

### 120-160GHz Up-Converter, X8 on LO line Bench-top Test Equipment, WR-06



#### Product Overview

AT-BTUC8T-120-160 is 120-160GHz Up-converter with X8 frequency multiplier inside. The Up converter IF-RF conversion loss is -18dB.

The RF Port is with standard WR-06. LO input port and IF input port are SMA Female. Please note there will be both up and low band for the mixer. AT Microwave provides many kinds of filters if only one side is needed.

PDRO, Band Pass filter and Power amplifier can be integrated internally or externally according to request.

More information, please contact [sales@atmicrowave.com](mailto:sales@atmicrowave.com)

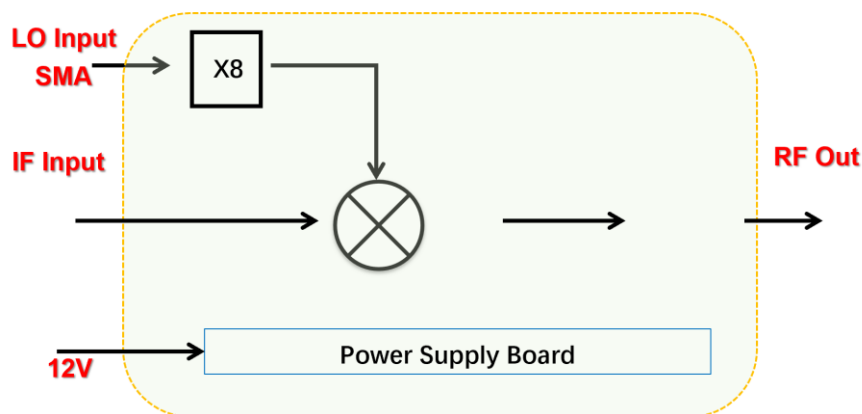
#### Advantages

- ✓ Frequency: 120-160GHz
- ✓ Low Loss: -18dB
- ✓ IF: DC-12GHz
- ✓ LO X8 inside
- ✓ Bench-Top Labs Test

#### Application

- ✓ 5G Communication
- ✓ ROF (RF Over Fiber)
- ✓ Radar System
- ✓ RCS Test

#### Diagram Block:





# AT-BTUC8T-120160

Bench-Top 110-170GHz Up-Converter

## Key Features

Parameter	Min	Typical	Max
RF Frequency	120GHz		160GHz
LO Frequency	12GHz		20GHz
LO Multiplier Factor		X8	
LO Driver	+10dBm	+13dBm	+15dBm
IF Frequency		DC-12GHz	
IF-RF Gain		-18dB	
IF Port Input P1dB		0dBm (tbd)	
LO Port Return Loss		-10dB	
IF Port Return Loss		-10dB	
Power Supply (with AC/DC Adapter)	+90V	+220V	260V
RF Port		WR-06 Female	
LO Port		SMA Female	
IF Port		SMA Female	

## Notes:

1. Datasheet may be changed according to update of MMIC, Raw materials , process, and so on.
2. This data is only for reference, not for guaranteed specifications.
3. Please contact AT Microwave team to make sure you have the most current data.





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Bench-Top 110-170GHz Up-Converter

## Mechanical Information:

Parameter	Value
RF Port	WR-06 Female
LO/IF Port	SMA Female
DC Bias	+12V Supply, AC to DC Power Converter included
DC Bias Switch	ON-OFF switch with light indicator
Dimension	204x127x74.6mm

## Absolute Maximum Ratings Table

Parameter	Value
AC Supply	+260V
IF Input Power	+7dBm
LO Port Power	+23dBm
Operating Temperature	0 to 50 C
Storage Temperature	-65 to +125C



### Application Note

Mixer is a three ports component with RF, LO and IF ports. Normally, a mixer can be used both up and down converter application. Take up converter for example:

#### General Balance Mixer

For general balance mixer,  $RF=LO \pm IF$ . There will be both high end  $LO+IF$  and Low End  $LO-IF$ . Take for example,  $IF=2GHz$ ,  $LO=140GHz$ , so there will be  $138GHz$  and  $142GHz$  at RF port with same power level.

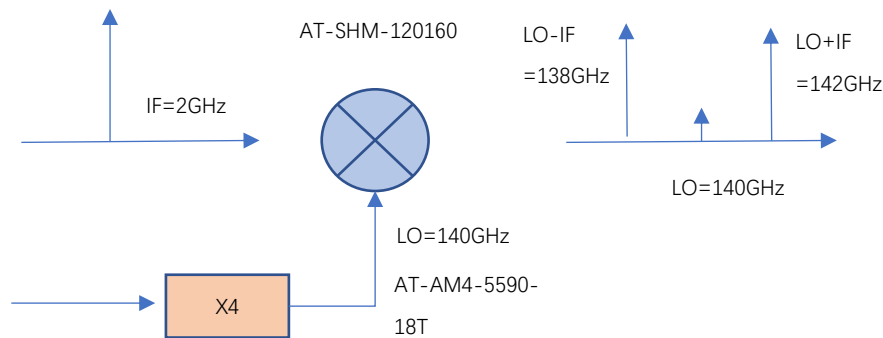


Figure A: General Balance Mixer with Both High and Low Side Output

#### IQ Mixer used as side suppression Mixer

When  $IF=2GHz$ , 90 degree hybrid is used at IF port, when IF applies to Input 1 Port of hybrid, you will have high end frequency  $RF=LO+IF=142GHz$ , while have side suppression (say  $-15dBc$ ) at Low end frequency  $138GHz$ .

When you need low end frequency  $138GHz$ , and make side suppression for high end frequency  $142GHz$ , just applies IF to Input 2 of the hybrid.

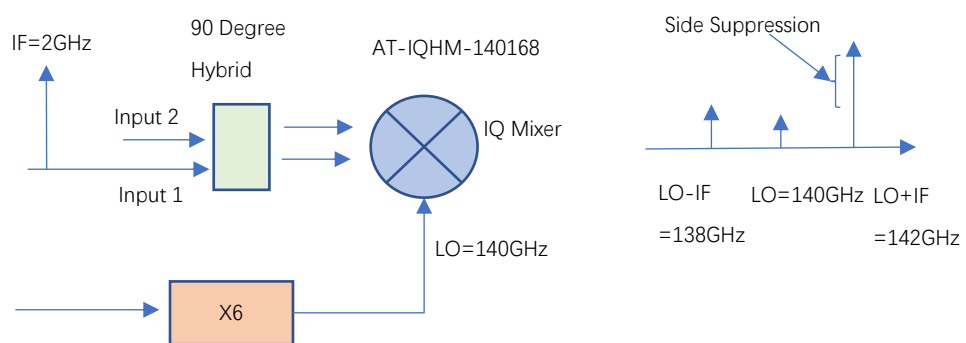


Figure B: IQ Mixer works as side suppression mixer





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## Partial Related Products

### Low Noise Amplifier

Part Number	Type	Low Fre /GHz	High Fre /GHz	Gain	NF	Connector
AT-LNA-110170-1806T	Full D Band	110	170	18	6	WR-06
AT-LNA-140200-1607T	G Band	140	200	16	7	WR-05

### Power Amplifier

Part Number	Type	Low Fre /GHz	High Fre /GHz	Gain /dB	P1 /dBm	Psat /dBm	Connector
AT-PA-80135-1320GN-08	F Band	80	135	13	15	20	WR-08
To be added							

### Band Pass Filter

Part Number	Freq Low /GHz	Freq High /GHz	Low Stop /GHz	Rejection /dB	High Stop /GHz	Rejection /dB	Connector
AT-BPF-130134	130	134	90-126	20	139-170	20	WR-06
AT-BPF-135149	135	149	110-131	20	153-170	20	WR-06
AT-BPF-140148	140	148	110-136	20	153-170	20	WR-06
AT-BPF-140160	140	160	110-136	20	170	20	WR-06
AT-BPF-152162	152	162	110-148	20	166-170	20	WR-06
AT-BPF-151164	151	164	110-146	20	170	20	WR-06

### Fixed Frequency PRDO

AT-PDRO-XXGHz-IR	1-43GHz Low Phase Noise Phase Locked DRO
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### Dimension: (mm)

