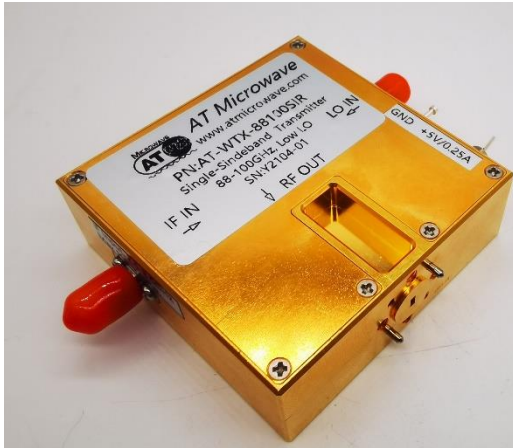


W Band Single-side band Transmitter, 88-100GHz

2022-1-1



Product Overview

AT-WTX-88100SIR is a W-Band single-side band Transmitter. The Tx is integrated with High Performance GaAs MMIC chips. RF frequency range is 88-100GHz, LO range is 10.7-12.18GHz with x8 times multiplier inside. IF range is 2.5-8.5GHz with single end port. IQ Port is available according to request.

The Tx Module is with compact size. LO/IF port is with SMA, and RF port is with standard WR-10.

More information, please visit www.atmicrowave.com

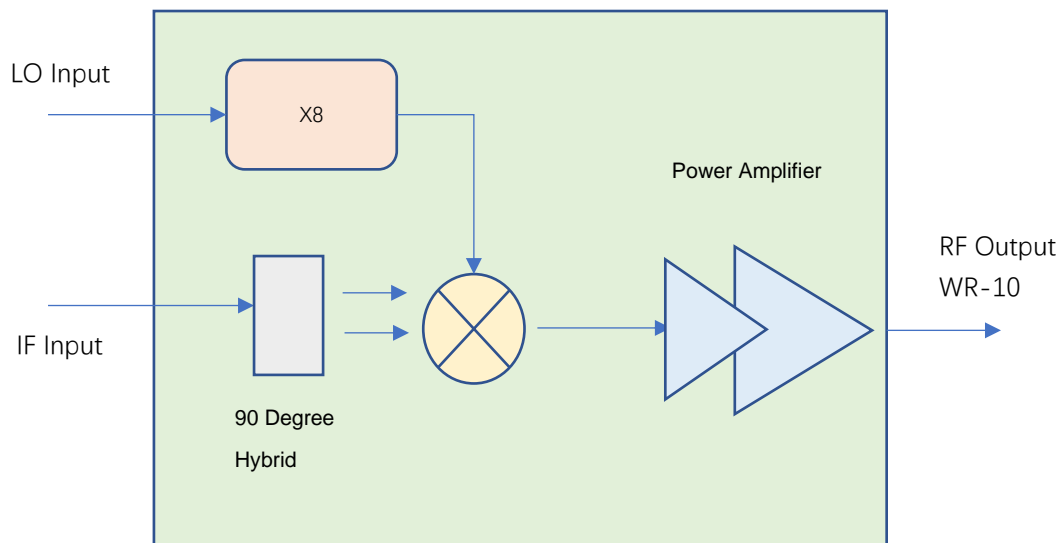
Feature

- ✓ Frequency: 88-100GHz
- ✓ High Power: +15dBm
- ✓ IF Range: 2.5-8.5GHz
- ✓ IF to RF Gain: 12dB
- ✓ Single power supply

Application

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

Diagram Block





AT-WTX-88100SIR

W Band Transmitter, 88-100GHz, Pout=+15dBm

Key Features

Parameter	Min	Typical	Max
RF Frequency		88-100GHz	
IF to RF Conversion Gain	8dB	10dB	
IF Frequency		2.5-8.5GHz	
LO Frequency (Note1)	10.7GHz		12.18GHz
LO Multiplier Factor		X8	
LO Power	0	+3dBm	+5dBm
Low Band Side Image Rejection (Note2)	-10	-20dBc	
8XLO to RF Leakage		+5dBm	
P1dB		+15dBm	
Psat		+17dBm	
Power Supply		+5	+8V
Current		0.5A	
Spec Temp		25C	
Operating Temp		0 to 50C	

Note1: Low LO application, LO frequency is lower than RF, $RF=8XLO+IF$

Note2: High band side rejection is available according to request.

Mechanical Information

Item	Description
RF Port	WR-10
IF Port	SMA Female
LO Port	SMA Female
Finish	Gold Plated
Weight (Without Heatsink)	225g
Size:	See outline





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Absolute Maximum Ratings Table

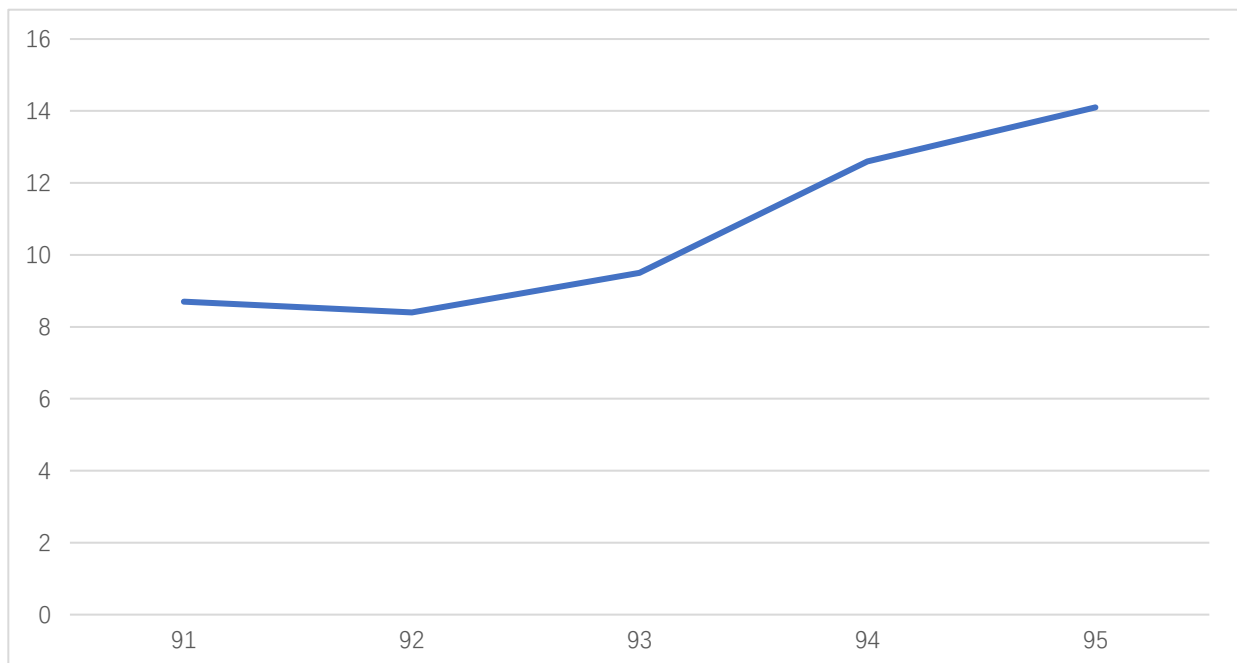
Parameter	Value
Drain Supply 1	+9V
IF Input Power	+14dBm
LO Power	+15dBm
Operating Temperature	0 to +50C
Storage Temperature	-65 to +150C

Test Condition

Parameter	Setting
IF Input Power	-10dBm
Input Frequency	3GHz
LO Power	3dBm
Temperature	25C

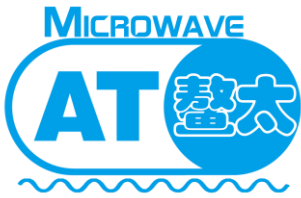
Test Data:

IF=3GHz, IF Power=-10dBm



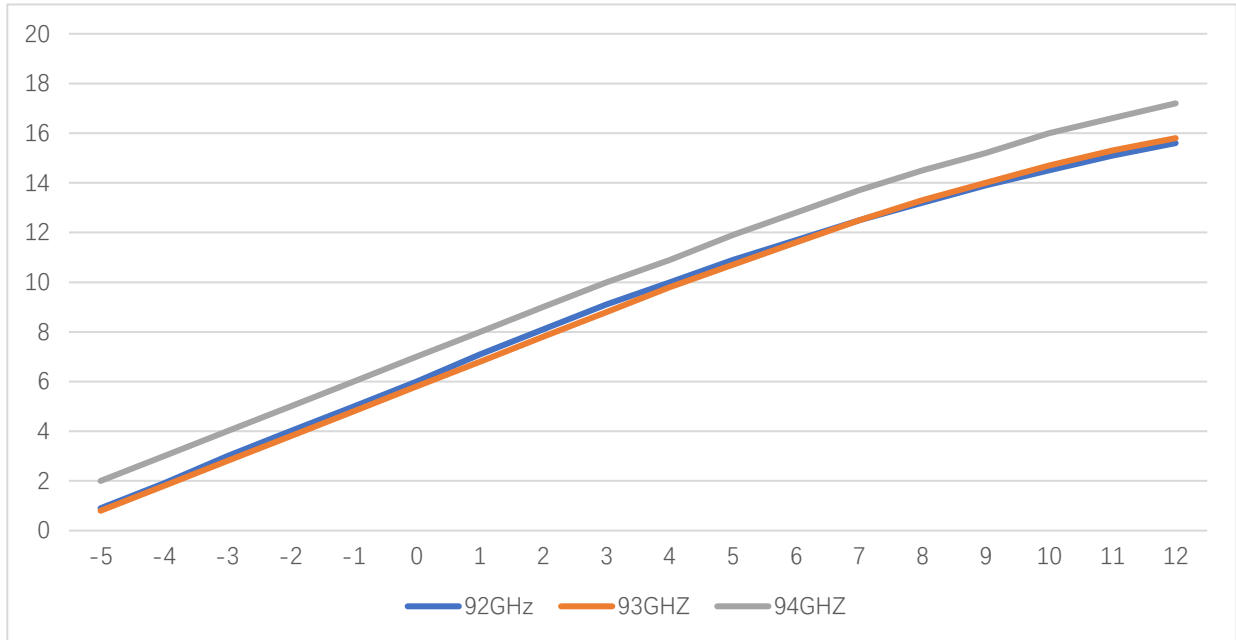
Gain vs Frequency



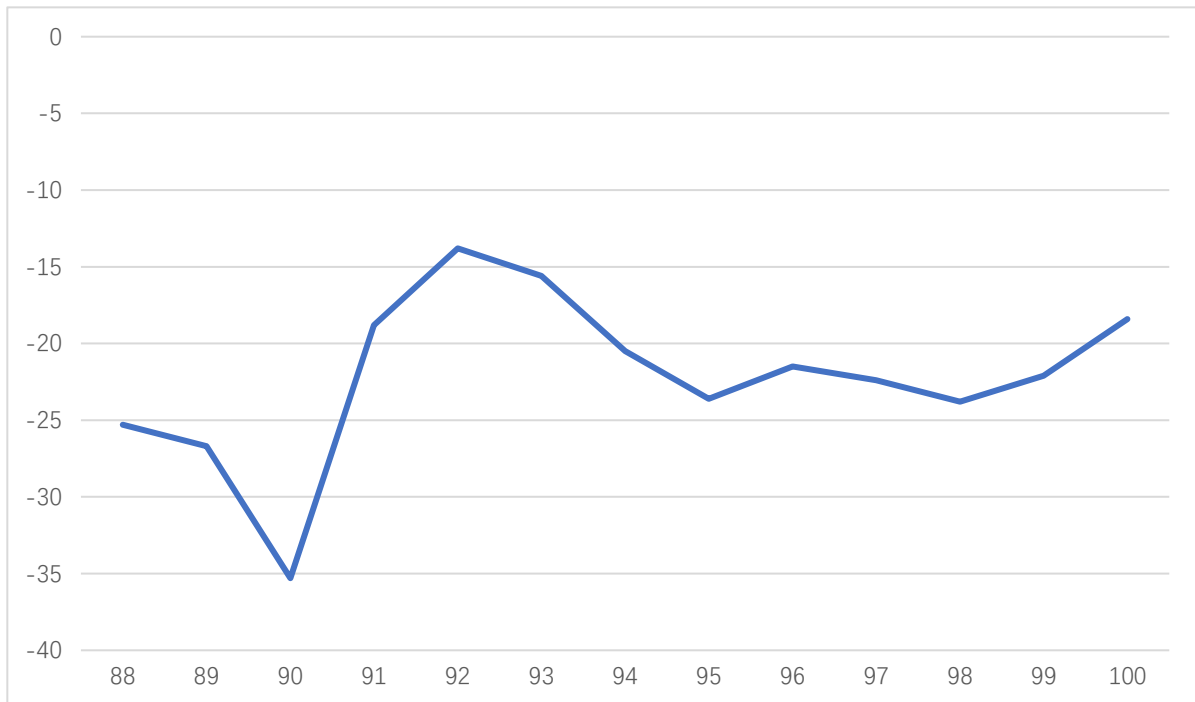


AT-WTX-88100SIR

W Band Transmitter, 88-100GHz, Pout=+15dBm



RF Pout vs IF Pin



Lower side band suppression vs RF frequency



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.

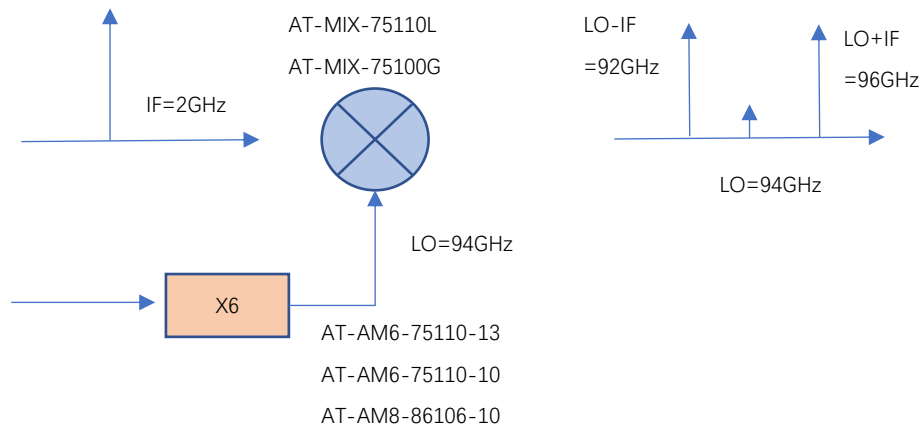


Figure A: General Balance Mixer with Both High and Low Side Output

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.

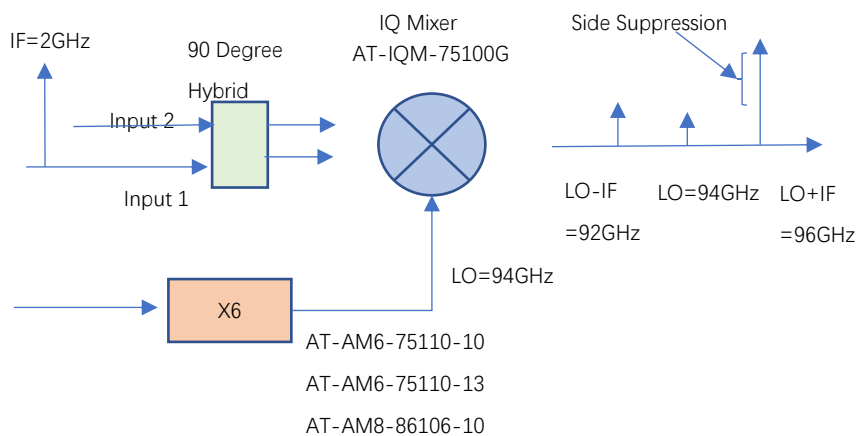


Figure B: IQ Mixer works as side suppression mixer



Dimension (unit mm)

