Key performance of the U3800 Series

- World's first two-channel simultaneous/parallel measurement in the analysis bandwidth (maximum: 40 MHz)
- Vector comparison with high sensitivity and wide dynamic range (pre-amplifier equipped as standard)
- U3800 Series to support 9 kHz to 43 GHz of measurement frequencies
  - 3 GHz Cross Domain Analyzer U3841: 9 kHz to 3 GHz
  - 8 GHz Cross Domain Analyzer U3851: 9 kHz to 8 GHz
  - 43 GHz Cross Domain Analyzer U3872: 9 kHz to 43 GHz

### U3841/3851 RF-part Specifications

<table>
<thead>
<tr>
<th>Frequency</th>
<th>U3841: 9 kHz to 3 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Amp:</td>
<td>10 MHz to 3 GHz</td>
</tr>
<tr>
<td>U3751:</td>
<td>9 kHz to 3.1 GHz (band 0), 3 GHz to 8 GHz (band 1)</td>
</tr>
<tr>
<td>Pre-Amp:</td>
<td>10 MHz to 8 GHz</td>
</tr>
</tbody>
</table>

#### Frequency reference stability
- Aging rate: <±2 x 10^{-7}/year
- Temperature stability: <±2.5 x 10^{-6} (0 to 50°C)

#### Frequency span
- Range: Zero span, 5 kHz to Full Frequency Sweep, 100 Hz to 40 MHz FFT, CBW step
- Accuracy: <±1%

#### Spectrum purity
- Accuracy: <±85 dBc/Hz (offset 10 kHz, span ≥200 kHz)

#### Resolution bandwidth
- Range: 100 Hz to 3 MHz Frequency Sweep, 1-3 steps 1 Hz to 400 kHz FFT, CBW/100
- Accuracy: <±12%

#### Video bandwidth range
- 10 Hz to 3 MHz (1-3 steps)

#### Sweep
- Sweep time
  - Setting range: 20 ms to 1000 s (spectrum mode), 50 µs to 1000 s (zero span)
  - Accuracy: <±2%
- Sweep mode: Continuous, single, gated
- Trigger source: Free run, video, external, IF

#### Amplitude range
- Measurement range: Displayed average noise level to ±30 dBm
- Maximum safe input level: Attenuator ≥10 dB
  - Pre-Amp OFF: +30 dB
  - Pre-Amp ON: +13 dBm
  - U3841: ±50 VDC max.
  - U3851: ±15 VDC max.
- Input attenuator range: 0 to 50 dB (10 dB steps)
- Detection mode: Normal, Positive peak, Negative peak, Sample, RMS, and Average

### Amplitude accuracy

<table>
<thead>
<tr>
<th>Calibration signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency: 20 MHz</td>
</tr>
<tr>
<td>Level: -20 dBm</td>
</tr>
<tr>
<td>Accuracy: ±0.3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level measurement accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>After automatic calibration, image suppression OFF, pre-amp OFF, at temperature 20 to 30°C, input attenuator 10 dB, reference level 0 dBm, input signal level -10 dBm</td>
</tr>
<tr>
<td>U3841: ±1.0 dB (9 kHz to 3 GHz)</td>
</tr>
<tr>
<td>±0.8 dB (10 MHz to 3 GHz)</td>
</tr>
<tr>
<td>U3851: ±1.5 dB (9 kHz to 10 MHz)</td>
</tr>
<tr>
<td>±0.8 dB (10 MHz to 3.1 GHz)</td>
</tr>
<tr>
<td>±1.0 dB (3.1 GHz to 8 GHz)</td>
</tr>
</tbody>
</table>

#### Dynamic range

- Displayed average noise level
  - Frequency ≥10 MHz, reference level <45 dBm, at RBW 100 Hz
  - U3841: Frequency 10 MHz to 3 GHz
    - Pre-Amp OFF: -123 dBm + 2f (GHz) dB (f < 2.5 GHz)
    - Pre-Amp ON: -138 dBm + 3f (GHz) dB (f ≥ 2.5 GHz)
  - U3851: Frequency 10 MHz to 8 GHz
    - Pre-Amp OFF: -123 dBm + 2f (GHz) dB (f ≤ 3.1 GHz, band 0)
    - Pre-Amp ON: -138 dBm + 3f (GHz) dB (f ≤ 3.1 GHz, band 0)
- 1 dB gain compression
  - U3841: Frequency >20 MHz
    - Pre-Amp OFF: >8 dBm
    - Pre-Amp ON: >25 dBm
  - U3851: Frequency >20 MHz
    - Pre-Amp OFF: >8 dBm
    - Pre-Amp ON: >25 dBm

#### Third order intermodulation distortion
- U3841: <−60 dBc (Pre-Amp OFF, mixer input level -20 dBm, frequency >10 MHz, 2-signal separation >200 kHz)
- U3851: <−50 dBc (Pre-Amp OFF, mixer input level -20 dBm, frequency 10 MHz to 8 GHz, 2-signal separation >200 kHz)

#### Image/Multiple/Out-of-band response
- U3841: <−60 dBc (Mixer input level -20 dBm)
- U3851: <−60 dBc (Mixer input level -30 dBm, Image suppression ON)

#### Residual response
- Frequency >10 MHz, pre-Amp OFF
  - U3841: <−80 dBm
  - U3851: <−80 dBm
Since the USB interface is provided at the front, USB accessories can be easily connected. This feature is very useful for organizing and storing data, and for editing files for the given measurement condition setting.

A USB interface that is useful for storing data and editing files.

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U3872 RF-part Specifications

Frequency

**Frequency range**

L-input

- **Frequency range:** 9 kHz to 8 GHz
- **Frequency band:** 9 kHz to 3.1 GHz (band 0)
- **Pre-Amp:** 10 MHz to 8 GHz
- **Frequency range:** 10 MHz to 43 GHz
- **Frequency band:** 10 MHz to 3.1 GHz (band 0, N = 1)
- **3.0 GHz to 8.0 GHz (band 1)**
- **7.8 to 14.573 GHz (band 2, N = 2)**
- **14.4288 to 28.0 GHz (band 3, N = 4)**
- **27.8 to 43.0 GHz (band 4, N = 6)**

H-input

- **Frequency range:** 10 MHz to 43 GHz
- **Frequency band:** 10 MHz to 3.1 GHz (band 0, N = 1)
- **3.0 to 8.0 GHz (band 1, N = 1)**
- **7.8 to 14.573 GHz (band 2, N = 2)**
- **14.4288 to 28.0 GHz (band 3, N = 4)**
- **27.8 to 43.0 GHz (band 4, N = 6)**

**Frequency reference stability**

- **Aging rate:** <±2 x 10^{-6}/year
- **Temperature stability:** <±2.5 x 10^{-6} (0 to 50°C)

Frequency span

- **Range:** Zero span, 5 kHz to Full Frequency Sweep, 100 Hz to 40 MHz FFT, CBW step
- **Accuracy:** <±1%

Spectrum purity

- **(-85 + 20 LogN) dBC/Hz, at offset 10 kHz, span ≤200 kHz**

Resolution bandwidth

- **Range:** 100 Hz to 3 MHz Frequency Sweep, 1-3 steps
- **1 Hz to 400 kHz FFT, CBW/100**
- **Accuracy:** <±12%

Video bandwidth range: 10 Hz to 3 MHz (1-3 steps)

Sweep

- **Sweep time**
  - **Setting range:** 20 ms to 1000 s (spectrum mode)
  - **50 µs to 1000 s (zero span)**
- **Accuracy:** <±2%

- **Sweep mode:** Continuous, single, gated

- **Trigger source:** Free run, video, external, IF

Amplitude range

- **Measurement range**
  - **L-input:** Displayed average noise level to +30 dBm
  - **H-input:** Displayed average noise level to +10 dBm

- **Maximum safe input level**
  - **L-input**
    - **Pre-Amp OFF:** +30 dBm (attenuator ≤10 dB)
    - **Pre-Amp ON:** +13 dBm (attenuator 0 dB), ±15 VDC max.
  - **H-input**
    - **Pre-Amp OFF:** +10 dBm (attenuator 0 dB), ±25 VDC max.

- **Input attenuator range**
  - **L-input:** 0 to 50 dB (10 dB steps)
  - **H-input:** 0 to 30 dB (10 dB steps)

- **Detection mode:** Normal, Positive peak, Negative peak, Sample, RMS, and Average

Amplitude accuracy

- **Calibration signal**
  - **Frequency:** 20 MHz
  - **Level:** -20 dBm
  - **Accuracy:** ±0.3 dB

Level measurement accuracy

- **After automatic calibration,** image suppression Off, pre-amp Off, at temperature
  - **20 to 30°C, input attenuator 10 dB, reference level 0 dBm, input signal level -10 dBm**

- **L-input**
  - **Band 0:** ±0.8 dB (frequency: 10 MHz to 3.1 GHz)
  - **Band 1:** ±1.0 dB (frequency: 3.1 to 8 GHz)
  - **±1.5 dB (frequency: 9 kHz to 10 MHz)

- **H-input**
  - **Band 0:** ±0.8 dB (frequency: 10 MHz to 3.1 GHz)
  - **Band 1:** ±1.0 dB (frequency: 3.1 to 8 GHz)
  - **Band 2:** ±3.0 dB (frequency: 7.8 to 14.573 GHz)
  - **Band 3:** ±3.5 dB (frequency: 14.4288 to 28.0 GHz)
  - **Band 4:** ±4.5 dB (frequency: 27.8 to 43 GHz)

Dynamic range

- **Displayed average noise level**
  - **Frequency:** ≥10 MHz, reference level <-45 dBm, at RBW 100Hz

- **L-input**
  - **Pre-Amp OFF:** Band 0: -123 dBm + 2f (GHz) dB
  - **Pre-Amp ON:** Band 0: -138 dBm + 1.2f (GHz) dB

- **H-input**
  - **Pre-Amp OFF:** Band 0: -121 dBm + 2f (GHz) dB
  - **Pre-Amp ON:** Band 0: -139 dBm + 1.5f (GHz) dB

- **Third order intermodulation distortion**
  - **-50 dBc (frequency >10 MHz, pre-amp OFF, mixer input level -20 dBm, 2-signal separation >1 MHz)**

- **Image/Multiple/Out-of-band response**
  - **-60 dBc (mixer input level -30 dBm, image suppression ON, span <5 GHz)**

- **Residual response**
  - **-80 dBc (frequency >10 MHz, pre-amp OFF)**

RF inputs (CH1/2)

- **L-input**
  - **Connector:** N-type female
  - **Impedance:** 50 Ω (nominal)
  - **VSWR:** <1.7 : 1 (frequency 10 MHz to 3 GHz, band 0)
  - **<2.0 : 1 (frequency >3.0 GHz, band 1)**

- **H-input**
  - **Connector:** K type female
  - **Impedance:** 50 Ω (nominal)
  - **VSWR:** Input attenuator 10 dB
  - **2.0 : 1 (typical, band 1, band 2, band 3)**
  - **2.5 : 1 (typical, band 4)**
### Rear-panel Interface Specifications

**Frequency reference input**
- **Connector:** BNC female
- **Impedance:** 50 Ω (nominal)
- **Frequency:** 10 MHz
- **Level:** -2 to +16 dBm

**Frequency reference output**
- **Connector:** BNC female
- **Impedance:** 50 Ω (nominal)
- **Frequency:** 10 MHz
- **Level:** >0 dBm

**External trigger input**
- **Connector:** BNC female
- **Impedance:** 10 kΩ (nominal), DC coupling
- **Level:** 0 to +5 V

**External trigger output**
- **Connector:** BNC female
- **Level:** +3.3 V (CMOS)

- **IF output:** IF output from CH1 only
  - **Connector:** BNC female
  - **Impedance:** 50 Ω (nominal)
  - **Frequency:** 21.4 MHz, 97.5 MHz
  - one of two frequencies, depending on resolution bandwidth, capture bandwidth and capture synchronization mode.

**GPIB:** IEEE-488 bus connector
**USB:** USB 1.1
**Video output:** VGA (D-sub15 pin female)
**LAN:** RJ45 type, 10/100 base-T

### General Specifications

- **Operating environment range:**
  - Ambient temperature: 0 to +50°C
  - Humidity: RH 85% or less (no condensation)

- **Storage environment range:**
  - 20 to +60°C, RH 85% or less

- **AC power input:**
  - Automatic switching to 100 VAC or 220 VAC
  - 100 VAC: 100-120 V, 50/60 Hz
  - 200 VAC: 220-240 V, 50/60 Hz

- **Power consumption:**
  - 150 VA or less

- **Mass:**
  - 10 kg or less (excluding options)

- **External dimensions (W x H x D):**
  - Approx. 308 x 175 x 339 mm (not including protruding parts)
  - Approx. 337 x 190 x 437 mm (including the handle and feet)

### Ordering Information

**Main units**
- 3 GHz Cross domain analyzer: U3841
- 8 GHz Cross domain analyzer: U3851
- 43 GHz Cross domain analyzer: U3872

**Options**
- High-stability frequency reference source: OPT.20
- EMC filter: OPT.28
- Tracking generator (3 GHz): OPT.76
- Tracking generator (6 GHz): OPT.77

Cross Domain Analyzer™ is a trademark of Advantest Corporation.

Please be sure to read the product manual thoroughly before using the products. Specifications may change without notification.