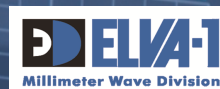




DATA SHEET

Frequency range

140 ÷ 330 GHz in two bands



## Sub-mmWave High ENR CW Noise Source Key Features:

### Full waveguide band

The high level of noise power spectral density within the whole waveguide frequency range. Silicon IMPATT diode is employed as a building block.

### Stable ENR up to 50 dB

- ENR > 45 dB typical
- Good flatness
- No high voltage PS required
- Compact solid state design

### Two Sub-bands

Sub-mm-wave sources are available in WR-05 and WR-03 waveguides

- ISSN-05 Model: 140 to 220 GHz
- ISSN-03 Model: 220 to 330 GHz

## The Future of Communication Technologies

Latest developments in the science, telecommunications and electronics industries have encouraged the use of submillimeter-wave components. Accordingly, submillimeter-wave noise sources are needed to test and calibrate these components.

Such noise sources may be used in various of applications, including measurement of noise figure and noise temperature, and calibration of the radiometers and other microwave receivers for different scientific applications including spectroscopy and radio astronomy.

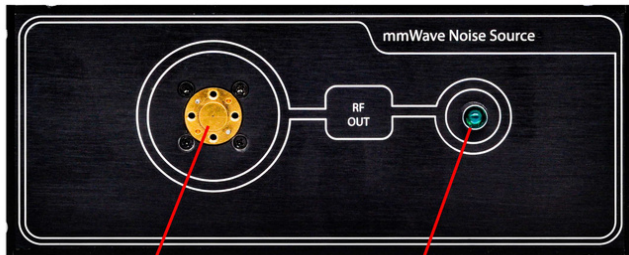
First time in the industry, solid-state noise sources of 220-330 GHz and 140-220 GHz were developed by ELVA-1. These solid-state noise source cover full waveguide bands, i.e. deliver a high level of noise power spectral density within the whole waveguide frequency range. As for other ELVA-1 solid-state noise sources, a silicon IMPATT diode is employed as a fundamental building block of the source.



# INSTRUMENT CONTROLS

ISSN-03 / ISSN-05

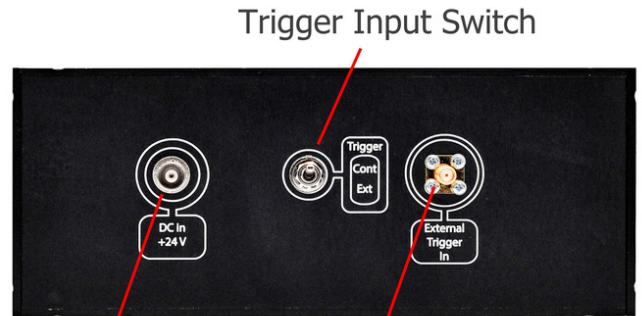
Front panel



RF Output

RF Power LED

Back panel



Power Input 24V DC

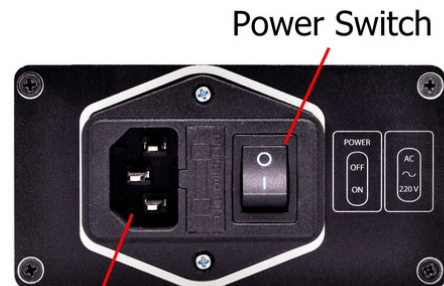
External Trigger Input

## Power Supply - Front and Back panels



Power LED

24V DC Output



Power Plug 230V AC

## Quick guide to operating of ISSN-03 / ISSN-05 noise source

Connect the coaxial BNC cable from power supply 24VDC to the BNC-F connector on ISSN-03 (-05) back panel. Then, turn on the power supply by switching the button on the back panel of the PSU. Make sure that the switch on the back panel of the ISSN-03 (-05) noise source is turned to Cont. position. After that, the mm-wave noise power will appear on the WR-03/05 waveguide output flange on the front panel.

It's possible to turn on/off the output noise power manually by switching the regulator (Cont./Ext.) on the back panel of the ISSN-03/05 case.

It is possible to use the TTL impulses via SMA-F connector on the back panel of the ISSN-03/05 to switch the output noise power automatically on/off. This adds the modulation to the output signal. The low level of the TTL signal corresponds to the output microwave power being turned off, and the high level of TTL corresponds to the output microwave power being turned on.





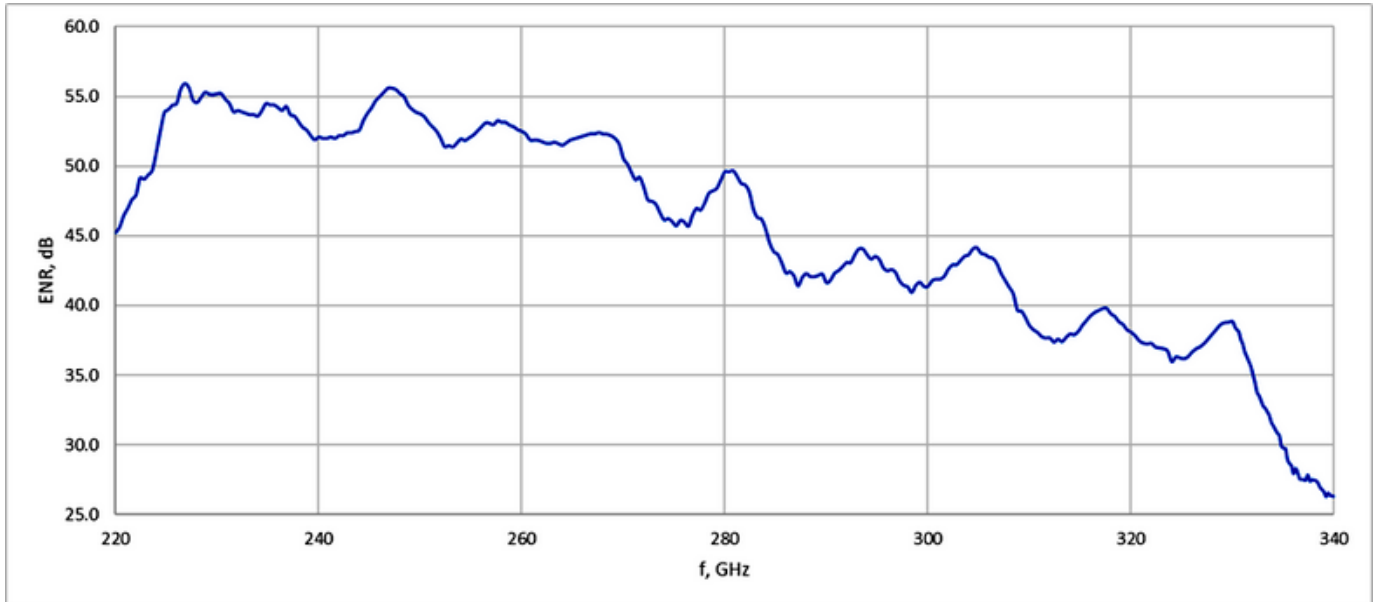
## ISSN-03/ISSN-05 NOISE SOURCES SPECIFICATIONS

Parameter	ISSN-03	ISSN-05
Frequency range, GHz	220 – 330	140-220
ENR, typical, dB	45*	50*
Stability, dB/°C	0.025	0.025
Stability, dB/day (typical)	0.05	0.05
Biasing Voltage, VDC	+24...+28	
Triggering Voltage, V	TTL level	
Power Supply input Voltage, VAC	100 to 240, 50/60 Hz	
Waveguide	WR-03	WR-05
Flange	UG-387/UM	
Noise Source biasing Connector	BNC-F	
Noise Source external trigger Connector	SMA-F	
Power Supply output Connector	BNC-F	
Weight	3.3 kg (noise source) + 0.6 kg (PSU)	
Operating temperature range	+15 to +30 °C (59 to 86 °F)	
Waveguide flange material	Gold plated brass	

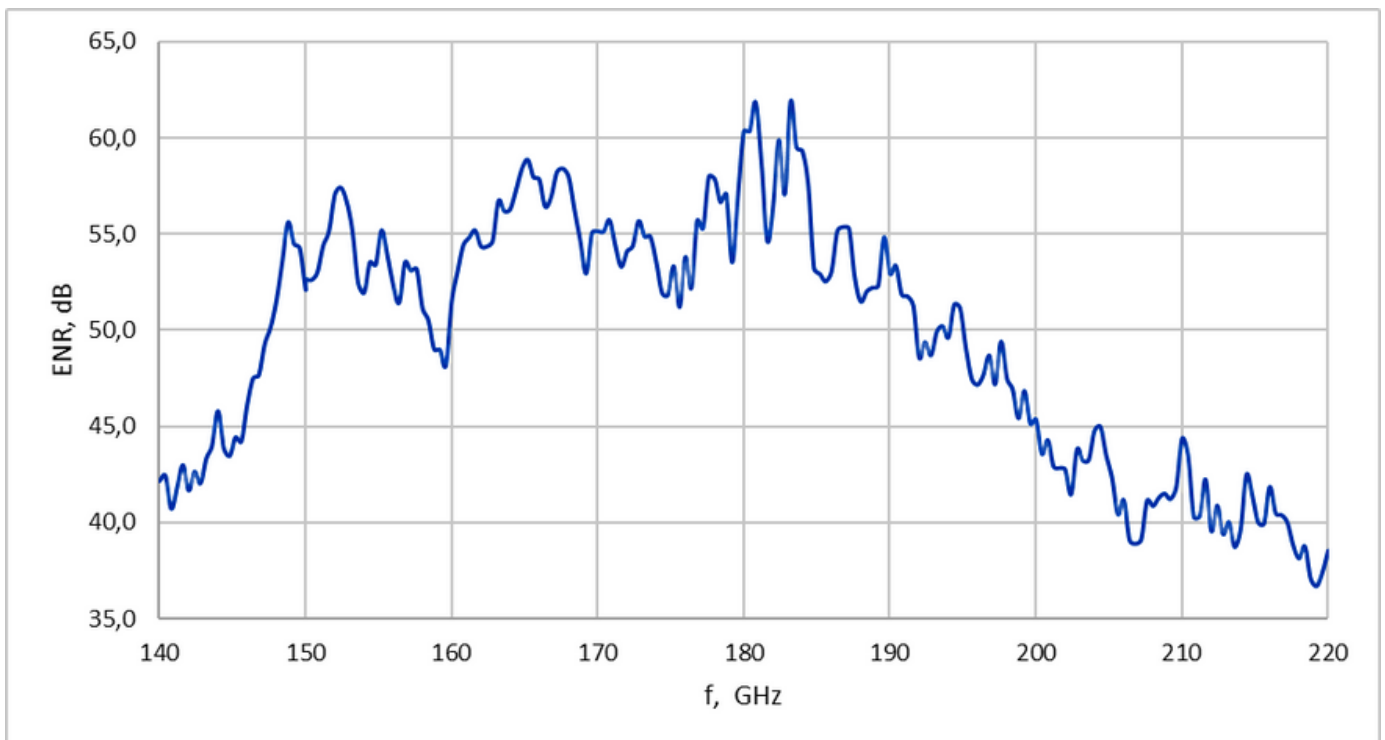
\* Device with lower typical ENR is possible to order by special request

## ISSN-03/ISSN-05 ENR PERFORMANCE

Typical ISSN-03 ENR chart over frequency



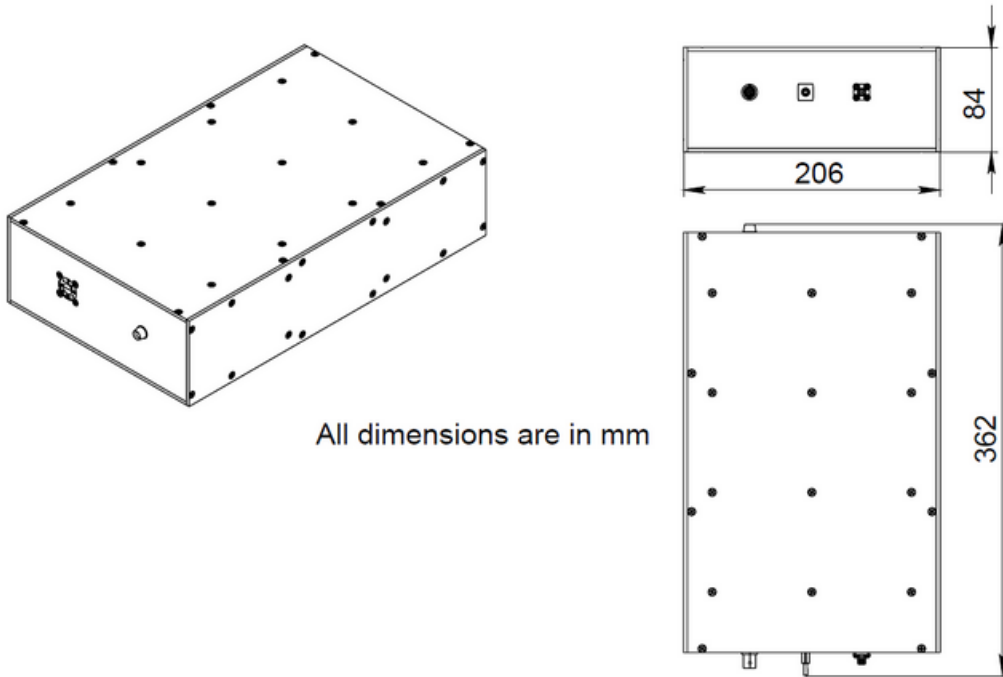
Typical ISSN-05 ENR chart over frequency



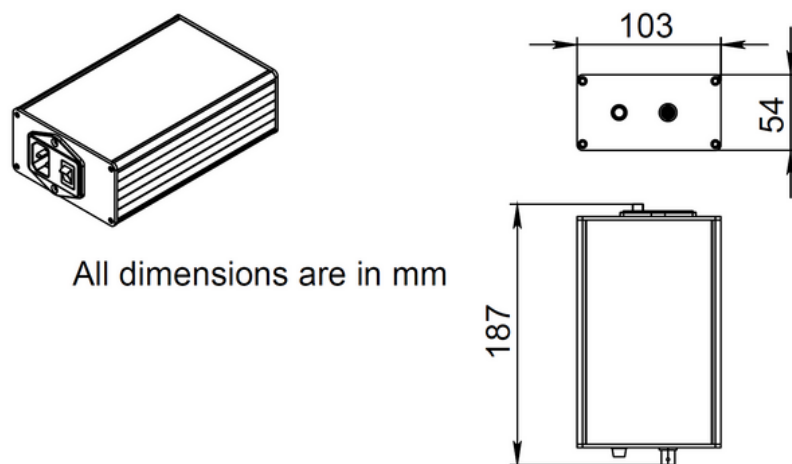
ENR testing was performed under +25°C ambient temperature conditions.

# ISSN-03/ISSN-05 NOISE SOURCES DRAWINGS

## Noise source unit



## Power Supply unit



Customers interested in customised enclosure for noise source and/or power supply unit, please contact ELVA-1.