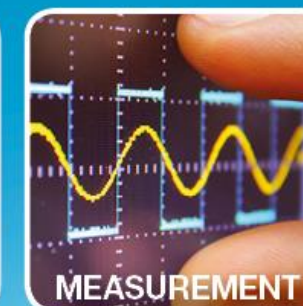




Test & Measurement Portfolio



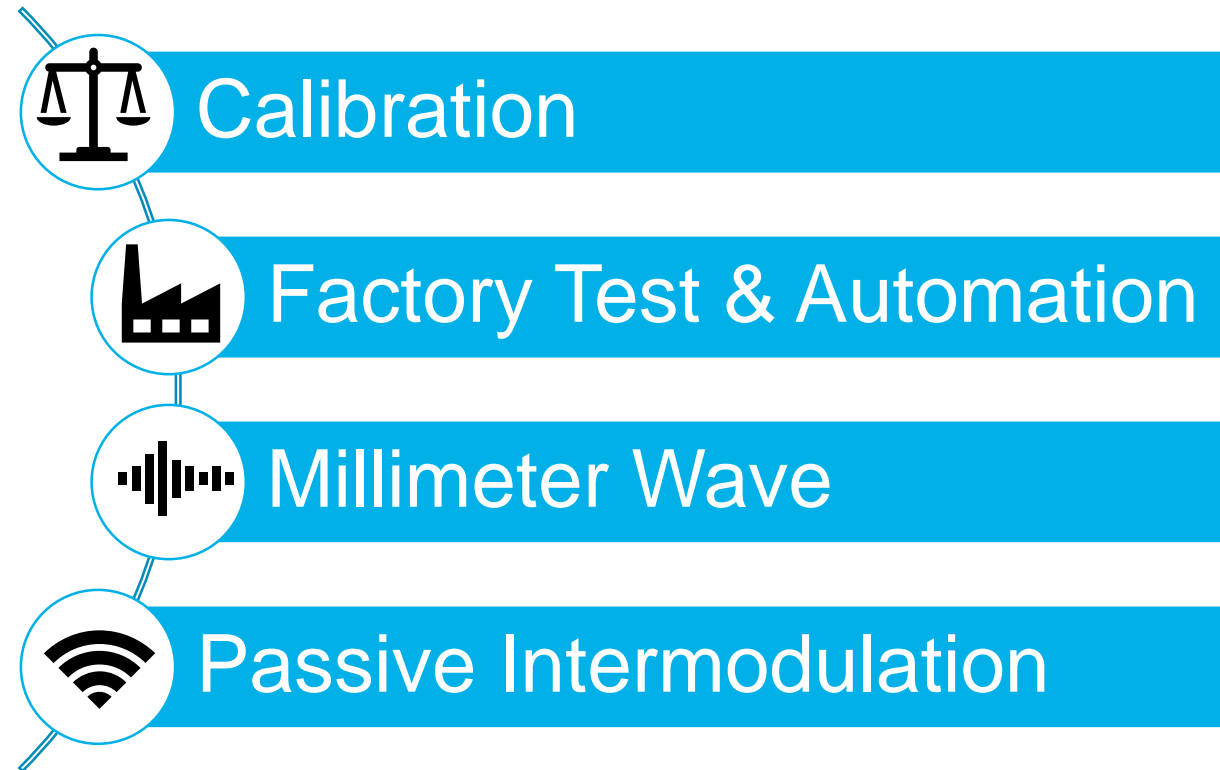
Author: Robert Strehmann, Industry & Science, 09-2017

HIGH FREQUENCY PERFORMANCE WORLDWIDE
www.spinner-group.com

SPINNER Test & Measurement Portfolio



- Product ranges



SPINNER Test & Measurement Portfolio



■ Calibration



Compact CalKits



High Precision CalKits



LRL-CalKit



Verification Kit



Precision Air Lines



Sliding Loads



Inter-Series Adaptors



Test-Port Adaptors



Articulated Lines



Rotary Joints



Connector Gauges



Torque Wrenches

SPINNER Test & Measurement Portfolio



■ Factory Test Components



EasyDock Adaptors for
JIG based operations



EasyDock Adaptors for
robotic based operations



EasyDock Adaptors for
manually operations



Push-Pull Adaptors

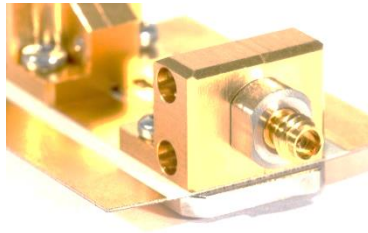
SPINNER Test & Measurement Portfolio



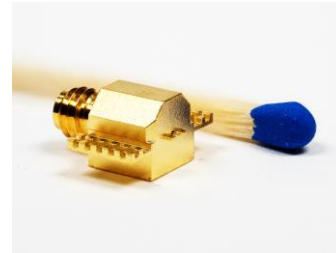
■ Millimeter Wave Components



Flexible Waveguide Assembly



PCB-Launch-Connector



PCB-Endlaunch-Connector



Waveguide to Coax Adaptors



Single Channel Rotary Joints

SPINNER Test & Measurement Portfolio

| Calibration



- OSL Compact Calibration Kits 3-in-1



- Open, Short and Load standard in one compact handy device
- Small size and low weight
- Cost efficient
- Applicable to all VNA
- Connector series (male/female)
 - 7-16
 - Type N (50 Ω)

SPINNER Test & Measurement Portfolio

| Calibration



- OSL Compact Calibration Kits 3-in-1 overview

- 7-16 | DC to 6 GHz



BN 53 38 66 R000



BN 53 38 65 R000

- N | DC to 6 GHz



BN 53 38 64 R000



BN 53 38 63 R000

50 Ω | Grade 0

50 Ω | Grade 1

75 Ω | Grade 0

■ ■ ■ ■ ■ RF Precision
Connector Color Coding

SPINNER Test & Measurement Portfolio

| Calibration



- OSLT Compact Calibration Kits (4-in-1)



- Open, Short, Load and Through in one compact handy device
- Simplified calibration of more-port VNAs
- For frequency's from 6 to 70 GHz
- Outstanding electrical performance
- General approved calibration coefficients
- Applicable to all VNA
- Connector male/female
7-16, 4.1-9.5, 4.3-10, Type N (50 Ω and 75 Ω), 3.5 mm, 2.92 mm, 2.4 mm, 1.85 mm
- Color coding for displaying connector size information

SPINNER Test & Measurement Portfolio

| Calibration



■ OSLT Compact Calibration Kits 4-in-1 overview

Connector size Frequency range	7-16 male / female	4.1-9.5 male / female	4.3-10 male / female	Type N male / female	3.5 mm ■ male / female	2.92 mm ■ male / female	2.4 mm ■ male / female	1.85 mm ■ male / female
DC - 3 GHz				533858./ 57R000				
DC - 6 GHz	533846 / ..45	533807 / ..08	533301 / ..02					
DC - 9 GHz				533844 / ..43				
DC - 12 GHz			533313 / ..14	534030 / ..29				
DC - 13 GHz					533829 / ..28			
DC - 15 GHz						533805 / ..06		
DC - 18 GHz				533879 / ..80				
DC - 26,5 GHz					533881 / ..82			
DC - 40 GHz						533897 / ..98		
DC - 44 GHz <i>new</i>						534930 / ..31		
DC - 50 GHz							533760 / ..59	
DC - 67 GHz								533755 / ..54
DC - 70 GHz <i>new</i>								533430 / ..31

50 Ω | Grade 0

50 Ω | Grade 1

75 Ω | Grade 0

■ ■ ■ ■ RF Precision
Connector Color Coding

SPINNER Test & Measurement Portfolio

| Calibration



■ OSLT High Precision Calibration Kits



- Kit contains both male and female standard of Open, Short, Load and Through
- Certificate of Calibration (CoC)
- Individual calibration coefficients
- Connector series
 - 7-16
 - 4.3 - 10
 - Type N (50 Ω)
 - 3.5 mm
 - 2.92 mm
 - 2.4 mm
 - 1.85 mm
- Plug-socket adapter is optionally available

SPINNER Test & Measurement Portfolio

| Calibration



■ OSLT High Precision Calibration Kits overview

Connector size Frequency range	7-16 (m) & (f)	4.3-10 (m) & (f)	4.1-9.5 (m) & (f)	Type N (m) & (f)	3.5 mm (m) & (f)	2.92 mm (m) & (f)	2.4 mm (m) & (f)	1.85 mm (m) & (f)
DC - 7,5 GHz	533840							
DC - 12 GHz		533312						
DC - 12.5 GHz			533827					
DC - 18 GHz				533861				
DC - 32 GHz					533854			
DC - 40 GHz						533856		
DC – 44 GHz						534932 <i>new</i>		
DC - 50 GHz							533842	
DC - 67 GHz								533855
DC - 70 GHz								533420 <i>new</i>

50 Ω | Grade 0

SPINNER Test & Measurement Portfolio

| Calibration



■ Verification Kits



■ Kit contains

- Attenuator 20 dB male/female
- Attenuator 40 dB male/female
- Airline male/female with
 - Outer Conductor
 - Center Conductor 50 Ω
 - Center Conductor 25 Ω (mismatch)

Frequency range Connector size	Part No.
DC - 7,5 GHz 7-16	533490
DC - 12 GHz 4.3-10	533331
DC - 18 GHz Type N	533480
DC - 32 GHz 3.5 mm	533470
DC - 40 GHz 2.92 mm	533460
DC - 50 GHz 2.4 mm	533450
DC - 70 GHz 1.85	533440

SPINNER Test & Measurement Portfolio

| Calibration



- Air lines



- For LRL measurements
- With one low-loss dielectric bead
- Connector series
7-16, 4.3-10, Type N, 3.5 mm
- With genders
plug - socket or socket - socket

- Sliding Loads



- Outstanding accuracy impedance standard for calibration and verification of a VNA
- Frequency range 4 - 50 GHz
- For connector series 2.4 mm male or female

SPINNER Test & Measurement Portfolio

| Calibration



▪ Articulated Lines



- Extremely long life time
 - 1 Million flex cycles guaranteed for articulated line (The rotary joints allow movements without stressing of the material by strain or torsion)
- Excellent amplitude and phase stability
 - even during movement
 - even with temperature drift
- Accurate and reproducible RF measurements
 - VNA calibration is not affected by movements
 - no need for adaptors because 3.5 and N connectors are available as male and female
- Highly flexible
 - DUT ports in any orientation can be connected within a sphere of 1 m diameter (0,5 m for short line)
 - rotation allowed
 - no mechanical stress introduced to DUT

SPINNER Test & Measurement Portfolio

| Calibration



■ Articulated Lines overview

Connector size Frequency range	Type N 650 mm	Type N 320 mm	3.5 mm 650 mm	3.5 mm 320 mm	2.92 mm 300 mm	2.4 mm 300 mm	1.85 mm 300 mm
DC - 18 GHz	533645C.	533626C....					
DC - 32 GHz			533638C....	533627C....			
DC - 40 GHz					533647C....		
DC - 50 GHz						533646C....	
DC - 67 GHz							533652C...

SPINNER Test & Measurement Portfolio

| Calibration



- Connector Gauges



- Tolerance limits according to the connector standard marked on the dial
- No specific knowledge of standards
- Reference gauge is included
- Connector series (male/female)
 - 7-16
 - 4.1-9.5
 - 4.3-10
 - N
 - 3.5 mm
 - 2.92 mm
 - 2.4 mm
 - 1.85 mm

SPINNER Test & Measurement Portfolio

| Calibration



- Torque Wrenches



- Available for connector sizes:
 - 7-16
 - 4.3-10
 - N
 - 3.5 / 2.92 / 2.4 / 1.85 mm
 - additional with softpads on spanner flat
- Preset torque from 5 to 30 N m

Contact SPINNER



SPINNER GmbH

Headquarters

Erzgiessereistr. 33

80335 Munich

GERMANY

Phone: +49 89 12601-0

Fax: +49 89 12601-1292

info@spinner-group.com



spinner-group.com

