

Table 1-1. 8553B/8552B Specifications

GENERAL SPECIFICATIONS

¹**Input Impedance:** 50 ohm nominal. Reflection coefficient <0.13 (1.3 SWR), input attenuator ≥ 10 dB.

¹**Maximum Input Level:** Peak or average power + 13 dBm (1.4V ac peak), ± 50 V dc.

Scan Time: 16 internal scan rates from 0.1 ms/div to 10 sec/div in a 1, 2, 5 sequence, or manual scan.

Scan Time Accuracy:

0.1 ms/div to 20 ms/div: $\pm 10\%$.
50 ms/div to 10 sec/div: $\pm 20\%$.

Scan Mode:

Int: Analyzer repetitively scanned by internally generated ramp; synchronization selected by scan trigger.

Single: Single scan with reset actuated by front panel pushbutton.

Ext: Scan determined by 0 to +8 volt external signal; scan input impedance >10 k Ω .

Blanking: -1.5V external blanking signal required.

Manual: Scan determined by front panel control; continuously variable across CRT in either direction.

Scan Trigger: For Internal Scan Mode, select between:

Auto: Scan free runs.

Line: Scan synchronized with power line frequency.

Ext: Scan synchronized with > 2 volt (20 volt max.) trigger signal (polarity selected by internally located switch in Model 8552B IF Section).

Video: Scan internally synchronized to envelope of RF input signal (signal amplitude of 1.5 major divisions peak-to-peak (required on display section CRT)).

Auxiliary Outputs:

Vertical Output: Approximately 0 to -0.8V for 8 division deflection on CRT display; approx. 100 Ω output impedance.

Scan Output: Approx. -5 to +5V for 10 div CRT deflection, 5 k Ω output impedance.

Pen Lift Output: 0 to 14V (0V, pen down). Output available in Int and Single Scan modes and Auto, Line, and Video scan trigger.

Power Requirements: 115 or 230 volts $\pm 10\%$, 50 to 60 Hz, normally less than 225 watts.

Dimensions:

Model 140T or 141T Display Section: 9-1/5 in. high (incl. height of feet) x 16 3/4 in. wide x 18-3/8 in. deep (229 x 425 x 467 mm).

Model 143S Display Section: 21 in. high (incl. height of feet) x 16 3/4 in. wide x 18-3/8 in. deep (533 x 425 x 467 mm).

Weight:

¹Model 8553B RF Section: Net 12 lb (5.5 kg).

AMPLITUDE SPECIFICATIONS**Absolute Amplitude Calibration Range:**

LOG: From -130 to +10 dBm, 10 dB/div on a 70 dB display; or 2 dB/div on a 16 dB display.

LINEAR: From 0.1 μ V/div to 100 mV/div in a 1, 2 sequence on an 8-division display.

¹**Dynamic Range:**

Average Noise Level: <-100 dBm with 10 kHz IF bandwidth.

Spurious Responses: For -40 dBm signal level at the input mixer,² Image responses, out-of-band mixing responses, harmonic and intermodulation distortion are all more than 70 dB below the signal level at input mixer², 2 MHz to 110 MHz; 60 dB, 1 kHz to 2 MHz.

Third Order Intermodulation Products: For -40 dBm total signal level at input mixer,² third order intermodulation products are more than 70 dB down for input signals of 100 kHz to 110 MHz; signal separation >300 Hz.

¹**Residual Responses:** 200 kHz - 100 MHz <-110 dBm, 20 kHz - 200 kHz <-95 dBm.

Amplitude Accuracy:

¹Frequency Response
(Flatness: attenuator settings ≥ 10 dB)

	Log	Linear
1 kHz to 110 MHz	± 0.5 dB	$\pm 5.8\%$

Switching between
Bandwidths (at 20°C)

0.1-300 kHz	± 0.5 dB	$\pm 5.8\%$
0.03-300 kHz	± 1.0 dB	$\pm 12\%$
0.01-300 kHz	± 1.5 dB	$\pm 19\%$
Amplitude Display	± 0.25 dB/dB but not more than ± 1.5 dB over the full 70 dB display range	$\pm 2.8\%$ of full 8 div deflection

Calibrator Output:

Amplitude: -30 dBm, ± 0.3 dB.

Frequency: 30 MHz, ± 3 kHz.

¹Applies to 8553B

²Signal level at input mixer = Signal level at RF INPUT - INPUT ATTENUATION

Table 1-1. 8553B/8552B Specifications (cont'd)

FREQUENCY SPECIFICATIONS

¹**Frequency Range:** 1 kHz—110 MHz (0—11 MHz and 0—110 MHz tuning ranges).

¹**Scan Width:** (on 10 division CRT horizontal axis).
Per Division: 18 calibrated scan widths from 10 MHz/div to 20 Hz/div in a 1, 2, 5 sequence.
Preset: 0—100 MHz.
Zero: Analyzer is fixed tuned receiver.

¹**Frequency Accuracy:**
Center Frequency Accuracy: The dial indicates the display center frequency within ± 1 MHz on the 0—110 MHz tuning range; ± 200 kHz on the 0—11 MHz tuning range with FINE TUNE centered, and temperature range of 20 to 30 degrees C.

Scan Width Accuracy: Scan widths 10 MHz/div to 2 MHz/div and 20 kHz/div to 20 Hz/div: Frequency error between two points on the display is less than $\pm 3\%$ of the indicated frequency separation between the two points. Scan widths 1 MHz/div to 50 kHz/div: Frequency error between two points on the display is less than $\pm 10\%$ of the indicated frequency separation.

Resolution:

Bandwidth: IF bandwidths of 10 Hz to 300 kHz provided in a 1, 3 sequence.

Bandwidth Accuracy: Individual IF bandwidth 3 dB points calibrated to $\pm 20\%$ (10 kHz bandwidth $\pm 5\%$).

Bandwidth Selectivity: 60 dB/3 dB IF bandwidth ratios: $< 11:1$ for IF bandwidths 10 Hz to 3 kHz, $< 20:1$ for IF bandwidths from 10 kHz to 300 kHz, 60 dB points separated by < 100 Hz for 10 Hz bandwidth.

¹**Stability:****Residual FM:**

Stabilized: Sidebands > 60 dB down 50 Hz or more from CW signal, scan time ≥ 1 sec/div, 10 Hz bandwidth.

Unstabilized: < 1 kHz peak-to-peak.

Noise Sidebands: More than 70 dB below CW signal, 50 kHz or more away from signal, with 1 kHz IF bandwidth.

H01/H02 SPECIFICATIONS**NOTE**

All specifications for the 75-ohm 8553B/8553B are identical to the 50-ohm 8553B/8552B except for the following.

¹**Input Impedance:** 75 ohms nominal. Reflection Coefficient ≤ 0.13 (≤ 1.30 SWR, 18 dB return loss).

¹**Maximum Input Level:** Peak or average power to RF Input $< +23$ dBm³ (4V rms, 5.6V peak, ± 50 Vdc).

Absolute Amplitude Calibration Range:

LOG: From -120 to $+20$ dBm, 10 dB/div on a 70 dB display, or 2 dB/div on a 16 dB display.

LINEAR: From $0.2 \mu\text{V/div}$ to 200 mV/div in a 1, 2 sequence on an 8-division display.

¹**Dynamic Range:****Average Noise Level:**

IF Bandwidth (kHz)	Avg. Noise Level (dBm) ³	Frequency ⁴ Range (MHz)
1	-110	1—110
10	-100	1—110
100	-90	1—110

Spurious Responses:

For -30 dBm Signal Level at Input Mixer:²

Image responses, out-of band mixing responses, harmonic and intermodulation distortion products, and IF feedthrough responses are all more than 70 dB below the Signal Level at Input Mixer.²
 (2 MHz to 110 MHz); 60 dB, 1 kHz to 2 MHz.

Third Order Intermodulation Products:

For -30 dBm Signal Level at Input Mixer² third order intermodulation products are more than 70 dB down for input signals of 100 kHz to 110 MHz.

Residual Responses:

(Referred to Signal Level at Input Mixer²):

200 kHz to 110 MHz: < -100 dBm

20 kHz to 200 kHz: < -85 dBm.

Calibrator Output:

Amplitude: -30 dBm³ ± 0.3 dB (8.66 mV into 75 ohms).

NOTE

RF INPUT and CAL OUTPUT connectors:
 Option H01, equivalent to Western Electric WE-560A; Option H02, standard BNC.

¹Applies to 8553B.

²Signal level at input mixer =
 Signal level at RF INPUT — INPUT ATTENUATION

¹Applies to 8553B.

²Signal level at input mixer = Signal level at RF INPUT — (10 dB + INPUT ATTENUATION).

³0 dBm = 1 mW into 75 ohms.

⁴Typical sensitivity vs. input frequency curves for frequencies from 1 kHz to 1 MHz shown in Figure 1-4 must be derated by 10 dB.