



**Electrical data**

Frequency range DC to 70.0 GHz

**Thru**

Return loss  $\geq 28$  dB, DC to 4 GHz  
 $\geq 21$  dB, 4 GHz to 26.5 GHz  
 $\geq 20$  dB, 26.5 GHz to 50 GHz  
 $\geq 17$  dB, 50 GHz to 70 GHz

**Open**

Error from nominal phase<sup>1</sup>  $\leq 2.0^\circ$ , DC to 4 GHz  
 $\leq 5.0^\circ$ , 4 GHz to 26.5 GHz  
 $\leq 7.0^\circ$ , 26.5 GHz to 50 GHz  
 $\leq 10.0^\circ$ , 50 GHz to 70 GHz

**Short**

Error from nominal phase<sup>2</sup>  $\leq 2.0^\circ$ , DC to 4 GHz  
 $\leq 5.0^\circ$ , 4 GHz to 26.5 GHz  
 $\leq 7.0^\circ$ , 26.5 GHz to 50 GHz  
 $\leq 10.0^\circ$ , 50 GHz to 70 GHz

**Load**

Return loss  $\geq 35.0$  dB, DC to 4 GHz  
 $\geq 25.0$  dB, 4 GHz to 26.5 GHz  
 $\geq 22.0$  dB, 26.5 GHz to 50 GHz  
 $\geq 20.0$  dB, 50 GHz to 70 GHz

DC Resistance  $50 \Omega \pm 0.5 \Omega$

Power handling (at 25 °C, sea level)  $\leq 0.5$  W, derate by 0.005 W/K

<sup>1</sup> The nominal phase is defined by the Offset Delay, the Offset Loss and the Fringing Capacitances

<sup>2</sup> The nominal phase is defined by the Offset Delay, the Offset Loss and the Short Inductance

**Mechanical data**

Mating cycles  $\geq 500$   
 Maximum torque 1.65 Nm  
 Recommended torque 0.90 Nm  
 Gauge 0.00 mm to 0.05 mm

**General standard definitions**

For proper operation the vector network analyzer (VNA) needs a model describing the electrical behaviour of this calibration standard. The different models, units, and terms used will depend on the VNA type and they will have to be entered into the VNA. All values are based on typical geometry and plating.

**Thru**

Offset  $Z_0$  / Impedance /  $Z_0$  50  $\Omega$   
 Offset Delay 84.492 ps  
 Length (electrical) / Offset Length 25.33 mm  
 Offset Loss 4.00 G $\Omega$ /s  
 Loss 0.0294 dB/ $\sqrt{\text{GHz}}$   
 Line Loss @ 1GHz 0.0012 dB/mm

**Load**

Offset  $Z_0$  / Impedance /  $Z_0$  50  $\Omega$   
 Offset Delay 0.0000 ps  
 Length (electrical) / Offset Length 0.000 mm  
 Offset Loss 0.00 G $\Omega$ /s  
 Loss 0.0000 dB/ $\sqrt{\text{GHz}}$

**Open**

Offset $Z_o$ / Impedance / $Z_o$	50 $\Omega$	
Offset Delay	16.678 ps	
Length (electrical) / Offset Length	5.00 mm	
Offset Loss	3.75 G $\Omega$ /s	
Loss	0.0109 dB/ $\sqrt{\text{GHz}}$	
Fringing Capacitances	$C_0 = 1.70000 \times 10^{-15} \text{ F}$	/ 1.70000 fF
	$C_1 = 170.000 \times 10^{-27} \text{ F/Hz}$	/ 0.17000 fF /GHz
	$C_2 = -6.30000 \times 10^{-36} \text{ F/Hz}^2$	/ -0.00630 fF /GHz <sup>2</sup>
	$C_3 = 0.04000 \times 10^{-45} \text{ F/Hz}^3$	/ 0.00004 fF /GHz <sup>3</sup>

**Short**

Offset $Z_o$ / Impedance / $Z_o$	50 $\Omega$	
Offset Delay	16.678 ps	
Length (electrical) / Offset Length	5.00 mm	
Offset Loss	4.17 G $\Omega$ /s	
Loss	0.0121 dB/ $\sqrt{\text{GHz}}$	
Short Inductance	$L_0 = -21.0000 \times 10^{-12} \text{ H}$	/ -21.000 pH
	$L_1 = 700.000 \times 10^{-24} \text{ H/Hz}$	/ 0.70000 pH/GHz
	$L_2 = -15.0000 \times 10^{-33} \text{ H/Hz}^2$	/ -0.01500 pH/GHz <sup>2</sup>
	$L_3 = 0.10000 \times 10^{-42} \text{ H/Hz}^3$	/ 0.00010 pH/GHz <sup>3</sup>

**Environmental data**

Operating temperature range <sup>3</sup>	+20 °C to +26 °C
Rated temperature range of use <sup>4</sup>	0 °C to +50 °C
Storage temperature range	-40 °C to +85 °C
RoHS	compliant

<sup>3</sup> Temperature range over which these specifications are valid.

<sup>4</sup> This range is underneath and above the operating temperature range, within the calibration kit is fully functional and could be used without damage

**Declaration of documentation**

Standard delivery for this kit includes Test Results. The documentation issued reports which quantities were tested individually, traceable to national / international standards. Model based standard definitions of the calibration standards are reported in Agilent / Keysight, Rohde & Schwarz and Anritsu compatible VNA format.

**Inspection interval**

Recommendation	12 months
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**Packing**

Weight	34 g/pce
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While the information has been carefully compiled to the best of our knowledge, nothing is intended as representation or warranty on our part and no statement herein shall be construed as recommendation to infringe existing patents. In the effort to improve our products, we reserve the right to make changes judged to be necessary.

For the installation of the electrotechnical equipment, particular electrotechnical expertise is required.



Draft	Date	Approved	Date	Rev.	Engineering change number	Name	Date
Marcel Panicke	31.01.17	Lars Ramtke	30.05.23	d00	23-0004	Marion Striegler	23.05.23