TABLE 1-1

CE-50A SPECIFICATIONS

ITEM	CHARACTERISTIC
RF SIGNAL GENERATION	
Frequency	
Range	100 kHz to 999.9999 MHz (usable to 10 kHz)
Resolution	100 Hz
Accuracy	
CW and AM Modes	±0.00001% ± Time Base (with OCXO)
FM Mode	±50 Hz additional
Level	
Range	.06 µV to 300 mVrms, continuous
Accuracy	±3 dB overall; ±2 dB typical for level ≤-13 dBm
Modulation	FM, AM, Pulsed FM, CW
FM	
Internal	
1 kHz	1000 Hz ± Time Base stability
GEN	30.00 Hz to 9999 Hz ±0.005%
GEN ÷ 1 kHz	Simultaneous 1 kHz tone + GEN frequency
Aging	20 PPM/Yr.
Deviation	
Ranges	1.5, 5, and 15 kHz peak deviation full scale ranges on meter and CRT
Accuracy	±5%
External	
Deviation Range	
Sine (30 Hz - 10 kHz rate)	15 kHz maximum
Square (5 Hz - 300 Hz rate)	2 kHz maximum
AM	
Internal	
1 kHz	1000 Hz ± Time Base stability
GEN	30.00 Hz to 9999 Hz 10.005%
GEN ÷ 1 kHz	Simultaneous 1 kHz tone + GEN frequency
Aging	20 PPM/Yr.
Range	0-100% full scale on meter; ±15%, ±50%, and ±150% full scale ranges on CRT
External	
Frequency	30 Hz to 10 kHz
Pulsed FM - External only	
Frequency Range	5 Hz to 300 Hz (5% to 95% duty cycle)
Deviation Range	≥2 kHz
Spurious Outputs	
Harmonics (Carrier Freq. >1 MHz)	≥40 dBc (Fine level set to <0 dB)
Non-harmonic Products	≥35 dBc (60 dB typical)
Residual FM	≤50 Hz typical
MOD OUT level range	0-2 Vp-p into 1 kilohm typical. Separately adjustable controls for GEN and 1 kHz
Frequency Offset	±15 kHz about the dialed-in frequency
Automatic Overload Protection	SIG GEN OUT/RF IN port protected against keyed transmitters to 100W for 10 seconds.

Table 1-1 CE-50A Specifications (cont'd)

ITEM	CHARACTERISTIC
MONITOR	
Functions	Frequency error; FM deviation, % AM, Power, SINAD, audio frequency (Lissajou)
Frequency	
Range	0.45 MHz to 999.9999 MHz (usable to 50 kHz)
Resolution	100 Hz
Inputs	2 BNC connectors: a high sensitivity (2 μV) antenna input and a high power input/output for direct connection to transceivers of up to 100 W transmitter power.
Sensitivity (Selectivity NARROW)	
FM, PFM (10 MHz to 999.9999 MHz)	2μV (0.6μV typical) for SINAD = 10 dB (PFM Mode)
AM	2μV (typically) for S/N = 10 dB. Frequency ≥10 MHz
Squelch	A concentric adjustment on the SENSITIVITY switch.
IF Bandwidth	
-3 dB Bandwidth (Selectivity NARROW)	22 kHz typical
(Selectivity WIDE)	220 kHz typical
FM Residual Noise (20μV input; Selectivity NARROW)	≤100 Hz (measured in PFM; f_c≥10 MHz)
DEMOD Output	
Level	2V p-p for 15 kHz FM deviation, typical
DISPLAYS	
Frequency Error Meter	
Ranges	±1.5 kHz, ±5 kHz, ±15 kHz
Resolution	50 Hz
Accuracy	±1 x 10^{-7} ± Time Base stability
Functions Meter	
Peak Deviation	1.5 kHz, 5 kHz, and 15 kHz ranges
% AM	
Range	0 - 100%
Accuracy	±5% of full scale on meter for <80% modulation
Power	
Frequency	10 - 500 MHz (usable to 1000 MHz)
Ranges	1-10, 10-100 watts
Maximum level	100 watts for 10 seconds
Accuracy	±10% of full scale
SINAD	
Frequency	1 kHz
Scope Display	7 divisions high x 10 divisions wide
Frequency Range (±3 dB BW)	DC to 1 MHz - Usable to 3 MHz
Vertical Inputs, Internal Mode	
Vert. Sensitivity (adjustable)	Continuous adjust between vert. ranges
Vert. Sensitivity (calibrated)	
±1.5 kHz FM/15% AM	±5%
±5 kHz FM/50% AM	±5%
±15 kHz FM/150% AM	±5%

Table 1-1 CE-50A Specifications (cont'd)

ITEM	CHARACTERISTIC
Vertical Inputs, External Mode	
Vert. Sensitivity (Adjustable)	Continuous adjust between vert. ranges
Vert. Sensitivity (Calibrated)	5 mV/DIV, 50 mV/DIV, 500 mV/DIV, and 5 V/DIV; ±5%
Vertical Impedance	1 MΩ, ±5% in parallel with 30 pF
Horizontal Inputs, Internal Mode	
Sweep Rate (Calibrated)	
10 ms/DIV, 1 ms/DIV, 100 µs/DIV, 10 µs/DIV	±5%
1 µs/DIV	±10%
Vernier Range	Continuous adjust between sweep rates
TIME BASE	
TCXO	
Stability	$\pm 1 \times 10^{-6}$ per year
Warm-up Time	30 seconds
OCXO (Optional)	
Stability	2×10^{-7} per year after 25 minutes at 25°C
Warm-up Time	Less than 5 min. from 20°C to 1×10^{-6} Less than 10 min. from 20°C to 1×10^{-7} after 1 hour on power.
SPECTRUM MONITOR (CE-50A-1)	Same instrument as the CE-50A with the addition of a spectrum monitor.
Frequency Range	10 to 999.9999 MHz
Dynamic Range	+0 to -115 dBm (usable to -130 dBm)
RF Attenuator	40 dB in 20 dB steps
Display Range	70 dB (10 dB/division)
Level Accuracy	±4.5 dB (S/N >20 dB) after cal at 200 MHz
Scan Widths	10 kHz/DIV, 100 kHz/DIV, 1 MHz/DIV
Minimum Resolution (2 equal level signals)	2 kHz
Calibration Signal	200 MHz at -20 dBm ±1 dB
POWER REQUIREMENTS	115 or 230 VAC, ±10%, 50-400 Hz, 48W max. 11-15 VDC at 3 Amps (External power) Internal rechargeable battery (Optional)
DIMENSIONS	9 5/8" (24.4 cm) H x 11 1/8" (28.3 cm) W x 18 1/4" (46.3 cm) D
WEIGHT	38 lbs. (17.3 kg) With optional internal battery, 43 lbs (19.5 kg)
ENVIRONMENTAL	
Temperature	
Operating	0°C to +55°C (32°F to 131°F)
Storage	-40°C to +75°C (-40°F to 167°F)
ADDITIONAL CE-50A-1/TG SPECIFICATIONS	
Frequency Range	10 MHz to 999.9999 MHz, usable from 450 kHz
Display Range	60 dB, typical
Dynamic Range	100 dB typical
Vertical Display Accuracy (after cal)	±1.5 dB relative to 0 dB reference
Horizontal Accuracy	±5% of full sweep width
Warm-up Time	Instantaneous
Frequency Resolution (in 10 kHz/Div)	3 kHz, typical