



**RIGOL**

Distribution in the UK & Ireland



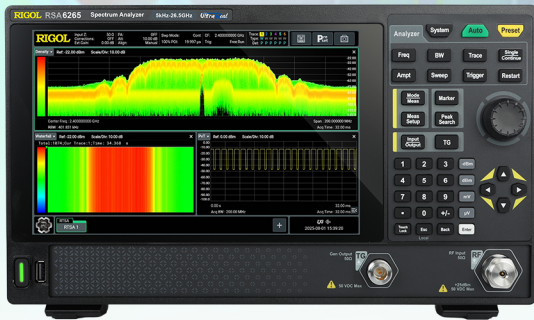
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# RSA6000 Series

## Real-Time Spectrum Analyzer

Data Sheet  
DSD27100-1110  
Aug. 2025

# RSA6000 Series Spectrum Analyzer



## Feature

**5 kHz ~ 26.5 GHz**  
Frequency Range

**200MHz**  
Real-Time / Analysis BW

**4THz/s**  
Sweep Speed

**-163 dBm(typ.)**  
DANL(1GHz)

**-108dBc/Hz(typ.)**  
Phase Noise(1GHz, 10kHz)

**±0.7dB**  
Amplitude Accuracy

## The Power Tool for Engineers Breaking Boundaries in Spectrum Analysis

RIGOL RSA6000 Series Real-Time Spectrum Analyzer, built on the upgraded UltraReal platform, combines high-performance signal capture, advanced analysis, and portable design—breaking free from traditional lab constraints.

With one-click mode switching, remote Web Control, and a lightweight form factor, it's a core platform for R&D, validation, and troubleshooting—delivering high-end performance in a truly portable form.

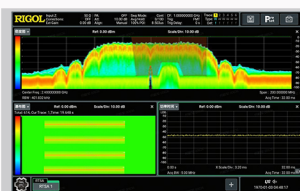
## Benefits

- **5 kHz to 26.5 GHz frequency range** — from low-frequency comms to microwave radar.
- **200 MHz real-time bandwidth, 4 THz/s sweep speed** — capture fast, transient signals with precision.
- **Rich signal analysis & demodulation** within 200 MHz bandwidth.
- **Five modes in one device:** GPSA, RTSA, VSA, EMI, ADM — ideal for R&D, production, and compliance.
- **Built-in preamp and tracking generator** — ready to use, no external modules required.
- **Compact and portable**, easy to deploy in the field.
- **Touch + key operation**, supports **Web Control** for remote access.
- **USB, LAN, HDMI interfaces**, SCPI compatible — ready for integration and automation.

## All-in-One Platform · Five Modes in One



## Next-Level Performance · Real-Time Transient Capture



**Reveal the Full Truth of Every Signal**  
Up to **200MHz** real-time bandwidth, RSA6000 captures every burst, hop, and anomaly—without loss or delay.



**Full Spectrum Visibility in Milliseconds**  
With up to 4THz/s scan speed and FMT trigger, RSA6000 captures dense, wideband signals in seconds—so no transient is missed, even in interference-heavy environments.

## Ultra-Portable Design · Deploy Anywhere, Anytime



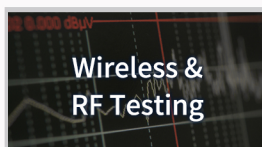
Small in size, light in weight—the A Series fits seamlessly into lab benches, factory setups.

## Application



### Spectrum Monitoring

- Real-time signal detection
- Frequency occupancy & compliance
- Illegal transmission tracking



### Wireless & RF Testing

- Gain, loss, harmonics, spurs, IMD
- Spectrum & interference analysis
- EVM and constellation validation



### R&D & Production

- RF performance validation
- Noise/interference troubleshooting
- Fast production line verification



### Research & Education

- RF teaching & lab experiments
- Academic research & innovation



### EMC / EMI

- Conducted/radiated tests
- PCB emission localization
- Pre-compliance diagnostics

# Product Features

## Product Features

- Five working modes: GPSA, RTSA, VSA, EMI, and ADM
- Frequency range: 5 kHz to 26.5 GHz
- Excellent DANL (Displayed Average Noise Level)
- Good phase noise performance
- High-precision amplitude measurement error
- Multiple analysis bandwidth options
- Excellent SFDR
- Powerful real-time spectrum analysis function
- Display different types of measurement values in multi-pane windowing form
- Support USB, LAN, and HDMI interfaces
- Support standard SCPI instruction sets

RSA6000 series is RIGOL's newly launched spectrum analyzer product. Its excellent performance in SFDR, phase noise, amplitude accuracy and test speed makes it applicable in various test scenarios such as spectrum analysis, real-time spectrum analysis, vector signal analysis, pulse analysis. RSA6000 series real-time spectrum analyzer has a strong expansion capability, allowing you to build the test system or perform user-defined development via various digital and analog output interfaces. With its excellent performance and flexible configuration, it can meet your test demands in various application scenarios such as wireless communication, automobile electronics, Internet of Things (IoT), and etc.

## RSA6000 Series Technical Specifications

| Model   | RSA6085   | RSA6140         | RSA6265           |
|---|---|-----------------|-------------------|
| Frequency Range   | 5 kHz to 8.5 GHz  | 5 kHz to 14 GHz | 5 kHz to 26.5 GHz |
| Max. Analysis Bandwidth   | 80 MHz (Std.), 200 MHz (Opt.)                               |                 |                   |
| Max. Real-Time Bandwidth  | 80 MHz (Std.), 200 MHz (Opt.)                               |                 |                   |
| 1 GHz Phase Noise   | 10 kHz offset, <-108 dBc/Hz (typ.)                          |                 |                   |
| Displayed Average Noise Level (DANL), Normalized from 1 GHz to 1 Hz | -143 dBm (typ.), with PA off<br>-163 dBm (typ.), with PA on |                 |                   |
| RBW   | 1 Hz to 10 MHz  |                 |                   |
| VBW   | 1 Hz to 10 MHz  |                 |                   |
| Third-order Intercept (TOI) 1GHz                                    | +15 dBm (typ.)  |                 |                   |

| <b>Model</b>                         | <b>RSA6085</b>   | <b>RSA6140</b> | <b>RSA6265</b> |
|--------------------------------------|--|----------------|----------------|
| Amplitude Range                      | DANL to +25 dBm (single-tone)  |                |                |
| I/O                                  | LAN, USB, and HDMI   |                |                |
| Screen                               | 10.1" capacitive multi-touch screen  |                |                |
| Programming Control Instruction Sets | Supports SCPI commands control, compatible with Keysight PXA series commands |                |                |

# Specifications

Specifications are valid under the following conditions: the instrument is within the calibration period; stored for at least two hours at 0°C to 50°C temperature; 40-minute warm-up. Unless otherwise noted, the specifications in the manual include the measurement uncertainty.

Typical (typ.): typical performance, which 80 percent of the measurement results will meet at room temperature (approximately 25°C). The data are not warranted and do not include the measurement uncertainty.

Nominal (nom.): the expected mean or average performance or a designed attribute (such as the 50Ω connector). The data are not warranted and are measured at room temperature (approximately 25°C).

Measured (meas.): an attribute measured during the design phase and can be compared with the expected performance, e.g. the amplitude drift varies with time. The data are not warranted and are measured at room temperature (approximately 25°C).

## NOTE:

All charts in this manual are the measurement results of multiple instruments at room temperature unless otherwise noted. All the specifications (except tracking generator specifications) listed in this manual are obtained with tracking generator off.

## Measurement Mode and Product Model Adaptation Table

|      | RSA6085 | RSA6140 | RSA6265 |
|------|---------|---------|---------|
| GPSA | √       | √       | √       |
| RTSA | √       | √       | √       |
| VSA  | ○       | ○       | ○       |
| EMI  | ○       | ○       | ○       |
| ADM  | ○       | ○       | ○       |

## NOTE:

√ indicates standard configuration; ○ indicates optional configuration.

## All Measurement Modes

| Model                               | RSA6085          | RSA6140         | RSA6265           |
|-------------------------------------|------------------|-----------------|-------------------|
| Frequency Range                     | 5 kHz to 8.5 GHz | 5 kHz to 14 GHz | 5 kHz to 26.5 GHz |
| <b>Internal Reference Frequency</b> |                  |                 |                   |
| Reference Frequency                 | 10 MHz           |                 |                   |

### Internal Reference Frequency

|                              |   |
|------------------------------|---|
| Accuracy                     | $\pm[(\text{time since last calibration} \times \text{aging rate}) + \text{temperature stability} + \text{calibration accuracy}]$ |
| Initial Calibration Accuracy | 1 ppm   |
| Temperature Stability        | 0°C to 50°C, with the reference 25°C  |
|                              | <0.5 ppm  |
| Aging Rate                   | <1 ppm/year   |

## GPSA Mode

### Frequency

#### Frequency Readout Accuracy

|                              |   |
|------------------------------|---|
| Marker Frequency Resolution  | $\text{span}/(\text{number of sweep points} - 1)$   |
| Marker Frequency Uncertainty | $\pm(\text{marker frequency readout} \times \text{reference frequency accuracy} + 1\% \times \text{span} + 10\% \times \text{resolution bandwidth} + \text{marker frequency resolution})$ |

#### Frequency counter (RBW = 1 kHz, Freq = 1 GHz)

|             |   |
|-------------|---|
| Resolution  | 1 Hz (Max.)   |
| Uncertainty | $\pm(\text{marker frequency readout} \times \text{reference frequency accuracy} + \text{counter resolution})$ |

#### Frequency Span

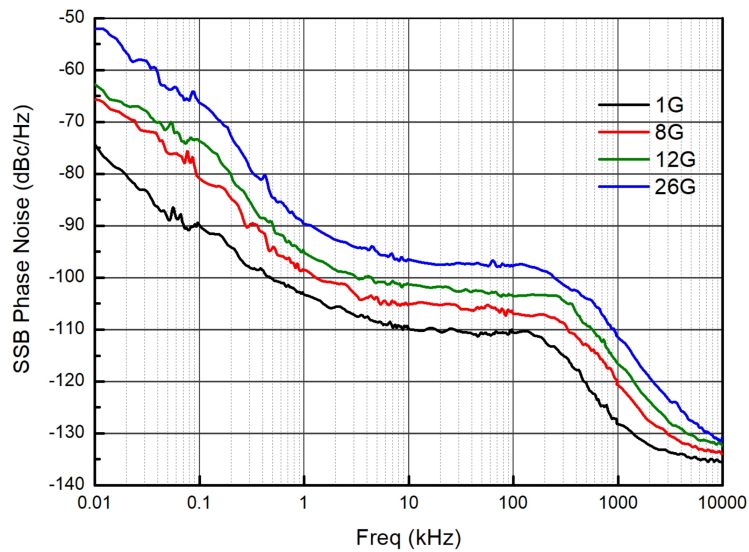
|             |   |
|-------------|---|
| Range       | 0 Hz, 10 Hz to maximum frequency  |
| Resolution  | 2 Hz  |
| Uncertainty | $\pm[0.1\% \times \text{span RBW} + \text{span}/(\text{number of sweep points} - 1)]$ |

#### SSB Phase Noise

20°C to 30°C,  $f_c = 1000$  MHz, sample detector

## SSB Phase Noise

|                |         |                                   |
|----------------|---------|-----------------------------------|
| Carrier Offset | 1 kHz   | <-95 dBc/Hz (typ.)                |
|                | 10 kHz  | <-105 dBc/Hz, <-108 dBc/Hz (typ.) |
|                | 100 kHz | <-105 dBc/Hz, <-108 dBc/Hz (typ.) |
|                | 1 MHz   | <-120 dBc/Hz, <-125 dBc/Hz (typ.) |
|                | 10 MHz  | <-130 dBc/Hz (typ.)               |



SSB Phase Noise

## Residual FM

20°C to 30°C, RBW = VBW = 1 kHz

|             |               |
|-------------|---------------|
| Residual FM | <10 Hz (nom.) |
|-------------|---------------|

## Bandwidth

Set "Sweep Type" to "Accurate"

|   |                                    |
|---|------------------------------------|
| Resolution Bandwidth (-3 dB)                        | 1 Hz to 10 MHz, in 1-3-10 sequence |
| RBW Accuracy  | 10 MHz, <10%                       |
|   | 1 Hz to 3 MHz, <3%                 |
| Resolution Filter Shape Factor (60 dB: 3 dB)<br>[1] | ≤5 (nom.)                          |
| Video Bandwidth (-3 dB)                             | 1 Hz to 10 MHz, in 1-3-10 sequence |
| Resolution Bandwidth (-6 dB)                        | 200 Hz, 9 kHz, 120 kHz, 1 MHz      |

## Amplitude

## Measurement Range

|       |                   |
|-------|-------------------|
| Range | $f_c \geq 10$ MHz |
|       | DANL to +25 dBm   |

## Maximum Safe Input Level<sup>[2]</sup>

|             |  |
|-------------|--|
| DC Voltage  | 50 V                                     |
| CW RF Power | +25 dBm, attenuation > 35 dB, preamp off |
|             | 0 dBm, attenuation > 35 dB, preamp on    |

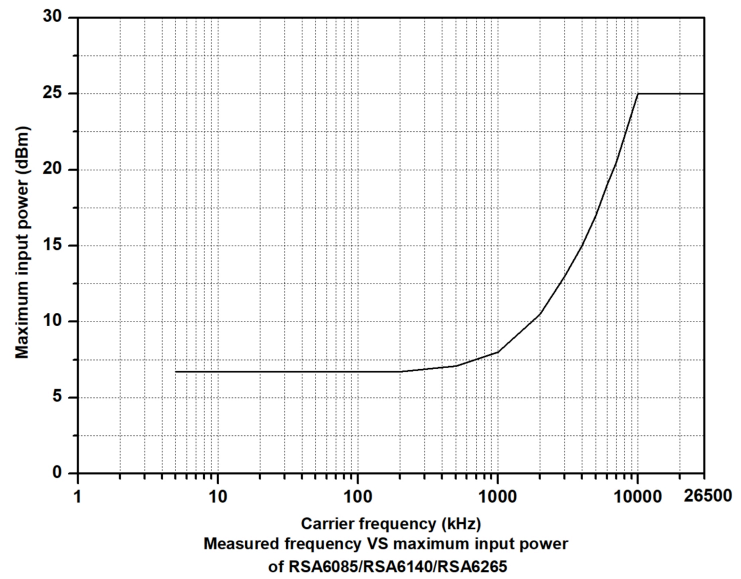
## Maximum Damage Level

|             |                 |
|-------------|-----------------|
| CW RF Power | +27 dBm (0.5 W) |
|-------------|-----------------|

**NOTE:**

[1]: When RBW is greater than 100 kHz, the filter characteristics near -60 dB cannot be directly obtained with measurement.

[2]: When  $f_c$  is smaller than 10 MHz, the maximum safe input level is decreased.



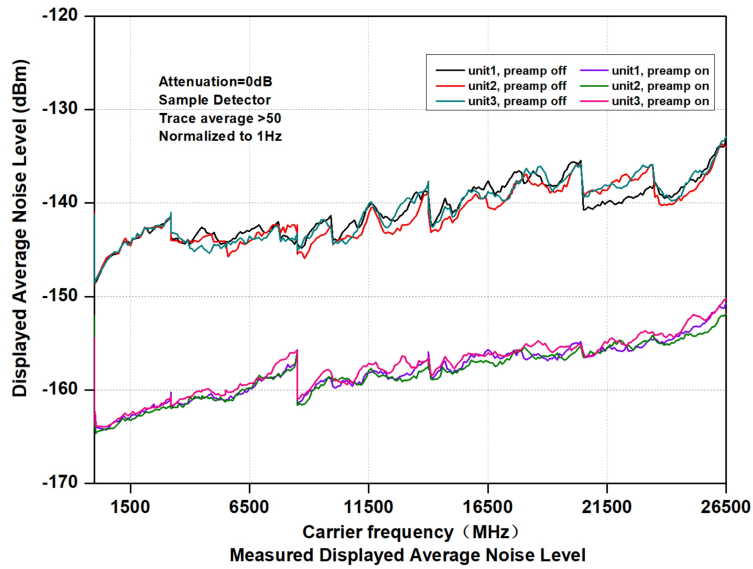
Maximum Damage Level

## Displayed Average Noise Level (DANL)

Attenuation = 0 dB, sample detector, trace averages  $\geq 50$ , tracking generator off, normalized to 1 Hz, 20°C to 30°C, input impedance = 50  $\Omega$ .

## Displayed Average Noise Level (DANL)

|        |                       |                             |
|--------|-----------------------|-----------------------------|
| PA Off | 5 kHz < f ≤ 100 kHz   | <-120 dBm (typ.)            |
|        | 100 kHz < f ≤ 20 MHz  | <-135 dBm, <-138 dBm (typ.) |
|        | 20 MHz < f ≤ 1.5 GHz  | <-140 dBm, <-143 dBm (typ.) |
|        | 1.5 GHz < f ≤ 3.2 GHz | <-138 dBm, <-141 dBm (typ.) |
|        | 3.2 GHz < f ≤ 8.5 GHz | <-136 dBm, <-140 dBm (typ.) |
|        | 8.5 GHz < f ≤ 14 GHz  | <-133 dBm, <-136 dBm (typ.) |
|        | 14 GHz < f ≤ 18 GHz   | <-130 dBm, <-133 dBm (typ.) |
|        | 18 GHz < f ≤ 23 GHz   | <-127 dBm, <-131 dBm (typ.) |
|        | 23 GHz < f ≤ 26.5 GHz | <-122 dBm, <-125 dBm (typ.) |
| PA On  | 100 kHz < f ≤ 500 kHz | <-149 dBm, <-152 dBm (typ.) |
|        | 500 kHz < f ≤ 20 MHz  | <-152 dBm, <-155 dBm (typ.) |
|        | 20 MHz < f ≤ 1.5 GHz  | <-160 dBm, <-163 dBm (typ.) |
|        | 1.5 GHz < f ≤ 3.2 GHz | <-157 dBm, <-160 dBm (typ.) |
|        | 3.2 GHz < f ≤ 8.5 GHz | <-154 dBm, <-157 dBm (typ.) |
|        | 8.5 GHz < f ≤ 14 GHz  | <-151 dBm, <-154 dBm (typ.) |
|        | 14 GHz < f ≤ 18 GHz   | <-148 dBm, <-151 dBm (typ.) |
|        | 18 GHz < f ≤ 23 GHz   | <-145 dBm, <-148 dBm (typ.) |
|        | 23 GHz < f ≤ 26.5 GHz | <-140 dBm, <-143 dBm (typ.) |



DANL

**Level Display**

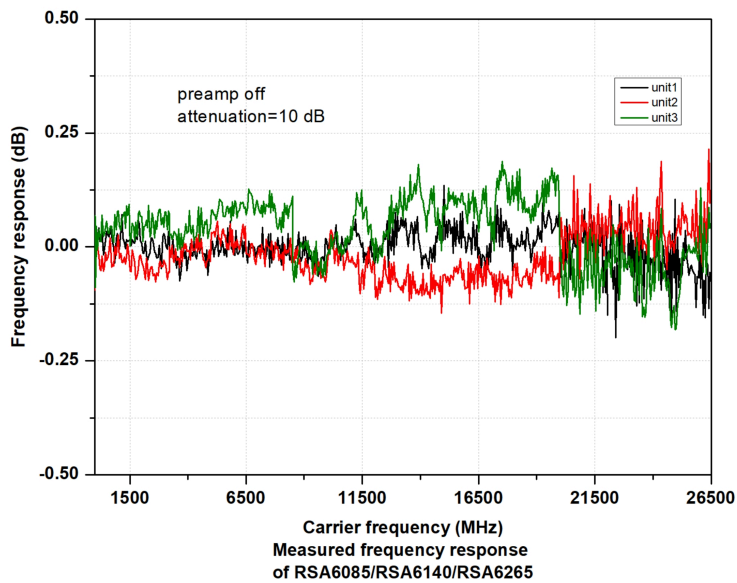
|                          |   |
|--------------------------|---|
| Logarithmic Scale        | 1 dB to 200 dB  |
| Linear Scale             | 0 to reference level  |
| Number of display points | 801   |
| Number of traces         | 6   |
| Detector Type            | Normal, pos-peak, neg-peak, sample, RMS average, voltage average, Quasi-peak, C-RMS average |
| Trace Type               | Clear write, max hold, min hold, average, view, blank                                       |
| Scale Unit               | dBm, dBmV, dBuV, nV, uV, mV, V, pW, nW, uW, mW, W, mA, uA, and A                            |

**Frequency Response**

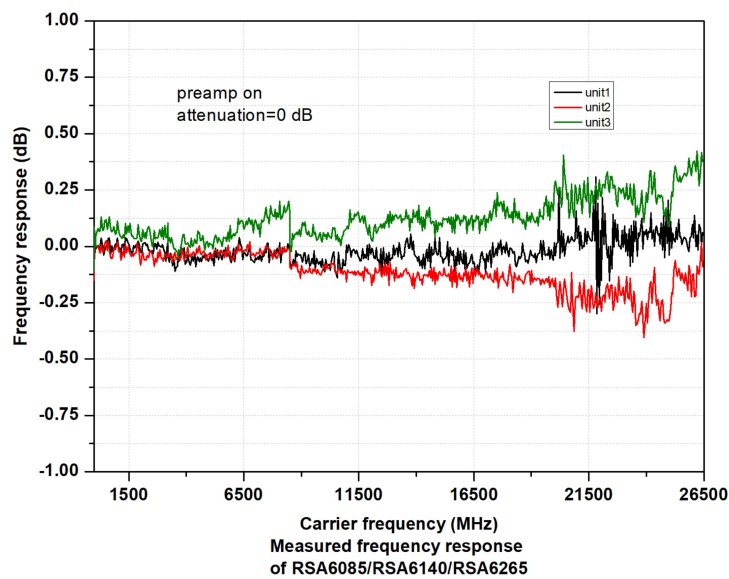
|        |   |                            |
|--------|---|----------------------------|
|        | attenuation = 10 dB, relative to 50 MHz, 20°C to 30°C |                            |
| PA Off | 5 kHz < f ≤ 100 kHz                                   | <0.3 dB (typ.)             |
|        | 100 kHz < f ≤ 3.2 GHz                                 | <0.5 dB, <0.3 dB (typ.)    |
|        | 3.2 GHz < f ≤ 8.5 GHz                                 | <0.7 dB, <0.5 dB (typical) |
|        | 8.5 GHz < f ≤ 14 GHz                                  | <1.5 dB, <1.3 dB (typ.)    |
|        | 14 GHz < f ≤ 20 GHz                                   | <1.7 dB, <1.5 dB (typ.)    |
|        | 20 GHz < f ≤ 26.5 GHz                                 | <2 dB, <1.8 dB (typ.)      |

## Frequency Response

|       |  |                         |
|-------|--|-------------------------|
| PA On | attenuation = 0 dB, relative to 50 MHz, 20°C to 30°C |                         |
|       | 100 kHz < f ≤ 3.2 GHz                                | <0.8 dB, <0.6 dB (typ.) |
|       | 3.2 GHz < f ≤ 8.5 GHz                                | <1 dB, <0.8 dB (typ.)   |
|       | 8.5 GHz < f ≤ 14 GHz                                 | <2.5 dB, <2.3 dB (typ.) |
|       | 14 GHz < f ≤ 20 GHz                                  | <2.7 dB, <2.5 dB (typ.) |
|       | 20 GHz < f ≤ 26.5 GHz                                | <3 dB, <2.8 dB (typ.)   |



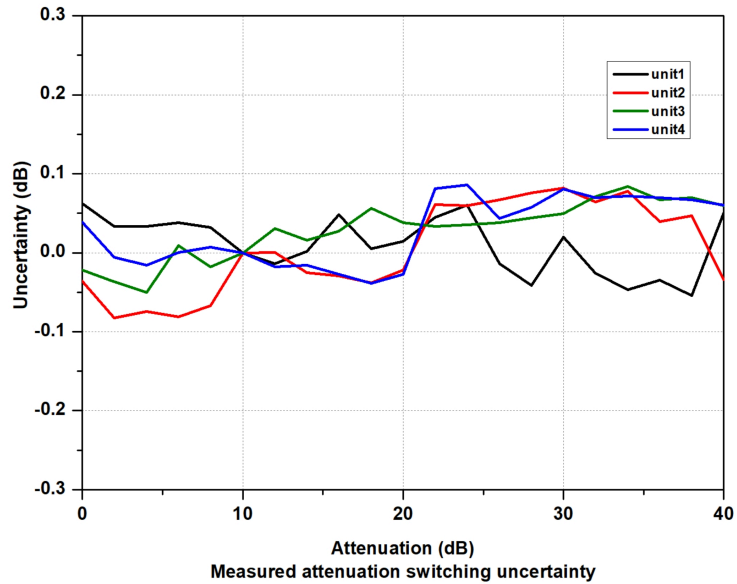
Frequency Response (attenuation = 10 dB, PA off)



Frequency Response (attenuation = 0 dB, PA on)

### Input Attenuation Switching Uncertainty

|                       |   |
|-----------------------|---|
| Setting Range         | 0 dB to 40 dB, in 2 dB step                                 |
| Switching Uncertainty | $f_c = 50$ MHz, relative to 10 dB, preamp off, 20°C to 30°C |
|                       | <0.3 dB   |



Switching Uncertainty

### Absolute Amplitude Accuracy

|             |  |  |
|-------------|--|--|
| Uncertainty | $f_c = 50$ MHz, peak detector, preamp off, attenuation = 10 dB, input signal level = -10 dBm, 20°C to 30°C |  |
|             | <0.3 dB  |  |

### Reference Level

|       |                   |  |
|-------|-------------------|--|
| Range | Logarithmic Scale | -170 dBm +25 dBm, in 0.01 dB step            |
|       | Linear Scale      | 707 pV to 3.98 V, 0.11% (0.01 dB) resolution |

### RBW Switching

|             |  |         |
|-------------|--|---------|
| Uncertainty | Set "Sweep Type" to "Accurate", relative to 30 kHz RBW |         |
|             | 1 Hz to 1 MHz  | <0.1 dB |
|             | 3 MHz, 10 MHz  | <0.3 dB |

### PA (Option RSA6000-PA)

|                 |                    |                   |                     |
|-----------------|--------------------|-------------------|---------------------|
|                 | RSA6085            | RSA6140           | RSA6265             |
| Frequency Range | 100 kHz to 8.5 GHz | 100 kHz to 14 GHz | 100 kHz to 26.5 GHz |

## PA (Option RSA6000-PA)

Gain 20 dB (nom.)

## Level Measurement Uncertainty

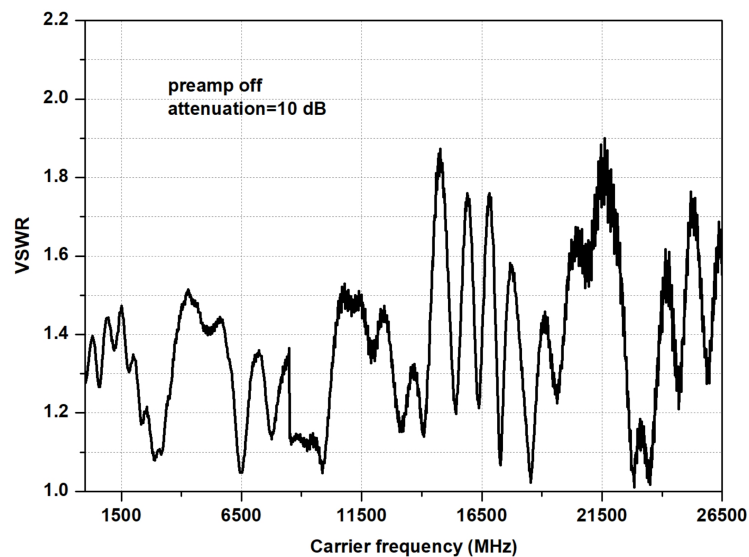
95% confidence level, S/N > 20 dB, RBW = VBW = 1 kHz, PA off, attenuation = 10 dB, -50 dBm < input level ≤ 0 dBm,  $f_c > 10$  MHz, 20°C to 30°C

|                               |                       |                |
|-------------------------------|-----------------------|----------------|
| Level Measurement Uncertainty | 10 MHz < f ≤ 3.2 GHz  | <0.8 dB (nom.) |
|                               | 3.2 GHz < f ≤ 8.5 GHz | <1 dB (nom.)   |
|                               | 8.5 GHz < f ≤ 14 GHz  | <1.8 dB (nom.) |
|                               | 14 GHz < f ≤ 20 GHz   | <2 dB (nom.)   |
|                               | 20 GHz < f ≤ 26.5 GHz | <2.4 dB (nom.) |

## RF Input VSWR

Attenuation ≥ 10 dB, preamp off

|      |                       |             |
|------|-----------------------|-------------|
| VSWR | 10 MHz ≤ f ≤ 3.2 GHz  | <1.6 (nom.) |
|      | 3.2 GHz ≤ f ≤ 8.5 GHz | <1.6 (nom.) |
|      | 8.5 GHz ≤ f ≤ 14 GHz  | <1.8 (nom.) |
|      | 14 GHz ≤ f ≤ 26.5 GHz | <2 (nom.)   |



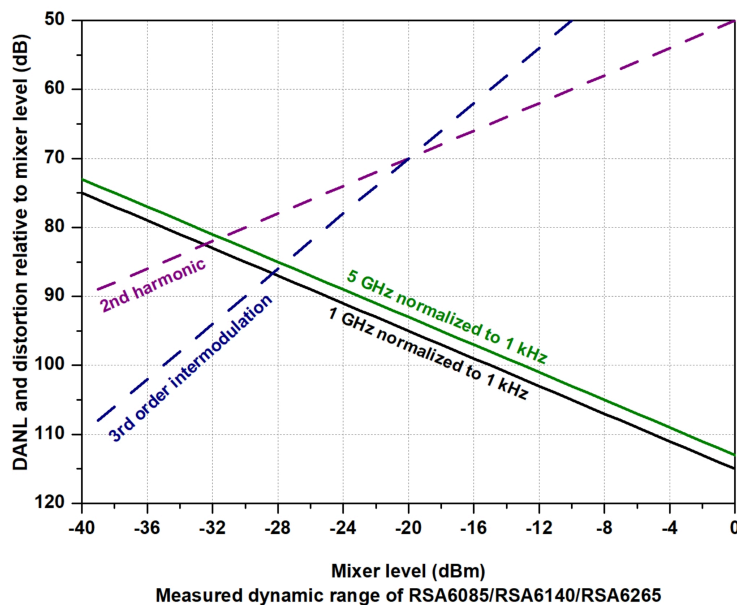
VSWR

## Distortion

|   |  |                         |
|---|--|-------------------------|
| Second Harmonic Intercept (SHI)                 | $f_c \geq 50$ MHz, input signal level = -20 dBm, attenuation = 0, preamp off   |                         |
|   | +45 dBm  |                         |
| Third-order Intercept (TOI)                     | $f_c \geq 50$ MHz, two -20 dBm tones at input mixer spaced by $>5 \times$ IF filter BW (RBW), attenuation = 0 dB, preamp off |                         |
|   | 10 MHz to 8.5 GHz  | +11 dBm, +15 dBm (typ.) |
|   | 8.5 GHz to 26.5 GHz  | +10 dBm, +14 dBm (typ.) |
| 1dB Gain Compression ( $P_1$ dB) <sup>[1]</sup> | $f_c \geq 50$ MHz, attenuation = 0 dB, preamp off  |                         |
| Dual-tone Test                                  | 0 dBm (nom.)   |                         |

### NOTE:

[1]: The frequency interval of the two-tone signals should be greater than 20 MHz.



Distortion

## Spurious Response

|                      |  |  |
|----------------------|--|--|
| Residual Response    | Input terminated with a 50 $\Omega$ load, attenuation = 0 dB, 20°C to 30°C   |  |
|                      | <-90 dBm (typ.)  |  |
| LO Disturbing Signal | Input terminated with a 50 $\Omega$ load, attenuation = 0 dB, 600 MHz $\times$ N <sup>[1]</sup> or 600 MHz $\times$ N <sup>[1]</sup> $\pm$ 4178.6 MHz $\times$ 2, 20°C to 30°C |  |
|                      | <-80 dBm (typ.)  |  |

## Spurious Response

|                                       |   |   |                       |
|---------------------------------------|---|---|-----------------------|
| Intermediate Frequency                | <-60 dBc/Hz (typical)                         |   |                       |
| System-related Sideband               | Carrier offset = 1 kHz                        |   |                       |
|                                       | <-60 dBc/Hz (typical)                         |   |                       |
| Input-related Spurious                | mixer level -30 dBm                           |   |                       |
|                                       | <-60 dBc/Hz (typical)                         |   |                       |
| Image spurious<br>mixer level -10 dBm | Tuned Freq                                    | Excitation Freq                           |                       |
|                                       | $10 \text{ MHz} \leq f \leq 3.2 \text{ GHz}$  | $f + 2 \times 4178.6 \text{ MHz(1st IF)}$ | <-80 dBc/Hz (typical) |
|                                       | $3.2 \text{ GHz} \leq f \leq 8.5 \text{ GHz}$ | $f + 2 \times 2378.6 \text{ MHz(1st IF)}$ | <-60 dBc/Hz (typical) |
|                                       | $8.5 \text{ GHz} \leq f \leq 14 \text{ GHz}$  | $f + 2 \times 4178.6 \text{ MHz(1st IF)}$ | <-80 dBc/Hz (typical) |
|                                       | $14 \text{ GHz} \leq f \leq 18 \text{ GHz}$   | $f + 2 \times 4178.6 \text{ MHz(1st IF)}$ | <-50 dBc/Hz (typical) |
|                                       | $18 \text{ GHz} \leq f \leq 26.5 \text{ GHz}$ | $f - 2 \times 4178.6 \text{ MHz(1st IF)}$ |                       |
|                                       | $10 \text{ MHz} \leq f \leq 18 \text{ GHz}$   | $f - 2 \times 21.4 \text{ MHz(3rd IF)}$   | <-70 dBc/Hz (typical) |
|                                       | $18 \text{ GHz} \leq f \leq 26.5 \text{ GHz}$ | $f + 2 \times 21.4 \text{ MHz(3rd IF)}$   |                       |
|                                       | $10 \text{ MHz} \leq f \leq 18 \text{ GHz}$   | $f + 2 \times 578.6 \text{ MHz(2nd IF)}$  | <-60 dBc/Hz (typical) |
|                                       | $18 \text{ GHz} \leq f \leq 26.5 \text{ GHz}$ | $f - 2 \times 578.6 \text{ MHz(3rd IF)}$  |                       |

### NOTE:

N is an integer.

### Sweep

#### Sweep

|                        |  |                 |
|------------------------|--|-----------------|
| Sweep Time             | Span $\geq 10 \text{ Hz}$                            | 1 ms to 4,000 s |
|                        | zero span  | 1 us to 6,000 s |
| Sweep Time Uncertainty | Span $\geq 10 \text{ Hz}$ , RBW $\geq 1 \text{ kHz}$ | 5% (nom.)       |
|                        | zero span (sweep time > 1ms)                         | 5% (nom.)       |

| Sweep        |   |
|--------------|---|
| Sweep Mode   | Continuous, single  |
| Sweep Points | EMI mode: 101 to 100,001, default 801<br>Other modes: 101 to 100,001, default 801 |

### Trigger

| Trigger                  |                                   |                   |
|--------------------------|-----------------------------------|-------------------|
| Trigger Source           | Free run, external trigger, video |                   |
| Trig Delay               | Span $\geq$ 10 Hz                 | 0 ms to 500 ms    |
|                          | zero span                         | -150 ms to 500 ms |
| Trigger Delay Resolution | 0.1 $\mu$ s                       |                   |

### Tracking Generator (RSA6000-T08)

| TG Output <sup>[1]</sup> |                      |         |         |
|--------------------------|----------------------|---------|---------|
|                          | RSA6085              | RSA6140 | RSA6265 |
| Frequency Range          | 100 kHz to 8.5 GHz   |         |         |
| Output Level Range       | -40 dBm to 0 dBm     |         |         |
| Output Level Resolution  | 1 dB                 |         |         |
| Output Flatness          | Relative to 50 MHz   |         |         |
|                          | $\pm$ 3 dB (nominal) |         |         |

### NOTE:

[1]: The TG and FFT sweep mode are mutually exclusive. When the TG is enabled, the sweep mode will be affected.

### RTSA Mode

| RTSA Mode           |                                |
|---------------------|--------------------------------|
| Real-Time Bandwidth | 80 MHz (std.)                  |
|                     | 200 MHz (Option RSA6000-RB200) |

| RTSA Mode  |   |                |                |
|--|---|----------------|----------------|
| Min. Signal Duration for 100% POI at the Full-Scale Accuracy | maximum span; default Kaiser Window   |                |                |
|  | 3.83 $\mu$ s  |                |                |
| Detector Type  | Pos-peak, neg-peak, sample, average   |                |                |
| Number of Traces   | 6   |                |                |
| Window Type  | Hanning, Blackman-Harris, Rectangular, Flattop, Kaiser, and Gaussian        |                |                |
| RBW  | Provides 6 RBWs for each window, except the Rectangular; for Kaiser window, |                |                |
|  | Span  | Min. bandwidth | Max. bandwidth |
|  | 200 MHz   | 502.29 kHz     | 16.07 MHz      |
|  | 80 MHz  | 200.91 kHz     | 6.43 MHz       |
|  | 40 MHz  | 100.46 kHz     | 3.21 MHz       |
|  | 10 MHz  | 25.11 kHz      | 803.66 kHz     |
| Max. Sample Rate   | 102.3 MSa/s   |                |                |
| Quick Sweep  | 4,000 GHz/s   |                |                |
| FFT Rate   | 300000/s  |                |                |
| Number of Markers  | 8   |                |                |
| Amplitude Resolution   | 0.01 dB   |                |                |
| Frequency Point  | 801   |                |                |
| Acquisition Time   | Max. sample rate  |                |                |
|  | >133.3 $\mu$ s  |                |                |

**Min. signal duration for 100% POI at different RBWs, with the unit  $\mu$ s**

| Span    | RBW1   | RBW2   | RBW3   | RBW4  | RBW5  | RBW6  |
|---------|--------|--------|--------|-------|-------|-------|
| 200 MHz | 7.710  | 5.708  | 4.708  | 4.207 | 3.957 | 3.832 |
| 80 MHz  | 15.004 | 10.000 | 7.498  | 6.246 | 5.621 | 5.308 |
| 40 MHz  | 25.005 | 14.995 | 9.990  | 7.488 | 6.237 | 5.611 |
| 20 MHz  | 45.005 | 24.985 | 14.976 | 9.971 | 7.468 | 6.217 |

## Amplitude

|                    |   |
|--------------------|---|
|                    | Only applicable to the Normal measurement.                        |
| Amplitude Flatness | 80 MHz, BW $\pm 0.7$ dB (nom.)<br>200 MHz, BW $\pm 1.2$ dB (nom.) |
| SFDR               | < -60 dBc (typ.)  |

## Density

|                   |                                 |
|-------------------|---------------------------------|
| Probability Range | 0 to 100% (with a step of 0.1%) |
| Min. Span         | 5 kHz                           |
| Duration          | 32 ms to 10 s                   |

## Spectrogram

|                                  |        |
|----------------------------------|--------|
| Maximum Acquisition Volume       | 10,000 |
| Dynamic Range Covered with Color | 200 dB |

## PvT

|                   |             |
|-------------------|-------------|
| Min. Capture Time | 100 $\mu$ s |
| Max. Capture Time | 40 s        |

## Trigger

|                |  |
|----------------|--|
| Trigger Source | Free run, external, IF power (time), FMT |
|----------------|--|

## FMT

|                    |   |
|--------------------|---|
| Trigger Diagram    | density, spectrogram, normal                            |
| Trigger Resolution | 0.5 dB  |
| Trigger Condition  | Enter, Leave, Inside, Outside, Enter-Leave, Leave-Enter |

## VSA Mode

### Analysis Bandwidth

|                    |                               |
|--------------------|-------------------------------|
| Analysis Bandwidth | 80 MHz                        |
|                    | 200 MHz (Option RSA6000-B200) |

### Capture Oversampling

|                      |          |
|----------------------|----------|
| Capture Oversampling | 4, 8, 16 |
|----------------------|----------|

| <b>Capture Length</b>          |   |
|--------------------------------|---|
| Capture Length                 | Max. 4,096  |
| <b>Sample Rate</b>             |   |
| Max. Sample Rate               | 256 MSa/s   |
| <b>Symbol Rate</b>             |   |
| Symbol Rate                    | Related to Capture Oversampling   |
|                                | = Sample Rate/Capture Oversampling, $\geq 1$ kHz                          |
| <b>Available I/Q Bandwidth</b> |   |
| Available I/Q Bandwidth        | Symbol Rate x Capture Oversampling/1.28                                   |
| <b>Trig Mode</b>               |   |
| Trigger Mode                   | Free run, external, IF power (time)                                       |
| <b>Modulation Format</b>       |   |
| FSK                            | 2FSK, 4FSK, 8FSK  |
| MSK                            | Enables or disables the differential encoding for MSK                     |
| PSK                            | BPSK, QPSK, OQPSK, DQPSK, $\pi/4$ -DQPSK, 8PSK, D8PSK, and $\pi/8$ -D8PSK |
| QAM                            | 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM, 1024QAM                      |
| ASK                            | 2ASK, 4ASK  |
| <b>Filter Type</b>             |   |
| Measurement Filter Type        | No Filter, RRC, Gaussian, Rectangular, user-defined                       |
| Reference Filter Type          | Raised Cosine, RRC, Gaussian, Rectangular, Half Sine, user-defined        |
| <b>Preset Standard</b>         |   |
| Cellular                       | GSM, NADC, WCDMA, PDC, PHP (PHS)  |
| Wireless Networking            | Bluetooth, WLAN (802.11b), ZIGBEE 868M, ZIGBEE 915M, ZIGBEE 2450M         |
| Others                         | TETRA, DECT, APCO-25  |

## Measurement Uncertainty

|                       |  |
|-----------------------|--|
| Applicable Conditions | Temperature at +20°C to +30°C<br>Signal level $\geq$ -25 dBm<br>Select the proper amplitude range<br>Deviation between the instrument's center frequency and the signal's center frequency less than 5% of symbol rate<br>Random data sequence<br>Capture oversampling 4 |
|-----------------------|--|

## Residual Error for QPSK

|             |   |
|-------------|---|
| Test Signal | The reference filter is RC, measurement filter RRC, with rolloff factor 0.35. The result lengths are 150 symbols. The center frequency is 1 GHz, and the capture oversampling is 4. |
|-------------|---|

### Residual EVM (EVM) RMS

|             |          |              |
|-------------|----------|--------------|
| Symbol Rate | 100 ksps | <0.7% (nom.) |
|             | 1 Msps   | <0.7% (nom.) |
|             | 10 Msps  | <1.0% (nom.) |
|             | 20 Msps  | <2.0% (nom.) |

## Residual Error for FSK

|             |  |
|-------------|--|
| Test Signal | The reference filter is RC, measurement filter RRC, with rolloff factor 0.35. The FSK frequency deviation is a quarter of the symbol rate. The result lengths are 150 symbols. The center frequency is 1 GHz, and the capture oversampling is 4. |
|-------------|--|

### FSK Error

|             |         |              |
|-------------|---------|--------------|
| Symbol Rate | 10 Msps | <1.5% (nom.) |
|             | 64 Msps | <4% (nom.)   |

## EMI Mode

### EMI Resolution Bandwidth

|                              |                                      |
|------------------------------|--------------------------------------|
| Resolution Bandwidth (-3 dB) | 100 Hz to 10 MHz, in 1-3-10 sequence |
| Resolution Bandwidth (-6 dB) | 200 Hz, 9 kHz, 120 kHz, 1 MHz        |

## EMI Detector

|          |   |
|----------|---|
| Detector | Pos-peak, neg-peak, average, quasi-peak, EMI average, and RMS average |
|----------|---|

## EMI Key Features

|              |  |
|--------------|--|
| Key Features | <p>CISPR 16-1-1 detectors</p> <p>CISPR 16-1-1 bandwidths</p> <p>log and linear display</p> <p>signal list</p> <p>scan table</p> <p>simultaneous detectors</p> <p>automatic limit testing</p> <p>measure at marker</p> <p>delta to limit</p> <p>report generation</p> |
|--------------|--|

## ADM Mode

### General Specifications

|                        | RSA6085           | RSA6140 | RSA6265 |
|------------------------|-------------------|---------|---------|
| Carrier Power          | -30 dBm to 20 dBm |         |         |
| Carrier Power Accuracy | ±1.8 dB (nom.)    |         |         |

### Amplitude Modulation (AM)

|                           |                         |                                     |
|---------------------------|-------------------------|-------------------------------------|
| Modulation Rate           | 20 Hz to 100 KHz        |                                     |
| Modulation Rate Accuracy  | Modulation Rate < 1 kHz | 1 Hz (nom.)                         |
|                           | Modulation Rate ≥ 1 kHz | <0.1% of the Modulation Rate (nom.) |
| Modulation Depth          | 5% to 95%               |                                     |
| Modulation Depth Accuracy | ±4% (nom.)              |                                     |

### Frequency Modulation (FM)

|                                |                  |
|--------------------------------|------------------|
| Modulation Rate <sup>[1]</sup> | 20 Hz to 200 KHz |
|--------------------------------|------------------|

### Frequency Modulation (FM)

|                                      |                         |                                     |
|--------------------------------------|-------------------------|-------------------------------------|
| Modulation Rate Accuracy             | Modulation Rate < 1 kHz | 1 Hz (nom.)                         |
|                                      | Modulation Rate ≥ 1 kHz | <0.1% of the Modulation Rate (nom.) |
| Freq Deviation                       |                         | 20 Hz to 400 kHz                    |
| FM Deviation Accuracy <sup>[1]</sup> |                         | ±4% (nom.)                          |

### Phase Modulation (PM)

|                          |                         |                                     |
|--------------------------|-------------------------|-------------------------------------|
| Modulation Rate          |                         | 50 Hz to 50 kHz                     |
| Modulation Rate Accuracy | Modulation Rate < 1 kHz | 1 Hz (nom.)                         |
|                          | Modulation Rate ≥ 1 kHz | <0.1% of the Modulation Rate (nom.) |
| PM Deviation             |                         | 0.2 rad to 100 rad                  |
| PM Deviation Accuracy    |                         | ±4% (nom.)                          |

**NOTE:**

[1]: Modulation Index = Modulation Frequency Deviation/Modulation Rate. The range of the modulation index is from 0.2 to 1,000.

## General Specifications

### Display

|            |                               |  |
|------------|-------------------------------|--|
| Type       | capacitive multi-touch screen |  |
| Resolution | 1280X800                      |  |
| Dimensions | 10.1-inch                     |  |
| Color      | 24-bit color                  |  |

### Mass Memory

|             |                  |                                   |
|-------------|------------------|-----------------------------------|
| Mass Memory | Internal Storage | Flash non-volatile memory         |
|             | External Storage | USB storage device (not supplied) |

### Power

|                         |                |
|-------------------------|----------------|
| Input Voltage Range, AC | 100 V to 240 V |
|-------------------------|----------------|

| <b>Power</b>       |                             |  |
|--------------------|-----------------------------|--|
| AC Frequency       | 50 Hz/60 Hz                 |  |
| AC Current         | 4A                          |  |
| Power Consumption  | 90W (typ.)                  |  |
| <b>Environment</b> |                             |  |
| Temperature        | Operating Temperature Range | 0°C to 50°C  |
|                    | Storage Temperature Range   | -20°C to +70°C   |
| Humidity           | Operating                   | 0°C to 30°C: ≤95%RH<br>30°C to 40°C: ≤75% RH<br>40°C to 50°C: ≤45%RH   |
|                    | Non-operating               | < +40°C: 5% to 90%RH, without condensation<br>≥ +40°C to < +60°C: 5% to 80%RH, without condensation<br>> +60°C to < +70°C: 5% to 45%RH, without condensation |
| Altitude           | Operating Height            | Below 3,000 m (9,842 feet)   |

## Electromagnetic Compatibility and Safety

|                                  |   |   |
|----------------------------------|---|---|
| EMC                              | Complies with EMC Directive 2014/30/EU, complies with or above the standard specified in IEC61326-1:2013/EN61326-1:2013 Group 1 Class A   |   |
|                                  | CISPR11/EN 55011  |   |
|                                  | IEC61000-4-2:2008/EN61000-4-2   | ± 4.0 kV (contact discharge)<br>±8.0 kV (air discharge)   |
|                                  | IEC61000-4-3:2002/EN61000-4-3   | 3 V/m (80 MHz to 1 GHz);<br>3 V/m (1.4 GHz to 2 GHz);<br>1 V/m (2.0 GHz to 2.7 GHz)   |
|                                  | IEC61000-4-4:2004/EN61000-4-4   | 1 kV power line   |
|                                  | IEC61000-4-5:2001/EN61000-4-5   | 0.5 kV (phase-to-neutral voltage)<br>1 kV (phase-to-earth voltage)<br>1 kV (neutral-to-earth voltage)                                     |
|                                  | IEC61000-4-6:2003/EN61000-4-6   | 3 V, 0.15 MHz to 80 MHz   |
|                                  | IEC61000-4-11:2004/EN61000-4-11   | Voltage dip:<br>0% UT during half cycle<br>0% UT during 1 cycle<br>70% UT during 25 cycles<br>Short interruption: 0% UT during 250 cycles |
| Safety                           | Complies with IEC 61010-1:2010 (Third Edition)/EN 61010-1:2010, UL 61010-1:2012 R4.16 and CAN/CSA-C22.2 No. 61010-1-12+ GI1+ GI2  |   |
| Environment                      | <p>Samples of this product have been type tested in accordance with RIGOL's reliability test regulations and verified to be robust against the environmental stresses of storage, transportation, and end-use; those stresses include, but are not limited to, temperature, humidity, shock, and vibration.</p> <p>The test methods are compliant with standards specified in GB/T65872 Class 2 and MIL-PRF-28800F Class 3.</p> |   |
| <b>Appearance and Dimensions</b> |   |   |
| W x H x D                        | 358.1 mm x 214.8 mm x 121.4 mm  |   |
| <b>Weight</b>                    |   |   |
| Weight                           | 5 kg  |   |

## Calibration Interval

|                                  |           |
|----------------------------------|-----------|
| Recommended Calibration Interval | 18 months |
|----------------------------------|-----------|

## Input/Output

### Front Panel Connector

|                           |           |  |
|---------------------------|-----------|--|
| RF Input                  | Impedance | 50 $\Omega$ (nom.)                                 |
|                           | Connector | N-type female (only available for RSA6085/RSA6140) |
|                           |           | 3.5mm male (only available for RSA6265)            |
| Tracking Generator Output | Impedance | 50 $\Omega$ (nom.)                                 |
|                           | Connector | N-type female                                      |

### Internal/External Reference

|                    |              |                                  |
|--------------------|--------------|----------------------------------|
| Internal Reference | Frequency    | 10 MHz                           |
|                    | Output Level | +3 dBm to +10 dBm, +7 dBm (typ.) |
|                    | Impedance    | 50 $\Omega$ (nom.)               |
|                    | Connector    | BNC female                       |
| External Reference | Frequency    | 10 MHz $\pm$ 10 ppm              |
|                    | Input Level  | 0 dBm to +10 dBm                 |
|                    | Impedance    | 50 $\Omega$ (nom.)               |
|                    | Connector    | BNC female                       |

### External Trigger Input/Output

|             |           |                            |
|-------------|-----------|----------------------------|
| Trig Input  | Impedance | $\geq$ 1 k $\Omega$ (nom.) |
|             | Connector | BNC female                 |
|             | Level     | 3.3 V TTL Level            |
| Trig Output | Impedance | 50 $\Omega$ (nom.)         |
|             | Connector | BNC female                 |
|             | Level     | 3.3 V TTL Level            |

## Communication Interface

|            |           |                        |
|------------|-----------|------------------------|
| USB Host   | Connector | USB Type-A (Standard)  |
|            | Protocol  | Version 2.0            |
| USB Device | Connector | USB Type- B (Standard) |
|            | Protocol  | Version 2.0            |
| LAN        | Connector | 100/1000 Base-T, RJ-45 |
|            | Protocol  | LXI Core 2011 Device   |
| HDMI       | Connector | A plug                 |
|            | Protocol  | HDMI 1.4b              |

# Order Information and Warranty Period

## Order Information

|                                   | Description  | Order No.           |
|-----------------------------------|--|---------------------|
| Model                             | Real-time Spectrum Analyzer, 5 kHz to 8.5 GHz                  | RSA6085             |
|                                   | Real-time Spectrum Analyzer, 5 kHz to 14 GHz                   | RSA6140             |
|                                   | Real-time Spectrum Analyzer, 5 kHz to 26.5 GHz                 | RSA6265             |
| Standard Accessory                | Power Cord   | -                   |
| Options                           | Vector Signal Analysis Application Software                    | RSA6000-VSA         |
|                                   | EMI Measurement Application Software                           | RSA6000-EMI         |
|                                   | Analog Demodulation Application Software                       | RSA6000-ADM         |
|                                   | Preamplifier (PA), 8.5 GHz                                     | RSA6000-P08         |
|                                   | Preamplifier (PA), 14 GHz                                      | RSA6000-P14         |
|                                   | Preamplifier (PA), 26.5 GHz                                    | RSA6000-P26         |
|                                   | 200 MHz Analysis Bandwidth                                     | RSA6000-B200        |
|                                   | 200 MHz Real-time Bandwidth                                    | RSA6000-RB200       |
|                                   | Advanced Measurement Kit                                       | RSA6000-AMK         |
| 8.5 GHz Tracking Generator Output | RSA6000-T08  |                     |
| Optional Accessories              | DSA utility kit. Refer to <a href="#">Note[1]</a> for details. | DSA Utility Kit     |
|                                   | RF adaptor kit. Refer to <a href="#">Note[2]</a> for details.  | RF Adaptor Kit      |
|                                   | Includes: 50 $\Omega$ to 75 $\Omega$ adaptor (2pcs)            | RF CATV Kit         |
|                                   | Includes: 6 dB attenuator (1pcs), 10 dB attenuator (2pcs)      | RF Attenuator Kit   |
|                                   | 30 dB high-power attenuator, with the max. power of 100 W      | ATT03301H           |
|                                   | N(M)-N(M) RF Cable   | CB-NM-NM-75-L-12G   |
|                                   | N(M)-SMA(M) RF Cable   | CB-NM-SMAM-75-L-12G |
|                                   | Near-field Probe   | NFP-3               |
|                                   | Rack Mount Kit   | RM3031              |
| USB Cable x1                      | CB-USBA-USBB-FF-150  |                     |

## NOTE:

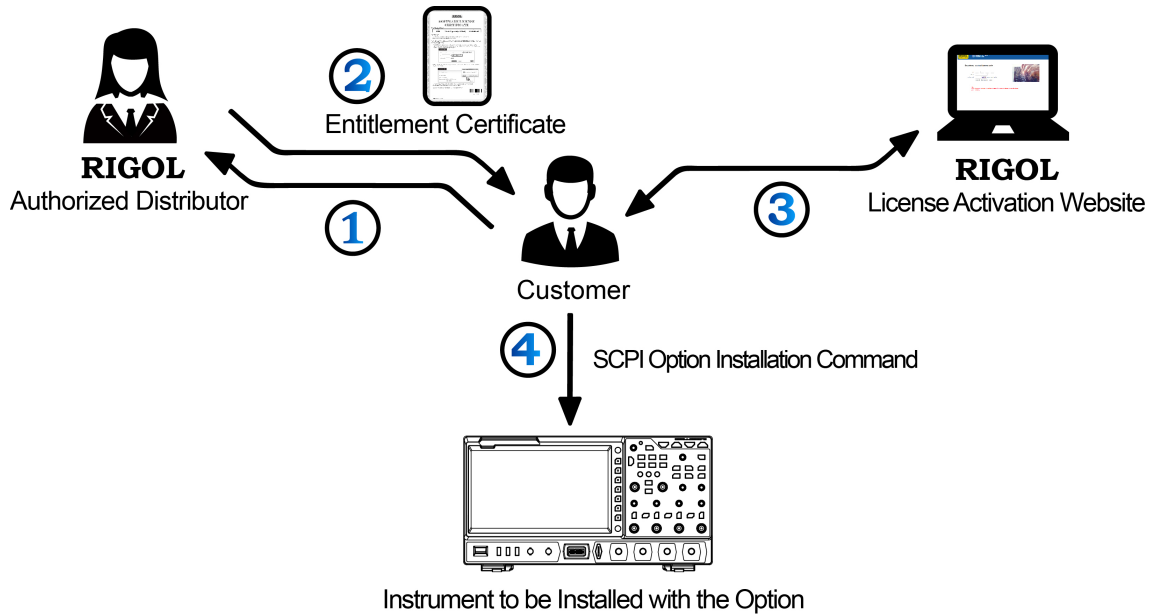
- For all the mainframes, accessories, and options, please contact the local office of RIGOL.
- [1]: Includes N-SMA cable, BNC-BNC cable, N-BNC adaptor, N-SMA adaptor, 75  $\Omega$ -50  $\Omega$  adaptor, 900 MHz/1.8 GHz antenna (2pcs), 2.4 GHz antenna (2pcs)
- [2]: Includes: N(F)-N(F) adaptor (1pcs), N(M)-N(M) adaptor (1pcs), N(M)-SMA(F) adaptor (2pcs), N(M)-BNC(F) adaptor (2pcs), SMA(F)-SMA(F) adaptor (1pcs), SMA(M)-SMA(M) adaptor (1pcs), BNC T type adaptor (1pcs), 50  $\Omega$  SMA load (1pcs), 50  $\Omega$  BNC impedance adaptor (1pcs)

## Warranty Period

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Three years for the mainframe, excluding the accessories.

# Option Ordering and Installation Process



1. According to the usage requirements, please purchase the specified options from **RIGOL Sales Personnel**, and provide the serial number of the instrument that needs to install the option.
2. After receiving the option order, the **RIGOL** factory will mail the paper software product license certificate to the address provided in the order.
3. Log in to **RIGOL** official website for registration. Use the software key and instruments serial number provided in the license certificate to obtain the option license code and the option license file.
4. Install the option with the license installation command.

## NOTE:

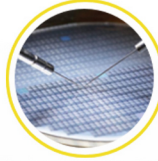
If you encounter any problems in the option installation, please contact **RIGOL** technical team.

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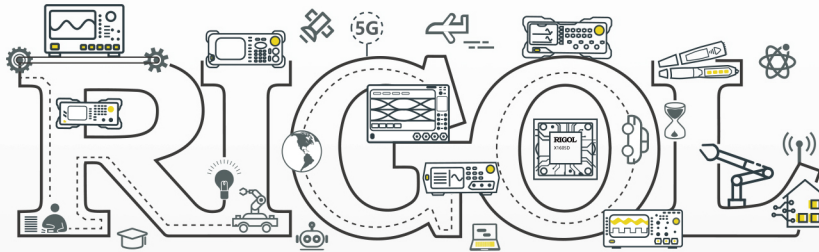
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