USB Smart Noise Sources

U1832A: 10 MHz to 18 GHz, 5 dB ENR nominal
U1832B: 10 MHz to 26.5 GHz, 5 dB ENR nominal
U1833A: 10 MHz to 18 GHz, 15 dB ENR nominal
U1833B: 10 MHz to 26.5 GHz, 15 dB ENR nominal
U1832C: 500 MHz to 50 GHz, 5 dB ENR nominal
U1833C: 500 MHz to 50 GHz, 15 dB ENR nominal
U1833D: 500 MHz to 60 GHz,10 dB ENR nominal
U1833G: 500 MHz to 67 GHz,12 dB ENR nominal

KEYSIGHT

Noise Sources Designed to Meet Specific Needs

Keysight Technologies USB smart noise sources works in conjunction with

- NFA series noise figure analyzers
- X-series signal analyzers
- Vector network analyzers
- FieldFox (does not support U1833G)

The USB (USB-TMC compliant) connectivity that comes with smart features of automatically download of electronically stored calibration data and temperature sensing. To simplify measurement set-up and improve accuracy this noise source automatically downloads electronically stored calibration data to the compatible Keysight noise figure measuring analyzers. The noise sources also have the capability to automatically measure their own temperature so that compensation can be applied to the calibration data. These capabilities increase the overall reliability and accuracy of noise figure measurements.

USB Smart Noise Sources Key Features

- Automatic download of ENR data to the analyzers significantly speeds up the overall setup time
- Electronic storage of Excess Noise Ratio (ENR) calibration data decreases opportunity for user error
- Temperature sensing improves measurement accuracy, leading to tighter specification of device performance

U1832/3x for accurate and reliable noise figure measurement of a device up to 67 GHz

The U183x USB smart noise source was designed to measure DUT noise figures reliably and accurately up to 30 dB from 10 MHz up to 67 GHz. It serves as an ideal usage for general purpose use with low reflection coefficient and a nominal ENR value of 5/10/12/15 dB.

Accurate noise power

The output of a noise source, usually given in terms of Excess Noise Ratio (ENR), must be known to make accurate noise figure measurements. Any uncertainty in the ENR transfers into uncertainty of the measured noise figure, dB for dB. Keysight provides accurate ENR calibration data with each noise source. ENR uncertainty and reflection coefficients at each frequency point are provided as well.

Specifications

Specifications refer to the performance standards or limits against which the U1832/3x USB smart noise sources are tested. These specifications for the noise sources are ONLY valid if the analyzers have been allowed to meet its specified warm up time. Typical characteristics are included for additional information only and they are not warranted specifications.

Parameter	U1832A	U1832B	U1833A	U1833B
Frequency range	10 MHz to 18 GHz	10 MHz to 26.5 GHz	10 MHz to 18 GHz	10 MHz to 26.5 GHz
ENR range	4.5 to 6.5 dB	4 to 7 dB	14 to 16 dB	12 to 17 dB
VSWR	10 MHz to 2 GHz: 1.06 2 to 3 GHz: 1.13 3 to 7 GHz: 1.13 7 to 18 GHz: 1.22	10 MHz to 2 GHz:1.06 2 to 3 GHz: 1.06 3 to 7 GHz: 1.13 7 to 18 GHz: 1.22 18 to 26.5 GHz: 1.25	10 MHz to 2 GHz: 1.15 2 to 3 GHz: 1.15 3 to 7 GHz: 1.20 7 to 18 GHz: 1.25	10 MHz to 2 GHz: 1.22 2 to 3 GHz: 1.22 3 to 7 GHz: 1.22 7 to 18 GHz: 1.25 18 to 26.5 GHz: 1.35
Reflection coefficient (Rho)	10 MHz to 2 GHz: 0.03 2 to 3 GHz: 0.06 3 to 7 GHz: 0.06 7 to 18 GHz: 0.10	10 MHz to 2 GHz: 0.03 2 to 3 GHz: 0.03 3 to 7 GHz: 0.06 7 to 18 GHz: 0.10 18 to 26.5 GHz: 0.11	10 MHz to 2 GHz: 0.07 2 to 3 GHz: 0.07 3 to 7 GHz: 0.09 7 to 18 GHz: 0.11	10 MHz to 2 GHz: 0.10 2 to 3 GHz: 0.10 3 to 7 GHz: 0.10 7 to 18 GHz: 0.11 18 to 26.5 GHz: 0.15
Reflection coefficient (Rho) delta (typical)	< 0.01	< 0.015	< 0.1	< 0.15
Connector	N-Type (m)	3.5 mm (m)	N-Type (m)	3.5 mm (m)

Parameter	U1832C	U1833C	U1833D	U1833G
Frequency range	500 MHz to 50 GHz:	500 MHz to 50 GHz:	500 MHz to 60 GHz:	500 MHz to 67 GHz
ENR range	3.5 to 8.5 dB	10 to 21 dB	6 to 21 dB	5 to 21 dB
VSWR	500 MHz to 20 GHz: 1.15 20 to 26.5 GHz: 1.22 26.5 to 40 GHz: 1.25 40 to 50 GHz: 1.35	500 MHz to 20 GHz: 1.35 20 to 26.5 GHz: 1.41 26.5 to 40 GHz: 1.50 40 to 50 GHz: 1.50	500 MHz to 20 GHz: 1.35 20 to 26.5 GHz:1.41 26.5 to 40 GHz: 1.50 40 to 50 GHz: 1.50 50 to 60 GHz:1.50	500 MHz to 18 GHz: 1.30 18 to 26.5 GHz: 1.41 26.5 to 40GHz: 1.56 40 to 50 GHz: 1.67 50 to 60GHz: 1.90 60 to 67GHz: 2.51
Reflection coefficient (Rho)	500 MHz to 20 GHz: 0.07 20 to 26.5 GHz: 0.10 26.5 to 40 GHz: 0.11 40 to 50 GHz: 0.15	500 MHz to 20 GHz: 0.15 20 to 26.5 GHz: 0.17 26.5 to 40 GHz: 0.20 40 to 50 GHz: 0.20	500 MHz to 20 GHz: 0.15 20 to 26.5 GHz: 0.17 26.5 to 40 GHz: 0.20 40 to 50 GHz: 0.20 50 to 60 GHz: 0.20	500 MHz to 18 GHz: 0.13 18 to 26.5 GHz: 0.17 26.5 to 40 GHz: 0.22 40 to 50 GHz:0.25 50 to 60 GHz: 0.31 60 to 67 GHz: 0.43
Reflection coefficient (Rho) delta (typical)	< 0.015	< 0.15	< 0.15	< 0.15
Connector	2.4 mm (m)	2.4 mm (m)	1.85 mm (m)	1.85 mm (m)

Supplemental Characteristics

Supplemental characteristics are not specifications but are typical characteristics included as additional information for the user.

Parameter	Model	Typical specifications
ENR variation with temperature	U1832A U1833A	30 MHz to 18 GHz: 0.013 dB/degC 30 MHz to 18 GHz: 0.01 dB/degC
	U1832B U1833B	30 MHz to 26.5 GHz: 0.01 dB/degC 30 MHz to 26.5 GHz: 0.005 dB/degC
	U1832C U1833C	500 MHz to 50 GHz: 0.015 dB/degC 500 MHz to 50 GHz: 0.015 dB/degC
	U1833D	500 MHz to 60 GHz: 0.015 dB/degC
	U1833G	500 MHz to 67 GHz: 0.015 dB/degC
ENR uncertainties	U1832A U1833A	+/- 0.13 dB
	U1832B U1833B	
	U1832C	500 MHz to 26.5 GHz: +/- 0.20 dB 26.5 to 40 GHz: +/- 0.30 dB 40 to 50 GHz: +/- 0.45 dB
	U1833C	500 MHz to 26.5 GHz: +/- 0.13 dB 26.5 to 40 GHz: +/- 0.25 dB 40 to 50 GHz: +/- 0.35 dB
	U1833D	500 MHz to 26.5 GHz: +/- 0.13 dB 26.5 to 40 GHz: +/- 0.25 dB 40 to 50 GHz: +/- 0.35 dB 50 to 60 GHz: +/- 0.45 dB[1]
	U1833G	500 MHz to 18GHz: +/- 0.16 dB 18 to 26.5 GHz: +/- 0.2 dB 26.5 to 40 GHz: +/- 0.31 dB 40 to 50 GHz: +/- 0.35 dB 50 to 67 GHz: +/- 0.5 dB[1]

[1] Monte carlo error analysis, nominal, at 23˚C ambient

Typical Performance

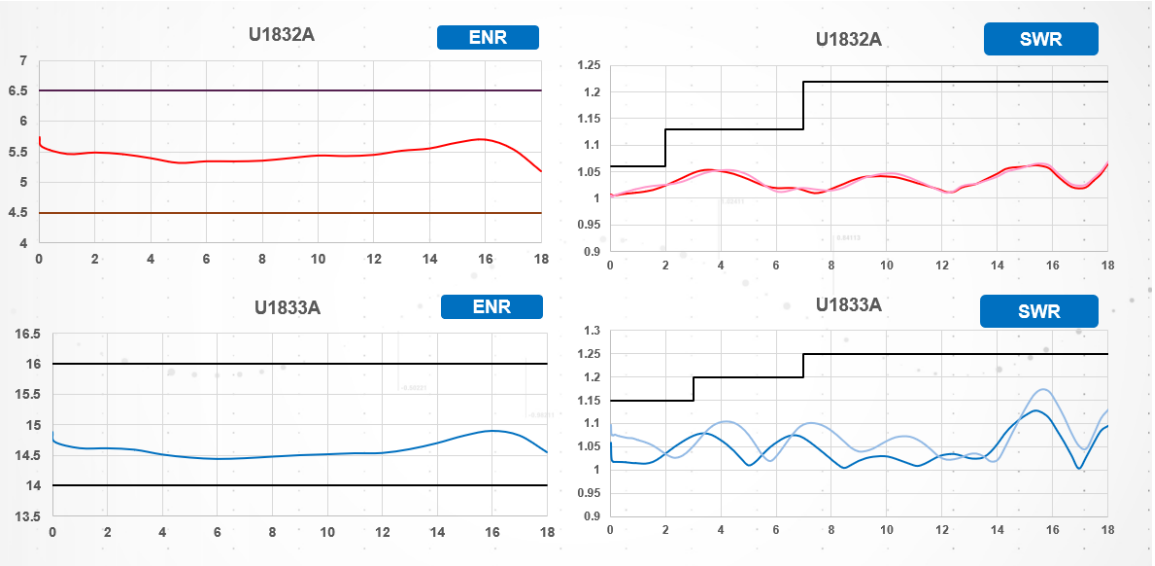

Figure 1. Typical ENR and return loss of U1832A and U1833A

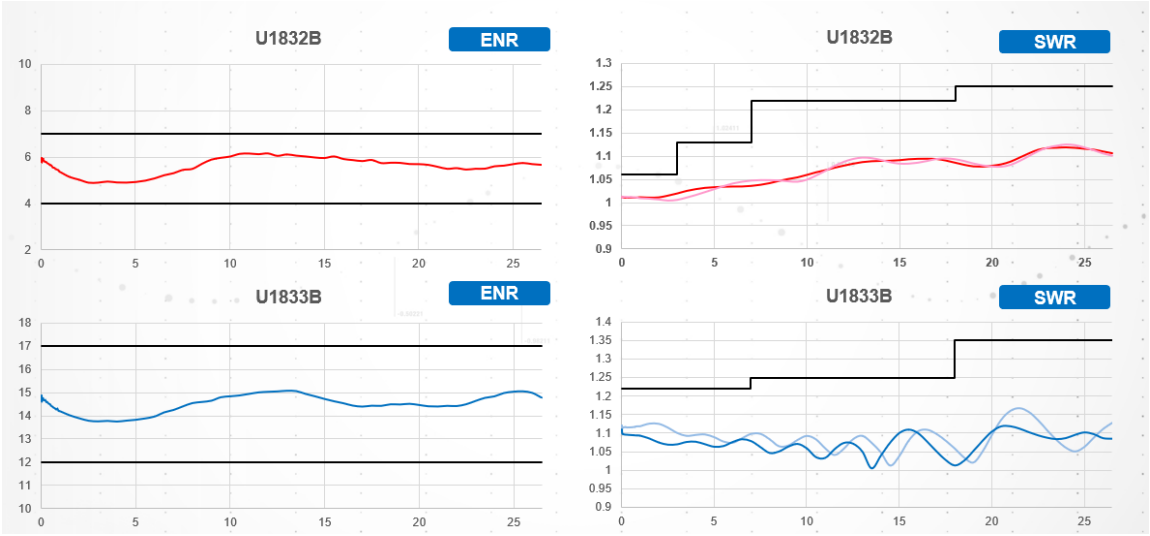

Figure 2. Typical ENR and return loss of U1832B and U1833B

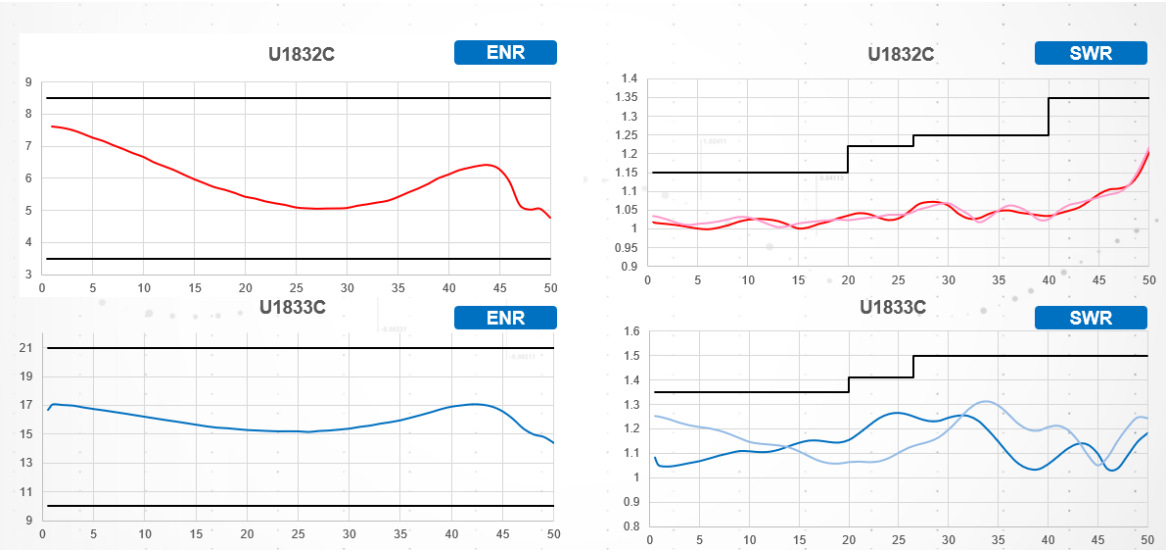

Figure 3. Typical ENR and return loss of U1832C and U1833C

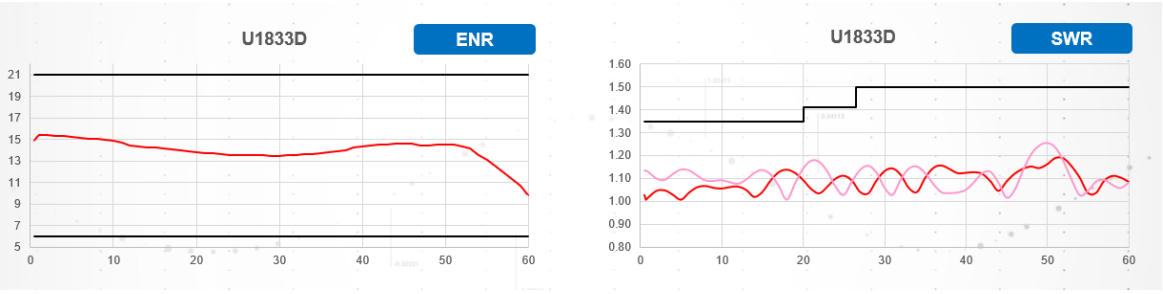

Figure 4. Typical ENR and return loss of U1833D

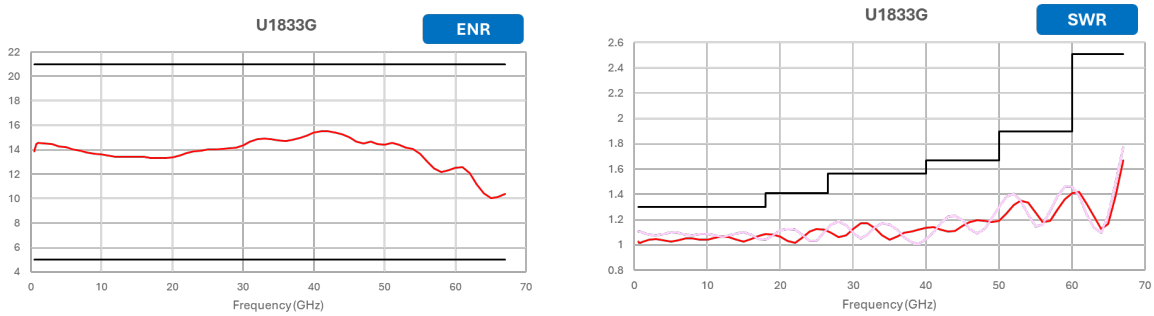

Figure 5. Typical ENR and return loss of U1833G

Environmental Specifications

Samples of this product have been type tested in accordance with the Keysight Environmental Test Manual 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, vibration and altitude conditions. The primary source of Keysight Environmental Test standards is the International Electrotechnical Commission (IEC) standards.

Parameter	
Temperature	Operating condition: 0 °C to 55 °C Storage condition: -40 °C to 70 °C
Humidity	Operating condition: Up to 95% RH at 40 °C (non-condensing) Method 1: 23°C/50% RH to 40°C/95% RH
Shock	End-use handling shock: ΔV: 1.6 m/s (60 in/s) ±5%, duration Transportation shock: 50 g, ΔV: 8.56 m/s
Vibration	Operating Random Vibration: 5-500 Hz, 0.21 Grms Survival Swept Sine Vibration: 5 Hz-500 Hz-5 Hz, 0.75 G Survival Random Vibration: 5-500 Hz, 2.41 Grms Packaging Drop: 48" drop height
Altitude	Operating: 4,600 meters (15,092 feet) Non-operating: 4,600 meters (15,092 feet)
ESD immunity	Contact discharge: 4 kV per IEC 61000-4-2 Air discharge: 8 kV per IEC 61000-4-2

Mechanical Dimensions

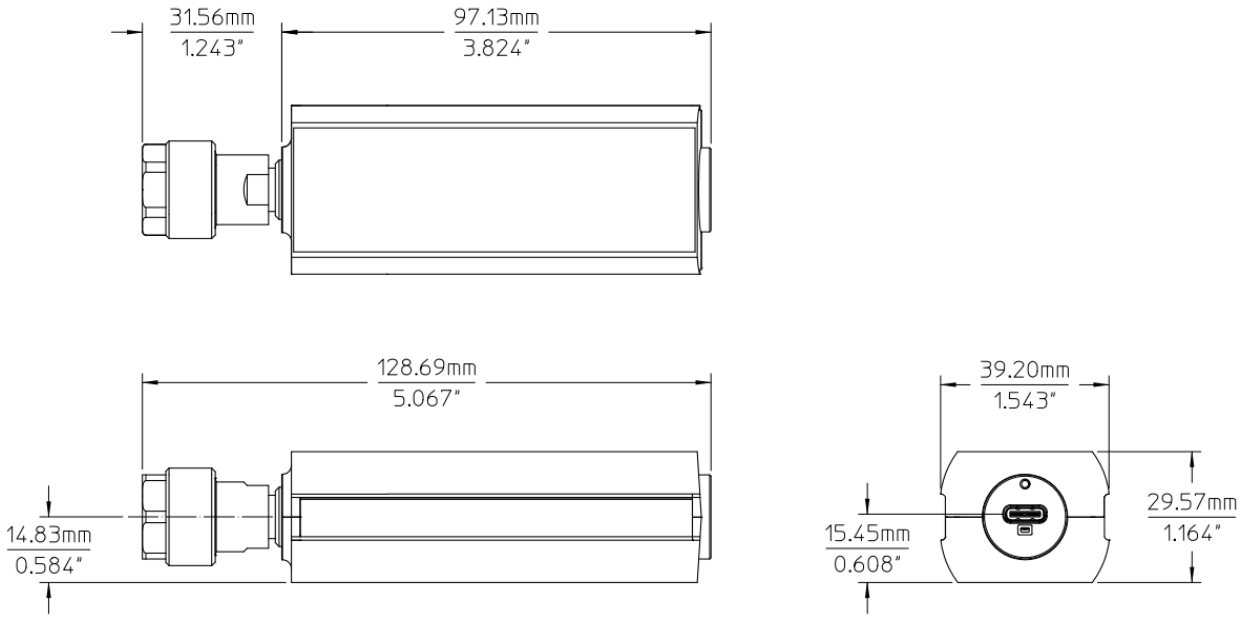

Figure 6. Mechanical dimension of U1832A

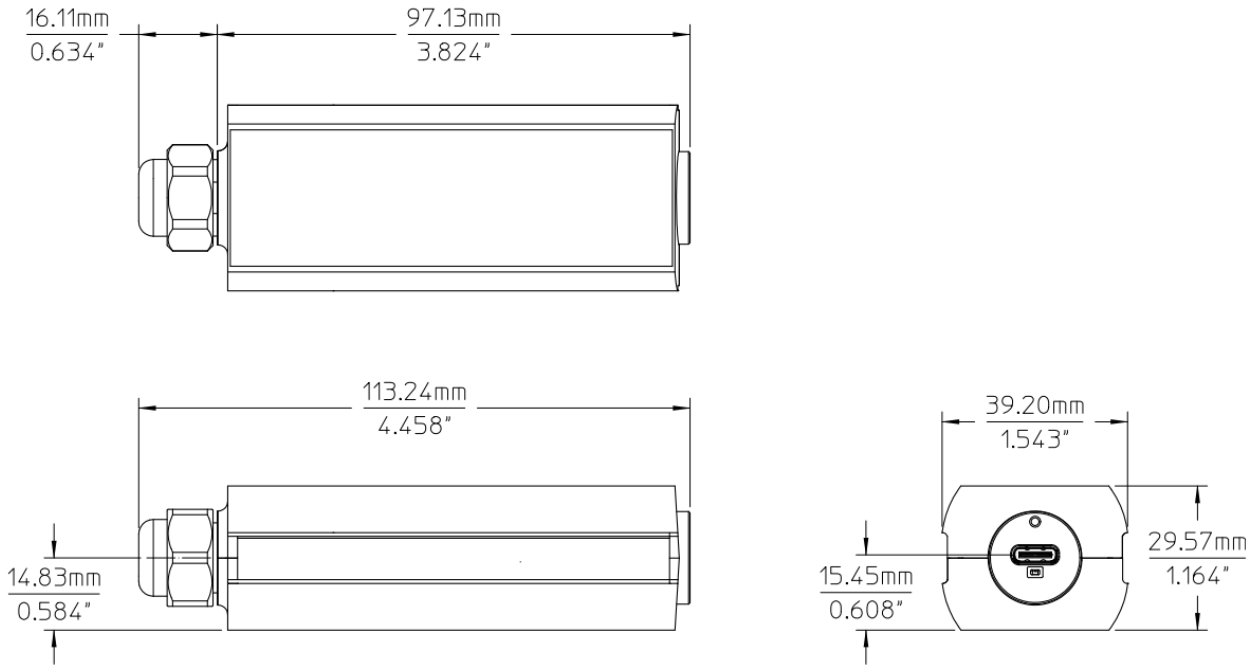

Figure 7. Mechanical dimension of U1832B

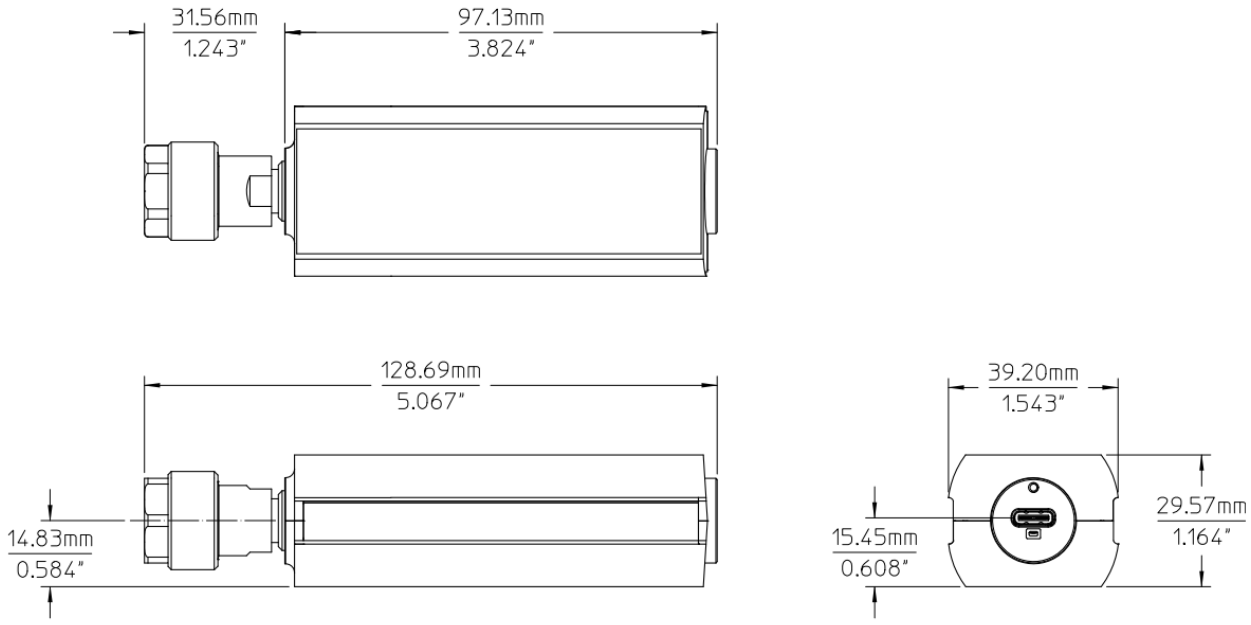

Figure 8. Mechanical dimension of U1833A

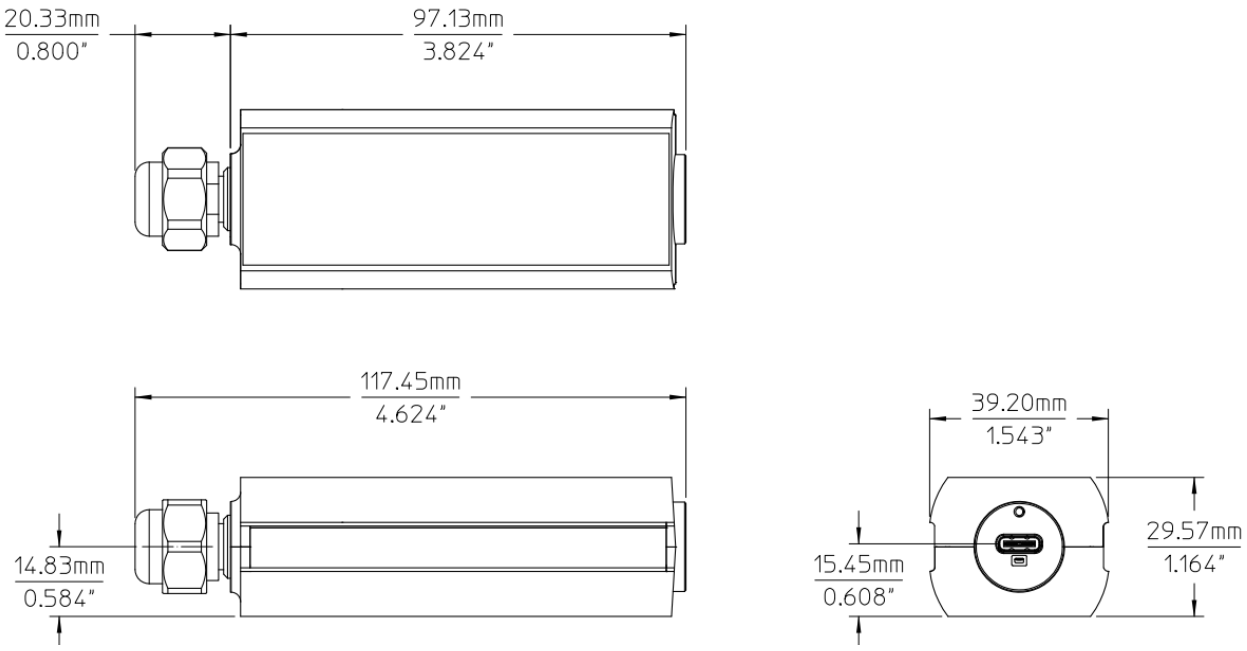

Figure 9. Mechanical dimension of U1833B

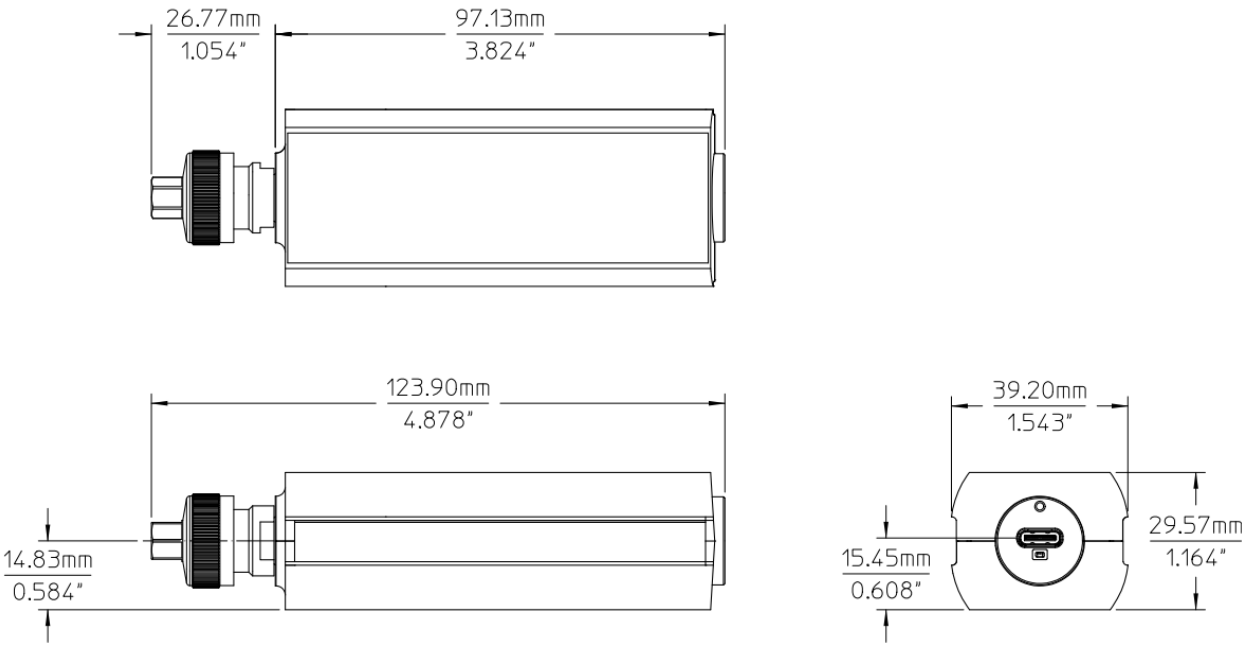

Figure 10. Mechanical dimension of U1832C

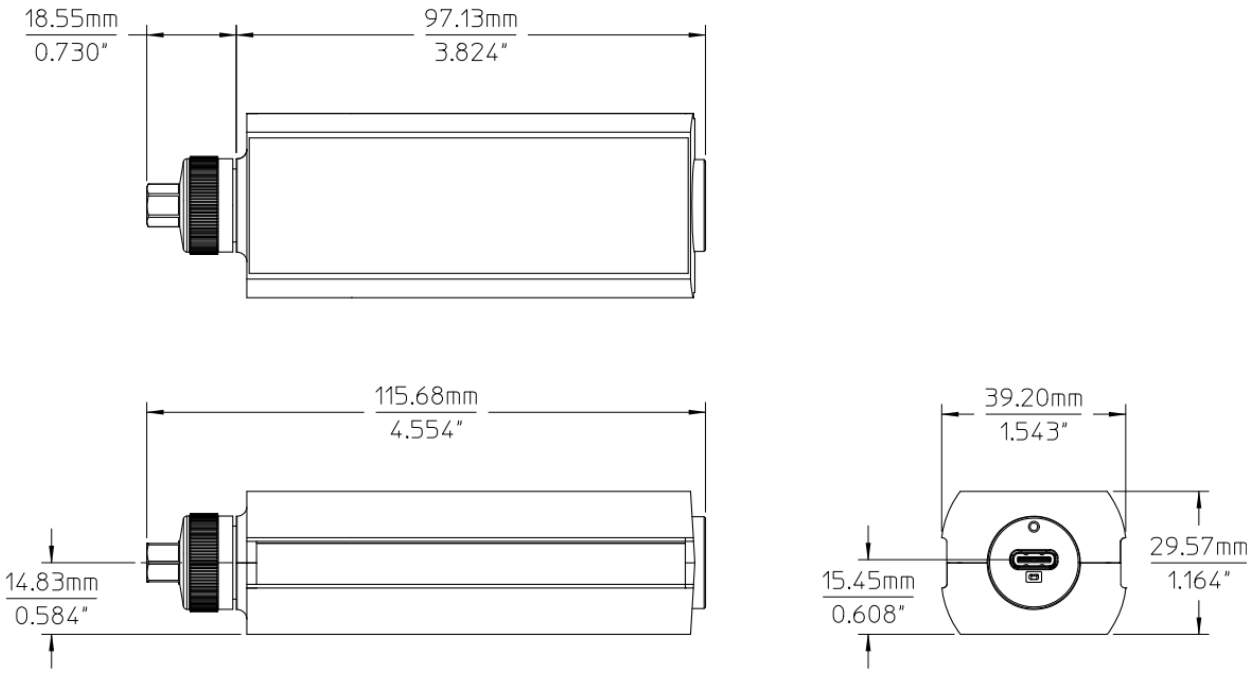

Figure 11. Mechanical dimension of U1833C

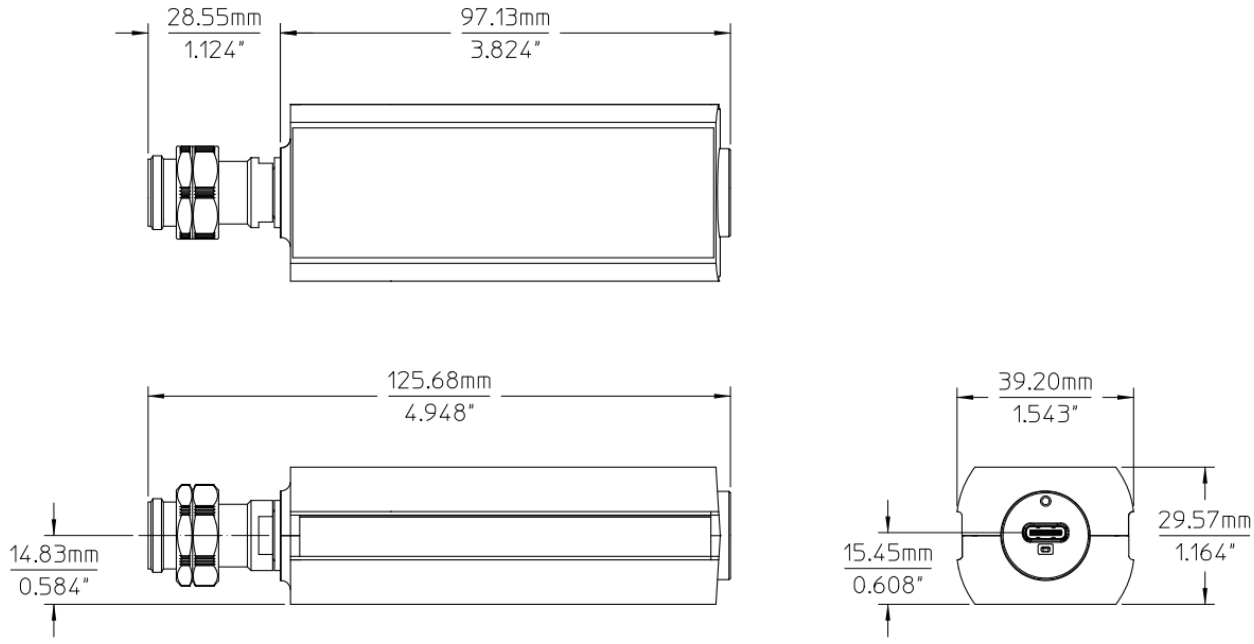

Figure 12. Mechanical dimension of U1833D

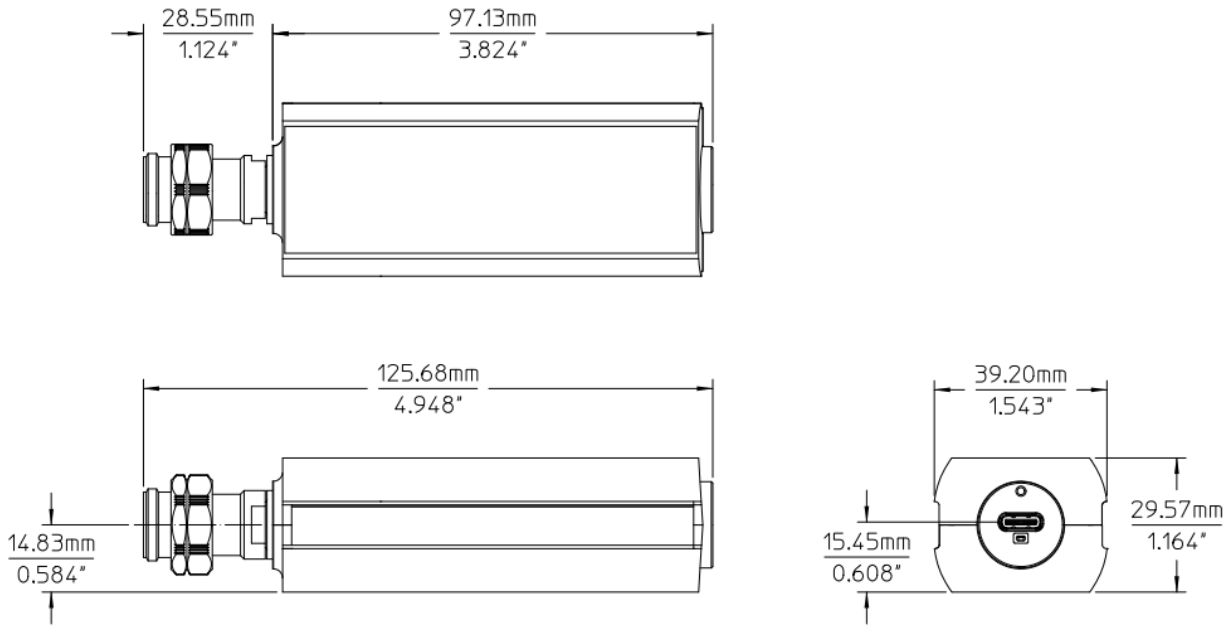

Figure 13. Mechanical dimension of U1833G

Ordering Information

Model/Option	Description
U1832A	10 MHz to 18 GHz, USB smart noise source, 5 dB ENR nominal
U1832B	10 MHz to 26.5 GHz, USB smart noise source, 5 dB ENR nominal
U1832C	500 MHz to 50 GHz, USB smart noise source, 5 dB ENR nominal
U1833A	10 MHz to 18 GHz, USB smart noise source, 15 dB ENR nominal
U1833B	10 MHz to 26.5 GHz, USB smart noise source, 15 dB ENR nominal
U1833C	500 MHz to 50 GHz, USB smart noise source, 15 dB ENR nominal
U1833D	500 MHz to 60 GHz, USB smart noise source, 10 dB ENR nominal
U1833G	500 MHz to 67 GHz, USB smart noise source, 12 dB ENR nominal
Option 101	USB 3.0 (Type C) cable, 1 meter
Option 102	USB 3.0 (Type C) cable, 2 meters