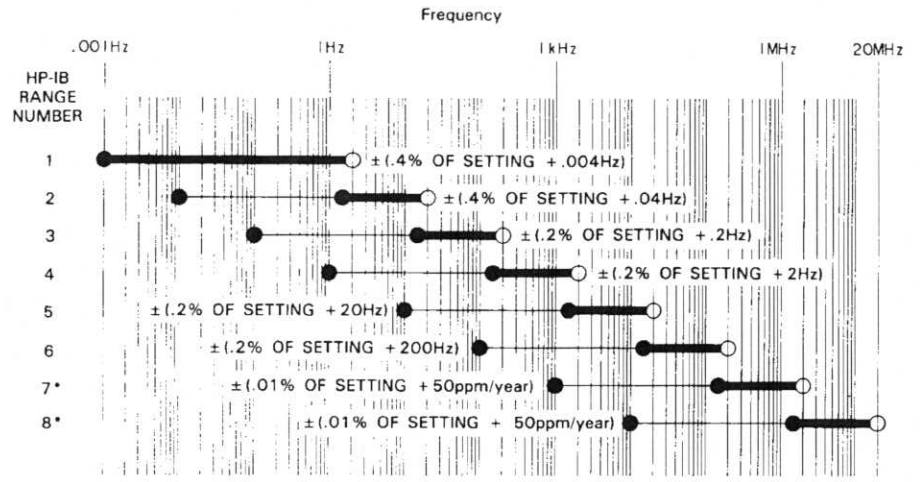
1-6. SPECIFICATIONS

The 3314A's specifications are listed in Table 1-1, Specifications. These specifications are the performance standards or limits against which every 3314A is tested.

Some of the 3314A's operating characteristics are listed in Table 1-2, Supplemental Characteristics. The Operating Manual contains detailed discussions of the remaining operating characteristics.

Table 1-1. Specifications



DENOTES FREQUENCY RANGE USING AUTO-RANGING.

DENOTES EXTENDED FREQUENCY RANGE USING RANGE HOLD.

○ FREQUENCIES UP TO BUT NOT INCLUDING THIS POINT ARE ALLOWED.

* FREQUENCY IS SYNTHESIZED IN RANGES 7 AND 8 IN THE FREE RUN MODE WITH VCO = OFF.

ACCURACY APPLIES IN THE FREE RUN MODE WITH SYMMETRY = 50% (FIXED), AND VCO = OFF AND WITH RANGE HOLD ON OR OFF.

Amplitude

Absolute Amplitude Accuracy:

±(1% of display + .035Vp-p), sine wave and square wave
±(1% of display + .06Vp-p), triangle

Amplitudes: 1.00Vp-p to 10.00Vp-p (Range 4)
Frequency: 10kHz
Auto-Range: ON

Flatness--sine wave:

Combines sine power flatness and vernier attenuator flatness
Relative to 10kHz, 1.00 V to 10.00Vp-p (Range 4)

20Hz	50kHz	1MHz	19.99MHz
.07dB	.33dB	1.5dB	

Step Attenuator Accuracy:

	.001Hz	50kHz	19.99MHz
20dB	.05dB	.3dB	
40dB			
60dB		.5dB	

DC Offset

Offset Accuracy:

±(3% of display + 10 mVDC +0.5% of AC Amplitude Range)

Frequency: <100kHz
Auto-Range: ON

Residual DC Offset:

± 0.5% of AC Amplitude Range
If option 001:

± 0.5% of AC Amplitude Range ±500μV

Setting: OVDC
Frequency: ≤100kHz

Symmetry

Symmetry Accuracy (Fixed):

50% ±0.2%

Fixed Symmetry: 50% (SYM light OFF)
Frequency: 1Hz to 100kHz
Function: square wave

Table 1-1. Specifications (Cont'd)

Symmetry Accuracy (Variable)

±0.5% of period:

Frequency: 1Hz to 100kHz
Function: square wave

Phase

Phase Offset--Phase lock Modes

Accuracy: ±2° (50Hz to 25kHz)

Phase Offset is referenced to the signal output for Fin ÷ N or the trigger input for Fin X N.

Start/Stop Phase--Burst Modes:

Accuracy: ±3° (applies from .001Hz to 1kHz)

Function Characteristics

Sine Harmonic Distortion:

Individual harmonics will be below these levels, relative to carrier level.
Offset = OV. Function Invert = OFF.
*Add 4dB for ambient temperature 0 to 5°C or 45 to 55°C.

20Hz	50kHz	1999kHz	19.99MHz
−55dB*	−40dB	−25dB	

Square Wave Rise/Fall Time:

≤9ns, 10% to 90% of a 10 Vp-p output

Square Wave Aberrations:

5% of (High Settled Amplitude - Low Settled Amplitude)

where Settled Amplitude is the voltage on the pulse top or bottom measured 100ns after the appropriate zero crossing.

Frequency: ≤ 1MHz

Amplitude: 10Vp-p

10% of p-p Aberrations relative to programmed amplitude.

Frequency: > 1MHz

Amplitude: 10Vp-p

Triangle Linearity:

±0.2% of the p-p voltage

Frequency: .01Hz to 1kHz, Amplitude = 10 Vp-p
Deviation is from a best fit straight line, from 10% to 90% of each ramp.

Internal Trigger Interval

Period Accuracy: ±(0.01% + 50 ppm/year) of displayed interval (excluding sweep intervals)

Frequency Sweep

Sweep Frequency Accuracy--Manual Sweep:

±(0.2% of Stop Freq +0.1% of Stop Freq Range), Stop Freq Range ≤200kHz
±1% of Stop Freq, Stop Freq in 2MHz Range
±3% of Stop Freq, Stop Freq in 20MHz Range

Modulation

Amplitude Modulation Envelope Distortion:

≤ −40dB

Carrier: = 1MHz, 10Vp-p, sine wave
Modulating Input: 1kHz, sine wave
Index of Modulation: 95%

VCO Linearity:

±0.15% of p-p frequency, .1Hz through 200kHz Range
±1% of p-p frequency, 2MHz Range
±3% of p-p frequency, 20MHz Range

−8Vdc to +1 Vdc input (−80% to +10%)
Deviation is from a best fit straight line.

Option 001 - Simultaneous X3 Output.

Specifications apply when the X3 Output is terminated with > 500Ω and <500pf and when the Main output is terminated with 50Ω.

The X3 Output is useable into all loads until the output current limits at ≈ 30 mA peak or the output voltage clips at ≈ 15V peak.

X3 Gain Accuracy:

±1% at 10kHz
X3 Output amplitude ≈ (3 ± 1%) x Main Output Amplitude

Sine Power Flatness:

Relative to full output power at 10kHz

20Hz	50kHz	500kHz	1MHz
±.1dB	±.5dB	±1.5dB	

Harmonic Distortion:

All harmonically related signals will be below these levels, relative to the fundamental.

20Hz	50kHz	1MHz
−53dB	−38dB	

Square Wave Rise/Fall Time: (Rear Panel)
<200ns, 10% to 90% at full output.

Residual DC Offset: (Rear Panel)

≤ 40mVDC