WATKINS-JOHNSON

959.00

WJ-9478-1 TUNABLE FREQUENCY CONVERTER

FEATURES

- Five Bandwidths
- 250 kHz to 30 MHz Tuning Range
- IEEE-488 Remote Control
- Excellent Phase Linearity
- 50 dB Spur-Free Dynamic Range
- Manual/Average AGC/Pulse AGC
- Two +10 dBm Outputs

DESCRIPTION

The WJ-9478-1 Tunable Converter provides frequency conversion of signals from 250 kHz to 30 MHz to one of five output frequencies ranging from 125 to 1600 kHz. Any of five bandwidths may be selected, either from the front panel or over the IEEE-488 remote control bus. The output center frequency depends upon the selected bandwidth and has been chosen to provide the lowest practical center frequency consistent with the bandwidth selected. This makes the WJ-9478-1 ideal for IF-to-tape conversions or as a front end for digital signal processing. All local oscillators are phase locked to the master reference. A precision frequency reference is provided internally, and there is a provision for using an external reference.

Control of the WJ-9478-1 is via the IEEE-488 bus or locally from the front panel. Tuned frequency may be entered by numeric entry on the keypad or by turning the main tuning knob. AGC modes and AGC time constants are selected from the keypad. Gain may be controlled by the front panel manual gain control. The front panel meter indicates signal strength while in AGC mode and output level while in manual gain mode. The tuned frequency is displayed on the LED numeric readout. All other settings are indicated by LEDs on the front panel. The IEEE-488 bus may be used to control all functions of the WJ-9478-1. Signal strength or output level and all control settings may be read back over the bus even if the unit is under local control.

This converter provides an adjustable gain of 15 to 60 dB. Two identical outputs at a nominal level of +10 dBm into 50 ohms are provided. All internally generated spurious signals are rejected by a minimum of 50 dB.

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Third order products and harmonics are also a minimum of 50 dB down. Phase linearity has been optimized through the use of precision IF filters. The AGC circuit provides leveling of the output signal. A front panel lamp alerts the operator if the unit is tuned below the minimum frequency limit for the bandwidth selected.

SPECIFICATIONS

Frequency Range	250 kHz to 30 MHz, lower limit depending upon selected bandwidth
RF Input	1, BNC, 50 ohms, VSWR 1.5:1 maximum
RF Input Level	−5 to −50 dBm
Image Rejection	55 dB minimum
Internally Generated Signal	−50 dB minimum
Single or Two Tone Intermod	−50 dB minimum
LO Leakage at RF Input	−100 dBm maximum
Tuning Range	Tunable from 0 to 15 MHz with the minimum usable tuned frequency depending on bandwidth. (See following table)

Filter Bandwidths:

Bandwidth	Minimum Tuned Input Center Frequency	Output Center Frequency
2.4 MHz	1,450 kHz	1600 kHz
1.2 MHz	750 kHz	800 kHz
300 kHz	400 kHz	200 kHz
150 kHz	300 kHz	125 kHz
100 kHz	300 kHz	125 kHz

Phase Linearity	± 15 degrees over 80% of selected bandwidth
Local Oscillator Stability	1 part in 10^7
Tuning Resolution	100 Hz steps
External Reference Input	1, BNC, 50 ohms, 10 MHz
Gain Control	Manual, step size less than 0.5 dB with 45 dB of range either front panel or remote control. AGC average of AGC peak, output leveled to within 1 dB. AGC time constants: 1 ms, 3 ms, 10 ms, 30 ms, 100 ms
Outputs	Two, BNC, 50 ohms, VSWR 1.5:1 maximum. Output level 10 dBm nominal
Operating Temperature	0 to 50°C, performance guaranteed at 25°C ±5°
Power Requirements	115/230 Vac ±10%, 50 to 400 Hz
Power Consumption	65 watts, typical
Dimensions	19 inches wide, 23.5 inches deep, 5.22 inches high
Weight	40 pounds, approximate