



# 87234 Series USB Peak and CW Power Sensor (50MHz to 67GHz)



Ceyear Technologies Co., Ltd

## Technical Specification

**Specifications (spec):** Unless otherwise specified, the calibrated instruments can be placed in the operating temperature range of 0°C to 50°C for at least two hours, and after 30 minutes of warm-up, the performance can be guaranteed, including measurement uncertainty degree.

**Typical value (typ):** Indicates the typical performance that 80% of the instruments can achieve. This data is not a guarantee data, and does not include the uncertainty factors during the measurement process. It is only valid at room temperature (approximately 25°C).

**Nominal value (nom):** Indicates the expected average performance, designed performance characteristics, or performance that cannot be tested by limited test methods, such as 50 Ω connectors. The product performance marked as rated value is not included in the product quality assurance range, and is measured at room temperature (approximately 25°C).

**Measured value (meas):** Represents the performance characteristics measured during the design stage in order to compare with the expected performance, such as changes in amplitude drift over time. This data is not guaranteed and it is measured at room temperature (approximately 25°C).

| Specifications                                           |                                     |                              |
|----------------------------------------------------------|-------------------------------------|------------------------------|
| Frequency Range                                          | 87234D                              | 50MHz~18GHz                  |
|                                                          | 87234E                              | 50MHz~26.5GHz                |
|                                                          | 87234F                              | 50MHz~40GHz                  |
|                                                          | 87234L                              | 500MHz~67GHz                 |
| Power Range                                              | Normal Mode                         | -30dBm~+20dBm (50MHz~500MHz) |
|                                                          |                                     | -35dBm~+20dBm (≥500MHz)      |
|                                                          | Average Mode <sup>1</sup>           | -45dBm~+20dBm                |
| Damage level                                             | +23dBm (Average Power)              |                              |
|                                                          | +30dBm (Peak Power, Duration<1us)   |                              |
| Rise/fall time                                           | ≤13ns <sup>2</sup>                  |                              |
| Sampling Rate                                            | 80MSamples/sec, Continuous sampling |                              |
| Video bandwidth                                          | ≥30MHz                              |                              |
| Single capture bandwidth                                 | ≥30MHz                              |                              |
| Minimum pulse width                                      | 50ns                                |                              |
| Basic accuracy of average power measurement <sup>3</sup> | 87234D                              | ±0.20dB (±4.5%)              |
|                                                          | 87234E                              | ±0.25dB (±6.0%)              |
|                                                          | 87234F                              | ±0.30dB (±6.7%)              |
|                                                          | 87234L                              | ±0.33dB (±7.9%)              |
| Maximum capture length                                   | 1s (Down frequency)                 |                              |
|                                                          | 1.2ms (Maximum sampling rate)       |                              |

|                               |        |                      |
|-------------------------------|--------|----------------------|
| Maximum pulse repetition rate | 10MHz  |                      |
| Maximum SWR                   | 87234D | 1.20 (50MHz~2GHz)    |
|                               |        | 1.26 (2GHz~18GHz)    |
|                               | 87234E | 1.20 (50MHz~2GHz)    |
|                               |        | 1.26 (2GHz~18GHz)    |
|                               |        | 1.35 (18GHz~26.5GHz) |
|                               | 87234F | 1.20 (50MHz~2GHz)    |
|                               |        | 1.26 (2GHz~18GHz)    |
|                               |        | 1.35 (18GHz~26.5GHz) |
|                               |        | 1.50 (26.5GHz~40GHz) |
|                               | 87234L | 1.20 (500MHz~2GHz)   |
|                               |        | 1.26 (2GHz~18GHz)    |
|                               |        | 1.35 (18GHz~26.5GHz) |
|                               |        | 1.50 (26.5GHz~40GHz) |
|                               |        | 1.70 (40GHz~67GHz)   |
| Calibration uncertainty       | 87234D | 4.0% (50MHz~10GHz)   |
|                               |        | 4.5% (10GHz~18GHz)   |
|                               | 87234E | 4.2% (50MHz~1GHz)    |
|                               |        | 4.5% (1GHz~18GHz)    |
|                               |        | 5.3% (18GHz~26.5GHz) |
|                               | 87234F | 4.2% (50MHz~1GHz)    |
|                               |        | 4.5% (1GHz~18GHz)    |
|                               |        | 5.3% (18GHz~26.5GHz) |
|                               |        | 5.8% (26.5GHz~40GHz) |
|                               | 87234L | 4.5% (500MHz~18GHz)  |
|                               |        | 5.3% (18GHz~26.5GHz) |
|                               |        | 5.8% (26.5GHz~40GHz) |
|                               |        | 7.0% (40GHz~67GHz)   |
| Interface                     | 87234D | N-Type(m)            |
|                               | 87234E | 3.5mm(m)             |
|                               | 87234F | 2.4mm(m)             |
|                               | 87234L | 1.85mm(m)            |

**Note:**

It is recommended to perform the zero calibration operation when the machine is turned on, The temperature changes significantly or after a long time has passed since the last zero calibration. In average mode, perform external zero calibration and ensure that the power meter and the RF source are isolated.

2. It is effective when the frequency is  $\geq 500\text{MHz}$  and the video bandwidth is off.

3. It is valid when the power range is  $-15\text{dBm} \sim +20\text{dBm}$ , the frequency is  $\geq 500\text{MHz}$ , and the SWR of the device under test is less than 1.20. In the free running mode, the average value is 32.

## Timebase and Trigger Specifications

| Timebase and trigger             |                               |                   |
|----------------------------------|-------------------------------|-------------------|
| Timebase                         | Range                         | 2ns/div~100ms/div |
|                                  | Accuracy                      | ±25ppm            |
| Internal trigger level (typical) | Range                         | -20dBm~+20dBm     |
|                                  | Resolution                    | 0.1dB             |
|                                  | Level accuracy                | ±0.5dB            |
| External TTL trigger input       | High                          | > 2.4V            |
|                                  | Low                           | < 0.7V            |
|                                  | Maximum trigger voltage input | 5V                |
|                                  | Impedance                     | 50Ω               |
| External TTL trigger output      | High                          | > 2.4V            |
|                                  | Low                           | < 0.7V            |
|                                  | Impedance                     | 50Ω               |
| Trigger delay                    | Range                         | ±1.0s (Max)       |
|                                  | Resolution                    | 1%, (Min)12.5ns   |
| Trigger hold off                 | Range                         | 1us~1s            |
|                                  | Resolution                    | 1%, (Max)12.5ns   |

## General Specifications

| Inputs/Outputs            |                                           |           |
|---------------------------|-------------------------------------------|-----------|
| RF input                  | 87234D                                    | N-Type(m) |
|                           | 87234E                                    | 3.5mm(m)  |
|                           | 87234F                                    | 2.4mm(m)  |
|                           | 87234L                                    | 1.85mm(m) |
| Trigger input             | Compatible with TTL level, MMCX connector |           |
| Trigger output            | Compatible with TTL level, MMCX connector |           |
| Video output              | 0~1V, 50Ω impedance, MMCX connector       |           |
| Program control interface | USB2.0 port,Compatible with USB-TMC       |           |
| Maximum measurement speed | 50000 readings per second                 |           |

## Product Features

| Product features                           |                                                                                                                                                                                                                                                                                                                                  |                       |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Display</b>                             | Main monitor                                                                                                                                                                                                                                                                                                                     |                       |
| <b>Language</b>                            | Chinese/English                                                                                                                                                                                                                                                                                                                  |                       |
| <b>Power supply</b>                        | +5V,500mA                                                                                                                                                                                                                                                                                                                        |                       |
| <b>Operating temperature</b>               | 0°C ~ 50°C                                                                                                                                                                                                                                                                                                                       |                       |
| <b>Storage Temperature</b>                 | -40°C ~ +70°C                                                                                                                                                                                                                                                                                                                    |                       |
| <b>Humidity</b>                            | <p>No humidity control when the temperature is lower than 10°C</p> <p>When the temperature range is 10°C ~ 30°C, the relative humidity is (5 ~ 95)%</p> <p>When the temperature range is 30°C ~ 40°C, the relative humidity is (5 ~ 75)%</p> <p>When the temperature range is above 40°C, the relative humidity is (5 ~ 45)%</p> |                       |
| <b>Altitude</b>                            | 0 ~ 4600m                                                                                                                                                                                                                                                                                                                        |                       |
| <b>Weight</b>                              | <0.3kg                                                                                                                                                                                                                                                                                                                           |                       |
| <b>Dimension<br/>(Width×Height×Length)</b> | 87234D                                                                                                                                                                                                                                                                                                                           | 141.1mm×52.0mm×34.0mm |
|                                            | 87234E                                                                                                                                                                                                                                                                                                                           | 133.9mm×52.0mm×34.0mm |
|                                            | 87234F                                                                                                                                                                                                                                                                                                                           | 124.7mm×52.0mm×34.0mm |
|                                            | 87234L                                                                                                                                                                                                                                                                                                                           | 124.7mm×52.0mm×34.0mm |
| <b>Vibration</b>                           | <p>Random vibration: Frequency 5 ~ 100Hz, Power Spectral Density, 0.015g<sup>2</sup>/Hz, Frequency 100 ~ 137Hz, Slope: -6dB, Frequency 137 ~ 350Hz, Power Spectral Density: 0.0075g<sup>2</sup>/Hz, Frequency: 350 ~ 500Hz, slope: -6dB; Frequency 500Hz, Power Spectral Density 0.0039g<sup>2</sup>/Hz.</p>                     |                       |
| <b>Reliability requirements</b>            | MTBF (θ <sub>0</sub> ) ≥5000h                                                                                                                                                                                                                                                                                                    |                       |
| <b>Recommended calibration interval</b>    | 1 year                                                                                                                                                                                                                                                                                                                           |                       |

## System and Installation Requirements

| PC operating system      |                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System</b>            | <p>Windows 10 32-bit and 64-bit</p> <p>Windows 7 32-bit and 64-bit</p> <p>Windows XP and Linux</p>                                                                                                            |
| <b>Computer hardware</b> | <p>Processor: 1GHz or higher (2GHz or higher recommended)</p> <p>Memory: 2GB or higher (4GB or higher recommended)</p> <p>Hard disk space: 1.0GB or higher</p> <p>Display resolution: 1280×1024 or higher</p> |

## Ordering information

| Main unit     | Description                             |
|---------------|-----------------------------------------|
| <b>87234D</b> | USB Peak/CW Power Sensor, 50MHz~18GHz   |
| <b>87234E</b> | USB Peak/CW Power Sensor, 50MHz~26.5GHz |
| <b>87234F</b> | USB Peak/CW Power Sensor, 50MHz~40GHz   |
| <b>87234L</b> | USB Peak/CW Power Sensor, 500MHz~67GHz  |

| Standard accessory | Description              |
|--------------------|--------------------------|
| <b>1</b>           | One power cable, 2.0m    |
| <b>2</b>           | Two trigger cables, 1.5m |
| <b>3</b>           | One CD                   |

| Options            | Description                                |
|--------------------|--------------------------------------------|
| <b>87234-H01</b>   | Power cables, 4.5m                         |
| <b>87234-H02</b>   | Trigger cable, 4.5m                        |
| <b>87234-H03D</b>  | Commercial calibration certificate, 87234D |
| <b>87234-H03E</b>  | Commercial calibration certificate, 87234E |
| <b>87234-H03F</b>  | Commercial calibration certificate, 87234F |
| <b>87234-H03L</b>  | Commercial calibration certificate, 87234L |
| <b>87234-H04</b>   | English                                    |
| <b>87234-H05A</b>  | Hard suitcase (one set can be carried)     |
| <b>87234-H05B</b>  | Hard suitcase (two sets can be carried)    |
| <b>87234D-EWT1</b> | Extended warranty service                  |
| <b>87234E-EWT1</b> | Extended warranty service                  |
| <b>87234F-EWT1</b> | Extended warranty service                  |
| <b>87234L-EWT1</b> | Extended warranty service                  |

**Ceyear**  
Focus on measurement  
Explore the future

**CEYEAR TECHNOLOGIES CO., LTD**

Tel: +86 532 86896691

Email: [sales@ceyear.com](mailto:sales@ceyear.com)

<http://www.ceyear.com>