

# Frequency Doubler 211B

## High-Efficiency 310 – 370 GHz

### Bias-able Frequency Tripler in WR-2.8 Based on ACST's High-Power Multiplier Technology.

211x series is a family of passive frequency Doublers which require bias. These Doublers are based on ACST high-power multiplier technology, covering frequency range between 270 GHz and 370 GHz. This series allows for building cost-effective high-power MM-Wave sources in combination with ACST's 1210x mm-wave sources covering the 136-185 GHz frequency range.

All multiplier designs within this series are based on balanced configuration to suppress undesired harmonics. These Doublers provide a conversion efficiency of typically >20 % within frequency bandwidth of about 12-17 %, and they can reliably handle up to 160 mW of input power. For even higher power level requirements please ask ACST for availability of ultrahigh-power versions.

Model 211B is a standard version of this family. It requires input signal within frequency range of 155 to 185 GHz generating output signal within frequency range of 310 to 370 GHz. Bias control is required for optimal operation at specified input power levels. ACST usually provides a bias box (711A) calibrated according to customer specification for typically available input power.

Various options can optionally be offered and integrated on customer request:

- Horn antenna (for coupling the output signal to free space),
- Waveguide sections compatible with the output RF-port
- Waveguide Variable or fixed Attenuator
- Dedicated Source to provide optimal input RF power (1210B)

Please consult [sales@acst.de](mailto:sales@acst.de) for available options for this product type



#### Product Features

- > Compactness & High-Efficiency
- > Large bandwidth
- > Flat response

#### Application Areas

- > Laboratory instrumentation
- > MM-wave FMCW-Radar
- > Active imaging
- > 5G Telecommunications
- > LO Source for MM/SubMM wave heterodyne receivers

### Technical Specification

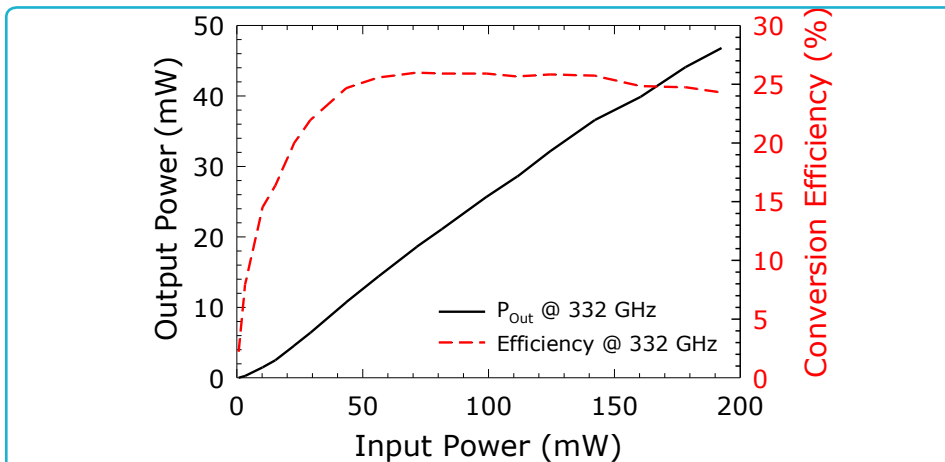
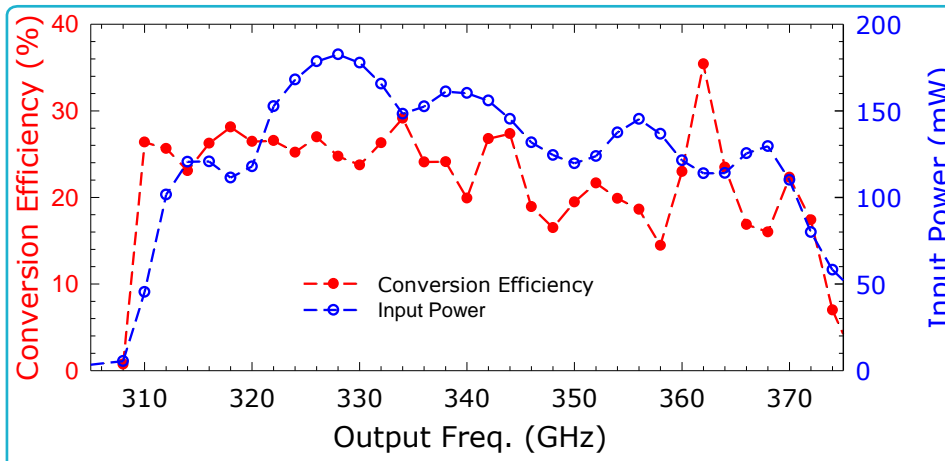
	Minimum	Typ	Maximum
Input Port (UG 387/U-M)		WR-5.1	
Input Frequency (GHz)	155		185
Input Power (dBm)	+13	+20	+22
Output Port (UG 387/U-M)		WR-2.8	
Output Frequency (GHz)	310		370
Output Power (dBm)	+3	+13	+16
Conversion Efficiency* (%)	10	20	25
Input VSWR	1.45:1	1.6:1	1.9:1
Material		Brass	
Finishing		Gold-Plated	

\* Lower Efficiency may be expected at input power lower than specified and near the band edges.

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### Typical Performance



### Absolute Maximum Ratings

	Maximum
Input Power (dBm)	+22.5
Operational Temperature and Humidity	5 °C to 45 °C // 0% to 80%
Storage Temperature and Humidity	5 °C to 65 °C // 0% to 80%

### Order information

- Please indicate product name and type.
- Please indicate expected input power requirements

### Notes

- > All plotted data represent typical values. The actual data may vary from unit to unit.
- > All tests are carried out at a room temperature of 24 °C.
- > All tests are carried out using the included Bias Box 711A

### Caution

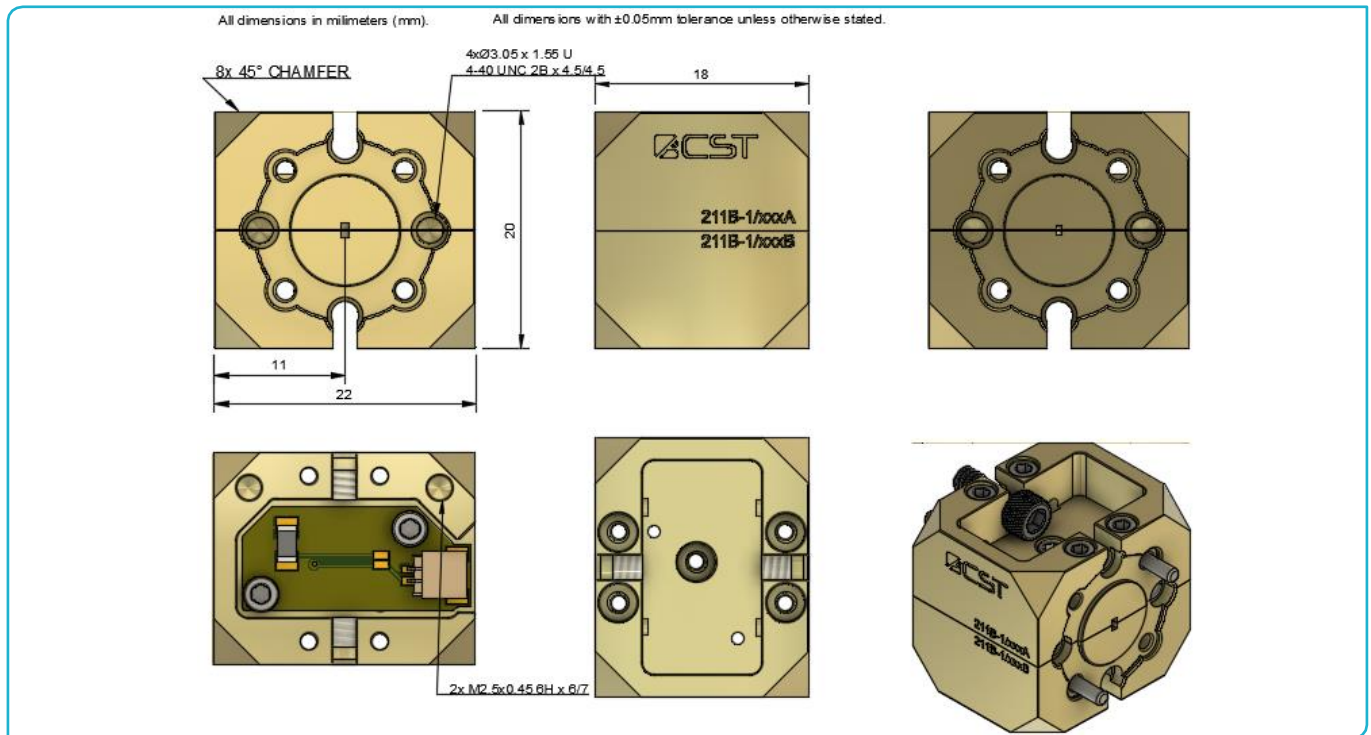
- > Absolute maximum ratings should not be used under normal operating conditions. Exceeding maximum ratings may lead to permanent failure.
- > Any foreign body inserted into the waveguide will cause a loss of performance and may damage the device.



ACST GmbH reserves the right to make changes to the product or information contained herein without notice. Visit [www.acst.de](http://www.acst.de) for additional data sheets and product information.

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## Outline Dimensions



## Mechanical Description

	Maximum
Size (without dowel pin)	16 mm x 20 mm x 21.63 mm
Output Waveguide Orientation	E-Plane