

# Frequency Tripler 215A

## High-Efficiency 410 – 470 GHz

### Bias-able Frequency Tripler in WR-2.2 Based on ACST's High-Power Multiplier Technology.

215x series is a family of passive frequency triplers which require bias. These triplers are based on ACST high-power multiplier technology, covering frequency range between 410 GHz and 540 GHz. This series allows for building cost-effective high-power MM-Wave sources in combination with ACSTs 1210x mm-wave sources covering the 136-180 GHz frequency range.

All multiplier designs within this series are based on balanced configuration to suppress undesired harmonics. These triplers provide a conversion efficiency of typically >10 % within frequency bandwidth of about 10-12 %, 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 215A is the high-power version of this family. It requires input signal within frequency range of 136.6 to 157 GHz generating output signal within frequency range of 410 to 470 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 1210x Source to provide optimal input RF power

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

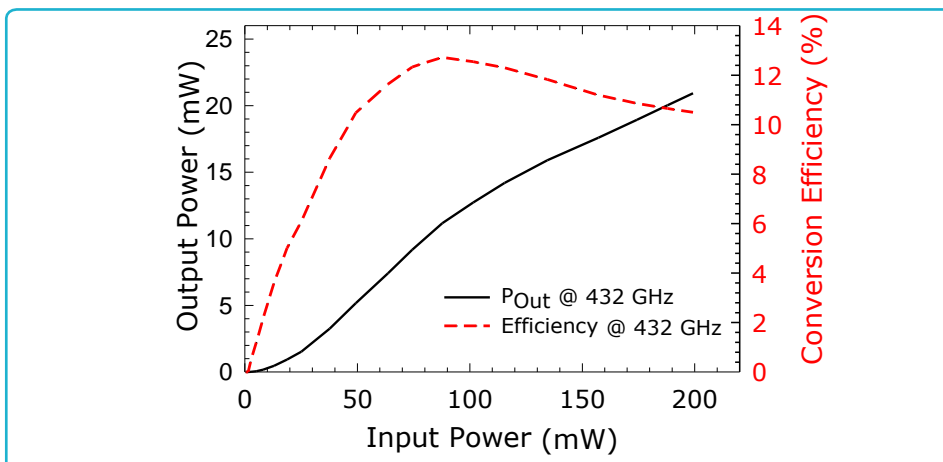
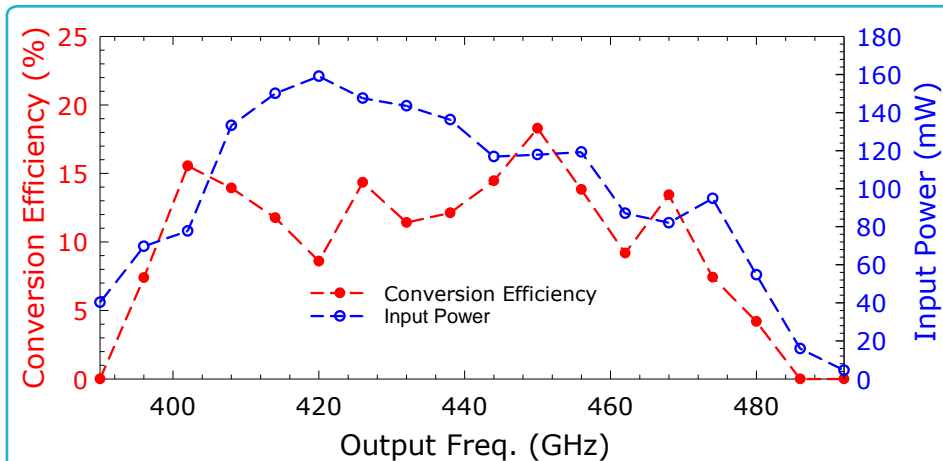
|                            | Minimum | Typ         | Maximum |
|----------------------------|---------|-------------|---------|
| Input Port (UG 387/U-M)    |         | WR-6.5      |         |
| Input Frequency (GHz)      | 136.6   |             | 157     |
| Input Power (dBm)          | +17     | +20         | +22     |
| Output Port (UG 387/U-M)   |         | WR-2.2      |         |
| Output Frequency (GHz)     | 410     |             | 470     |
| Output Power (dBm)         | +7      | +11         | +13     |
| Conversion Efficiency* (%) | 10      | 12          | 15      |
| 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                        |
| Operational Temperature and Humidity (at the case) | 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.

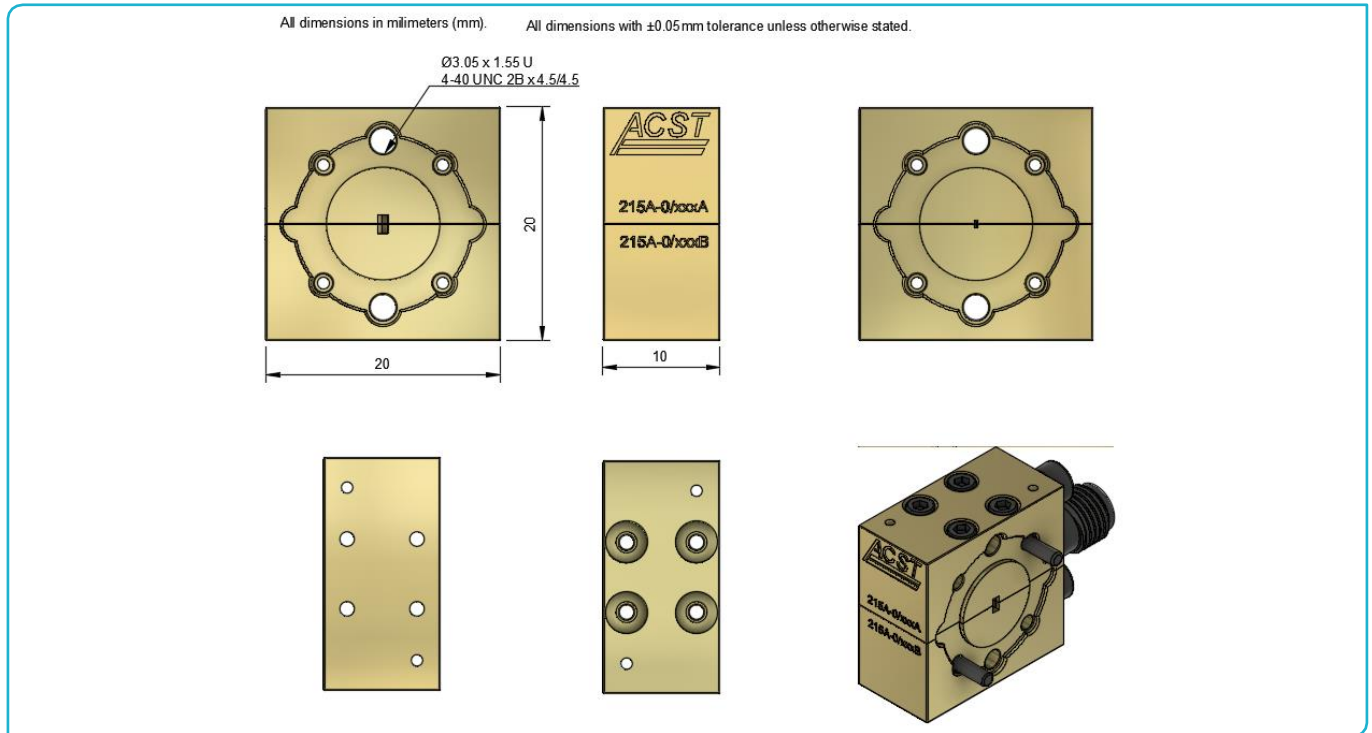


ACST GmbH reserves the right to make changes to the product or information contained herein without notice. Visit [www.acst.de](http://www.acst.de) for additional data sheets and product information.

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### Outline Dimensions



### Mechanical Description

|                              | Maximum               |
|------------------------------|-----------------------|
| Size (without dowel pin)     | 10 mm x 20 mm x 20 mm |
| Output Waveguide Orientation | E-Plane               |