

# Frequency Doubler 214G

## Broadband 90 – 140 GHz

### Non-Biasable Full-band Frequency Doubler in WR-8.0 Based on ACST's High-Power Multiplier Technology.

214x series is a family of passive frequency doublers which don't require bias. These Doublers are based on ACST high-power multiplier technology, covering the frequency range between 90 GHz and 190 GHz. This series allows for building cost-effective high-power full-band MM-Wave sources in combination with most powerful commercially-available High-Power Amplifier MMIC technology developed at V and E-Band.

All multiplier designs within this series are based on balanced configuration to suppress undesired harmonics. These Doublers provide a conversion efficiency of typically >8 % within frequency bandwidth of about 40-45 %, and they can reliably handle up to 250 mW of input power. For even higher power level requirements please ask ACST for availability of high- and ultrahigh-power versions.

Model 214G is the standard version of this family. It requires input signal within frequency range of 45 to 70 GHz generating output signal within frequency range of 90 to 140 GHz. Bias control isn't required.

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 (1216D)

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



#### Product Features

- > Compactness, High-Power & Efficiency
- > Full Waveguide 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

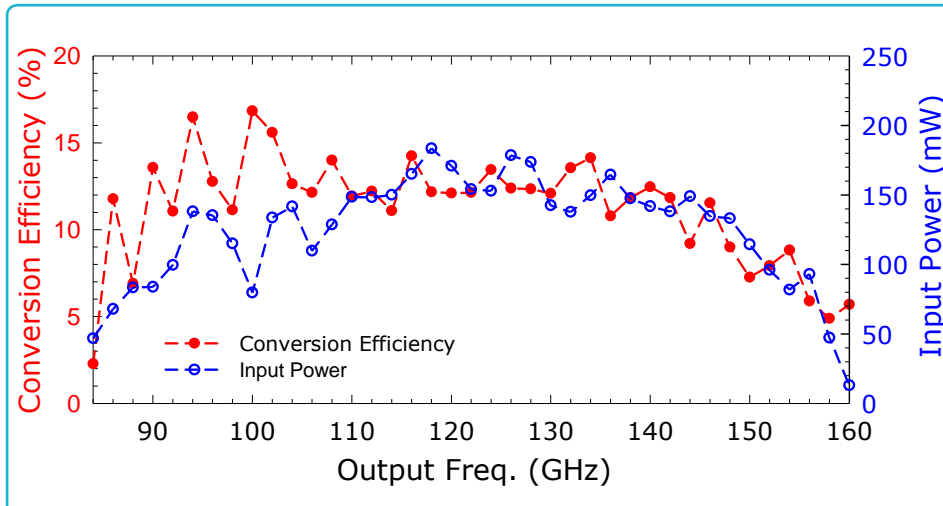
	Minimum	Typ	Maximum
Input Port (UG 387/U-M)		WR-15	
Input Frequency (GHz)	45		70
Input Power (dBm)	+17	+20	+24
Output Port (UG 387/U-M)		WR-8.0	
Output Frequency (GHz)	90		140
Output Power (dBm)	+4	+10	+15
Conversion Efficiency* (%)	8	10	13
Input VSWR	1.45:1	1.6:1	1.9:1
Material		Brass	
Finishing		Gold-Plated	

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

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### Typical Performance



#### 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.

### Absolute Maximum Ratings

	Maximum
Input Power (dBm)	+24
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%

#### 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.

### Order information

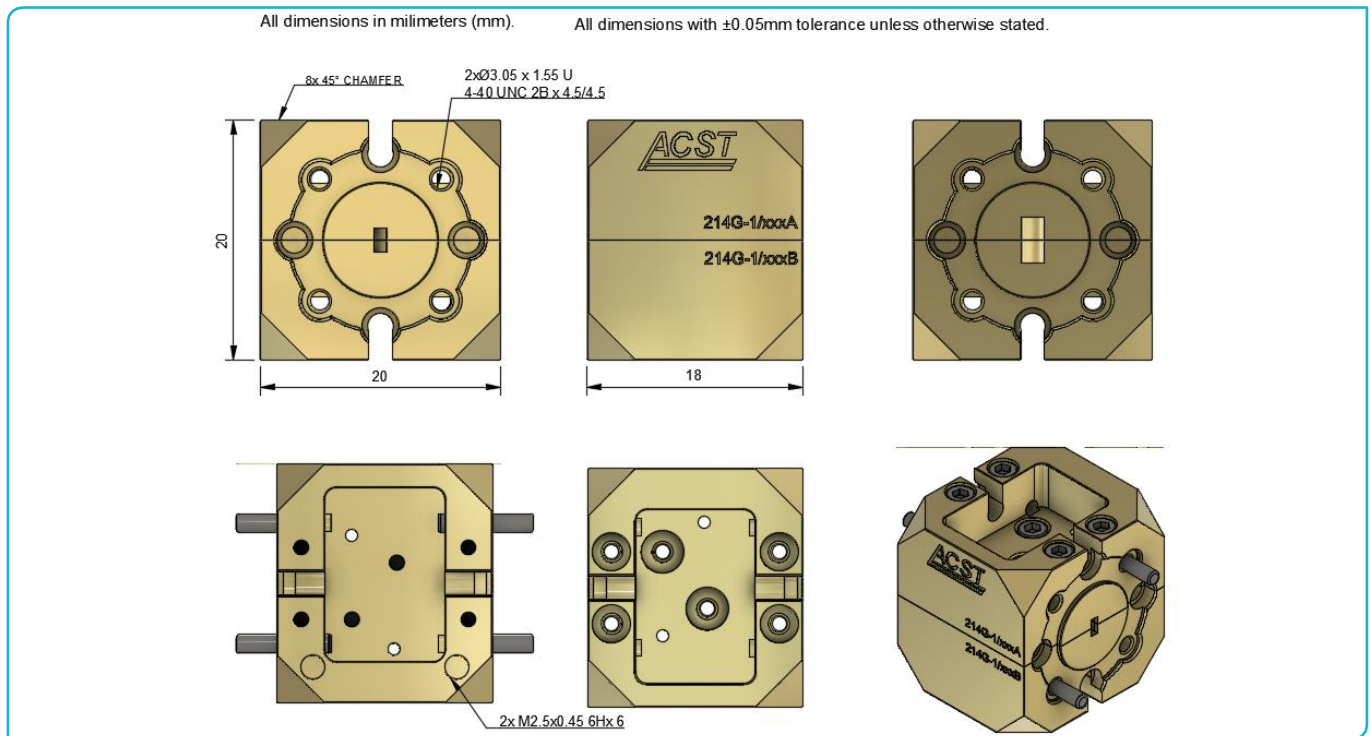
- Please indicate product name and type.
- Please indicate expected input power requirements



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)	18 mm x 20 mm x 20 mm
Output Waveguide Orientation	E-Plane