VC1800

Frequency Specifications

Input Frequency Range

3MHz – 1.8GHz
100kHz[a] – 1.8GHz (VC-LBD Option)

		TCXO	OCXO (VC-OCXO Option)
Frequency Reference			
Frequency reference error = ± [(aging rate x time since last adjustment) + settability + Temperature stability]			
Frequency readout accuracy (start, stop, center, marker) = ± ((Center frequency x frequency reference error) + 4kHz ± RBW/3)			
Aging		±1x10^{-6}/year	±1x10^{-7}/year
Temperature stability	20˚ C – 30˚ C	±1.5x10^{-7}	±1.4x10^{-9}
	0˚ C – 50˚ C	±7.4x10^{-7}	±7.2x10^{-9}
Settability		3.8x10^{-10}	1.5x10^{-10}
External Reference Input	10MHz 50Ω -10dBm to +10dBm		
Frequency Span			
Range = 2Hz to maximum frequency range of the analyzer			
Accuracy ± (Span x Frequency Reference Error) ± RBW/3			
Frequency Resolution 1Hz			
Instantaneous Bandwidth (Stare)			
Range (6dB)	36MHz [b], 40MHz (VC-40S Option)		
Resolution Bandwidths			
Range (-3dB)	3Hz – 1MHz Continuously Variable		
Accuracy	± 5%		
Selectivity (60dB/3dB bandwidth ratio)	4:1 digital, approximately Gaussian		
Stability			
Noise sidebands offset from CW signal with 1kHz RBW			
Frequency	Offset from CW signal	Spec, typical dBc/Hz	
< 40MHz	≥10kHz	-120, -130dBc/Hz	
40MHz – 1.8GHz	≥10kHz	-85, -90dBc/Hz	
Residual FM (peak-to-peak)			
1kHz RBW, (measurement time)	≤ 150Hz (100ms)		
System Related Sidebands			
≥ 30kHz offset from carrier CW signal ≤ -65dBc			

a. 9kHz Characteristic.
b. At 70MHz IF.

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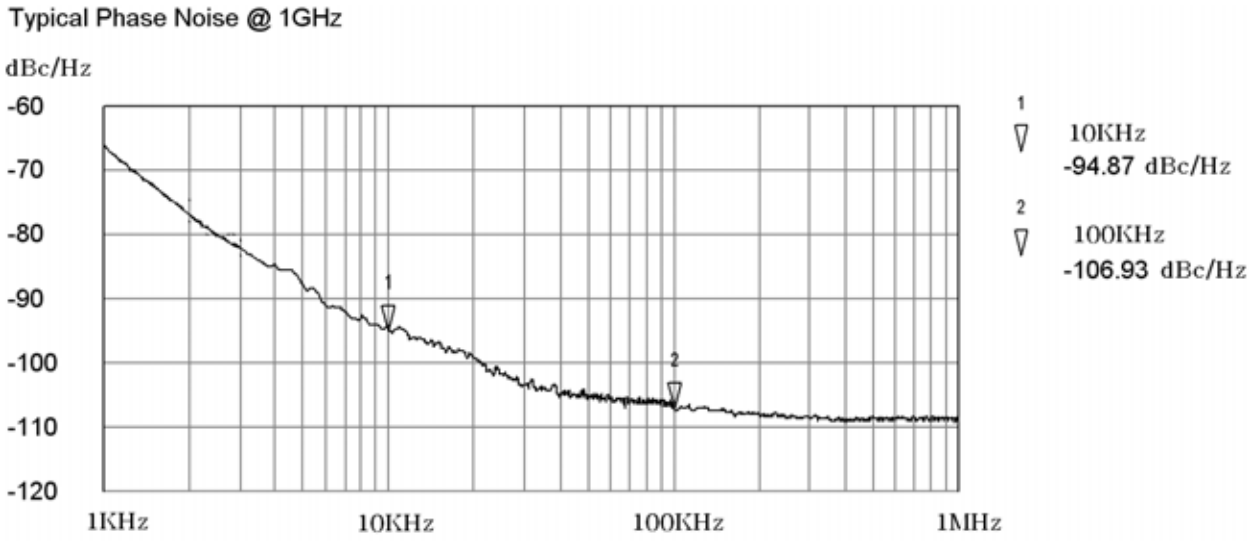

Amplitude Specifications

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

Gain Compression 2 Tone [a]	
Total mixer power –30dBm	<1dB

Displayed Average Noise Level (dBm), Noise Figure (dB) [b] **Typical**		
Frequency	DANL	Typ
3MHz – 40MHz	-143	11
40MHz – 500MHz	-134	20
500MHz – 1GHz	-133	21
1GHz – 1.8GHz	-131	23
Amplitude Specifications continued		

a. As measured with reference level signal when 2nd tone input @ 10dB above reference level.
b. 100Hz RBW, input terminated, 0dB front end attenuation.

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 [a]	± 0.5dB
Overall amplitude accuracy [b]	± 1.5dB

Spurious Responses	
Third Order Intercept (dBm) (Typical) [c]	
3MHz – 40MHz	+12
40MHz – 500MHz	+10
500MHz – 1GHz	+11
1GHz – 1.8GHz	+12
Other Input Related Spurious	
Inband > 30kHz offset	< -65dBc
Residual responses [d]	< -90dBm

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
General Specifications continued	
Power Requirements [a]	

a. Settings are: Reference level -30dBm; input attenuation 10dB, center frequency 1GHz; RBW 1kHz; span 30kHz; 20 to 30º C. Input Power at -30dBm.
b. For reference level +20 to -30dBm, RBW 1kHz, span 30kHz (20 to 30º C). Input level +20 to -30dBm.
c. For two -50dBm signals at mixer input and greater than 150kHz separation. Mixer input defined as input power (dBm) – input attenuation (dB).
d. Input terminated and 0dB front end attenuation.
a. Contact Factory for custom input voltage requirements.

100 – 240 VAC, 50 – 60 Hz, 2 Amps +24VDC @ 3.5 Amps max	
+28VDC (+20 to +34 VDC) (VC-28V Option)	
Communication Interface	
RS232 serial	
10/100 Ethernet	
USB 2.0	
Modem (Optional)	
Wireless modem (Optional)	
IEEE-1394 firewire (VC-FWO Option)	
Protocol	
TCP/IP	
Inputs/Outputs	
Input	50 Ω type N (f)
10MHz REF OUT	50 Ω SMA (f), > +5dBm (characteristic)
10MHz REF IN	50 Ω, -10 to +10dBm (characteristic)
IF OUT	SMA (f), 10.7MHz, nominal –8dBm, (uncorrected) at Reference Level
Serial interface	RS232, 9 pin D-SUB (m)
Parallel interface	25 pin D-SUB (f)
Firewire (IEEE – 1394) (VC-FWO Option)	
USB 2.0	
Ethernet 10/100	
GPS Antenna (VC-GPS Option)	SMA (f)
Dimensions, Weight	
Rack mount form factor	19” 1 RU 20” deep, 14 pounds
Compact form factor	10” X 11.75” X 3.75”, 10 pounds

Options

VC-FWO **IEEE-1394 (Firewire) Communication Port** This option provides similar communication capabilities as the Ethernet port, and supports the TCP/IP protocol.

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-40S **40MHz Instantaneous bandwidth** increases 70MHz final IF 6dB instantaneous bandwidth to 40MHz.

VC-LBD **Lowband Module** extends low frequency input down to 100kHz.

VC-OCXO **Oven-Controlled Reference Oscillator** provides +/- 0.0014 PPM frequency reference temperature stability.

VC-28V **28 VDC Power Option** allow unit to be powered by a wide voltage range (+20 to +34 VDC) power source. **Recommended for installations in vehicles, aircraft, etc.**

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.