

40-60GHz Up-Converter, X4 on LO line Bench-top Test Equipment, WR-19

2022-12-1



Product Overview

AT-BTUC4-4060 is 40-60GHz Up-converter with X4 frequency multiplier inside. The Up converter IF-RF conversion loss is -10dB.

The RF Port is with standard WR-19. 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

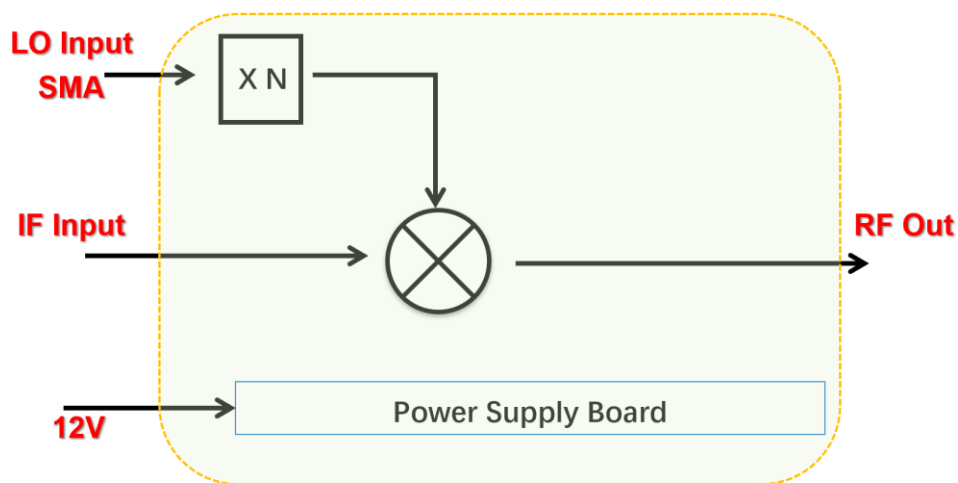
Advantages

- ✓ Frequency: 40-60GHz
- ✓ Low Loss: -10dB
- ✓ IF: DC-20GHz
- ✓ LO X4 inside
- ✓ Bench-Top Labs Test

Application

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

Diagram Block:





AT-BTUC4-4060

Bench-Top 40-60GHz Up-Converter

Key Features

Parameter	Min	Typical	Max
RF Frequency	40GHz		60GHz
LO Frequency	10GHz		15GHz
LO Driver	+3dBm	+5dBm	+8dBm
LO Multiplier Factor		X4	
4XLO Frequency Range	40GHz		60GHz
Mixer Type		Fundamental Mixer	
IF Frequency		DC-20GHz	
IF-RF Gain		-10dB	-15dB
IF Port Input P1dB		+9dBm	
RF Port Return Loss		-10dB	
IF Port Return Loss		-10dB	
Spec Temp		25C	



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AT-BTUC4-4060

Bench-Top 40-60GHz Up-Converter

Mechanical Information:

Parameter	Value
RF Port	WR-19
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	See outline

Absolute Maximum Ratings Table

Parameter	Value
AC Supply	+260V
IF Input Power	+15dBm
LO Port Power	+20dBm
Operating Temperature	0 to 50 C
Storage Temperature	-45 to +85C

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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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, $IF=2GHz$, $LO=40GHz$, so there will be $38GHz$ and $42GHz$ at RF port with same power level.

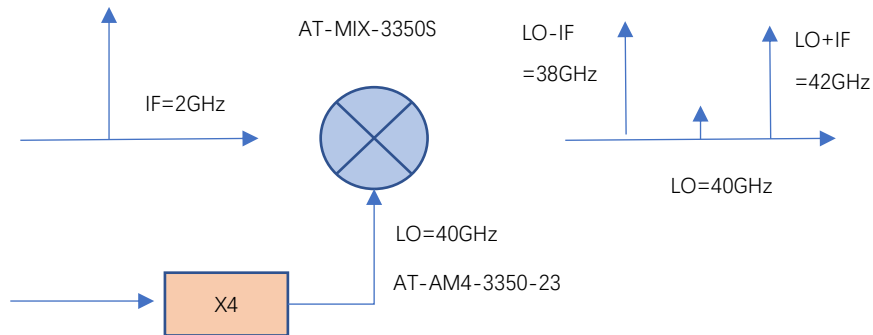


Figure A: General Balance Mixer with Both High and Low Side Output

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 $RF=LO+IF=42GHz$, while have side suppression (say $-25dBc$) at Low end frequency $38GHz$.

When you need low end frequency $38GHz$, and make side suppression for high end frequency $42GHz$, just applies IF to Input 2 of the hybrid.

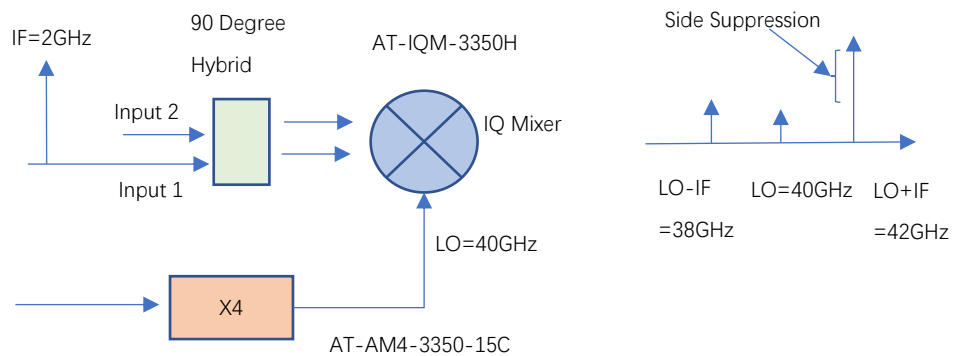


Figure B: IQ Mixer works as side suppression mixer

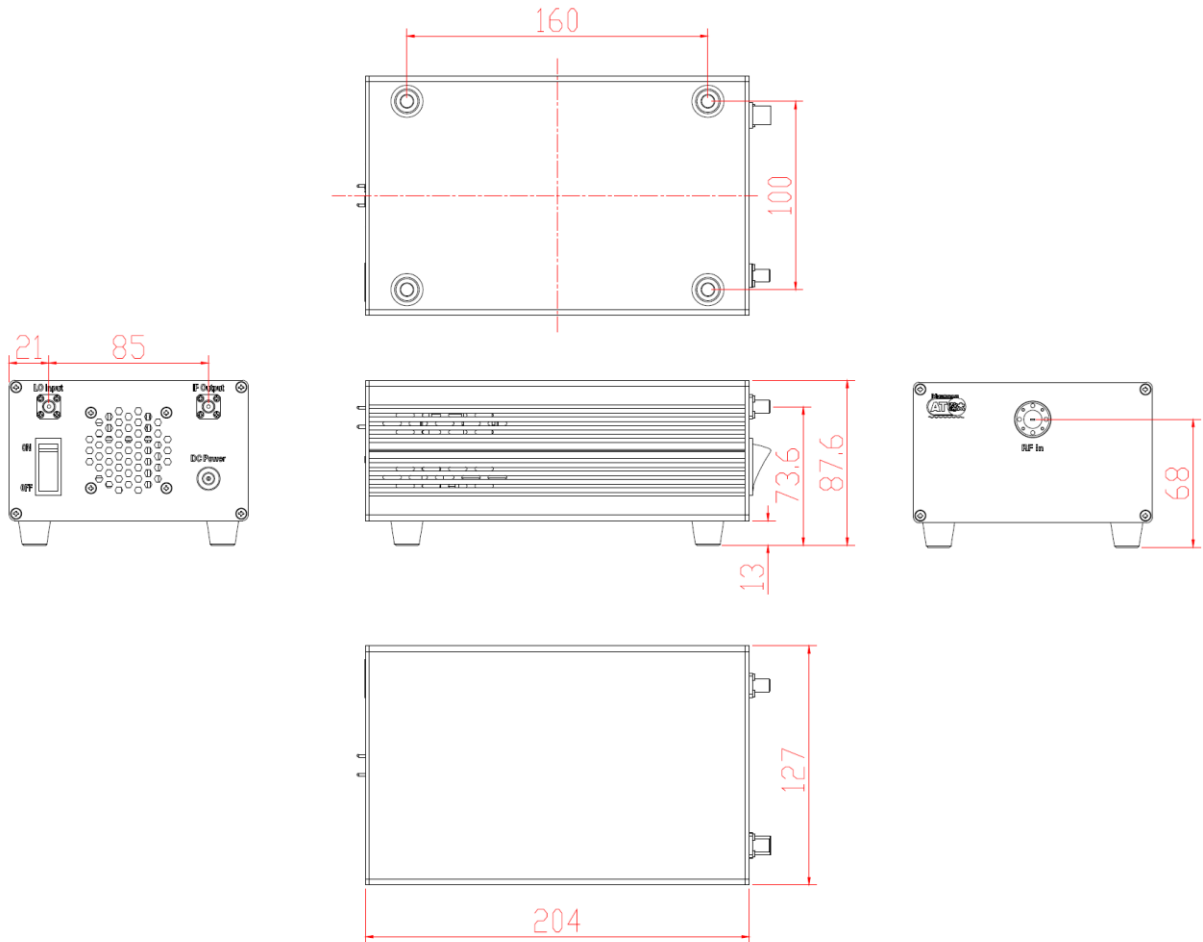




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Bench-Top 40-60GHz Up-Converter

Dimension: (mm)



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