Calibration Kit Datasheet

Introduction

Mechanical calibration kit contains individual standards to characterize systematic errors, used to calibrate scalar or vector network analyzers.

The Siglent standards include fixed terminations, open circuits, short circuits, and through adaptors, in both sexes.

Model*1	Frequency	Type*2	Connector	Impendence	Similar
F503ME	DC - 4.5 GHz	OSLT	N-Male	50 Ω	85032B/E
F503FE	DC - 4.5 GHz	OSLT	N-Female	50 Ω	85032B/E
F603ME	DC - 4.5 GHz	OSLT	3.5mm-Male	50 Ω	85033E
F603FE	DC - 4.5 GHz	OSLT	3.5mm-Female	50 Ω	85033E
F504MS	DC - 9 GHz	OSLT	N-Male	50 Ω	85032F
F504FS	DC - 9 GHz	OSLT	N-Female	50 Ω	85032F
F604MS	DC - 9 GHz	OSLT	3.5mm-Male	50 Ω	85033E
F604FS	DC - 9 GHz	OSLT	3.5mm-Female	50 Ω	85033E

*1:

F	Calibration kit
5/6	N/3.5mm
0/1	50/75 Ohm
3/4	4.5G/9G
M/F	Male/Female
E/S	Economy/Standard

*2:

OSLT = Open + Short + 50Ω termination Load + Through adaptor

F503ME and F503FE

The F503ME and F503FE economy 50Ω N type coaxial mechanical calibration standards include fixed terminations, open circuits, short circuits, and through adaptors, specified from DC to 4.5 GHz.

The F503ME and F503FE performance specifications are very similar to the Keysight 85032B/E mechanical calibration kit and it can be used as an approximate replacement of 85032B/E, or use the STD of 85032B/E in network analyzers.

Performance

Model	Type	Connector	Specification
F503ME	Open	N-Male	DC – 4.5 GHz, Phase Deviation* ≤ ± 1.0°
	Short	N-Male	DC – 4.5 GHz, Phase Deviation ≤ ± 1.0°
	Load	N-Male	DC – 4.5 GHz, SWR ≤ 1.04 (Return Loss ≥ -34 dB)
	Through	N-Male to N-Male	DC – 9 GHz, SWR ≤ 1.035 (Return Loss ≥ -35 dB), Insert Loss ≤ 0.1 dB, Delay= 125.4 ps
F503FE	Open	N-Female	DC – 4.5 GHz, Phase Deviation ≤ ± 1.0°
	Short	N-Female	DC – 4.5 GHz, Phase Deviation ≤ ± 1.0°
	Load	N-Female	DC – 4.5 GHz, SWR ≤ 1.04 (Return Loss ≥ -34 dB)
	Through	N-Female to N-Female	DC – 9 GHz, SWR ≤ 1.035 (Return Loss ≥ -35 dB), Insert Loss ≤ 0.1 dB, Delay= 55.3 ps

* Relative error to the standard phase

General Specification

Impendence	50 Ω
Power	1 W
Interfaces Standard	IEC 60169-16
Durability	> 2000
Torque	1.35 Nm
Spanner	19 mm
Temperature	-15 ℃ ~ + 35 ℃

F603ME and F603FE

The F603ME and F603FE economy 50Ω 3.5mm/SMA type coaxial mechanical calibration standards include fixed terminations, open circuits, short circuits, and through adaptors, specified from DC to 4.5 GHz.

The F603ME and F603FE performance specifications are very similar to the Keysight 85033E mechanical calibration kit and it can be used as an approximate replacement of 85033E, or use the STD of 85033E in network analyzers.

Performance

Model	Type	Connector	Specification
F603ME	Open	3.5mm-Male	DC – 4.5 GHz, Phase Deviation* ≤ ± 1.0°
	Short	3.5mm-Male	DC – 4.5 GHz, Phase Deviation ≤ ± 1.0°
	Load	3.5mm-Male	DC – 4.5 GHz, SWR ≤ 1.04 (Return Loss ≥ -34 dB)
	Through	3.5mm-Male to 3.5mm-Male	DC – 9 GHz, SWR ≤ 1.035 (Return Loss ≥ -35 dB), Insert Loss ≤ 0.2 dB, Delay= 56.6 ps
F603FE	Open	3.5mm-Female	DC – 4.5 GHz, Phase Deviation ≤ ± 1.0°
	Short	3.5mm-Female	DC – 4.5 GHz, Phase Deviation ≤ ± 1.0°
	Load	3.5mm-Female	DC – 4.5 GHz, SWR ≤ 1.04 (Return Loss ≥ -34 dB)
	Through	3.5mm-Female to 3.5mm-Female	DC – 9 GHz, SWR ≤ 1.035 (Return Loss ≥ -35 dB), Insert Loss ≤ 0.2 dB, Delay= 56.8 ps

* Relative error to the standard phase

General Specification

Impendence	50 Ω
Power	1 W
Interfaces Standard	IEC 60169-23
Durability	> 2000
Torque	0.9 Nm
Spanner	8 mm
Temperature	-15 ℃ ~ + 35 ℃

F504MS and F504FS

The F504MS and F504FS economy 50Ω N type coaxial mechanical calibration standards include fixed terminations, open circuits, short circuits, and through adaptors, specified from DC to 9 GHz.

The F504MS and F504FS performance specifications are very similar to the Keysight 85032F mechanical calibration kit and it can be used as an approximate replacement of 85032F, or use the STD of 85032F in network analyzers.

Performance

Model	Type	Connector	Specification
F504MS	Open	N-Male	DC – 9 GHz, Phase Deviation* ≤ ± 0.8°
	Short	N-Male	DC – 9 GHz, Phase Deviation ≤ ± 0.8°
	Load	N-Male	DC – 9 GHz, SWR ≤ 1.032 (Return Loss ≥ -36 dB)
	Through	N-Male to N-Male	DC – 9 GHz, SWR ≤ 1.06 (Return Loss ≥ -31 dB), 9 – 18 GHz, SWR ≤ 1.1 (Return Loss ≥ -26 dB), Insert Loss ≤ 0.2 dB, Delay= 197.1 ps
F504FS	Open	N-Female	DC – 9 GHz, Phase Deviation ≤ ± 0.8°
	Short	N-Female	DC – 9 GHz, Phase Deviation ≤ ± 0.8°
	Load	N-Female	DC – 9 GHz, SWR ≤ 1.032 (Return Loss ≥ -36 dB)
	Through	N-Female to N-Female	DC – 9 GHz, SWR ≤ 1.06 (Return Loss ≥ -31 dB), 9 – 18 GHz, SWR ≤ 1.1 (Return Loss ≥ -26 dB), Insert Loss ≤ 0.15 dB, Delay= 136.2 ps

* Relative error to the standard phase

General Specification

Impendence	50 Ω
Power	1 W
Interfaces Standard	IEC 60169-16
Durability	> 2000
Torque	1.35 Nm
Spanner	19 mm
Temperature	-15 ℃ ~ + 35 ℃

F604MS and F604FS

The F604MS and F604FS economy 50Ω 3.5mm/SMA type coaxial mechanical calibration standards include fixed terminations, open circuits, short circuits, and through adaptors, specified from DC to 9 GHz.

The F604MS and F604FS performance specifications are very similar to the Keysight 85033E mechanical calibration kit and it can be used as an approximate replacement of 85033E, or use the STD of 85033E in network analyzers.

Performance

Model	Type	Connector	Specification
F604MS	Open	3.5mm-Male	DC – 9 GHz, Phase Deviation* ≤ ± 0.8°
	Short	3.5mm-Male	DC – 9 GHz, Phase Deviation ≤ ± 0.8°
	Load	3.5mm-Male	DC – 9 GHz, SWR ≤ 1.032 (Return Loss ≥ -36 dB)
	Through	3.5mm-Male to 3.5mm-Male	DC – 9 GHz, SWR ≤ 1.06 (Return Loss ≥ -31dB), 9 – 26.5 GHz, SWR ≤ 1.1 (Return Loss ≥ -26dB), Insert Loss ≤ 0.1 dB, Delay= 82.0 ps
F604FS	Open	3.5mm-Female	DC – 9 GHz, Phase Deviation ≤ ± 0.8°
	Short	3.5mm-Female	DC – 9 GHz, Phase Deviation ≤ ± 0.8°
	Load	3.5mm-Female	DC – 9 GHz, SWR ≤ 1.04 (Return Loss ≥ -34 dB)
	Through	3.5mm-Female to 3.5mm-Female	DC – 9 GHz, SWR ≤ 1.06 (Return Loss ≥ -31dB), 9 – 26.5 GHz, SWR ≤ 1.1 (Return Loss ≥ -26dB), Insert Loss ≤ 0.1 dB, Delay= 83.0 ps

* Relative error to the standard phase

General Specification

Impendence	50 Ω
Power	1 W
Interfaces Standard	IEC 60169-23
Durability	> 2000
Torque	0.9 Nm
Spanner	8 mm
Temperature	-15 °C ~ + 35 °C

Calibration Kit Definitions

Model	Type	C0 F(e-15)	C1 F(e-27)/Hz	C2 F(e-36)/Hz^2	C3 F(e-45)/Hz^3	L0 H(e-12)	L1 H(e-24)/Hz	L2 H(e-33)/Hz^2	L3 H(e-42)/Hz^3	Delay ps(1e-12*s)
F503ME	Open	62.14	-143.07	82.92	0.76					17.4
	Short					0	0	0	0	17.8
	Load									0
	Through									125.4
F503FE	Open	119.09	-36.955	26.258	5.5136					0
	Short					0	0	0	0	0.093
	Load									0
	Through									55.3
F603ME	Open	49.433	-310.13	23.168	-0.15966					29.2
	Short					2.0765	-108.54	2.1705	-0.01	31.8
	Load									0
	Through									56.6
F603FE	Open	49.433	-310.13	23.168	-.0.15966					29.2
	Short					2.0765	-108.54	2.1705	-0.01	31.8
	Load									0
	Through									56.8

Model	Type	C0 F(e-15)	C1 F(e-27)/Hz	C2 F(e-36)/Hz^2	C3 F(e-45)/Hz^3	L0 H(e-12)	L1 H(e-24)/Hz	L2 H(e-33)/Hz^2	L3 H(e-42)/Hz^3	Delay ps(1e-12*s)
F504MS	Open	89.939	2536.8	-264.99	13.4					40.856
	Short					3.3998	-496.4808	34.8314	-0.7847	45.955
	Load									0
	Through									197.1
F504FS	Open	89.939	2536.8	-264.99	13.4					41.17
	Short					3.3998	-496.4808	34.8314	-0.7847	45.955
	Load									0
	Through									136.2
F604MS	Open	49.433	-310.13	23.168	-0.15966					29.2
	Short					2.0765	-108.54	2.1705	-0.01	31.8
	Load									0
	Through									82
F604FS	Open	49.433	-310.13	23.168	-0.15966					29.2
	Short					2.0765	-108.54	2.1705	-0.01	31.8
	Load									0
	Through									82

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, function/arbitrary waveform generators, RF generators, digital multimeters, DC power supplies, spectrum analyzers, vector network analyzers, isolated handheld oscilloscopes, electronic load and other general purpose test instrumentation. Since its first oscilloscope, the ADS7000 series, was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

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