



All dimensions are in mm; tolerances according to ISO 2768 m-H

Interface

According to IEC 61169-16

Contents and Documentation

This kit is delivered with

- **Standard Definitions Card**
Printed Standard Definitions that can be used on nearly all Vector Network Analyzers
- **Test Results Documentation**
- **Lanyard**
- **Hard Shell Case**
- **Protection Caps**

Material and plating

Connector parts

Center conductor
Outer conductor
Body
Dielectric
Substrate

Material

CuBe
Stainless steel
Aluminum
PPE
Al₂O₃

Plating

Gold, min. 1.27 μm, over nickel
Passivated
black anodized

Electrical data

Frequency range	DC to 18 GHz
Thru	
Return loss	≥ 40 dB, DC to 6 GHz ≥ 36 dB, 6 GHz to 9 GHz ≥ 32 dB, 9 GHz to 18 GHz
Open	
Error from nominal phase ¹	≤ 2.0°, DC to 6 GHz ≤ 3.0°, 6 GHz to 9 GHz ≤ 4.0°, 9 GHz to 18 GHz
Short	
Error from nominal phase ²	≤ 1.5°, DC to 6 GHz ≤ 2.0°, 6 GHz to 9 GHz ≤ 2.5°, 9 GHz to 18 GHz
Load	
Return loss	≥ 42 dB, DC to 6 GHz ≥ 36 dB, 6 GHz to 9 GHz ≥ 30 dB, 9 GHz to 18 GHz
DC-Resistance	50 Ω ± 0.5 Ω
Power handling (at 25 °C, sea level)	≤ 1.0 W, derate by 0.01 W/K

¹ The nominal phase is defined by the Offset Delay, the Offset Loss and the Fringing Capacitances

² The nominal phase is defined by the Offset Delay, the Offset Loss and the Short Inductance

Mechanical data

Mating cycles	≥ 500
Maximum torque	1.70 Nm
Recommended torque	1.10 Nm
Gauge	5.22 mm to 5.26 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 Ω
Offset Delay	152.105 ps
Length (electrical) / Offset Length	45.60 mm
Offset Loss	2.20 GΩ/s
Loss	0.0291 dB/√GHz
Line Loss @ 1GHz	0.0006 dB/mm

Open

Offset Z ₀ / Impedance / Z ₀	50 Ω
Offset Delay	40.028 ps
Length (electrical) / Offset Length	12.00 mm
Offset Loss	0.80 GΩ/s
Loss	0.0056 dB/√GHz
Fringing Capacitances	C ₀ = 37.1000 x 10 ⁻¹⁵ F / 37.1000 fF
	C ₁ = 1200.00 x 10 ⁻²⁷ F/Hz / 1.20000 fF /GHz
	C ₂ = -30.0000 x 10 ⁻³⁶ F/Hz ² / -0.03000 fF /GHz ²
	C ₃ = 0.00000 x 10 ⁻⁴⁵ F/Hz ³ / 0.00000 fF /GHz ³

Short

Offset Z_o / Impedance / Z_o	50 Ω
Offset Delay	40.028 ps
Length (electrical) / Offset Length	12.00 mm
Offset Loss	0.80 GΩ/s
Loss	0.0056 dB/√GHz
Short Inductance	$L_0 = 95.0000 \times 10^{-12} \text{ H} \quad / \quad 95.0000 \text{ pH}$
	$L_1 = -9900.00 \times 10^{-24} \text{ H/Hz} \quad / \quad -9.90000 \text{ pH/GHz}$
	$L_2 = 980.000 \times 10^{-33} \text{ H/Hz}^2 \quad / \quad 0.98000 \text{ pH/GHz}^2$
	$L_3 = -29.0000 \times 10^{-42} \text{ H/Hz}^3 \quad / \quad -0.02900 \text{ pH/GHz}^3$

Load

Offset Z_o / Impedance / Z_o	50 Ω
Offset Delay	0.0000 ps
Length (electrical) / Offset Length	0.000 mm
Offset Loss	0.00 GΩ/s
Loss	0.0000 dB/√GHz

Environmental data

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

³ Temperature range over which these specifications are valid.

⁴ 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

Standard	1 pce in bag
Weight	235 g/pce

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.

Draft	Date	Approved	Date	Rev.	Engineering change number	Name	Date
Marcel Panicke	26.11.14	Markus Müller	29.04.20	f00	19-2083	Marion Striegler	29.04.20

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