

# 346A/B/C Noise Source Specifications

Specifications describe the instrument's warranted performance. Supplemental characteristics are intended to provide information useful in applying the instrument by giving typical, but not warranted, performance parameters.

**ENR accuracy:** calibrations at cardinal frequencies are printed on each noise source and on a separate report shipped with each 346 Noise Source to the accuracy shown in the following table:

Frequency (GHz)	Worst Case Uncertainty (dB)	Root-Sum-of-Squares Uncertainty (dB)
<b>346A</b>		
0.01 to 1	0.25	0.08
2 to 18	0.31	0.14
<b>346B/C</b>		
0.01 to 1	0.24	0.09
2 to 18	0.28	0.13
19 to 21	0.41	0.13
22 to 26.5	0.47	0.14

ENR calibrations are traceable to the U.S. National Bureau of Standards (NBS) from 2 GHz to 18 GHz. At frequencies where NBS does not offer ENR measurement service, calibrations are referenced to physical hot and cold loads.

**Frequency range:** 10 MHz to 18 GHz for 346A and 346B; 10 MHz to 26.5 GHz for 346C.

**Excess noise ratio (ENR) range:** Calibrated values at cardinal frequencies printed on label. Range of value is 5 to 7 dB for 346A, 14 to 16 dB for 346B, and 12 to 16 dB (10 MHz to 12 GHz) and 14 to 17 dB (12 to 26.5 GHz) for 346C.

**Maximum SWR (reflection coefficient) for source ON and source OFF (50 ohm reference impedance):**

346A/B: 10 to 30 MHz — 1.3 (0.13)  
30 to 5000 MHz — 1.15 (0.07)  
5 to 18 GHz — 1.25 (0.11)  
346C: 10 MHz to 18 GHz — 1.25 (0.11)  
18 to 26.5 GHz — 1.35 (0.15).

**Maximum change in complex reflection coefficient between source ON and source OFF at all frequencies for 346A only:** 0.01.

**Power required:** (automatically furnished by the 8970B Noise Figure Meter)  $28 \pm 1V$ .

346A/B: 60 mA peak, 30 mA average for source ON.  
346C: 45 mA.

**Operating temperature:** 0 to 55°C.

**Connectors:** bias: BNC(f); noise output: APC-3.5(m) — also mates with female SMA connectors. See ordering information for other connector styles.

**Maximum reverse power:** 1W.

**Dimensions:** 140 x 21 x 31 mm (5.5 x 0.8 x 1.2 in.).

**Net weight:** 0.1 kg (3.5 oz.).

**Shipping weight:** 0.5 kg (1 lb).

## Supplemental Characteristics

**ENR variation with temperature:**  $<0.01$  dB/°C for 30 MHz to 26.5 GHz.

**ENR variation with voltage:** internal current regulator for  $<0.02$  dB variation for  $28 \pm 1V$ .

**Switching speed:** for repetitive operation (in previous state for less than 5 seconds), turn-on:  $<20 \mu s$ ; turn-off:  $<80 \mu s$ . For single shot operation (in previous state more than 5 seconds), turn-on:  $<3$  ms; turn-off:  $<80 \mu s$ .

## Ordering Information

**346A** Noise Source

**346B** Noise Source

**346C** Noise Source

**Option 001** (346A/B only):

Type N(m) noise output connector

**Option 002** (346A/B only):

APC-7 noise output connector

**Option 004** (346A/B only):

Type N(f) noise output connector

Recommended models are:

**346B Option 002** for general purpose applications to 18 GHz with adapters listed below as necessary.

**346A Option 002** for mismatch sensitive devices to 18 GHz with adapters listed below as necessary.

**346C** for applications to 26.5 GHz.

**Accessories**

**X281C** APC-7 to WR 90 Adapter

**P281C** APC-7 to WR 62 Adapter

**K281C** APC-3.5 to WR 42 Adapter

**11524A** APC-7 to N(m) Adapter

**11525A** APC-7 to N(f) Adapter

**1250-1746** APC-3.5(m) to APC-7 Adapter

**1250-1747** APC-3.5(f) to APC-7 Adapter

**5060-0343** 3/4" Torque Wrench (APC-7)

**5060-0344** 9/16" Torque Wrench (for the new standard 346 with larger APC-3.5 nut)

Data Subject to Change.

For more information, call your local HP sales office listed in the telephone directory white pages. Ask for the Electronic Instruments Department, or write to Hewlett-Packard: United States: Hewlett-Packard Company, 4 Choke Cherry Road, Rockville, MD 20850 (301) 670-4300; Italy: Hewlett-Packard Italiana S.p.A., Via G. di Vittorio, 9 20063 Cernusco Sul Naviglio (MI) Milano 02/923691; European Multi Country Region: Hewlett-Packard S.A., Route du Nant d'Avril 150 1217 Meyrin 2 - Geneva Switzerland (41) 22/83 81 11.