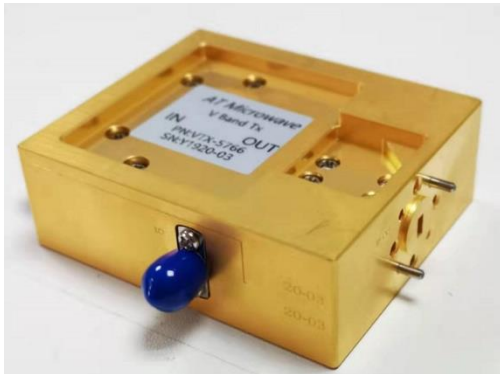


2022-9-1

## E1 Band Transmitter, 71-76GHz



### Product Overview

AT-ETX-7176 is a E-Band Transmitter, with gain=17dB, Pout=+20dBm typical.

The Tx is integrated with High Performance GaAs MMIC chips. RF frequency range is 71-76GHz, LO range is 11.83-12.67GHz with x6 times multiplier inside. IF range is DC-10GHz The transmitter is with compact size. LO/IF port is with SMA, and RF port is with standard WR-12.

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

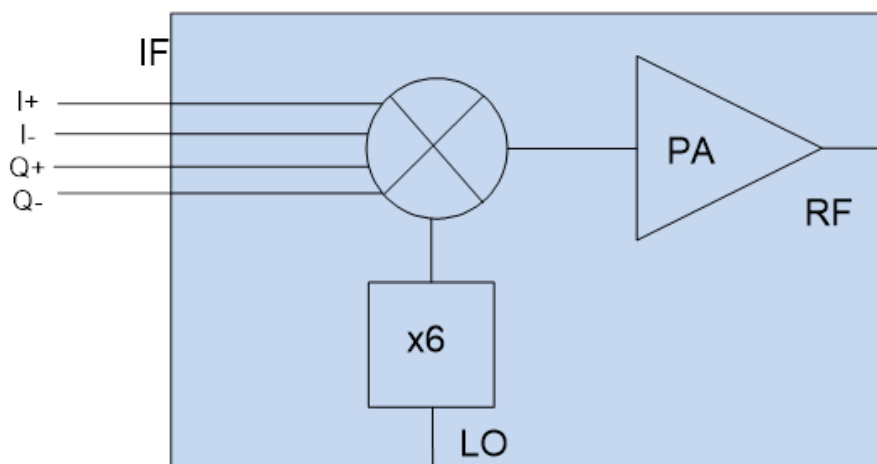
### Feature

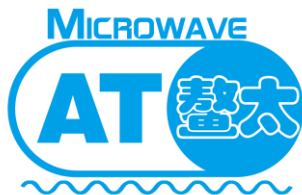
- ✓ Frequency: 71-76GHz
- ✓ Gain: 17dB typical
- ✓ IF Range: DC-10GHz
- ✓ Pout: +20dBm Typical

### Application

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

### Diagram Block





# AT-ETX-7176

Compact E1 Band Transmitter, 71-76GHz

## Key Features

| Parameter              | Min   | Typical        | Max    |
|------------------------|-------|----------------|--------|
| RF Frequency           |       | 71-76 GHz      |        |
| IF Frequency (Note1)   |       | DC-10 GHz      |        |
| LO Frequency           |       | 11.83-12.67GHz |        |
| LO Power               | +3dBm | +5 dBm         | +12dBm |
| X6 LO Power at RF Port |       | -35dBm         |        |
| P1 dB                  |       | +18 dBm        |        |
| Psat                   |       | +20 dBm        |        |
| Conversion Gain        |       | 17 dB          |        |
| RF Return Loss         |       | -10 dB         |        |
| LO Return Loss         |       | -14 dB         |        |
| Drain Power Supply     |       | +5/950mA       | +8V    |
| Spec Temp              |       | 25C            |        |





# AT-ETX-7176

Compact E1 Band Transmitter, 71-76GHz

## Mechanical Information

| Parameter            | Description |
|----------------------|-------------|
| RF Port              | WR-12       |
| LO Port              | SMA Female  |
| IF Port              | SMA Female  |
| Case Material (Note) | Copper      |
| Finish               | Gold Plated |
| Weight               | 315g        |
| Dimension            | See outline |

Note: Aluminium for lighter weight is available according to request

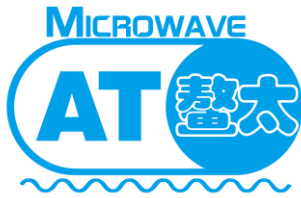
## Absolute Maximum Ratings Table

| Parameter             | Value        |
|-----------------------|--------------|
| IF Power              | +7dBm        |
| LO Port               | +15dBm       |
| Power Supply          | +7V          |
| Operating Temperature | 0 to +50C    |
| Storage Temperature   | -55 to +125C |

## Test Condition

| Parameter       | Setting |
|-----------------|---------|
| IF Input Power  | -5dBm   |
| Input Frequency | 1GHz    |
| LO Power        | +5dBm   |
| Temperature     | 25C     |



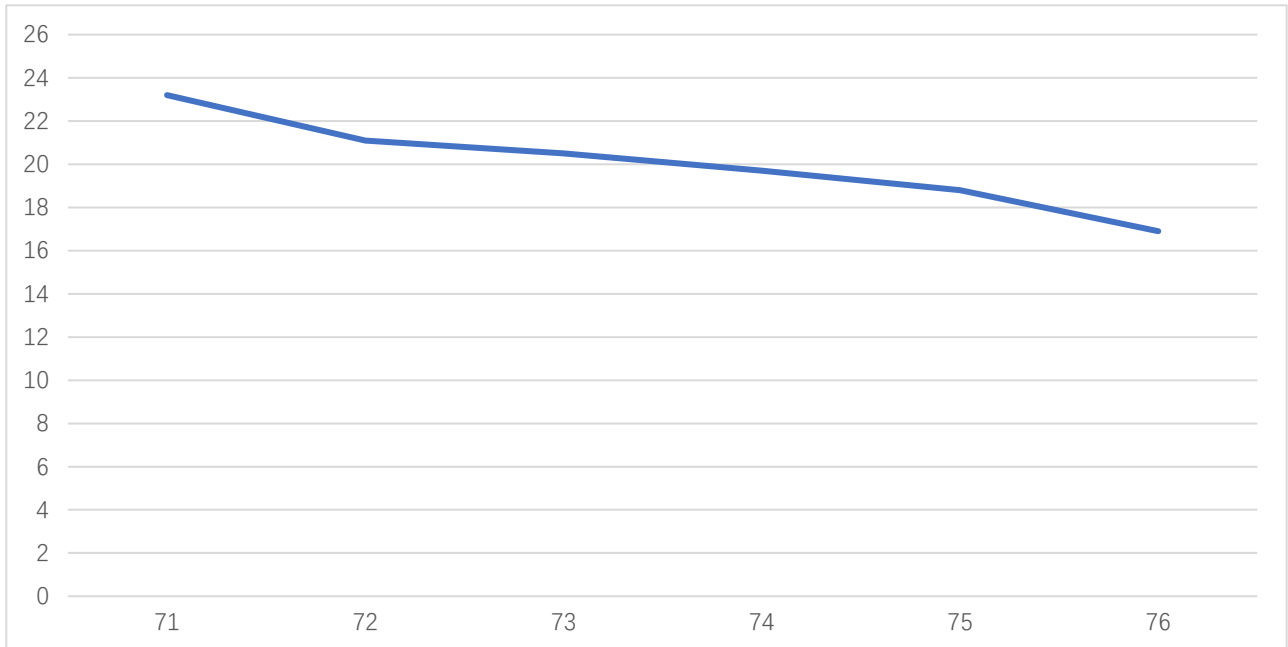


# AT-ETX-7176

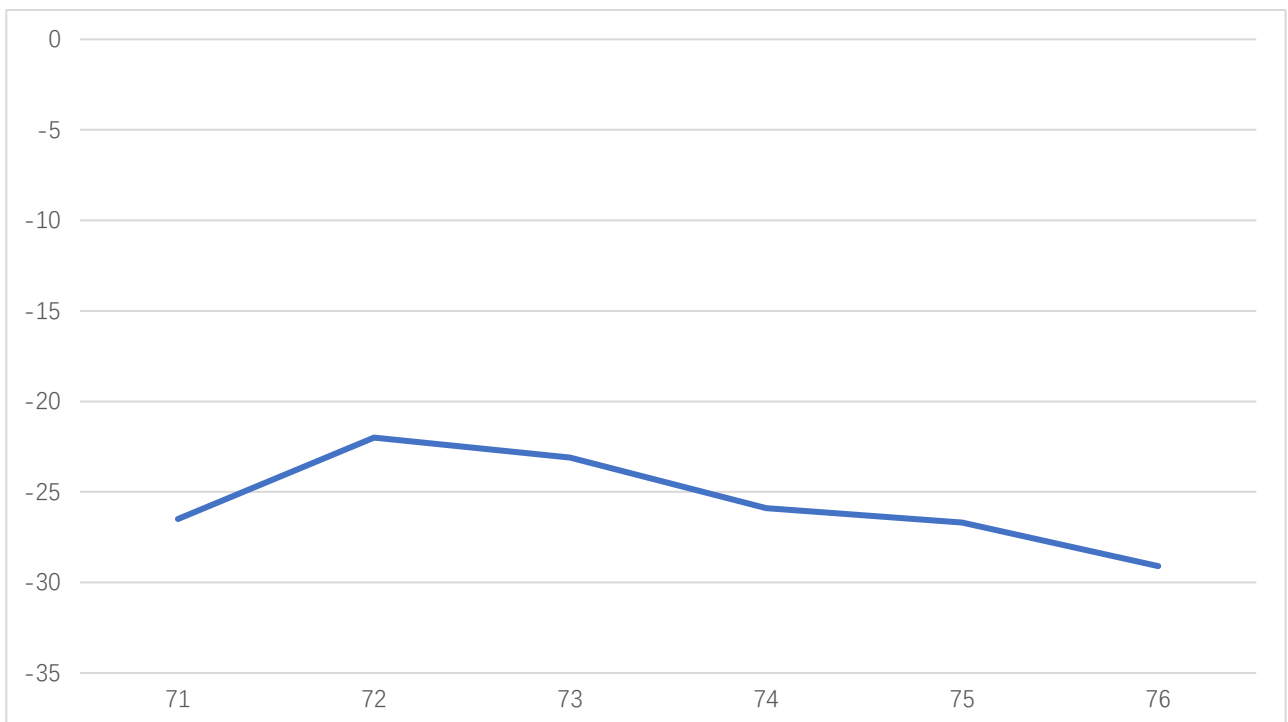
Compact E1 Band Transmitter, 71-76GHz

## Test Data (25C)

IF=1GHz, IF Power=-5dBm, Combine IQ together.

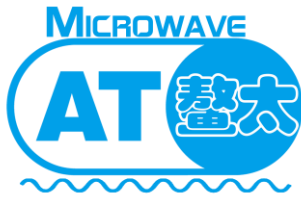


Gain vs Frequency



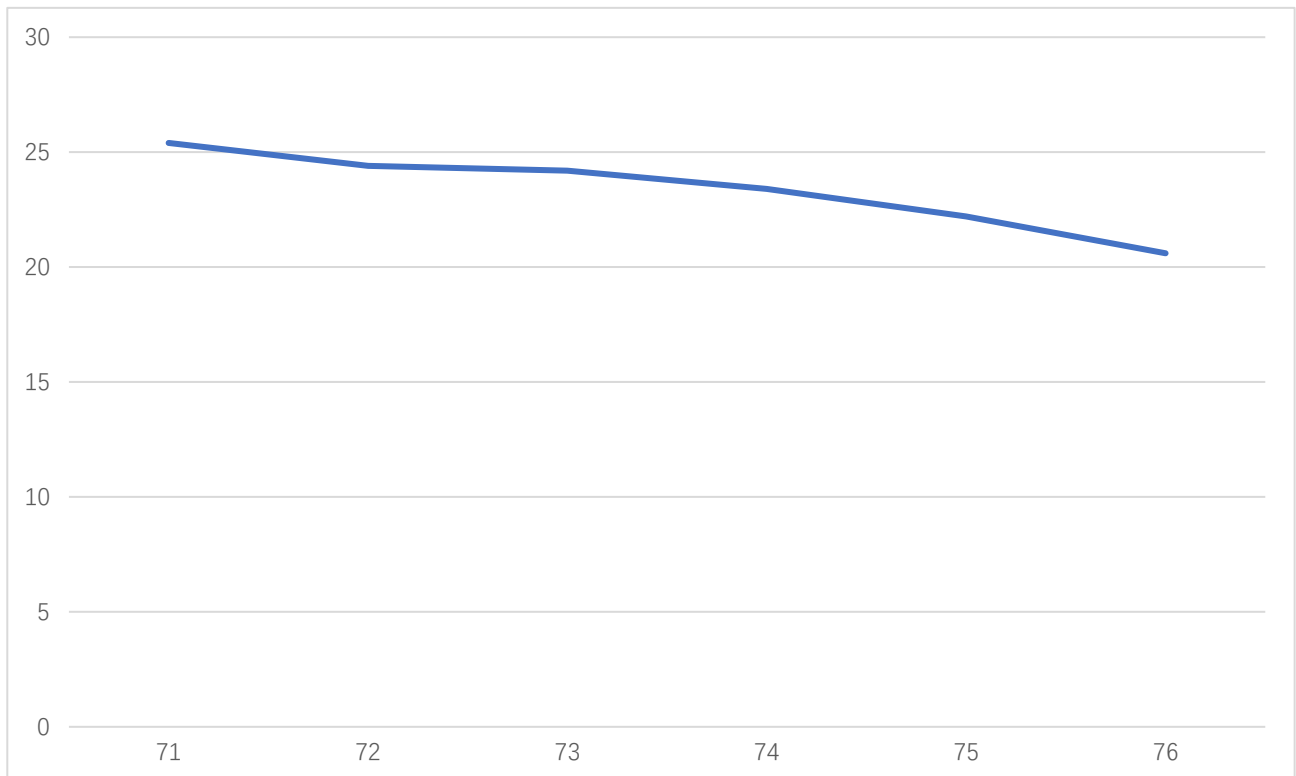
LSB Band side suppression vs RF Frequency





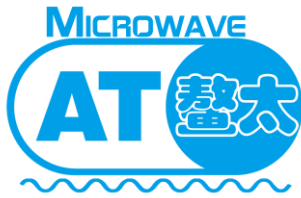
# AT-ETX-7176

Compact E1 Band Transmitter, 71-76GHz



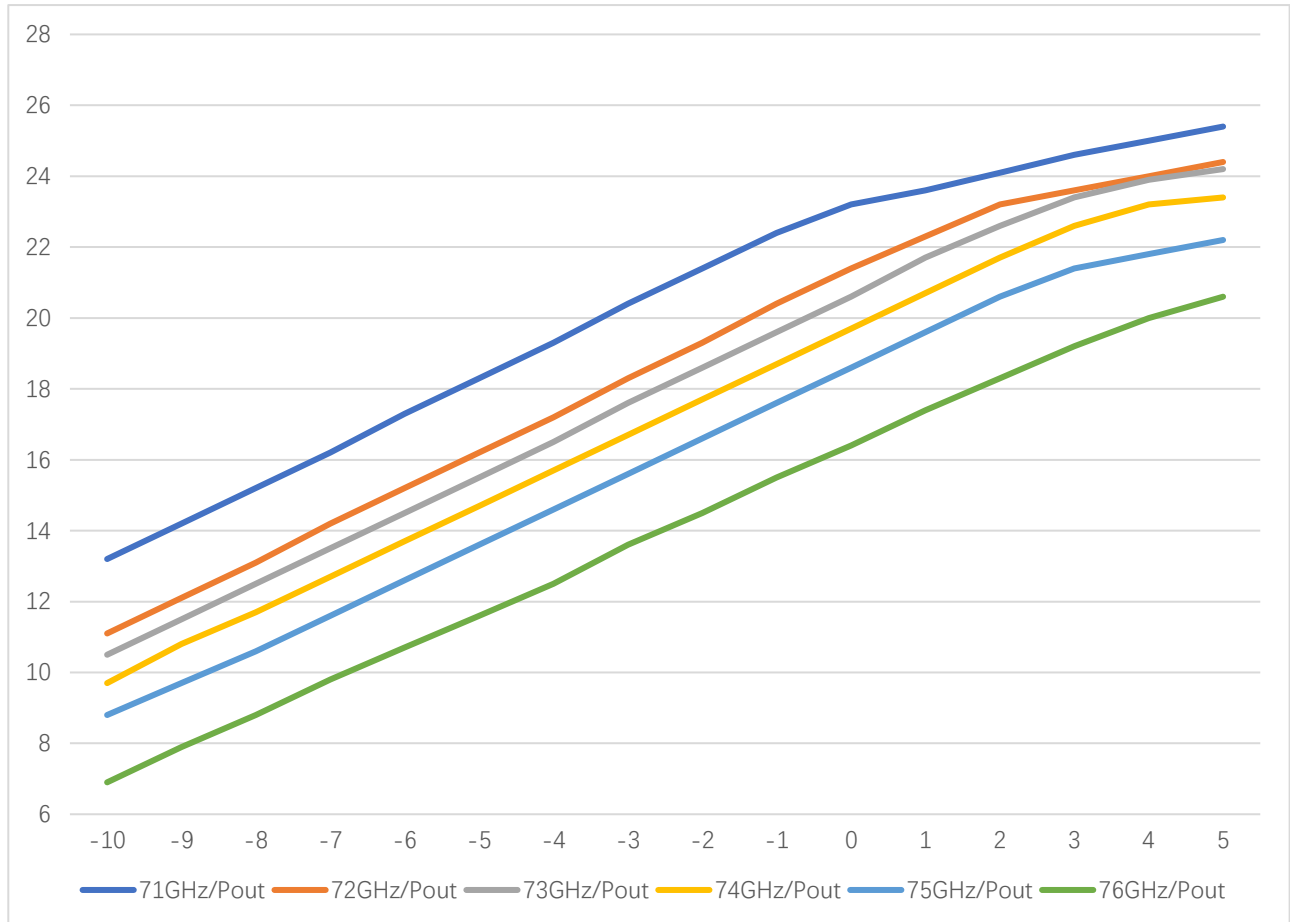
Pout vs Frequency, Pin=+5dBm/ch





# AT-ETX-7176

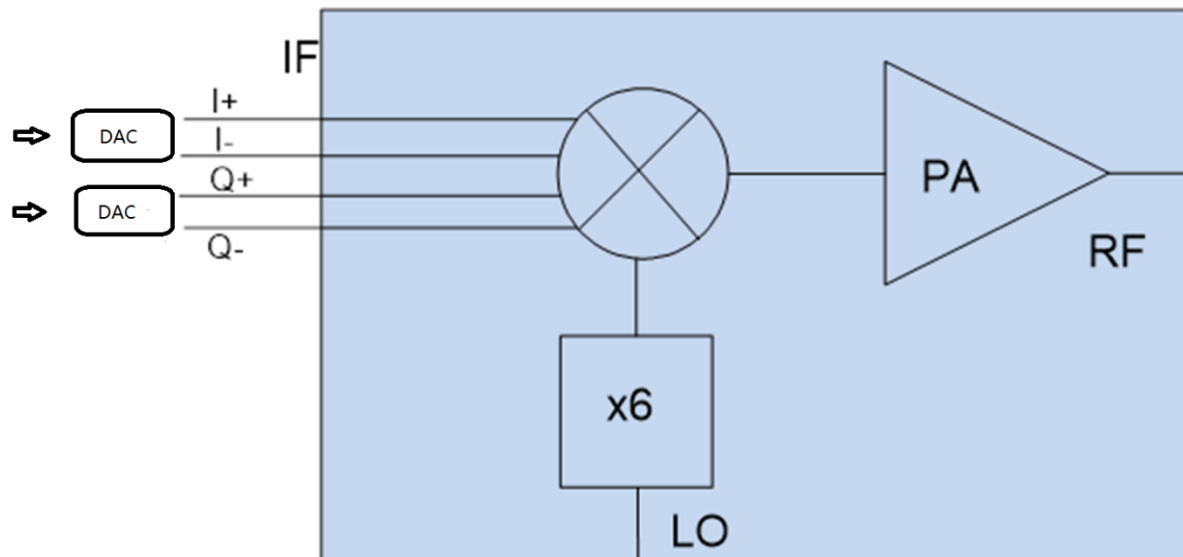
Compact E1 Band Transmitter, 71-76GHz



Pout vs Input Power/ch

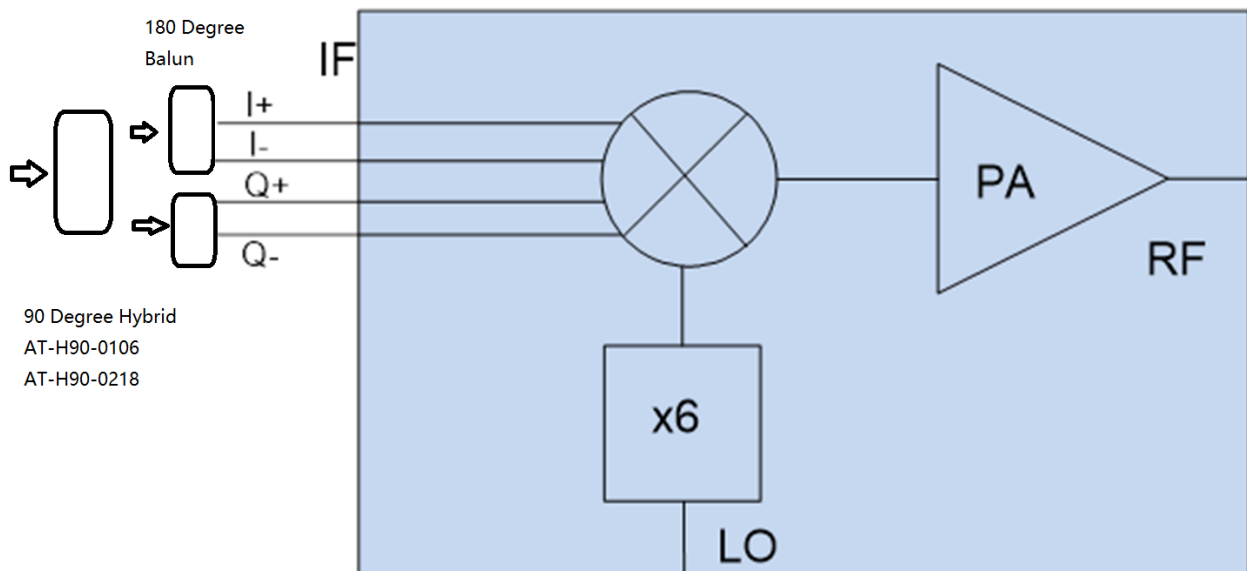


## Applicaiton1:



Zero IF Direct Conversion

## Applicaiton2:



Imaging Rejection Single IF Application

Contact with us for 180degree balun and 90degree hybrid.



### 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.

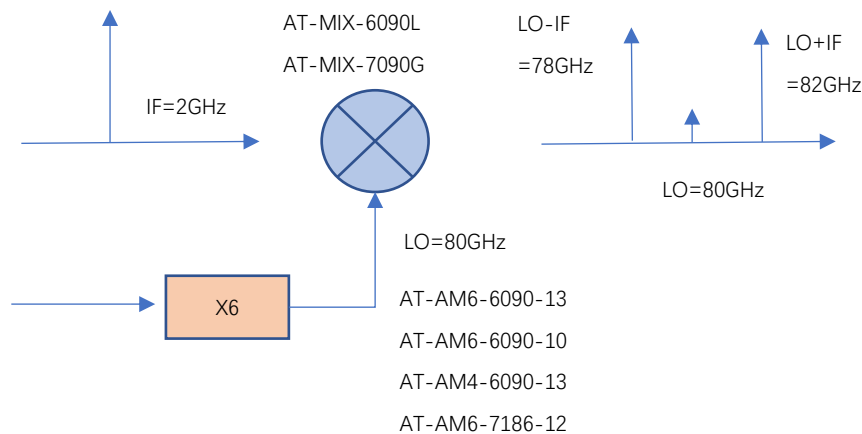


Figure A: General Balance Mixer with Both High and Low Side Output

#### 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.

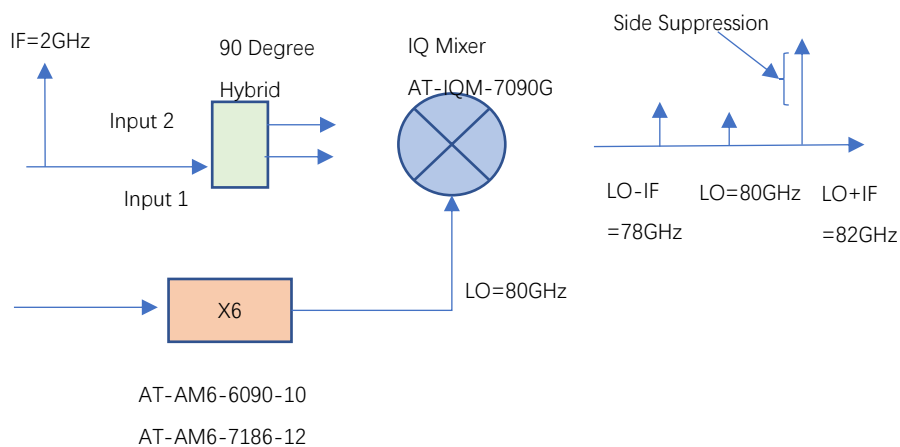


Figure B: IQ Mixer works as side suppression mixer





### Dimension (mm)

