

1-12. The 3586A SLM uses an 800Hz tone frequency for entry reference and for 800Hz tone level measurements. A  $1010 \pm 15$ Hz notch for noise with tone and impulse noise, and  $1010 \pm 50$ Hz for phase jitter measurements is used when the Transmission Impairments Option 003 is included. The 3586B SLM uses 1004Hz for all tone and impairments measurements.

1-13. RMS wideband power measurements from +20 to -45dBm can be made from 20kHz to 10MHz with  $\pm 1.0$ dB accuracy, and from 200Hz to 32.5MHz with  $\pm 2.0$ dB accuracy.

1-14. The frequency of the 3336A/B companion synthesizer will automatically be set to the frequency of the 3586A/B Selective Level Meter when in the tracking mode and with HP-IB inputs connected together.

1-15. HP-IB control is standard, allowing automatic operation to be controlled by a desk top calculator such as the -hp- Model 9825A, 9835A, or by a mainframe computer such as the -hp- 1000.

1-16. The 3586C Selective Level Meter is designed specifically for users needing precise frequency selective measurements such as harmonic level and distortion analysis, line frequency and non-harmonic spurious testing, and production testing of HF radio systems. The 3586C is closely related to the A/B models, with 50, 75 and 600 ohm impedances and a 3100Hz channel filter. The 3586C does not include the Transmission Impairments option, equivalent noise filter or carrier/tone frequency reference entry. BNC connectors are standard except a dual banana connector is used for the 600 ohm input.

**1-17. SPECIFICATIONS.**

1-18. Table 1-1 is a complete list of the Model 3586A/B/C critical specifications that are controlled by tolerances. Specifications listed in this manual supersede all previous specifications for the Model 3586A/B/C.

**Table 1-1. 3586A/B/C Performance Specifications.**

FREQUENCY			
Frequency Range And Signal Inputs:			
Signal Input	3586A	3586B	3586C
75Ω/50Ω/10kΩ Unbalanced	200 Hz to 32.5 MHz		
124Ω Balanced		4 kHz to 10 MHz	
135Ω Balanced		4 kHz to 1 MHz	
150Ω Balanced	4 kHz to 1 MHz		
600Ω/Bridged	100 Hz to 108 kHz		

The 50Ω, 75Ω, 10 kΩ, 124Ω, 135Ω, 150Ω and 600Ω inputs are usable over wider frequency ranges than specified.

Frequency Resolution:  
0.1Hz

Center Frequency Accuracy:  
 $\pm 1 \times 10^{-5}$ /year, ( $\pm 2 \times 10^{-7}$ )/year with option 004

Counter Accuracy:  
 $\pm 1.0$ Hz in addition to center frequency accuracy for signals within the 60dB bandwidth of the IF filter chosen or greater than -100dBm, (largest signal measured).

Frequency Display:  
9 digit LED

**Table 1-1. 3586A/B/C Performance Specifications (Cont'd).**

<b>SELECTIVITY</b>				
<b>3dB Bandwidth, ±10%:</b>				
<b>3586A (CCITT)</b>		<b>3586B (No. American)</b>		<b>3586C (General)</b>
<b>Standard</b>	<b>Option 003</b>	<b>Standard</b>	<b>Option003</b>	<b>Standard</b>
20Hz	20Hz	20Hz	20Hz	20Hz
400Hz	400Hz	400Hz	400Hz	400Hz
1740Hz*	3100Hz	2000Hz**	3100Hz	3100Hz
-	Psophometric Noise Weighting	-	C-Message Noise Weighting	-
* Psophometric <i>Equivalent Noise Weighting Filter.</i>				
** C-Message <i>Equivalent Noise Weighting Filter.</i>				
<b>Adjacent Channel Rejection:</b>				
75dB minimum at ± 2850Hz, 3100Hz BW; ± 2500Hz, 2000Hz BW; ± 2350Hz, 1740Hz BW.				
<b>Carrier Rejection:</b>				
<b>Bandwidth</b>	<b>60db Points (Max)</b>		<b>400Hz Bandwidth 60dB Rejection:</b>	
3100Hz	± 1850Hz		± 1100Hz	
2000Hz	± 1500Hz		<b>20Hz Bandwidth Rejection:</b>	
1740Hz	± 1350Hz		30dB, ± 45Hz; 60dB, ± 90Hz	
<b>Passband Flatness:</b>				
<b>Bandwidth</b>	<b>Flatness Range</b>	<b>Flatness</b>		
3100Hz	± 1000Hz	± 0.3dB		
2000Hz	± 650Hz	± 0.3dB		
1740Hz	± 550Hz	± 0.3dB		
400Hz	± 50Hz	± 0.3dB		
20Hz	± 3Hz	± 0.3dB		
<b>AMPLITUDE</b>				
<b>Measurement Range:</b>				
+ 25 to - 120dBm				
Note that the <b>specified</b> measurement range is + 20 to - 100 dBm.				
<b>Amplitude Resolution:</b>				
.01 dB				
<b>Level Accuracy:</b>				
10dB auto range, low distortion mode, after calibration (For the 3586C; 75Ω, 50Ω, and 600Ω, inputs; below - 80dBm; these specifications apply only when using the 20Hz and 400Hz bandwidths).				
75Ω/50Ω Input (3586A/B/C)				
Input Level	+ 20dBm	± .40dB	± .20dB	± .25dB
	- 80dBm	± .95dB		± 75dB
	- 100dBm	200Hz	20kHz	18MHz 32.5MHz

**Table 1-1. 3586A/B/C Performance Specifications (Cont'd).**

124Ω Input (3586B)					
Input Level	+ 20dBm				
	- 80dBm	± .60dB	± .50dB	± .35dB	± .50dB
	- 100dBm		± 1.0dB	± .75dB	± 1.0dB
		4kHz	10kHz	50kHz	5MHz
					10MHz
150Ω Input (3586A) or 135Ω Input (3586B)					
Input Level	+ 20dBm				
	- 80dBm	± .60dB	± .50dB	± .35dB	
	- 100dBm		± 1.0dB	± .75dB	
		4kHz	10kHz	50kHz	1MHz
600Ω Input (3586A/B/C)					
Input Level	+ 20dBm				
	- 80dBm	± .35dB			
	- 100dBm	± .75dB			
		100Hz	108kHz		

**Level Accuracy:**

100dB Range (after calibration); add correction to 10dB auto range accuracy for dB below full scale. (Not required when in 10dB autorange.)

dB Below Full Scale	Accuracy Correction
0 to - 20dB	± .25dB
- 20 to - 40dB	± .50dB
- 40 to - 80dB	± 2.0 dB

**DYNAMIC RANGE**

**Spurious Responses:**

Image Rejection (100-132MHz):  
- 80dBc

IF Rejection:  
15625Hz, - 80dBc; 50MHz, - 60dBc

Non-Harmonic Spurious Signals:  
> 1600Hz offset; - 80dBc  
300Hz to 1600Hz offset; - 75dBc

Residual Spurious Signals:  
≥ 350Hz, - 115dBm (- 110dBm for a 3586C)  
< 350Hz, - 100dBm (- 95dBm for a 3586C)

**Table 1-1. 3586A/B/C Performance Specifications (Cont'd).**

**Distortion:**

Harmonic Distortion:

70dB below full scale ( - 75dB for the 3586C), > 4kHz on 75Ω and 600Ω inputs, Low Distortion Mode.

Intermodulation Distortion:

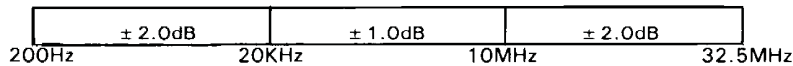
Two Tone 2nd and 3rd order, in band;

Separation 7kHz to 1MHz: either tone ≥ 10MHz, 70dB below full scale

Separation 7kHz to 1MHz: either tone < 10MHz, 75dB below full scale (78dB for the 3586C)

**Wideband Power Accuracy:**

After calibration, 100dB auto range, averaging on, - 45 to + 20dBm;



**Noise Floor (Full Scale Setting -35 to -120dBm, AVE On Low Distortion Mode):**

Frequency	Input	Bandwidth	Noise Level
100kHz to 32.5MHz	75Ω	1740Hz, 2000Hz, or 3100Hz	- 116dBm (- 114dBm for a 3586C)
		400Hz or 20Hz	- 120dBm
2kHz to 100kHz	75Ω, 600Ω	All	- 105dBm
100kHz to 10MHz	124Ω	1740Hz, 2000Hz, or 3100Hz	- 116dBm
		400Hz or 20Hz	- 120dBm
100kHz to 1MHz	135Ω, 150Ω	1740Hz, 2000Hz, or 3100Hz	- 116dBm
		400Hz or 20Hz	- 120dBm
10kHz to 100kHz	124Ω, 135Ω, 150Ω	All	- 105dBm

The noise floor for full scale settings of - 30 to + 25dBm will be 80dB below full scale for > 100kHz, or 60dB below full scale for < 100kHz. For the 3586C, the noise floor for full scale settings of - 30 to + 25dBm will be 75dB below full scale for > 100kHz, or 55dB below full scale for < 100kHz. These specifications do not apply to the 3586C's 50Ω input.

**SIGNAL INPUTS**

Model	Impedance	Frequency	Mating Connector
3586A	75 ohms unbalanced	200Hz to 32.5MHz	BNC
	150 ohms balanced	4kHz to 1MHz	Siemens 3-prong 9 Rel-6AC
	600 ohms balanced	100Hz to 108kHz	
3586B	75 ohms unbalanced	200Hz to 32.5MHz	WECO 439/440A
	124 ohms balanced	4kHz to 10MHz	WECO 443A
	135 ohms balanced	4kHz to 1MHz	WECO 241A
	600 ohms balanced	100Hz to 108kHz	WECO 310
(See Table 8-15 of Service Manual.)			
3586C	50/75 ohms unbalanced	200Hz to 32.5MHz	BNC
	600 ohms balanced	100Hz to 108kHz	Dual Banana Plug, 0.75 inch spacing

**Table 1-1. 3586A/B/C Performance Specifications (Cont'd).**

**Return Loss:**

Input	Return Loss							
50Ω/75Ω	30dB							
124Ω		20dB	25dB	30dB				
135Ω/150Ω		20dB	25dB	30dB				
600Ω	25dB							
	50Hz	4kHz	6kHz	10kHz	108kHz	1MHz	5MHz	32.5MHz

**Balance:**

Input	Frequency	Balance
124Ω	10kHz to 10MHz	- 36dB
135Ω or 150Ω	10kHz to 1MHz	- 36dB
600Ω	50Hz to 108kHz	- 40dB

**DEMODULATED AUDIO OUTPUT**

Demodulates an erect (USB) or inverted (LSB) SSB telephone channel, provides speaker or headphone output with volume control. Carrier is re-inserted at ± 1850Hz to align channel filter precisely on a voice channel.

**Output Level:**

0dBm into 600Ω at full scale, adjustable

**Output Connector:**

Front Panel, mates with WECO 347 or 1/4" phone plug

**TRACKING GENERATOR:**

Level 0dBm at 10kHz, ± .5dB  
Flatness 200Hz to 32.5MHz, ± .5dB

**TRANSMISSION IMPAIRMENTS OPTION 003**

Adds transmission impairment measurement capability to standard instrument. Measures phase jitter, noise with tone, single level impulse noise and weighted noise at voice channel and carrier frequencies. 3100Hz channel filter and C-message or psophometric weighted noise filter replaces the standard 2000Hz or 1740Hz equivalent noise filter.

**Phase Jitter:**

A phase jitter measurement can be made at any input signal frequency up to 32.5MHz that produces a 960-1060Hz tone in the demodulated output. Meets BSP 41009 and CCITT recommendation 0.91.

Demodulated Tone Frequency:	Accuracy:
960 to 1060Hz	±(10% + .5° p-p)
Input Signal Level:	Residual Phase Jitter:
≤ 30dB below full scale, - 65dBm minimum	≤ .5° p-p (50kHz to 32.5MHz)
Frequency Response:	
20 to 300Hz	

**Table 1-1. 3586A/B/C Performance Specifications (Cont'd).****Weighted Noise Filters:**

Psophometric weighting filter (3586A) complies with CCITT Recommendation P.53 and C-message weighting filter (3586B) complies with BSP 41009 response. When the noise weighting filter is enabled it is superimposed on the 3100Hz channel filter response.

**Accuracy:**

In addition to full scale accuracy, after calibration

800Hz (Psophometric, 3586A):

$\pm 0.5\text{dB}$

1004Hz (C-Message, 3586B):

$\pm 0.5\text{dB}$

**Impulse Noise:**

An impulse noise measurement can be made in a voice channel up to 32.5MHz. Meets BSP41009 or CCITT Recommendation O.71. Used with 10db auto range only. The notch filter is automatically inserted, measurement can be made with or without a 1000Hz tone present.

**Counting Rate of Impulse Noise:**

3586A (CCITT):

125ms/count,  $\pm 5\%$

3586B (No. American):

143ms/count  $\pm 5\%$

**Threshold Accuracy:**

$\pm 1\text{dB}$  for a 1700Hz signal (with or without a 1000Hz tone applied 5dB above the threshold level), with a threshold level from 0 to 50db below full scale, or greater than  $-80\text{dBm}$ .

**Notch Filter Rejection:**

(Enabled during Noise with Tone and Impulse Noise measurements, Filter Response meets BSP41009.)

50dB minimum, 995 to 1025Hz.

**GENERAL****Operating Environment**

Temperature:  
0° to 55°C

Relative Humidity:  
95%. 0° to 40°C

Altitude:  
 $\leq 15000\text{ ft.}$

Storage Temperature:  
-40°C to 75°C

Storage Altitude:  
 $\leq 50,000\text{ ft.}$

**Table 1-1. 3586A/B/C Performance Specifications (Cont'd).**

<p>Power:</p> <p>100/120/220/240V, + 5%, - 10% 48 to 66Hz, 150VA</p> <p>Weight:</p> <p>23Kg (50 lbs) net; 30Kg(65 lbs) shipping</p> <p>Dimensions:</p> <p>177mm high x 425.5mm wide x 466.7mm deep (7'' high x 16.75'' wide x 18.38'' deep)</p>
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**1-19. ACCESSORIES AVAILABLE.**

1-20. The following is a list of -hp- accessories available for use with the Model 3586A/B/C:

Accessory	-hp- Part No.
124Ω Return Loss Coupler (3586B Only)	5061-1136
124Ω Return Loss Coupler (3586B with opt. 001 only)	5061-1137
150Ω Return Loss Coupler (3586A only)	5061-1135
Service Spare Parts Kit	03586-68701
Product Support Package	03586-69800
Accessory Kit	03586-84401
This kit consists of:	
(2) Extender Boards (44 pin)	03586-66590
(2) Extender Boards (30 pin)	03586-66591

**1-21. INSTRUMENT AND MANUAL IDENTIFICATION.**

1-22. The instrument serial number is located on the rear panel. Hewlett-Packard uses a two-section serial number consisting of a four-digit prefix and a five-digit suffix. A letter between the prefix and suffix identifies the country in which the instrument was manufactured (A = USA, G = West Germany, J = Japan, U = United Kingdom). All correspondence with Hewlett-Packard concerning this instrument should include the complete serial number.

1-23. If the serial number of your instrument is lower than the serial number on the title page of this manual, you must modify your manual for agreement with your instrument. Refer to Section VII, Backdating, for the information that will adapt this manual to your instrument.