

## D Band: 140-160GHz Compact Receiver

2023-4-25

## LO with X12 Amplified Frequency Multiplier Chain



(Picture for reference only)

### Description:

AT-DRX-140160SIF is compact D Band Rx with RF frequency from 140-160GHz. LO link is with x12 amplified multiplier chain with input of 11.66-13.33GHz. IF inputs frequency range is dc-12GHz

It's suitable for D band point to point communication, instrumentation, sensing, security and high resolution imaging applications. AT Microwave also provides D band power amplifiers and band pass filter for communication application.

For more information, please visit [www.atmicrowave.com](http://www.atmicrowave.com)

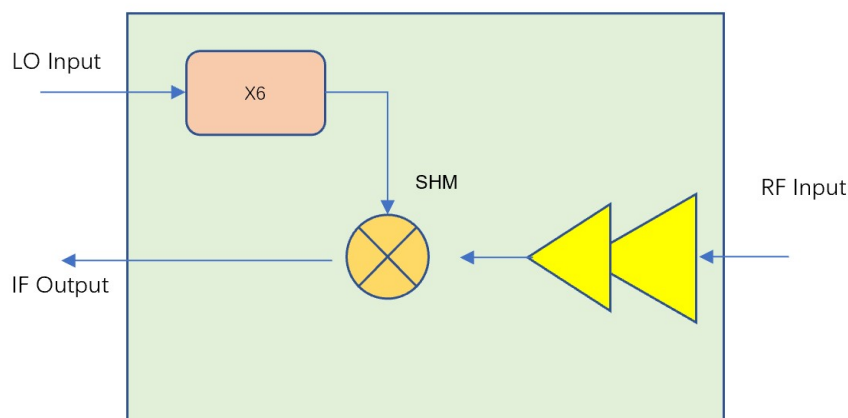
### Feature

- ✓ RF: 140-160GHz
- ✓ LO:11.66-13.33GHz with X12 Multiplier
- ✓ IF: DC-12GHz
- ✓ High Gain 15dB
- ✓ Low NF=6dB

### Application

- ✓ D band Imaging
- ✓ FOD (Foreigner Objects Debris)
- ✓ Test Equipment
- ✓ ROF (RF Over Fiber)
- ✓ Radar System

## Diagram Block





# AT-DRX-140160SIF

140-160GHz D Band Receiver

## Electrical Specifications:

Parameter	Min	Typical	Max
RF		140-160 GHz	
LO		10.41-11.66 GHz	
6XLO Frequency Range		70-80GHz	
LO Driver	+3dBm	+5 dBm	+10
LO Multiplier Factor		X6	
Mixer Type		Sub-Harmonic Mixer	
Conversion Gain		15dB	
NF		6dB	9dB
RF Input P1dBm		-35dBm	
Power Supply		+5V/ 150mA	
Temp Spec		25C	





# AT-DRX-140160SIF

## 140-160GHz D Band Receiver

### Mechanical Information

Parameter	Description
RF Port	WR-06
LO Port	SMA Female
IF Port	SMA Female
Case Material (Note)	Copper
Finish	Gold Plated
Weight	180g
Dimension	See outline

Note: Aluminium for lighter weight is available according to request

### Absolute Maximum Ratings Table

Parameter	Value
RF Power	+7dBm
LO Port	+15dBm
Power Supply	+7V
Operating Temperature	0 to +50C
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.



### Application Note

Mixer is a three port 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,  $IF=2GHz$ ,  $LO=94GHz$ , so there will be  $92GHz$  and  $96GHz$  at RF port with same power level.

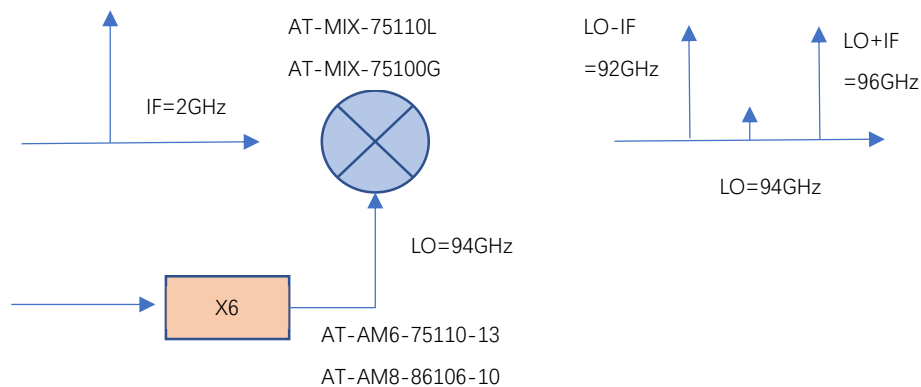


Figure A: General Balance Mixer with Both High and Low Side Output

#### IQ Mixer used as side suppression Mixer

When  $IF=2GHz$ , 90 degree hybrid is used at IF port, and IF applies to Input 1 Port of hybrid, you will have high end frequency  $RF=LO+IF=96GHz$ , while have side suppression (say  $-25dBc$ ) at Low end frequency  $92GHz$ .

When you need low end frequency  $92GHz$ , and make side suppression for high end frequency  $96GHz$ , just applies IF to Input 2 of the hybrid.

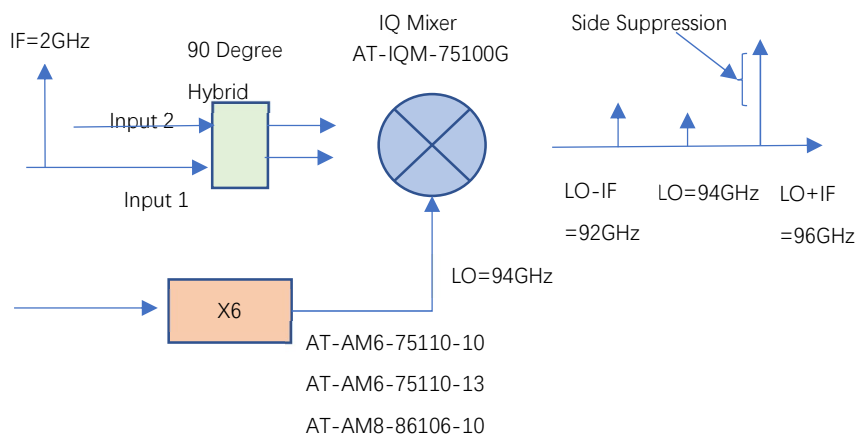


Figure B: IQ Mixer works as side suppression mixer

