

Opens

General Information

Shielded, coaxial open circuit terminations (opens) are used in the calibration of vector network analyzers (VNAs) to provide a nominal 180 degree phase offset from a compatible reference short circuit over a broad range of microwave frequencies.

At these frequencies, open circuit terminations are inherently imperfect. Shielding the open essentially eliminates radiation loss, but creates a residual frequency-sensitive capacitance. An accurate knowledge of the open's effective capacitance is essential to an accurate calibration of the analyzer.

Maury opens are characterized for effective capacitance versus frequency by means of a fourth order polynomial curve fit, and the nominal capacitance coefficients are provided with each unit. We offer several innovative designs that improve the consistency and repeatability of the open's capacitance coefficients resulting in improved effective source match of the calibrated VNA ¹.

One design (seen in the 14mm and 7mm models shown below) uses a beadless captivated dielectric rod in place of the center conductor contact. This rod depresses the spring-loaded contact of the test port connector so that it is flush with the outer conductor mating plane. This creates highly accurate, precisely repeatable open circuit conditions which improve the



calibration effectiveness and measurement accuracy of the open.

Another design (seen in most of the sexed models listed below) uses a center contact that is captivated and set at the factory to be essentially flush with the outer conductor mating plane, thereby eliminating dependence on test port connector tolerances and adding a high degree of performance consistency to the open.

The 371N1/P1, 8585A/B, and 8885A/B models are designed for limited frequency ranges as determined by their connector types. Models 8885A and 8885B have shielded shells without center conductors or supporting dielectric rods.

In all cases, the specification "Phase Accuracy" is defined as phase deviation from a nominal unit.

Specifications and Available Models

MODEL	SEX	CONNECTOR TYPE	FREQUENCY RANGE (GHz)	NOMINAL IMPEDANCE	PHASE ACCURACY	MINIMUM REFLECTION COEFFICIENT
7848A	female	1.85mm	DC – 70.0	50 ohm	± 5.0 degrees	0.98
7848B	male	1.85mm	DC – 70.0	50 ohm	± 5.0 degrees	0.98
7948A	female	2.4mm	DC – 50.0	50 ohm	± 2.0 degrees	0.98
7948B	male	2.4mm	DC – 50.0	50 ohm	± 2.0 degrees	0.98
8773A1	female	2.92mm (K)	DC – 40.0	50 ohm	± 1.5 degrees	0.98
8773B1	male	2.92mm (K)	DC – 40.0	50 ohm	± 1.5 degrees	0.98
8048A1	female	3.5mm	DC – 26.5	50 ohm	± 1.4 degrees	0.98
8048B1	male	3.5mm	DC – 26.5	50 ohm	± 1.4 degrees	0.98
2616D3	—	7mm	DC – 18.0	50 ohm	± 0.3 degrees	0.995
8809B1	female	Type N	DC – 18.0	50 ohm	± 2.0 degrees	0.99
8810B1	male	Type N	DC – 18.0	50 ohm	± 2.0 degrees	0.99
8609B	female	TNC	DC – 18.0	50 ohm	± 5.0 degrees	0.98
8610B	male	TNC	DC – 18.0	50 ohm	± 5.0 degrees	0.98
8685A	female	AFTNC	DC – 20.0	50 ohm	± 2.0 degrees	0.98
8685B	male	AFTNC	DC – 20.0	50 ohm	± 2.0 degrees	0.98
8675A	female	TNCA	DC – 20.0	50 ohm	± 2.0 degrees	0.98
8675B	male	TNCA	DC – 20.0	50 ohm	± 2.0 degrees	0.98
8782A	female	OSP™	DC – 18.0	50 ohm	± 2.0 degrees	0.99
8782B	male	OSP™	DC – 18.0	50 ohm	± 2.0 degrees	0.99
371N1	female	BNC	DC – 12.4	50 ohm	± 5.0 degrees	0.98
371P1	male	BNC	DC – 12.4	50 ohm	± 5.0 degrees	0.98
2416D1	—	14mm (GR900)	DC – 8.5	50 ohm	± 0.2 degrees	0.997
2716A	female	7-16	DC – 7.5	50 ohm	± 1.00 degrees	0.99
2716B	male	7-16	DC – 7.5	50 ohm	± 1.25 degrees	0.99
8585A	female	BNC	DC – 2.0	75 ohm ²	± 1.0 degrees	0.98
8585B	male	BNC	DC – 2.0	75 ohm ²	± 1.0 degrees	0.98
8885A	female	Type N	DC – 4.0	75 ohm ²	± 1.0 degrees	0.98
8885B	male	Type N	DC – 4.0	75 ohm ²	± 1.0 degrees	0.98

¹ See Maury data sheet 5C-027.

² The 8585 and 8885 series opens are for use in 75 ohm calibrations only. These units should never be mated to 50 ohm connectors, as this could result in damage to the 75 ohm female center conductor contact, and would produce an unreliable, unstable electrical connection.