

## 90-98GHz IQ Receiver, High Gain, NF=4dB

2022-3-2



### Product Overview

AT-WRX-9098IQ is high gain W-Band IQ receiver. The receiver is integrated with High Performance GaAs MMIC chips, with Gain=23dB, NF=4dB. RF frequency range is 90-98GHz, LO range is 10.7-13.3GHz with x8 time inside. IF range is DC-10GHz

The receiver is with compact size. LO/IF port is with SMA, and RF port is with standard WR-10. The module can also be used for RF from 86 to 100GHz with some degrade of performance

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

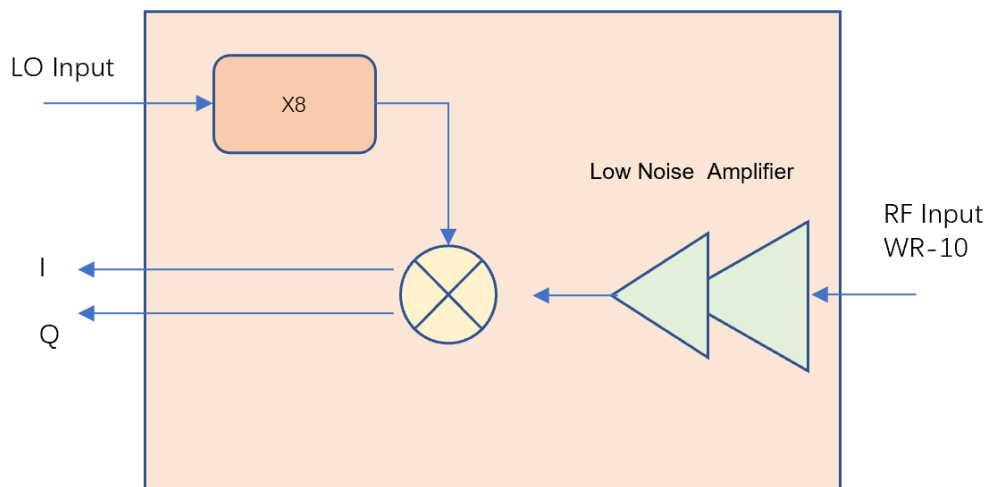
### Feature

- ✓ Frequency: 90-98GHz
- ✓ Gain: +23dB typical
- ✓ IF Range: DC-10GHz
- ✓ Single Power Supply

### Application

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

### Diagram Block





# AT-WRX-90981Q

IQ Receiver, 90-98GHz, Gain 23dB

## Key Features

Parameter	Min	Typical	Max
RF Frequency		90-98GHz	
Input Power		-40 dBm	-15
LO Frequency	10.7GHz		13.3GHz
LO Multiplier Factor		X8	
LO Power	0	+3dBm	+5dBm
IF Frequency		DC-10GHz	
RF to IF Gain	20	23 dB	
NF		4 dB	6
Drain Power Supply		+5V	+8V
Current		300mA	
Spec Temp		+25C	

## Mechanical Information

Item	Description
RF Port	WR-10
IF Port	SMA Female
LO Port	SMA Female
Finish	Gold Plated
Weight	225g
Size:	See outline

## Absolute Maximum Ratings Table

Parameter	Value
Drain Supply	+9V
RF Input Power	+10 dBm
LO Input Power	+15dBm
Operating Temperature	0 to +50C
Storage Temperature	-65 to +150C

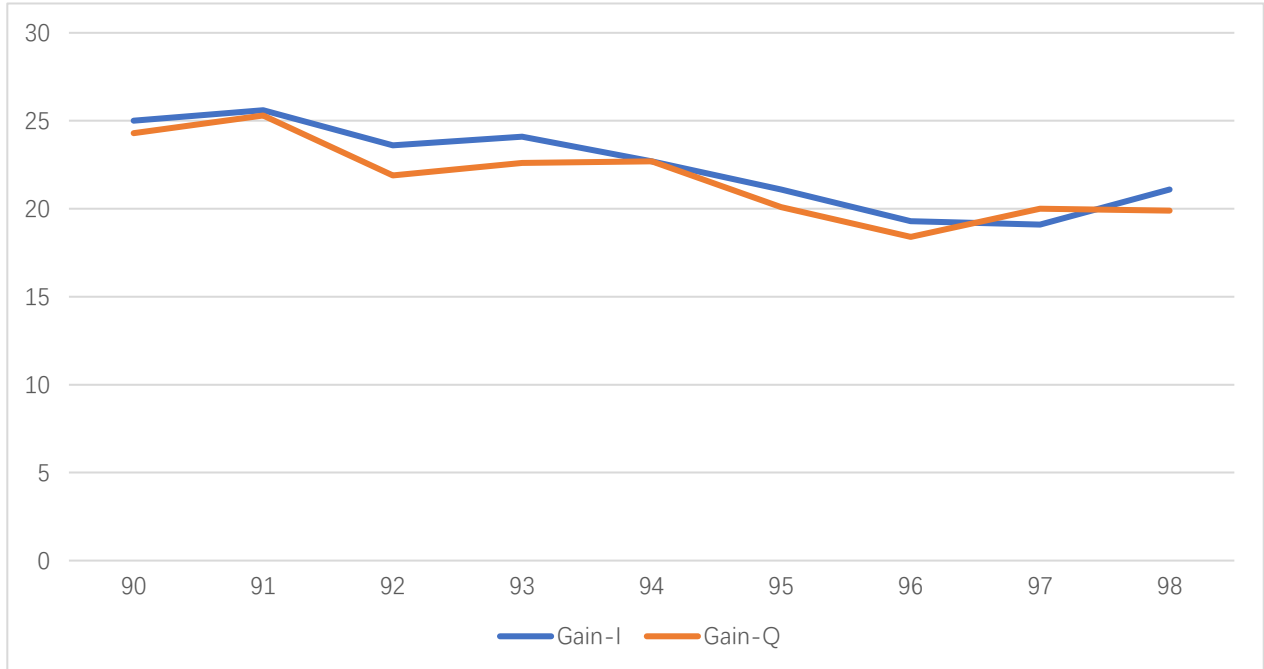




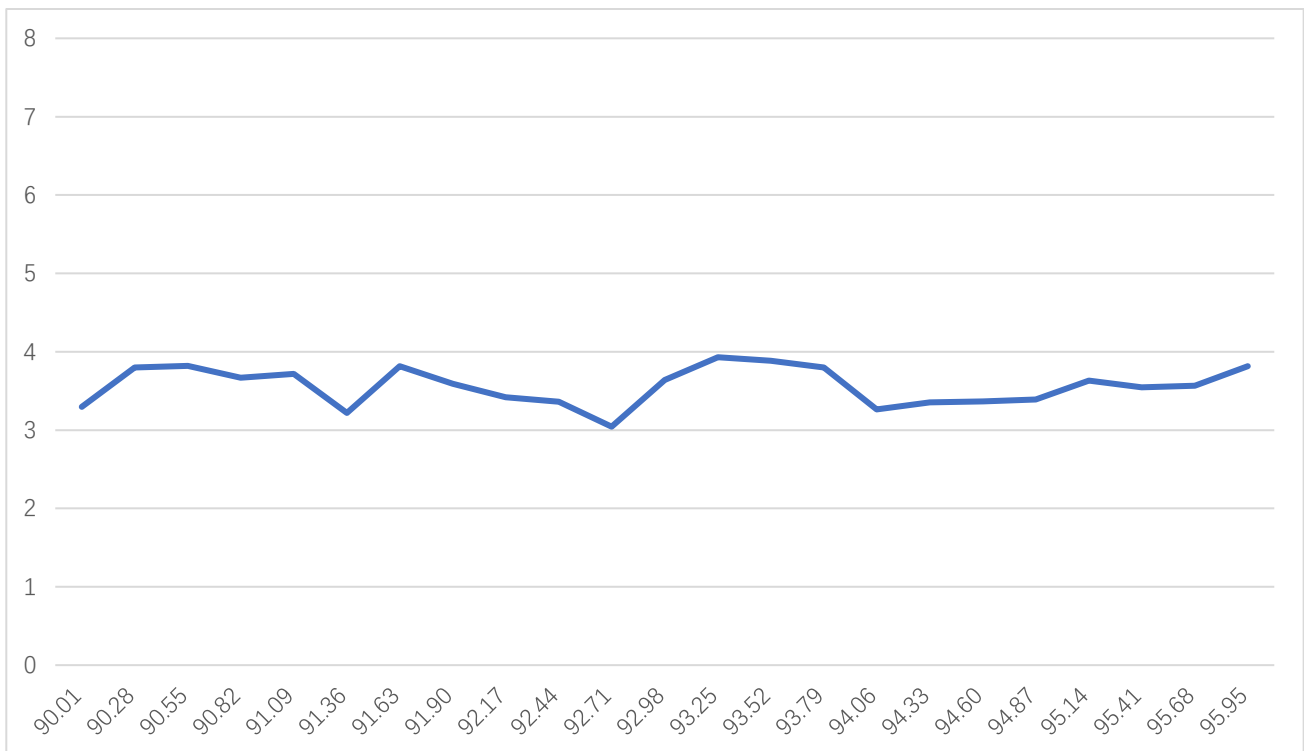
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## Test Data:



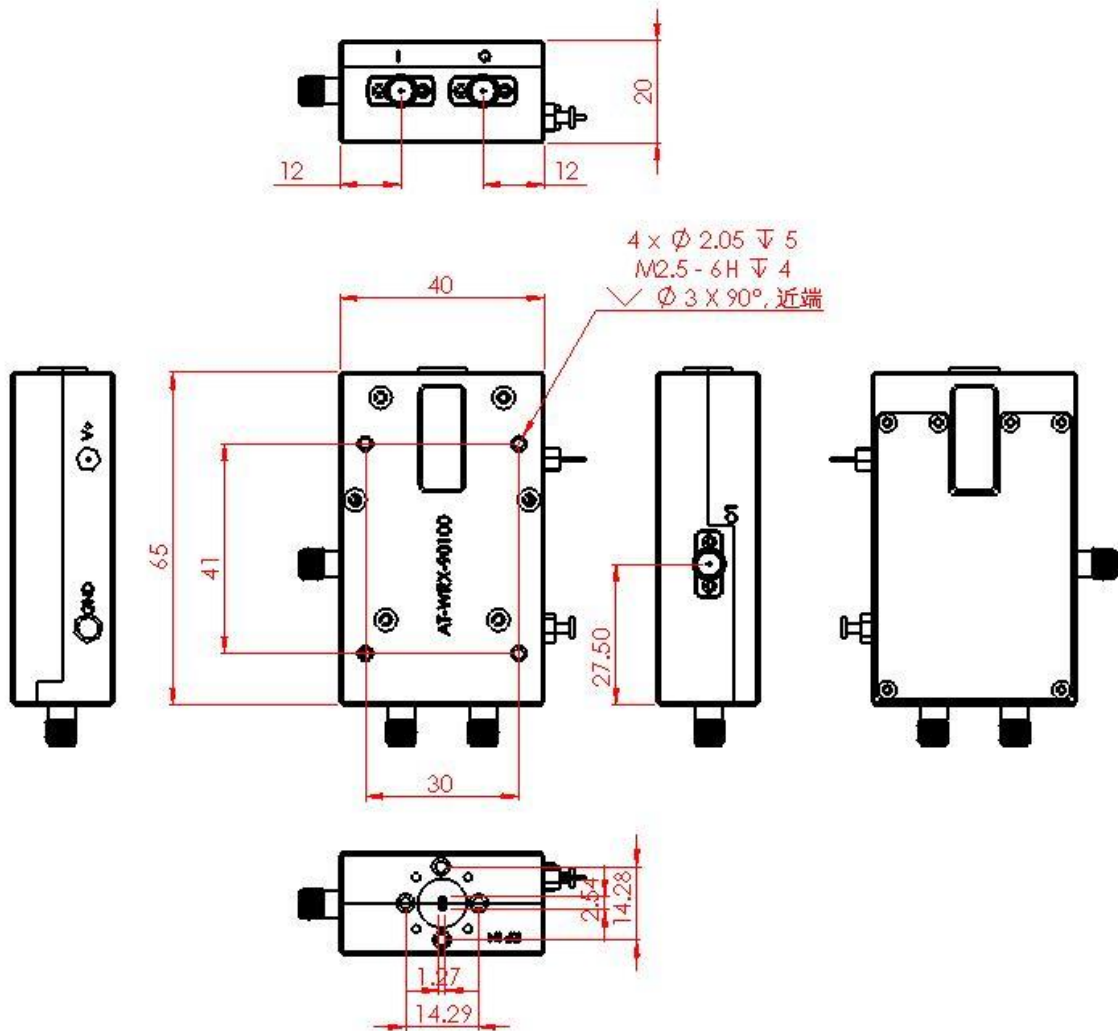
Rx I/Q Gain vs Frequency, IF=1GHz



RX NF Test vs Frequency



## Dimension (unit mm)



## 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 90GHz and 98GHz at RF port with same power level.

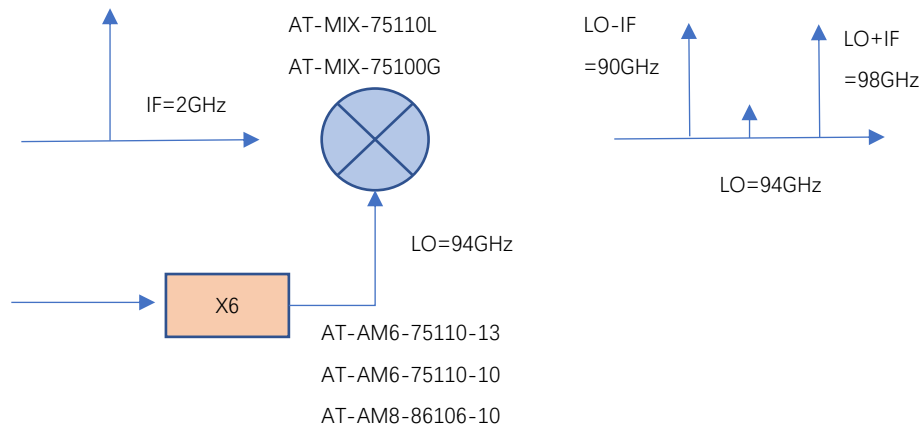


Figure A: General Balance Mixer with Both High and Low Side Output

### 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  $RF = LO + IF = 98GHz$ , while have side suppression (say  $-25dBc$ ) at Low end frequency 90GHz.

When you need low end frequency 90GHz, and make side suppression for high end frequency 98GHz, just applies IF to Input 2 of the hybrid.

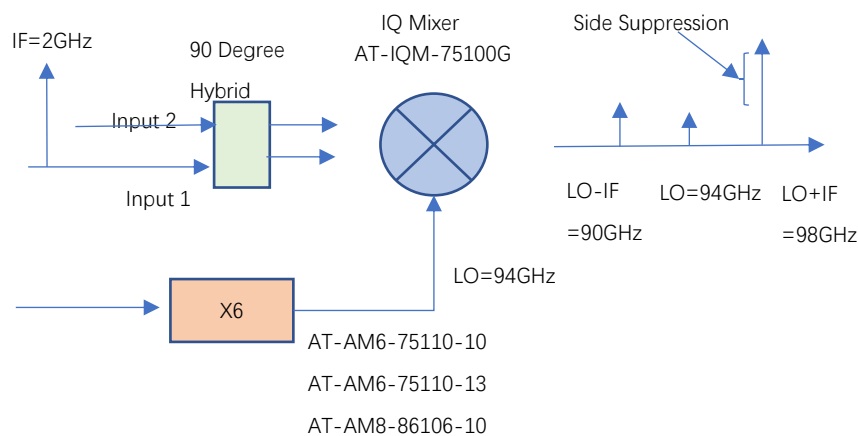


Figure B: IQ Mixer works as side suppression mixer

