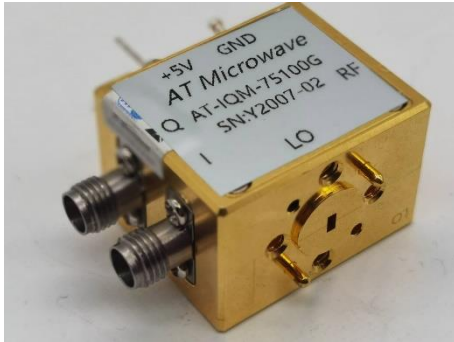


70-90GHz IQ Down-converter,

2022-5-14



Description:

AT-IQM-7090G is a IQ Down-converter covering E and W band. IF input is IQ port and can range from DC to 12GHz. LO/RF frequency range is 70-90GHz. The imaging rejection is -20dBc typical.

One of the advantages of using this mixer is that LO driver power is +7dBm typical. This eliminates the need for an expensive local amplifier, making system integrations much easier and cheaper.

More information, please visit www.atmicrowave.com

Feature

- ✓ RF/LO: 70-90GHz
- ✓ IF: DC-12GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement

Application

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

Electronical Specifications:

Parameter	Min	Typical	Max
RF/LO Frequency		70-90GHz	
IF Range		DC-12GHz	
Conversion Loss		-10dB	-15dB
LO Driver	+5dBm	+8dBm	+12dBm
Imaging Rejection		-20dBc	
LO-RF Isolatin		-15dBc	
Power Supply		+5V	+6V
Current		1mA	
Spec Temp		25C	

Test Condition, Down-convertor, IF=1GHz if not specified. RF input=-10dBm





AT-IQM-7090G

70-90GHz IQ Down-converter

Mechanical Information

Item	Description
RF Port	WR-12
LO Port	WR-12
IF Port	SMA Female
Case Material	Copper
Finish	Gold Plated
Weight	130g
Size:	See outline

Absolute Maximum Ratings Table

Parameter	Value
IF Port Power	+7dBm
RF Port Power	+5dBm
LO Port Power	+13dBm
Vdd	+8V
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.

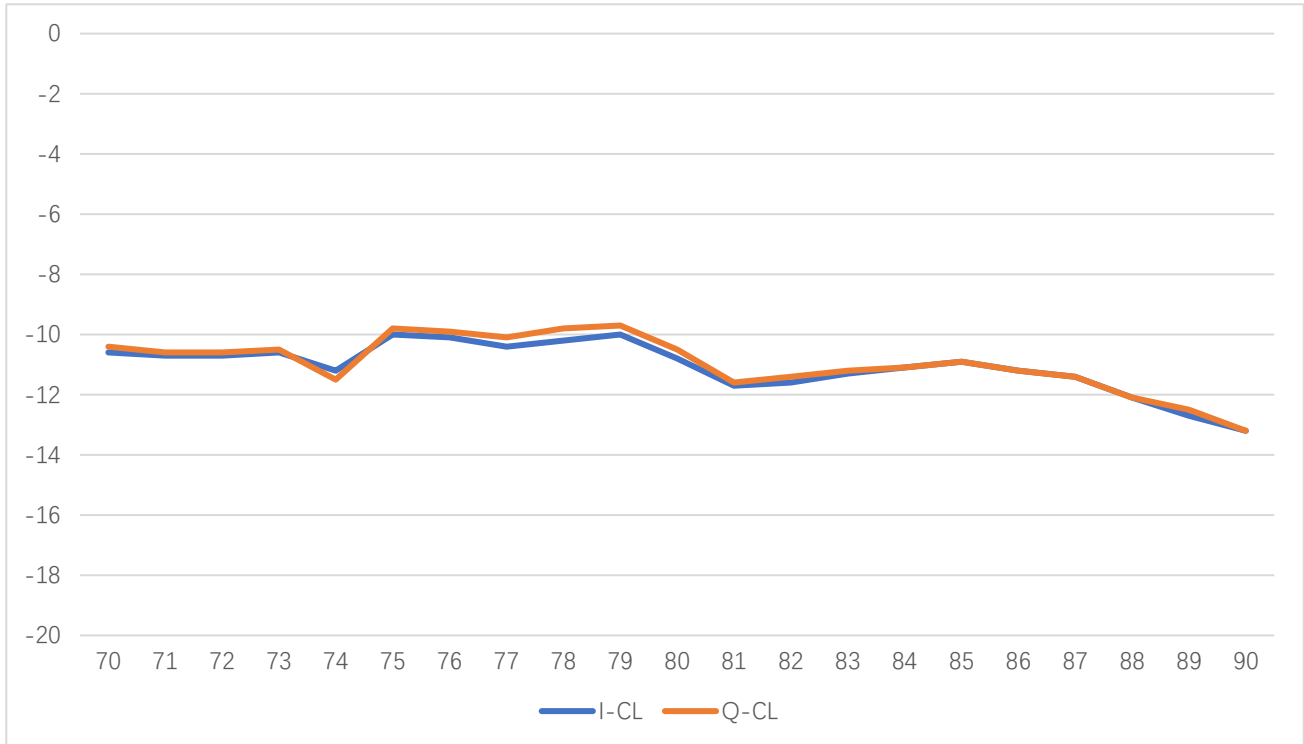




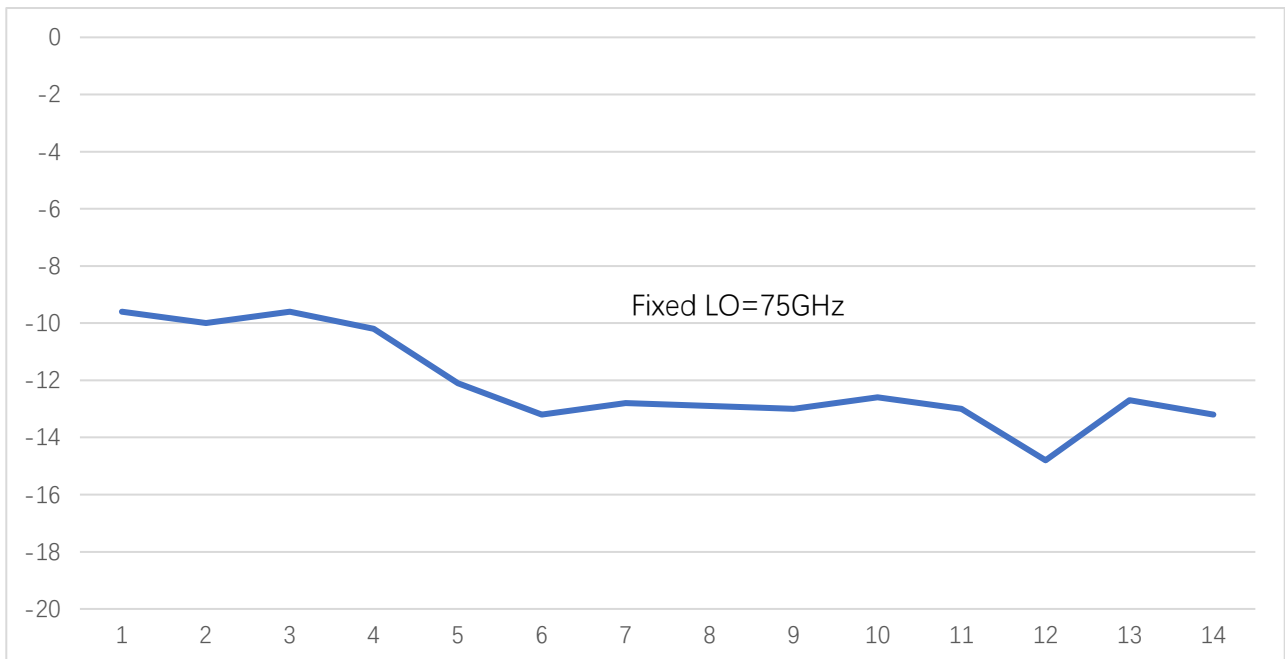
AT-IQM-7090G

70-90GHz IQ Down-converter

Test Data (25C)

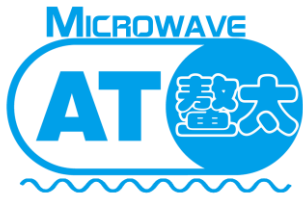


Conversion Loss vs Frequency, IF=1GHz



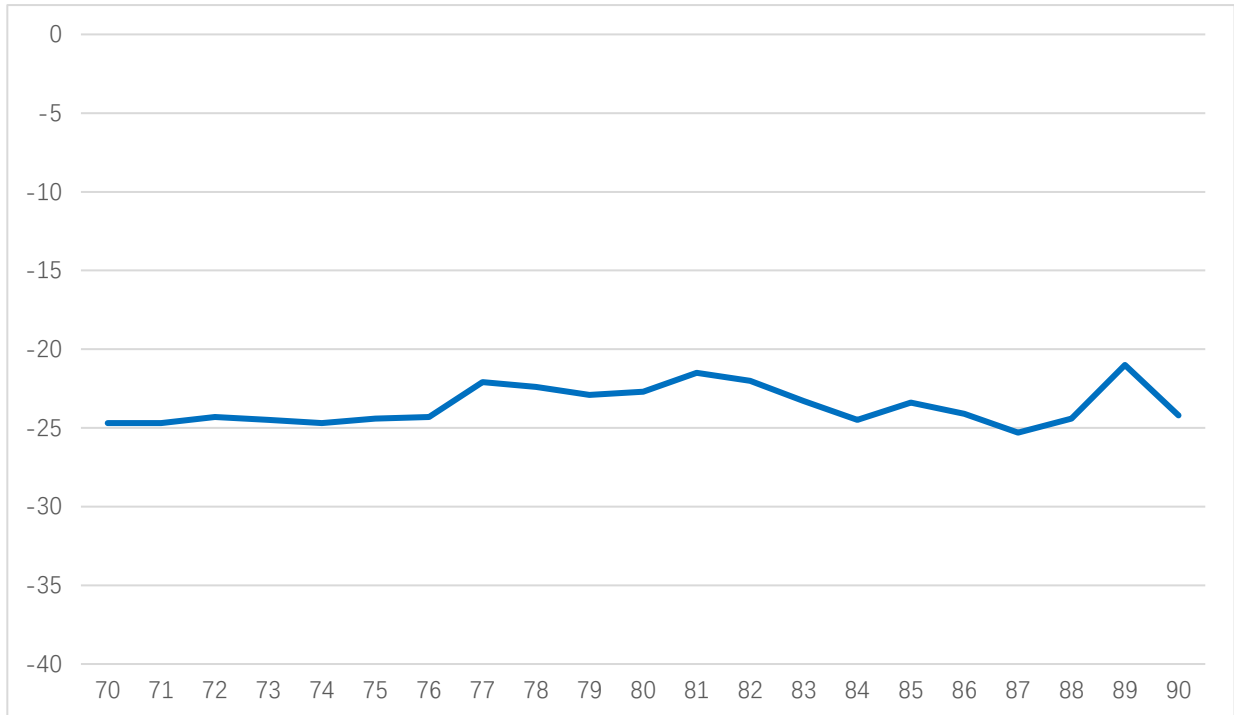
IF Response, LO=75GHz



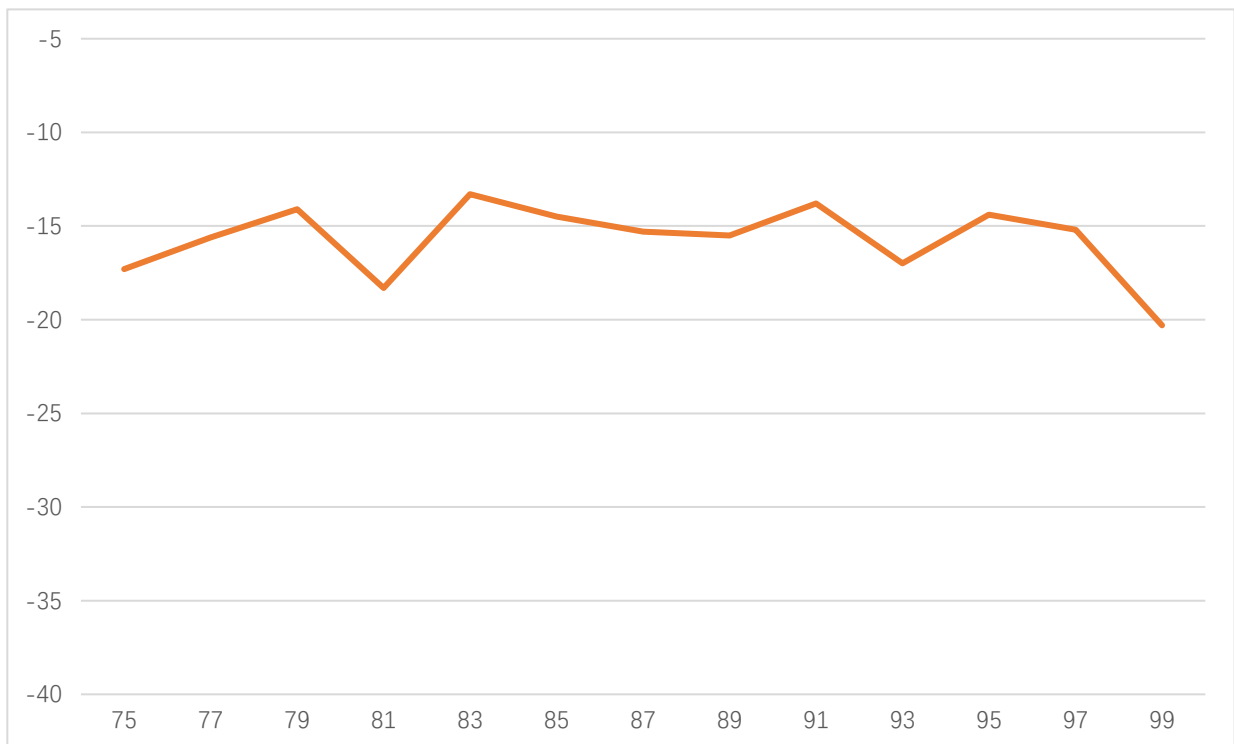


AT-IQM-7090G

70-90GHz IQ Down-converter



LSB Imaging Rejection



LO-RF Isolation



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, $IF=2GHz$, $LO=80GHz$, so there will be $78GHz$ and $82GHz$ at RF port with same power level.

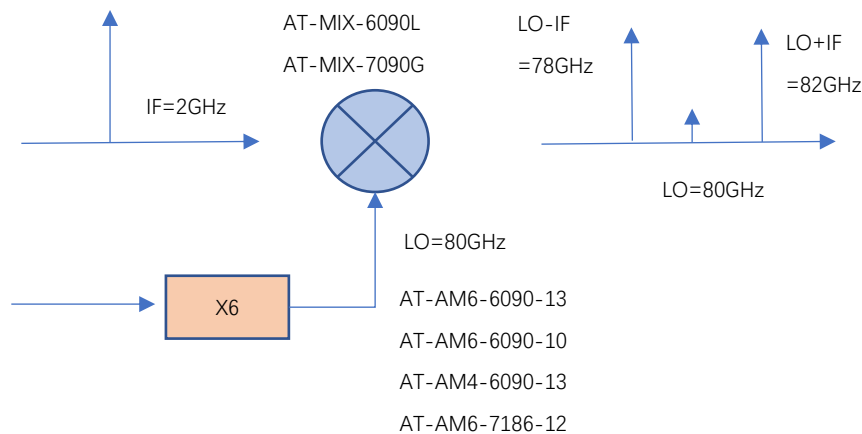


Figure A: General Balance Mixer with Both High and Low Side Output

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 $RF=LO+IF=82GHz$, while have side suppression (say $-25dBc$) at Low end frequency $78GHz$.

When you need low end frequency $78GHz$, and make side suppression for high end frequency $82GHz$, just applies IF to Input 2 of the hybrid.

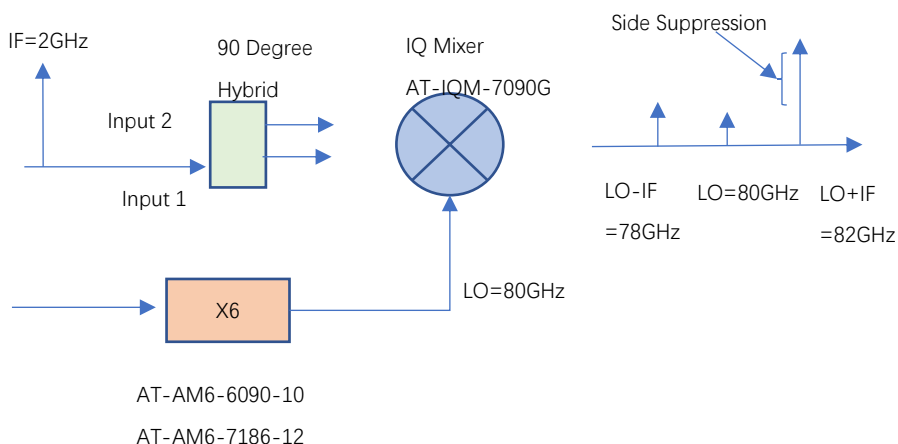


Figure B: IQ Mixer works as side suppression mixer



Dimension(mm)

