

# S-PROBE SP-GR SERIES

RUGGED, SINGLE-ENDED 30/20 GHZ PROBE CAPABLE OF PROBING ON UNEVEN SOLDER BUMPS



## FEATURES:

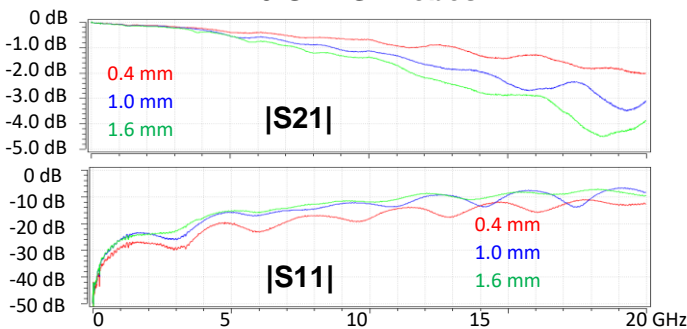
- **High Bandwidth:** DC to 30/20 GHz
- **Low Insertion Loss:** < 3 dB @ 30 GHz for probe pitch  $\leq$  0.5 mm
- **High Repeatability:** No moving parts
- **Strong beryllium copper (BeCu) tips:** perfect for direct probing of uneven surfaces, such as solder pads & components.
- **Probe-tip Calibration:** accurate measurements without the need of soldering semi-rigid RF cables

S-Probe series is designed for RF, signal integrity, and power integrity testing of printed-circuit boards. Microprobes are not suitable for this type of measurements due to their fragility. Constant shrinking size of circuit components makes soldering semi-rigid RF cables to test gigahertz circuits impractical. The rugged S-Probe and its calibration substrate (TCS70) allow engineers to perform probe-tip calibration for accurate, repetitive measurements.

## SPECIFICATIONS

<b>Bandwidth</b>	30/20 GHz (0.25/0.4/0.5 mm pitch) 18 GHz (0.8/1.0 mm pitch) 16 GHz (1.2/1.4/1.6 mm pitch)
<b>Insertion Loss</b>	Less than 3 dB @ bandwidth
<b>Impedance</b>	50 $\pm$ 2 Ohm
<b>Connector Type</b>	Female 2.92mm/30GHz, SMA/20GHz
<b>Size/ Weight</b>	38x20 x12 mm (1.5x0.8x0.5") / 8 gm
<b>Probe Force</b>	50 gm (typical) 200 gm (max w/o damage)

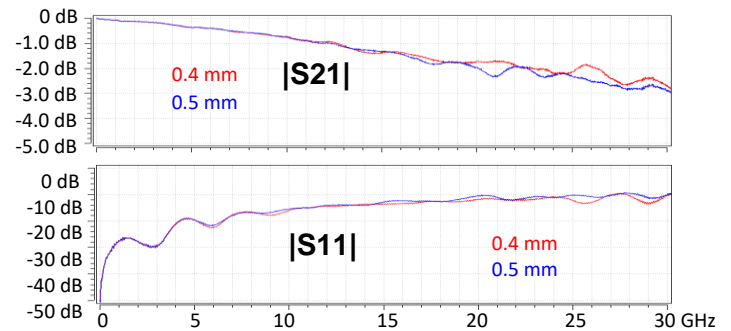
### 20 GHz S-Probes



Un-calibrated S21/S11 of 0.4/1.0/1.6 mm pitch

20 GHz PART NO.	BW (GHz)	PITCH
<b>SP-GR-2015025</b>	20 GHz	0.25 mm / 10 mil
<b>SP-GR-201504</b>	20 GHz	0.4 mm / 16 mil
<b>SP-GR-201505</b>	20 GHz	0.5 mm / 20 mil
<b>SP-GR-181508</b>	18 GHz	0.8 mm / 32 mil
<b>SP-GR-181510</b>	18 GHz	1.0 mm / 40 mil
<b>SP-GR-181512</b>	16 GHz	1.2 mm / 48 mil
<b>SP-GR-181514</b>	16 GHz	1.4 mm / 56 mil
<b>SP-GR-161516</b>	16 GHz	1.6 mm / 64 mil

### 30 GHz S-Probes



Un-calibrated S21/S11 of 0.4/0.5 mm pitch

30 GHz PART NO.	BW (GHz)	PITCH
<b>SP-GR-3015025</b>	30 GHz	0.25 mm / 10 mil
<b>SP-GR-301504</b>	30 GHz	0.4 mm / 16 mil
<b>SP-GR-301505</b>	30 GHz	0.5 mm / 20 mil

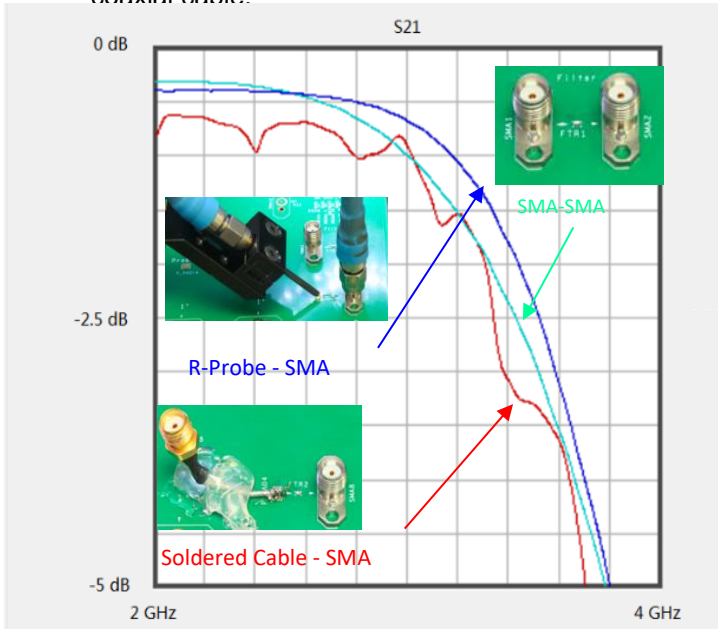
### PROBE PITCH VS. COMPONENT SIZE

PROBE PART NO.	SIZE
SP-GR-2015025	01005
SP-GR-201505	0201
SP-GR-181510	0402
SP-GR-161514	0603

## MEASUREMENTS

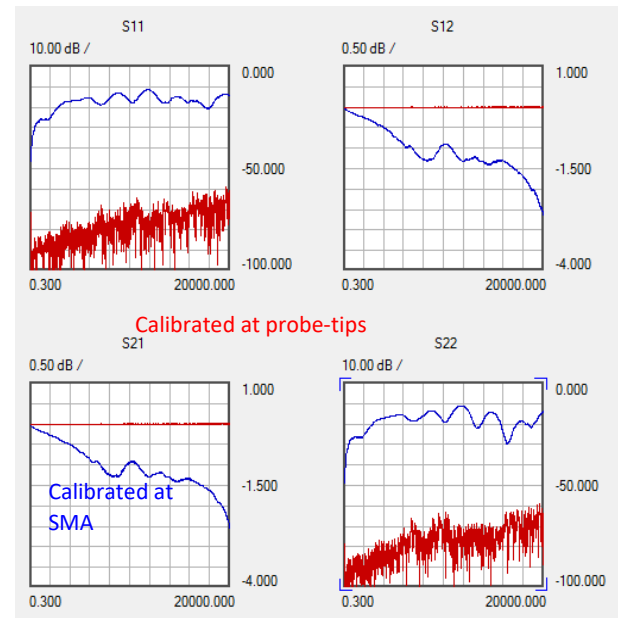
### RF Measurement

The following S21 measurement of a TDK 2.45 GHz low pass filter (P/N: DEA102500LT-6307A1, Size 0402) shows that S-Probe performance is better than that of soldering a coaxial cable.



### 2-Port Probe-Tip Calibration

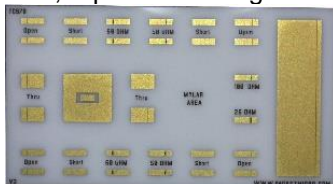
Probe-tip calibration allows accurate, repetitive S-Parameter measurements.



## TCS70 CALIBRATION SUBSTRATE

### Calibration Substrate

S-Probe product family includes a TCS70 calibration substrate with short, open, load, and thru (SOLT) standards for S-parameter calibrations. This substrate enables a user to move the measurement reference point directly to the probe tips for accurate, repetitive testing.



### SPECIFICATIONS

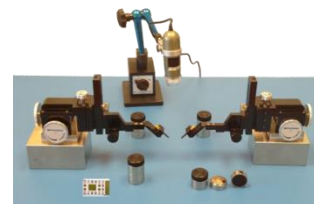
- SOLT Standards:** Open, short, thru, and 50  $\Omega$
- Frequency:** 30 GHz
- Probe Pitch:** 0.2 mm – 1.0 mm
- Substrate:** Polished alumina
- Contact Material:** Gold
- Accuracy:** < 0.5% (25  $\Omega$ , 50  $\Omega$ )
- Size/Weight:** 17.3 x 9.4 x 0.6 mm (0.68 x 0.37 x 0.025 in) / 1 gm

## ACCESSORIES

- TP250 4D (xyz $\theta$ ) Precision Positioner
- TP150 4D (xyz $\theta$ ) Precision Positioner
- PH100 PCB Holder
- FP40-HDM1 Flex Positioner
- Dino-Lite Digital Microscope



S-Probe on TP250



Typical Probing Setup



Dino-Lite Microscope