
8480 Series Power Sensor Specifications

NOTE

These specifications are valid with EPM and EPM-P Series of power meters.

The 8480 series thermocouple and diode power sensors provide accuracy, stability, and SWR over a wide range of frequencies (100 kHz to 50 GHz) and power levels (-70 dBm to +44 dBm)

Table 1-3 Typical measurement uncertainties of Calibration Factor (CF) data printed on the power sensor

Frequency	25°C ± 3°C			
	8481A	8482A	8483A	8485A
100 kHz to 10 MHz	-	0.87	1.59	-
10 MHz to 30 MHz	0.81	0.8	1.39	-
30 MHz to 500 MHz	0.78	0.8	1.41	1.29
500 MHz to 1.2 GHz	0.78	0.8	1.41	1.26
1.2 GHz to 6 GHz	0.92	0.9	1.46	1.35
6 GHz to 14 GHz	1.16	-	-	1.61
14 GHz to 18 GHz	1.59	-	-	1.77
18 GHz to 26.5 GHz	-	-	-	2.47
26.5 GHz to 33 GHz	-	-	-	3.35*
33 GHz to 34 GHz	-	-	-	-
34 GHz to 35 GHz	-	-	-	-
35 GHz to 40 GHz	-	-	-	-
40 GHz to 45 GHz	-	-	-	-
45 GHz to 50 GHz	-	-	-	-

* These uncertainties only apply to Option 033

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Table 1-4 Typical measurement uncertainties of Calibration Factor (CF) data printed on the power sensor

Frequency	25°C ± 3°C							
	8487A	8481B	8482B	8481H	8482H	8487D	8485D	8481D
100 kHz to 10 MHz	-	-	1.50	-	0.91	-	-	-
10 MHz to 30 MHz	-	1.48	1.44	0.86	0.81	-	-	0.77
30 MHz to 500 MHz	1.38	1.48	1.51	0.88	0.92	1.33	1.24	0.81
500 MHz to 1.2 GHz	1.34	1.48	1.48	0.87	0.88	1.35	1.26	0.81
1.2 GHz to 6 GHz	1.41	1.54	1.53	0.98	0.95	1.41	1.35	0.97
6 GHz to 14 GHz	1.59	1.71	-	1.36	-	1.62	1.63	1.20
14 GHz to 18 GHz	1.69	1.99	-	1.71	-	1.73	1.83	1.72
18 GHz to 26.5 GHz	2.23	-	-	-	-	2.25	2.45	-
26.5 GHz to 33 GHz	2.58	-	-	-	-	2.55	2.94*	-
33 GHz to 34 GHz	2.73	-	-	-	-	3.08	-	-
34 GHz to 35 GHz	2.73	-	-	-	-	3.08	-	-
35 GHz to 40 GHz	2.73	-	-	-	-	3.08	-	-
40 GHz to 45 GHz	3.67	-	-	-	-	4.28	-	-
45 GHz to 50 GHz	4.33	-	-	-	-	4.72	-	-

* These uncertainties only apply to Option 033

Table 1-5 25 Watt sensors, 1 mW to 25 W (0 dBm to +44 dBm)

Model	Frequency Range	Maximum SWR	Power Linearity ^a	Maximum Power	Connector Type	Weight
8481B	10 MHz to 18 GHz	10 MHz to 2 GHz: 1.10 2 GHz to 12.4 GHz: 1.18 12.4 GHz to 18 GHz: 1.28	+35 dBm to +44 dBm: $\pm 4\%$	0°C to 35°C: 30W avg ^b 35°C to 55°C: 25W avg 0.01 to 5.8 GHz: 500W pk 5.8 to 18 GHz: 125W pk 500W.μs / pulse	Type-N(m)	Net: 0.8 kg (1.75 lb) Shipping: 1.5 kg (3.25 lb)
8482B	100 kHz to 4.2 GHz	100 kHz to 2 GHz: 1.10 2 GHz to 4.2 GHz: 1.18	+35 dBm to +44 dBm: $\pm 4\%$	0°C to 35°C: 30W avg ^b 35°C to 55°C: 25W avg 0.1 to 4.2 GHz: 500W pk 500W.μs / pulse	Type-N(m)	Net: 0.8 kg (1.75 lb) Shipping: 1.5 kg (3.25 lb)

- a. Negligible deviation except for those power ranges noted.
b. For pulses greater than 30 W, the maximum average power (Pa) is limited by the energy per pulse (E) in W.μs according to $P_a = 30 - 0.02 E$.

Table 1-6 3 Watt sensors, 100 μW to 3 W (-10 dBm to +35 dBm)

Model	Frequency Range	Maximum SWR	Power Linearity ^a	Maximum Power	Connector Type	Weight
8481H	10 MHz to 18 GHz	10 MHz to 8 GHz: 1.20 8 GHz to 12.4 GHz: 1.25 12.4 GHz to 18 GHz: 1.30	+25 dBm to +35 dBm: $\pm 5\%$	3.5W avg, 100W pk 100W.μs / pulse	Type-N(m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)
8482H	100 kHz to 4.2 GHz	100 kHz to 4.2 GHz: 1.20	+25 dBm to +35 dBm: $\pm 5\%$	3.5W avg, 100W pk 100W.μs / pulse	Type-N(m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)

- a. Negligible deviation except for those power ranges noted.

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Table 1-7 100 mW sensors, 1 μ W to 100 mW (–30 dBm to +20 dBm)

Model	Frequency Range	Maximum SWR	Power Linearity ^a	Maximum Power	Connector Type	Weight
8485A	50 MHz to 26.5 GHz	50 MHz to 100 MHz: 1.15 100 MHz to 2 GHz: 1.10 2 GHz to 12.4 GHz: 1.15 12.4 GHz to 18 GHz: 1.20 18 GHz to 26.5 GHz: 1.25	+10 dBm to +20 dBm: $\pm 3\%$	300 mW avg, 15 W pk 30 W. μ s / pulse	APC - 3.5mm(m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)
Option 8485A -033	26.5 MHz to 33 GHz	26.5 GHz to 33 GHz: 1.40	+10 dBm to +20 dBm: $\pm 3\%$	300 mW avg, 15 W pk 30 W. μ s / pulse	APC - 3.5mm(m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)
8481A	10 MHz to 18 GHz	10 MHz to 30 MHz: 1.40 30 MHz to 50 MHz: 1.18 50 MHz to 2 GHz: 1.10 2 GHz to 12.4 GHz: 1.18 12.4 GHz to 18 GHz: 1.28	+10 dBm to +20 dBm: $\pm 3\%$	300 mW avg, 15 W pk 30 W. μ s / pulse	Type-N(m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)
8482A	100 kHz to 4.2 GHz	100 kHz to 300 kHz: 1.60 300 kHz to 1 MHz: 1.20 1 MHz to 2 GHz: 1.10 2 GHz to 4.2 GHz: 1.30	+10 dBm to +20 dBm: $\pm 3\%$	300 mW avg, 15W pk 30 W. μ s / pulse	Type-N(m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)

Table 1-7 **100 mW sensors, 1 μ W to 100 mW (–30 dBm to +20 dBm)**

Model	Frequency Range	Maximum SWR	Power Linearity ^a	Maximum Power	Connector Type	Weight
8483A (75ohm)	100 kHz to 2 GHz	100 kHz to 600 kHz: 1.80 600 kHz to 2 GHz: 1.18	+10 dBm to +20 dBm: \pm 3%	300 mW avg, 10W pk	Type-N(m) (75 ohm)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)
8487A	50 MHz to 50 GHz	50 MHz to 100 MHz: 1.15 100 MHz to 2 GHz: 1.10 2 GHz to 12.4 GHz: 1.15 12.4 GHz to 18 GHz: 1.20 18 GHz to 26.5 GHz: 1.25 26.5 GHz to 40 GHz: 1.30 40 GHz to 50 GHz: 1.50	+10 dBm to +20 dBm: \pm 3%	300 mW avg, 15W pk 30 W. μ s / pulse	2.4 mm (m)	Net: 0.14 kg (0.28 lb) Shipping: 0.5 kg (1.0 lb)

a. Negligible deviation except for those power ranges noted.

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Table 1-8 High sensitivity sensors, 100 pW to 10 μ W (-70 dBm to -20 dBm)

Model	Frequency Range	Maximum SWR	Power Linearity ^a	Maximum Power	Connector Type	Weight
8481D ^b	10 MHz to 18 GHz	10 MHz to 30 MHz: 1.40 30 MHz to 4 GHz: 1.15 4 GHz to 10 GHz: 1.20 10 GHz to 15 GHz: 1.30 15 GHz to 18 GHz: 1.35	-30 dBm to -20 dBm: $\pm 1\%$	100 mW avg, 100 mW pk	Type-N (m)	Net: 0.16 kg (0.37 lb) Shipping: 0.5 kg (1.0 lb)
8485D ^b	50 MHz to 26.5 GHz	50 MHz to 100 MHz: 1.19 100 MHz to 4 GHz: 1.15 4 GHz to 12 GHz: 1.19 12 GHz to 18 GHz: 1.25 18 GHz to 26.5 GHz: 1.29	-30 dBm to -20 dBm: $\pm 2\%$	100 mW avg, 100 mW pk	APC - 3.5mm (m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)
Option 8485D-033	50 MHz to 33 GHz	26.5 GHz to 33 GHz: 1.35	-30 dBm to -20 dBm: $\pm 2\%$	100 mW avg, 100 mW pk	APC - 3.5mm (m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)

Table 1-8 High sensitivity sensors, 100 pW to 10 μ W (-70 dBm to -20 dBm)

Model	Frequency Range	Maximum SWR	Power Linearity ^a	Maximum Power	Connector Type	Weight
8487D ^b	50 MHz to 50 GHz	50 MHz to 100 MHz: 1.19 100 MHz to 2 GHz: 1.15 2 GHz to 12.4 GHz: 1.20 12.4 GHz to 18 GHz: 1.29 18 GHz to 34 GHz: 1.37 34 GHz to 40 GHz: 1.61 40 GHz to 50 GHz: 1.89	-30 dBm to -20 dBm: $\pm 2\%$	100 mW avg, 100 mW pk 10 W. μ s / pulse	2.4 mm (m)	Net: 0.2 kg (0.38 lb) Shipping: 0.5 kg (1.0 lb)

- a. Negligible deviation except for those power ranges noted.
- b. Includes 11708A 30 dB attenuator for calibrating against 0 dBm, 50 MHz power reference. The 11708A is factory set to 30 dB ± 0.05 dB at 50 MHz, traceable to NIST. SWR < 1.05 at 50 MHz.