

Table 1-1. Specifications.

FREQUENCY

Display Accuracy: ± 3 Hz

AFC Pull-In Range: $> 5 \times$ Bandwidth for 3 Hz thru 100 Hz
Bandwidth, > 800 Hz for 300 Hz Bandwidth.

AFC Hold-In Range: ± 800 Hz

AFC Lock Frequency: center of passband ± 1 Hz

AMPLITUDE

Amplitude Accuracy:

Frequency Response

3581A and 3581C Unbalanced

LOC

LINEAR

15 Hz to 50 kHz

± 0.4 dB

$\pm 4\%$

3581C Balanced Inputs*:

40 Hz to 20 kHz,

± 20 dBm max

± 0.5 dB

$\pm 5\%$

Switching Between Bandwidths:

± 0.5 dB

$\pm 5\%$

Amplitude Display:

± 2 dB

$\pm 2\%$

Input Attenuator:

-0.3 dB

$\pm 3\%$

Amplitude Reference Level

(IF Attenuator)

Most Sensitive Range:

± 1 dB

$\pm 10\%$

All Other Ranges:

± 1 dB

$\pm 3\%$

*for signals below -20 dBm

Dynamic Range:

Display Range (90 dB scale): > 80 dB

Noise Level:

Model 3581A/C

NOISE LEVEL (dBV)

10 100 1K 10K 100K

200

FREQUENCY

BW = 300 Hz

BW = 20 Hz

BW = 3 Hz

100mV

Noise Sidebands: > 70 dB below CW signal 10 Bandwidths away from signal.

Spurious Responses: > 80 dB for signals less than 0 dBm above 100 Hz.

Line-Related Spurious: > 80 dB below input reference level or -140 dBV (0.1 μ V).

Below -90 dBm for 3581C Balanced-Terminated input.

IF Feedthru:

Input Feedthru

> 10 V 60 dB or lower

< 10 V -70 dB or lower

Zero Response: > 30 dB below input reference level

BALANCED INPUT (3581C only)

Frequency Response: 40 Hz to 20 kHz ± 0.5 dB for signals below $+20$ dBm

Common Mode Rejection: > 64 dB at 60 Hz

OUTPUTS

Recorder Outputs:

X-Axis: 0 V to $+5$ V $\pm 2.5\%$

Y-Axis: 0 V to $+5$ V $\pm 2.5\%$

Tracking Oscillator Output

Frequency Accuracy: ± 1 Hz relative to center of passband

Frequency Response

3581A: $\pm 3\%$ 15 Hz to 50 kHz

3581C: ± 0.5 dB 100 Hz to 20 kHz, 10 kHz reference, into 600 Ω load

THD and Spurious: > 40 dB below 1 V signal level

Table 1-2. General Information.

INPUT CHARACTERISTICS (3581A) Connector: female banana plug Impedance: 1 megohm, 30 pF Maximum (ac) Input Level: <table border="1"> <thead> <tr> <th>Input Sensitivity</th> <th>Maximum Input</th> </tr> </thead> <tbody> <tr> <td>+30 dB (20 V) to -10 dB (0.2 V)</td> <td>100 V rms</td> </tr> <tr> <td>-20 dB (0.1 V) to -70 dB (0.2 mV)</td> <td>50 V rms</td> </tr> </tbody> </table> Maximum (dc) Input Voltage: ± 100 V dc Coupling: capacitive DC Isolation: none (input common referenced to frame ground)	Input Sensitivity	Maximum Input	+30 dB (20 V) to -10 dB (0.2 V)	100 V rms	-20 dB (0.1 V) to -70 dB (0.2 mV)	50 V rms	Full-Scale Sensitivity: Volts Scale Calibrated: 30 V rms to 0.1 μV rms (18 ranges) Uncalibrated: 100 V rms to 0.2 μV rms Log 90 dB Scale: Calibrated: +30 dBV/dBm to -70 dBV/dBm (11 ranges) Uncalibrated: -40 dBV/dBm to -60 dBV/dBm Overload Indicator: An LED Overload indicator on the front panel lights to indicate that the input signal exceeds the maximum (full scale) input level set by the INPUT SENSITIVITY switch and amplitude VERNIER. Internal Calibration Signal: An internally generated calibration signal can be used to calibrate the amplitude section (following input attenuator) to an accuracy of $\pm 1.5\%$ at 10 kHz. The calibration signal can also be used to verify the frequency accuracy of the instrument.
Input Sensitivity	Maximum Input						
+30 dB (20 V) to -10 dB (0.2 V)	100 V rms						
-20 dB (0.1 V) to -70 dB (0.2 mV)	50 V rms						
INPUT CHARACTERISTICS (3581C) Selectable Input Configurations: - Unbalanced - Balanced Bridged - Balanced Terminated Connector: accepts WECO Type 310 mating plug Impedance: - Unbalanced: 1 megohm, 40 pF - Bridged: greater than 12 K (typically 14 K at 1 kHz) - Terminated: 500 ohms or 900 ohms Maximum Input Levels: - Unbalanced: same as 3581A - Bridged: 100 vdc max, 35 vrms ac max - Terminated: -27 dBm at 0 V dc DC Isolation: - Unbalanced: none (input common referenced to frame ground) - Bridged and Terminated: floating input	FREQUENCY CHARACTERISTICS: Frequency Range: 15 Hz to 50 kHz Frequency Control: The front panel FREQUENCY control tunes the frequency of the analyzer over the 0 Hz to 50 kHz range. The control can be used to set the start frequency of electronic or manual sweeps. Coarse or Fine Tuning: Coarse tuning is selected by pushing the crank toward the front panel; fine tuning is selected by pulling the crank outward. In the coarse position, one revolution of the crank changes the frequency by approximately 2.7 kHz. In the fine position, one revolution of the crank changes the frequency by approximately 73 Hz. Frequency Display: 5-digit LED display indicates tuned frequency in Hz. Accuracy: ± 3 Hz Range: 0 Hz to approximately 51,000 Hz Out of Range Indication: Frequency digits blank and decimal points light when frequency is tuned below 0 Hz. Typical Frequency Stability: ± 10 Hz/hr. after 1 hour; ± 5 Hz/$^{\circ}$C Remote Tuning: 3581A/C can be remotely tuned by applying an externally generated 1 MHz to 1.5 MHz signal to L.O. IN connector. Bandwidth Settings: 3 Hz, 10 Hz, 30 Hz, 100 Hz, 300 Hz Bandpass Characteristic: closely approximates a gaussian response. Shape Factor: 10:1 on 3 Hz thru 100 Hz bandwidths; 8:1 on 300 Hz bandwidth Equivalent Noise Bandwidth: Typically 12% wider than absolute 3 dB bandwidth. Display Smoothing (noise filtering): 3 Settings: min, med max Response: determined by Bandwidth setting.						
AMPLITUDE CHARACTERISTICS: Scale Settings: Volts: Absolute measurements in rms volts (average responding); relative measurements in percent of full scale. Log 90 dB: 3581A: Absolute measurements in dBV (1 V rms = 0 dBV) or dBm/600 ohms; relative measurements in dB. 3581C: Absolute measurements in dBm/900 ohms or dBm/600 ohms; relative measurements in dB. Display Range: 80 dB Log 10 dB: Display sensitivity is 1 dB per division; display range is 10 dB. Any 10 dB portion of 80 dB range can be displayed by changing AMPLITUDE REF LEVEL setting.							

