Quick Fact Sheet
ShockLine MS46522B 2-Port Performance Vector Network Analyzer

RF and Microwave VNAs to 92 GHz
The MS46522B is a series of 2-port Performance ShockLine Vector Network Analyzers. Delivering an unprecedented level of value and performance, the MS46522B series lowers cost-of-test and speeds time to market in numerous test applications up to 92 GHz. These applications include characterizing and manufacturing mobile network equipment, mobile devices, automotive cables, high-speed data interconnects and system integration components.

The MS46522B configured with option 10, 20, or 43 brings 50 kHz to 8.5/20/43.5 GHz frequency capabilities to the Performance ShockLine family. These frequency options, combined with powerful ShockLine software, provide a cost effective solution for the most challenging passive device testing.

MS46522B-082 and -083 are unique tethered E-band frequency options for the MS46522B series which delivers banded mmWave measurement capabilities at an unprecedented level of convenience and value to the marketplace. The one-meter option 82 targets production and characterization of E-band components while the MS46522B with the five-meter option 83 aims at over-the-air (OTA) applications.

The MS46522B series comes in a 3U high chassis and uses the same GUI, software, command syntax, drivers, and programming environments as the rest of the ShockLine family.

Key Features and Benefits
● Guaranteed performance to 43.5 GHz with Extended-K™ ports on option 43.
● High output power allows measurement of high attenuation devices.
● Wide dynamic range enables measurement of very low reflection artifacts.
● Excellent corrected directivity minimizes measurement uncertainty.
● SmartCal auto calibration unit reduces calibration and setup time.
● Advanced Time Domain option provides Signal Integrity testing capabilities.
● Bias Tee option increases test setup flexibility.
● Time domain with time gating option grants easier and faster fault identification.
● Modern LAN interface for remote control is faster than GPIB.
● A common GUI and SCPI interface within the Shockline Family for ease of use.
● USB ports allow for easy connection to peripherals like keyboard and mouse.

Simple | Economical | Great Performance
Quick Fact Sheet

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### Key Specifications

#### Analyzer Performance

**Frequency Options**
- MS46522B-010, 50 kHz to 8.5 GHz, type N(f) ports
- MS46522B-020, 50 kHz to 20 GHz, type K(m) ports
- MS46522B-043, 50 kHz to 43.5 GHz, type Extended-K(m) ports
- MS46522B-082, 55 GHz to 92 GHz, WR12 waveguide flange, one-meter
- MS46522B-083, 55 GHz to 92 GHz, WR12 waveguide flange, five-meter

**Dynamic Range**
≥ 120 dB, (50 MHz to 43.5 GHz), typical

**Output Power**
-30 dBm to 9 dBm (300 kHz to 40 GHz), typical

**Corrected Directivity**
≥ 40 dB (300 kHz to 40 GHz, calibrated with 36585K AutoCal)

**General**

- **Measurement Parameters**
  - Single ended S-Parameters: $S_{11}$, $S_{21}$, $S_{12}$, $S_{22}$
  - Mixed-Mode S-Parameters: $S_{DD}$, $S_{CC}$, $S_{DC}$, $S_{CD}$
  - User-defined combination: $a_1$, $a_2$, $b_1$, $b_2$, $1$
  - Max Efficiency: $kQ$ product, $\eta_{max}$

- **Display Graphs**
  - Log Magnitude, Phase, Group Delay, Linear Magnitude, Real, Imaginary, SWR, Impedance, Smith Chart, Polar, Power in/out, Max Efficiency ($kQ$ product and $\eta_{max}$)

- **Measurements Data Points**
  2 to 20,001 points

- **Limit Lines**
  Single or segmented. 2 limit lines per trace. 100 segments per trace.

- **IF Bandwidth**
  10, 20, 30, 50, 70, 100, 200, 300, 500, 700 Hz
  1, 2, 3, 5, 7, 10, 20, 30, 50, 70, 100, 200, 300, 500 kHz

- **Display and Traces**
  Up to 16 traces. A separate memory for each trace can be used to store measurement data for later display or subtraction, addition, multiplication or division with current measurement data. The trace data can be saved and recalled.

- **Markers**
  12 markers + 1 reference marker

- **Remote Control Interface**
  SCPI/Software drivers over LAN

- **Display**
  Powerful GUI displayed on user-provided monitor, touchscreen compatible

- **Dimensions (H x W x D)**
  152 mm x 445 mm x 442 mm

- **Weight:**
  < 11 - 15 kg (< 25 - 33 lb), typical depending on frequency option

### Product Options

<table>
<thead>
<tr>
<th>Option Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS46522B-001</td>
<td>Rack mount</td>
</tr>
<tr>
<td>MS46522B-002</td>
<td>Time Domain with time gating</td>
</tr>
<tr>
<td>MS46522B-022</td>
<td>Advanced Time Domain</td>
</tr>
<tr>
<td>MS46522B-024</td>
<td>Universal Fixture Extraction</td>
</tr>
<tr>
<td>MS46522B-061</td>
<td>Bias Tee (Only available with Option 10)</td>
</tr>
</tbody>
</table>

### Calibration Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>MN25208A</td>
<td>2-Port SmartCal 8.5 GHz USB Auto Calibration Unit</td>
</tr>
<tr>
<td>MN25218A</td>
<td>2-Port SmartCal 20 GHz USB Auto Calibration Unit</td>
</tr>
<tr>
<td>36585K</td>
<td>2-Port Precision AutoCal 40 GHz Auto Calibration Unit</td>
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<tr>
<td>TOSLN50A-8</td>
<td>Precision N Male Through/Open/Short/Load Mechanical Calibration Tee</td>
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<tr>
<td>TOSLN50A-8</td>
<td>Precision N Female Through/Open/Short/Load Mechanical Calibration Tee</td>
</tr>
<tr>
<td>TOSLK50A-40</td>
<td>Precision K Male Through/Open/Short/Load Mechanical Calibration Tee</td>
</tr>
<tr>
<td>TOSLK50A-40</td>
<td>Precision K Female Through/Open/Short/Load Mechanical Calibration Tee</td>
</tr>
<tr>
<td>TOSLK50A-43.5</td>
<td>Precision Extended-K Male Through/Open/Short/Load Mechanical Calibration Tee, DC to 43.5 GHz, 50 ohm, includes .s1p files for data-based calibration support</td>
</tr>
<tr>
<td>TOSLK50A-43.5</td>
<td>Precision Extended-K Female Through/Open/Short/Load Mechanical Calibration Tee, DC to 43.5 GHz, 50 ohm, includes .s1p files for data-based calibration support</td>
</tr>
<tr>
<td>3650A</td>
<td>SMA/3.5 mm Calibration Kit, Without Sliding Loads, DC to 26.5 GHz, 50 Ω</td>
</tr>
<tr>
<td>3652A</td>
<td>K Connector Calibration Kit, Without Sliding Loads, DC to 40 GHz, 50 Ω</td>
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<tr>
<td>3653A</td>
<td>N Connector Calibration Kit, Without Sliding Loads, DC to 18 GHz, 50 Ω</td>
</tr>
<tr>
<td>3655E</td>
<td>Waveguide Calibration Kit (WR12)</td>
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### Accessories

#### Cables

#### Automatic Calibration Unit

#### Calibration Accessories

#### Torque Wrenches

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