



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
- **Certificate of Testing**
- **Lanyard**
- **Hard Shell Case**
- **Protection Caps**
- **User Manual**

Material and plating

Connector parts

Center conductor
Outer conductor
Coupling nut
Body
Dielectric
Substrate

Material

CuBe
Stainless steel
Stainless steel
Aluminum
PS
Al₂O₃

Plating

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

Electrical data

| | |
|---------------------------------------|---|
| Frequency range | DC to 12 GHz |
| Thru | |
| Return loss | ≥ 36 dB, DC to 4 GHz ≥ 27 dB, 4 GHz to 8 GHz ≥ 25 dB, 8 GHz to 12 GHz |
| Open | |
| Error from nominal phase ¹ | ≤ 3.0°, DC to 4 GHz ≤ 5.0°, 4 GHz to 8 GHz ≤ 6.0°, 8 GHz to 12 GHz |
| Short | |
| Error from nominal phase ² | ≤ 2.5°, DC to 4 GHz ≤ 4.0°, 4 GHz to 8 GHz ≤ 5.0°, 8 GHz to 12 GHz |
| Load | |
| Return loss | ≥ 38 dB, DC to 4 GHz ≥ 32 dB, 4 GHz to 8 GHz ≥ 30 dB, 8 GHz to 12 GHz |
| DC-Resistance | 75 Ω ± 0.75 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 | 5.28 mm to 5.36 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 | 75 Ω |
| Offset Delay | 214.148 ps |
| Length (electrical) / Offset Length | 64.20 mm |
| Offset Loss | 1.20 GΩ/s |
| Loss | 0.0149 dB/√GHz |
| Line Loss @ 1GHz | 0.0002 dB/mm |

Open

| | |
|--|--|
| Offset Z ₀ / Impedance / Z ₀ | 75 Ω |
| Offset Delay | 41.095 ps |
| Length (electrical) / Offset Length | 12.32 mm |
| Offset Loss | 1.20 GΩ/s |
| Loss | 0.0057 dB/√GHz |
| Fringing Capacitances | C ₀ = -5.66000 x 10 ⁻¹⁵ F / -5.66000 fF C ₁ = -320.000 x 10 ⁻²⁷ F/Hz / -0.32000 fF /GHz C ₂ = 188.000 x 10 ⁻³⁶ F/Hz ² / 0.18800 fF /GHz ² C ₃ = -9.40000 x 10 ⁻⁴⁵ F/Hz ³ / -0.00940 fF /GHz ³ |

Short

| | |
|-------------------------------------|---|
| Offset Z_o / Impedance / Z_o | 75 Ω |
| Offset Delay | 41.095 ps |
| Length (electrical) / Offset Length | 12.32 mm |
| Offset Loss | 1.20 GΩ/s |
| Loss | 0.0057 dB/√GHz |
| Short Inductance | $L_0 = 22.8000 \times 10^{-12} \text{ H} \quad / \quad 22.8000 \text{ pH}$ |
| | $L_1 = -1630.00 \times 10^{-24} \text{ H/Hz} \quad / \quad -1.63000 \text{ pH/GHz}$ |
| | $L_2 = 23.0000 \times 10^{-33} \text{ H/Hz}^2 \quad / \quad 0.02300 \text{ pH/GHz}^2$ |
| | $L_3 = -2.40000 \times 10^{-42} \text{ H/Hz}^3 \quad / \quad -0.00240 \text{ pH/GHz}^3$ |

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

Packing

Weight 257 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.

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



| Draft | Date | Approved | Date | Rev. | Engineering change number | Name | Date |
|----------------|----------|-------------|----------|------|---------------------------|------------------|----------|
| Marcel Panicke | 14.01.16 | Lars Ramtke | 30.05.23 | f00 | 23-0004 | Marion Striegler | 26.05.23 |