuation
- Carrier Control and Status
- Converter and Frequency Type
- RF Detector, IF Detector, and DAC Attenuation Voltages
- Channel Gain
- Gain Offset
- Faults Status and Mask
- Frequency Reference Status and Offset Control
- Remote Protocol, Baud, Line, and Echo Modes
- Converter Band and User Minimum/Maximum Frequencies
- Terminal Emulation and Baud Rate

PHYSICAL CHARACTERISTICS

Size:	19" x 1.75" x 21" Deep (48.26cm x 4.44cm x 48.26cm Deep)
Weight:	12 lb. (5.44 kg)
Primary Power:	100 to 240 VAC, 50 to 60 Hz
Power Consumption:	50 Watts

ENVIRONMENTAL CHARACTERISTICS

Operating Temperature:	0 to 50°C
Humidity:	To 95% Non-Condensing
Altitude:	To 8,000 Feet (2438.4 meters) AMSL
Shock & Vibration:	No loss of frame synchronization at the BER Test set due to a standard hammer drop test on any outside surface of converter. Likewise, no loss of frame sync for temperature gradient of ±22°C/hour
Non-Operating Temperature:	-32 to +70°C, 99% Humidity, Non-Condensing

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