Agilent 35670A
Dynamic Signal Analyzer

Versatile two- or four-channel high-performance FFT-based spectrum/network analyzer
122 µHz to 102.4 kHz 16-bit ADC

Data Sheet

Key Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>102.4 kHz 1 channel</td>
</tr>
<tr>
<td></td>
<td>51.2 kHz 2 channel</td>
</tr>
<tr>
<td></td>
<td>25.6 kHz 4 channel</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>90 dB typical</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.15 dB</td>
</tr>
<tr>
<td>Channel match</td>
<td>±0.04 dB and ±0.5 degrees</td>
</tr>
<tr>
<td>Real-time bandwidth</td>
<td>25.6 kHz/1 channel</td>
</tr>
<tr>
<td>Resolution</td>
<td>100, 200, 400, 800 &amp; 1600 lines</td>
</tr>
<tr>
<td>Time capture</td>
<td>&gt; 6 Msamples</td>
</tr>
<tr>
<td>Source types</td>
<td>Random, burst random, periodic chirp, burst chirp, pink noise, sine, swept-sine (Option1D2), arbitrary (Option1D4)</td>
</tr>
</tbody>
</table>
Summary of Features on Standard Instrument

The following features are standard with the Agilent 35670A:

**Instrument modes**
- FFT analysis
- Correlation analysis

**Measurement**
- Frequency domain
- Linear spectrum
- Cross spectrum

- Time domain (oscilloscope mode)
  - Time waveform
  - Cross-correlation

- Amplitude domain
- Histogram, PDF, CDF

**Trace coordinates**
- Linear magnitude
- Log magnitude
- dB magnitude
- Group delay
- Phase

**Trace units**
- **Y-axis amplitude**: combinations of units, unit value, calculated value, and unit format describe y-axis amplitude
- **Units**: volts, g, meters/sec^2, inches/sec^2, meters/sec, inches/sec, meters, mils, inches, pascals, Kg, N, dyn, lb, user-defined EUs
- **Unit value**: rms, peak, peak-to-peak
- **Calculated value**: V, V^2, V^2/Hz, \sqrt{Hz}, V*s/Hz (ESD)
- **Unit format**: linear, dB's with user selectable dB reference, dBm with user selectable impedance.

**Display scaling**
- Autoscale
- Manual Scale
- Input range tracking
- Selectable reference

**Marker functions**
- Individual trace markers
- Coupled multi-trace markers
- Absolute or relative marker
- Peak search
- Harmonic markers
- Band marker
- Sideband power markers
- Waterfall markers
- Time parameter markers
- Frequency response markers

**Signal averaging (FFT mode)**
- Average types (1 to 9,999,999 averages)
- RMS
- Time exponential
- RMS exponential
- Peak hold
- Time

**Averaging controls**
- Overload reject
- Fast averaging on/off
- Update rate select
- Select overlap process percentage
- Preview time record

**Measurement control**
- Start measurement
- Pause/continue measurement

**Triggering**
- Continuous (Freerun)
- External (analog or TTL level)
- Internal trigger from any channel
- Source synchronized trigger
- GPIB trigger
- Armed triggers
- Automatic/manual
- RPM step
- Time step
- Pre- and post-trigger measurement Delay

**Tachometer input:**
- ±4 V or ±20 V range
- 40 mv or 200 mV resolution
- Up to 2048 pulses/rev
- Tach hold-off control
**Source outputs**
- Random
- Periodic chirp
- Pink noise

**Note:** Some source types are not available for use in optional modes. See option description for details.

**Input channels**
- Manual range
- Up-only auto range
- Up/down auto range
- Floating or grounded
- Transducer power supplies (4 ma constant current)

**Frequency**
- 20 spans from 195 mHz to 102.4 kHz (1 channel mode)
- 20 spans from 98 mHz to 51.2 kHz (2 channel mode)

**Resolution**
- 100, 200, 400, 800 and 1600 lines

**Windows**
- Hann
- Flat top

**Math**
- Addition, subtraction, multiplication, division, conjugate
- Magnitude
- Square root
- Logarithm
- Frequency
- Differentiation
- Integration

**Analysis**
- Limit test with pass/fail
- Data table with tabular readout
- Data editing

**Time capture functions**
Capture transient events for repeated analysis in FFT, octave, order, histogram, or correlation modes (except swept-sine). Time-captured data may be saved to internal or external disk, or transferred over GPIB. Zoom on captured data for detailed narrowband analysis.

**Data storage functions**
Built-in 3.5 in., 1.44-Mbyte flexible disk also supports 720-KByte disks, and 2 Mbyte NVRAM disk. Both MS-DOS® and HP-LIF formats are available. Data can be formatted as either ASCII or binary (SDF). The 35670A provides storage and recall from the internal disk, internal RAM disk, internal NVRAM disk, or external GPIB disk for any of the following information:

- Instrument setup states
- User-math
- Limit data
- Trace data
- Time capture buffers
- Waterfall display data
- Data tables
- Agilent Instrument BASIC
- Curve fit/synthesis tables

**GPIB capabilities**
Conforms to IEEE 488.1/488.2
Conforms to SCPI 1992
Controller with Agilent Instrument Basic Option

**Calibration & memory**
- Single or automatic calibration
- Built-in diagnostics & service tests
- Nonvolatile clock with time/date
- Time/date stamp on plots and saved data files

**Online help**
Access to topics via keyboard or index

**Fan**
On/Off
Agilent 35670A Specifications

Instrument specifications apply after 15 minutes warm-up and within 2 hours of the last self-calibration. When the internal cooling fan has been turned OFF, specifications apply within 5 minutes of the last self-calibration. All specifications are with 400 line frequency resolution and with anti-alias filters enabled unless stated otherwise.

<table>
<thead>
<tr>
<th>Frequency</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum range</strong></td>
<td></td>
</tr>
<tr>
<td>1 channel mode</td>
<td>102.4 kHz, 51.2 kHz (opt AY6*)</td>
</tr>
<tr>
<td>2 channel mode</td>
<td>51.2 kHz</td>
</tr>
<tr>
<td>4 channel mode (Option AY6 only)</td>
<td>25.6 kHz</td>
</tr>
<tr>
<td><strong>Spans</strong></td>
<td></td>
</tr>
<tr>
<td>1 channel mode</td>
<td>195.3 mHz to 102.4 kHz</td>
</tr>
<tr>
<td>2 channel mode</td>
<td>97.7 mHz to 51.2 kHz</td>
</tr>
<tr>
<td>4 channel mode (Option AY6 only)</td>
<td>97.7 mHz to 25.6 kHz</td>
</tr>
<tr>
<td><strong>Minimum resolution</strong></td>
<td></td>
</tr>
<tr>
<td>1 channel mode</td>
<td>122 µHz (1600 line display)</td>
</tr>
<tr>
<td>2 channel mode</td>
<td>61 µHz (1600 line display)</td>
</tr>
<tr>
<td>4 channel mode (Option AY6 only)</td>
<td>122 µHz (800 line display)</td>
</tr>
<tr>
<td><strong>Maximum real-time bandwidth</strong></td>
<td></td>
</tr>
<tr>
<td>FFT span for continuous data acquisition (Preset, fast averaging)</td>
<td></td>
</tr>
<tr>
<td>1 channel mode</td>
<td>25.6 kHz</td>
</tr>
<tr>
<td>2 channel mode</td>
<td>12.8 kHz</td>
</tr>
<tr>
<td>4 channel mode (Option AY6 only)</td>
<td>6.4 kHz</td>
</tr>
</tbody>
</table>

| Measurement rate (Typical) (Preset, fast averaging) |  |
| 1 channel mode | ≥ 70 averages/sec |
| 2 channel mode | ≥ 33 averages/sec |
| 4 channel mode (Option AY6 only) | ≥ 15 averages/sec |

| Display update rate |  |
| Typical (Preset, fast average off) | ≥ 5 updates/Sec |
| Maximum (Preset, fast average off, single channel, single display, undisplayed trace displays set to data registers) | ≥ 9 updates/Sec |

| Accuracy |  |
| ±30 ppm (.003%) |  |

**Single channel amplitude**

**Absolute amplitude accuracy (FFT)**

(A combination of full scale accuracy, full scale flatness, and amplitude linearity.)

±2.92% (0.25 dB) of reading

±0.025% of full scale

FFT full scale accuracy at 1 kHz (0 dBfs)

±0.15 dB (1.74%)

FFT full scale flatness (0 dBfs) relative to 1 kHz

±0.2 dB (2.33%)

FFT amplitude linearity at 1 kHz measured on +27 dBVrms range with time avg. 0 to -80 dBfs

±0.58% (0.05 dB) of reading

±0.025% of full scale

**Amplitude resolution**

(16 bits less 2 dB over-range) with averaging 0.0019% of full scale (typical)

**Residual DC response (FFT mode)**

Frequency display (excludes A-weight filter)

<30 dBfs or 0.5 mVdc

**FFT dynamic range**

Spurious free dynamic range

Includes spurs, harmonic distortion, intermodulation distortion, alias products. Excludes alias responses at extremes of span.

Source impedance = 50 Ω.

800 line display.

90 dB typical (<80 dBfs)

* Option AY6 single channel maximum range extends to 102.4 kHz without anti-alias filter protection.

** Show all lines mode allows display of up to 131.1, 65.5 and 32.7 kHz respectively. Amplitude accuracy is unspecified and not alias protected.
Full span FFT noise floor (typical)
Flat top window, 64 RMS averages, 800 line display.

### Typical noise floor vs. range for different frequency spans

<table>
<thead>
<tr>
<th>dB below full scale</th>
<th>-70 dB/0.03%</th>
<th>-80 dB/0.01%</th>
<th>-90 dB/0.003%</th>
<th>-100 dB/0.001%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amplitude range (dBVrms / Vrms)</td>
<td>0.0028</td>
<td>0.0089</td>
<td>0.028</td>
<td>0.089</td>
</tr>
</tbody>
</table>

### Harmonic distortion
- Single Tone (in band), ≤ 0 dBfs
- Intermodulation distortion
  - Two tones (in-band), each ≤ -6.02 dBfs

### Spurious and residual responses
Source impedance = 50 Ω.

### Frequency alias responses
- Single tone (out of displayed range),
  ≤ 0 dBfs, ≤ 1 MHz
- (≤ 200 kHz with IEPE transducer power supply On)
  - 2.5% to 97.5% of the frequency span
  - Lower and upper 2.5% of frequency span

### Input noise
#### Input noise level
Flat top window, -51 dBVrms range
Source impedance = 50 Ω
- Above 1280 Hz
  - <140 dBVrms/√Hz
- 160 Hz to 1280 Hz
  - <130 dBVrms/√Hz

Note: To calculate noise as dB below full scale:
Noise [dBfs] = Noise [dB/√Hz] + 10LOG(NBW) - Range [dBVrms]; where NBW is the noise equivalent BW of the window (see below).

### Window parameters

<table>
<thead>
<tr>
<th>-3 dB bandwidth*</th>
<th>Uniform</th>
<th>Hann</th>
<th>Flat top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.125% of span</td>
<td>0.185% of span</td>
<td>0.450% of span</td>
</tr>
<tr>
<td>Noise equivalent bandwidth*</td>
<td>0.125% of span</td>
<td>0.1875% of span</td>
<td>0.4775% of span</td>
</tr>
<tr>
<td>Attenuation at ±½ bin</td>
<td>4.0 dB</td>
<td>1.5 dB</td>
<td>0.01 dB</td>
</tr>
<tr>
<td>Shape factor</td>
<td>716</td>
<td>9.1</td>
<td>2.6</td>
</tr>
</tbody>
</table>

* For 800 line displays. With 1600, 400, 200, or 100 line displays, multiply bandwidths by 0.5, 2, 4, and 8, respectively.
**Single channel phase**

Phase accuracy relative to external trigger
- 16 time averages center of bin,
- DC coupled 0 dBfs to -50 dBfs only
- 0 Hz < freq ≤ 10.24 kHz only

For Hann and flat top windows, phase is relative to a cosine wave at the center of the time record. For the uniform, force, and exponential windows, phase is relative to a cosine wave at the beginning of the time record.

**Cross-channel amplitude**

<table>
<thead>
<tr>
<th>FFT cross-channel gain accuracy</th>
<th>± 0.04 dB (0.46%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency response mode</td>
<td>Same amplitude range</td>
</tr>
<tr>
<td>At full scale: Tested with 10 RMS averages on the -11 to +27 dBVrms ranges, and 100 RMS averages on the -51 dBVrms range</td>
<td></td>
</tr>
</tbody>
</table>

**Cross-channel phase**

| Cross-channel phase accuracy | ± 0.5 deg |
| (Same conditions as cross-channel amplitude) |

**Input**

<table>
<thead>
<tr>
<th>Input ranges (full scale)</th>
<th>+27 dBVrms (31.7 Vpk) to -51 dBVrms (3.99 mVpk) in 2 dB steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Auto-range capability)</td>
<td>42 Vpk</td>
</tr>
<tr>
<td>Maximum input levels</td>
<td>1 MΩ ±10%</td>
</tr>
<tr>
<td>Input impedance</td>
<td>90 µF nominal</td>
</tr>
<tr>
<td>Low side to chassis impedance</td>
<td>1 MΩ ±30% (typical)</td>
</tr>
<tr>
<td>Floating mode</td>
<td>&lt;0.010 µF</td>
</tr>
<tr>
<td>Grounded mode</td>
<td>≤100 Ω</td>
</tr>
<tr>
<td>AC coupling rolloff</td>
<td>&lt;3 dB rolloff at 1 Hz</td>
</tr>
<tr>
<td>Source impedance = 50 Ω</td>
<td></td>
</tr>
<tr>
<td>Common mode rejection ratio</td>
<td>75 dB typical</td>
</tr>
<tr>
<td>Single tone at or below 1 kHz</td>
<td>60 dB typical</td>
</tr>
<tr>
<td>-51 dBVrms to -11 dBVrms ranges</td>
<td>50 dB typical</td>
</tr>
<tr>
<td>-9 dBVrms to +9 dBVrms ranges</td>
<td></td>
</tr>
<tr>
<td>+11 dBVrms to +27 dBVrms ranges</td>
<td></td>
</tr>
</tbody>
</table>

**Common mode range**

| (floating mode) | ± 4 V pk |

**IEPE transducer power supply**

| Current source | 4.25 ± 1.5 mA |
| Open circuit voltage | +26 to +32 Vdc |

**A-weight filter**

| Conforms to ANSI Standard S1.4-1983; and to IEC 851-1979; 10 Hz to 25.6 kHz |

**Crosstalk**

Between input channels, and source-to-input (Receiving channel source impedance = 50 Ω)

| < -135 dB below signal or < -80 dBfs of receiving channel, whichever response is greater in amplitude |

**Time domain**

Specifications apply in histogram/time mode, and unfiltered time display

| DC amplitude accuracy | ±5.0 %fs |
| Rise time of -1 V to 0 V test pulse | <11.4 µSec |
| Settling time of -1 V to 0 V test pulse | <16 µSec to 1% |
| Peak overshoot of -1 V to 0 V test pulse | <3% |

**Sampling period**

| 1 channel mode | 3.815 µSec to 2 Sec in 2x steps |
| 2 channel mode | 7.629 µSec to 4 Sec in 2x steps |
| 4 channel mode | 15.26 µSec to 8 Sec in 2x steps |

(Option AY6 only)
**Trigger**

**Trigger modes**
- Internal, source, external (analog setting) GPIB

**Maximum trigger delay**
- Post trigger: 8191 seconds
- Pre trigger: 8191 sample periods

No two channels can be further than ±7168 samples from each other.

**External trigger max. input** ±42 Vpk

**External trigger range**
- Low range: -2 V to +2 V
- High range: -10 V to +10 V

**External trigger resolution**
- Low range: 15.7 mV
- High range: 78 mV

**Tachometer**

**Pulses per Revolution**
- 0.5 to 2048

**RPM**
- 5 ≤ RPM ≤ 491,519

**RPM Accuracy**
- ±100 ppm (0.01%)

**Tach level range**
- Low range: -4 V to +4 V
- High range: -20 V to +20 V

**Tach level resolution**
- Low range: 39 mV
- High range: 197 mV

**Maximum tach input level** ±42 Vpk

**Minimum tach pulse width** 600 nSec

**Maximum tach pulse rate** 400 kHz (typical)

---

**Source output**

**Source types**
- Sine, random noise, chirp, pink noise, burst random, burst chirp

**Amplitude range**
- AC: ±5 V peak*
- DC: ±10 V*

* Vacpk + |Vdc| ≤ 10 V

**AC amplitude resolution**
- Voltage > 0.2 Vrms: 2.5 mVpeak
- Voltage < 0.2 Vrms: 0.25 mVpeak

**DC offset accuracy**
- ±15 mV ± 3% of (|DC| + Vacpk) settings

**Pink noise adder**
- Add 600 mV typical when using pink noise

**Output impedance**
- < 5 Ω

**Maximum loading**
- Current: ±20 mA peak
- Capacitance: 0.01 μF

**Sine amplitude accuracy at 1 kHz**
- ±4% (0.34 dB) of setting

Rload > 250 Ω
- 0.1 Vpk to 5 Vpk

**Sine Flatness** (relative to 1 kHz)
- ±1 dB

0.1 V to 5 V peak

**Harmonic and sub-harmonic distortion and spurious signals (In band)**
- 0.1 Vpk to 5 Vpk sine wave
- Fundamental < 30 kHz: < -60 dBc
- Fundamental > 30 kHz: < -40 dBc

---

**Digital interfaces**

**External keyboard**
- Compatible with PC-style 101-key keyboard

---

**GPIB**

Conforms to the following standards:
- IEEE 488.1 (SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C1, C2, C3, C12, E2)
- IEEE 488.2-1987

Complies with SCPI 1992

**Data transfer rate**
- REAL 64 Format: < 45 mSec for a 401 point trace

---

**Serial port**

**Parallel port**

**External VGA port**
Computed order tracking – Option 1D0

\[
\left( \frac{\text{Maximum order} \times \text{Maximum RPM}}{60} \right) \leq 60
\]

Online (real time)
- 1 channel mode: 25,600 Hz
- 2 channel mode: 12,800 Hz
- 4 channel mode: 6,400 Hz

Capture playback
- 1 channel mode: 102,400 Hz
- 2 channel mode: 51,200 Hz
- 4 channel mode: 25,600 Hz

Number of orders ≤ 200
- \(5 \leq \text{RPM} \leq 491,519\)
- \(\frac{\text{Maximum order}}{\text{Delta order}}\) ≤ 60

Capture playback
- 1 channel mode: 102,400 Hz
- 2 channel mode: 51,200 Hz
- 4 channel mode: 25,600 Hz

Delta order
- 1/128 to 1/1

Resolution
- \(\leq 400\)

Maximum RPM ramp rate
- 1000 RPM/second real-time (typical)

1000 - 10,000 RPM run up
- Maximum order: 10
- Delta order: 0.1
- RPM step: 30 (1 channel), 60 (2 channel), 120 (4 channel)

Order track amplitude accuracy
- ±1 dB (typical)

Real time octave analysis – Option 1D1

Standards
- Conforms to ANSI Standard S1.11 - 1986, Order 3, Type 1-D, extended and optional frequency ranges
- Conforms to IEC 651-1979 Type 0 Impulse, and ANSI S1.4

1 second stable average
- Single tone at band center: \(\leq \pm 0.20 \text{ dB}\)
- Readings are taken from the linear total power spectrum bin. It is derived from sum of each filter.

1/3-octave dynamic range
- \(> 80 \text{ dB} \text{ (typical)}\)
- Conforms to ANSI S1.11-1986

2 second stable average
- Total power limited by input noise level

Frequency ranges (at centers)

<table>
<thead>
<tr>
<th>Single channel</th>
<th>2 channel</th>
<th>4 channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1 octave</td>
<td>0.063 - 16 kHz</td>
<td>0.063 - 8 kHz</td>
</tr>
<tr>
<td>1/3 octave</td>
<td>0.08 - 40 kHz</td>
<td>0.08 - 20 kHz</td>
</tr>
<tr>
<td>1/12 octave</td>
<td>0.0997 - 12.338 kHz</td>
<td>0.0997 - 6.169 kHz</td>
</tr>
</tbody>
</table>

Capture playback
- 1/1 octave: 0.063 - 16 kHz
- 1/3 octave: 0.08 - 40 kHz
- 1/12 octave: 0.0997 - 49.35 kHz

One up to 12 octaves can be measured and displayed.

Swept sine measurements – Option 1D2

Dynamic range
- 130 dB

Tested with 11 dBVrms source level at 100 mSec integration

Curve fit/synthesis – Option 1D3

20 Poles/20 zeroes curve filter frequency response
- synthesis pole/zero, pole residue & polynomical format

Arbitrary waveform source – Option 1D4

Amplitude range
- AC: ±5 V peak*
- DC: ±10 V

\* \(|V_{ac}| + |V_{dc}| \leq 10 \text{ V}\)

Record length
- \# of points = 2.56 x lines of resolution, or \# of complex points = 1.28 x lines of resolution

DAC resolution
- 0.2828 Vpk to 5 Vpk: 2.5 mV
- 0 Vpk to 0.2828 Vpk: 0.25 mV
# General Specifications

## General specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EMI / RFI standards</td>
<td>CISPR 11</td>
</tr>
</tbody>
</table>
| Acoustic power | LpA < 55 dB (Cooling fan at high speed setting)  
< 45 dB (Auto speed setting at 25 °C) |

Fan speed settings of high, automatic, and off are available. The fan off setting can be enabled for a short period of time, except at higher ambient temperatures where the fan will stay on.

## Environmental operating restrictions

<table>
<thead>
<tr>
<th>Operating:</th>
<th>Operating:</th>
<th>Storage &amp; transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk in drive</td>
<td>No disk in drive</td>
<td></td>
</tr>
<tr>
<td>Ambient temp.</td>
<td>4 °C to 45 °C</td>
<td>0 °C to 55 °C</td>
</tr>
<tr>
<td>Relative humidity (non-condensing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Maximum</td>
<td>80% at 32 °C</td>
<td>95% at 40 °C</td>
</tr>
<tr>
<td>Vibrations (5 - 500 Hz)</td>
<td>0.6 Grms</td>
<td>1.5 Grms</td>
</tr>
<tr>
<td>Shock</td>
<td>5 G (10 mSec ½ sine)</td>
<td>5 G (10 mSec ½ sine)</td>
</tr>
<tr>
<td>Max. altitude</td>
<td>4600 meters (15,000 ft.)</td>
<td>4600 meters (15,000 ft.)</td>
</tr>
</tbody>
</table>

## Abbreviations

<table>
<thead>
<tr>
<th>Typical</th>
<th>Typical, non-warranted, performance specification included to provide general product information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>dBVrms</td>
<td>dB relative to 1 Volt rms.</td>
</tr>
<tr>
<td>dBfs</td>
<td>dB relative to full scale amplitude range. Full scale is approx. 2 dB below ADC overload.</td>
</tr>
<tr>
<td>Typical</td>
<td>Typical, non-warranted, performance specification included to provide general product information.</td>
</tr>
</tbody>
</table>

## AC power

- 90 Vrms - 264 Vrms (47 - 440 Hz)
- 350 VA maximum

## DC power

- 12 VDC to 28 VDC nominal
- 200 VA maximum

## DC current at 12 V

- Standard: <10 A typical
- 4 channel: <12 A typical

## Warm-up time

- 15 minutes

## Weight

- 15 kg (33 lb) net
- 29 kg (64 lb) shipping

## Dimensions

- (Excluding bail handle and impact cover)
- Height: 190 mm (7.5”)
- Width: 340 mm (13.4”)
- Depth: 465 mm (18.3”)

## Abbreviations

- dBVrms: dB relative to 1 Volt rms.
- dBfs: dB relative to full scale amplitude range. Full scale is approx. 2 dB below ADC overload.
Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements. For information regarding self maintenance of this product, please contact your Agilent office.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance, onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:
www.agilent.com/find/removealldoubt

For more information on Agilent Technologies’ products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Agilent Email Updates

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

Agilent Direct

www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.

MS-DOS is a U.S. registered trademark of Microsoft Corporation.
MATLAB is a U.S. registered trademark of The Math Works, Inc.