

VC70

Frequency Specifications

Input Frequency Range

50MHz – 90MHz

		TCXO	OCXO (VC-OCXO Option)
Frequency Reference			
Frequency reference error = \pm [(aging rate x time since last adjustment) + settability + temperature stability]			
Frequency readout accuracy (start, stop, center, marker) = \pm ((Center frequency x frequency reference error) + 4kHz \pm RBW/3)			
Aging		$\pm 1 \times 10^{-6}$ /year	$\pm 1 \times 10^{-7}$ /year
Temperature stability	20° C – 30° C	$\pm 1.5 \times 10^{-7}$	$\pm 1.4 \times 10^{-9}$
	0° C – 50° C	$\pm 7.4 \times 10^{-7}$	$\pm 7.2 \times 10^{-9}$
Settability		3.8×10^{-10}	1.5×10^{-10}
External Reference Input	10MHz 50Ω -10dBm to +10dBm (characteristic)		
Frequency Span			
Range = 2Hz to 40MHz			
Accuracy \pm (Span x Frequency Reference Error) \pm RBW/3			
Frequency Resolution 1Hz			
Instantaneous Bandwidth (Stare)			
Range (6dB)	40MHz		
Resolution Bandwidths			
Range (-3dB)	3Hz – 1MHz Continuously Variable		
Accuracy	$\pm 5\%$		
Selectivity (60dB/3dB bandwidth ratio)	4:1 digital, approximately Gaussian		
Stability			
Noise sidebands offset from CW signal with 1kHz RBW			
Offset from CW signal	Spec, typical dBc/Hz		
≥ 10 kHz	-120, -130dBc/Hz		
Residual FM (peak-to-peak)			
1kHz RBW, (measurement time)	≤ 0.6 Hz (100ms)		
System Related Sidebands			
≥ 30 kHz offset from carrier CW signal ≤ -65 dBc			

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Amplitude Specifications

Amplitude Range	
	Standard
Measurement Range	Displayed average noise level (DANL) to maximum safe input level
Input attenuator range	0 – 60dB, (1dB steps)
Maximum Safe Input Level	
Average continuous power ^a	+20dBm (100mW)
DC Voltage	0 VDC

Gain Compression 2 Tone ^b	
Total mixer power –30dBm	<1dB

Displayed Average Noise Level (dBm), Noise Figure (dB) Typical ^c		
DANL	Noise figure	
-134	20	

Display	
Display range	0.01 – 20dB/div
Vertical divisions	Continuously variable
Scale units	dBm
Trace functions	Clear/write, max. hold, min. hold, clear operation
Reference Level	
Range	-150dBm - +20dBm

Amplitude Accuracy	
At reference level ^d	± 0.5dB
Overall amplitude accuracy ^e	± 1.5dB

Spurious Responses	
Third Order Intercept (dBm) (Typical) ^f	
Frequency	IIP
50MHz – 90MHz	+14
Other Input Related Spurious	
Inband > 30kHz offset	< -65dBc
Residual responses ^g	< -90dBm

^a. 0dB input attenuation.

^b. As measured with reference level signal when 2nd tone input @ 10dB above reference level.

^c. 100Hz RBW, input terminated, 0dB front-end attenuation.

^d. Settings are: Reference level –40dBm; input attenuation 10dB, center frequency 70MHz; RBW 1KHz; span 30KHz; 20 to 30° C. Input Power at –40dBm.

^e. For reference level +20 to –40dBm, RBW 1KHz, span 30KHz (20 to 30° C). Input level +20 to –40dBm.

^f. For two –50dBm signals at mixer input and greater than 150KHz separation. Mixer input defined as input power (dBm) – input attenuation (dB).

^g. Input terminated and 0dB front end attenuation.

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General Specifications

Temperature Range	
Operating	0° C to 50° C
Storage	-40° C to 65° C
Disk drive	5° C to +55° C
Max temperature gradient	20° C/hour
Relative Humidity	
Operating	8 to 90% non-condensing
Storage	5 to 95% non-condensing
Altitude	
Operating	15000 feet @ 0° C to 40° C
Storage	50000 feet @ 0° C to 25° C
Altitude Hard Disk	
Operating	10000 feet
Storage	14000 feet
Power Requirements ^a	
100 – 240 VAC, 50 – 60 Hz 1.2 Amp max +12VDC @ 3.5 Amps max	
Communication Interface	
RS232 serial	
10/100 Ethernet	
USB 2.0	
Modem (Optional)	
Wireless modem (Optional)	
Protocol	
TCP/IP	
Inputs/Outputs	
Input	50 Ω type N (f) rack mount form factor 50 Ω type SMA (f) compact form factor
10MHz REF OUT	50 Ω SMA (f), > +5dBm (characteristic)
10MHz REF IN	50 Ω , -10 to +10dBm (characteristic)
Serial interface	RS232, 9 pin D-SUB (m)
Parallel interface	25 pin D-SUB (f)
USB 2.0	
Ethernet 10/100	
GPS Antenna (VC-GPS Option)	SMA (f)
Dimensions, Weight	
Rack mount form factor	19" 1 RU 10.50" deep, 9 pounds
Compact form factor	10" X 8.75" X 2.25", 4 pounds

^a. Contact factory for custom input voltage ranges

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Options

- VC-OCXO** **Oven-Controlled Reference Oscillator** provides +/- 0.0014 PPM frequency reference temperature stability.
- VC-GPS** **Internal GPS Receiver** provides position and time information. Also includes a programming interface that allows you to build your own clients-side application to process GPS information.
- VC-LOG** **Data logging option** enables the user to review the past performance of the site. 3-D traces can be generated as well as Amplitude versus Time graphs. Data can also be stored directly on the analyzer or on the users own network. The data is time-stamped and all settings are stored within the file for easy recall.

Definitions and conditions

- Specifications describe the performance of parameters covered by the product warranty. (The temperature range is 0° C to 50° C, unless otherwise noted.)
- Characteristics describe product performance that is useful in the application of the product, but is not covered by the product warranty.
- Typical performance describes additional product performance information that is not covered by the product warranty. It is performance beyond specification that 80% of the units exhibit with a 95% confidence level over the temperature range 20° C to 30° C. Typical performance does not include measurement uncertainty.
- Nominal values indicate the expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

The following conditions must be met for the analyzer to meet its specifications.

- The analyzer is within the one-year calibration cycle.
- When the analyzer is at a constant temperature, within the operating temperature range, for a minimum of 90 minutes.
- After the analyzer is turned on for a minimum of 90 minutes.

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