

Downconversion  
Mixer

RF Input  
 $f_{RF}$

IF Output  
 $f_{IF} = |f_{RF} - f_{LO}|$

Upconversion  
Mixer

RF Output  
 $f_{RF} = f_{IF} \pm f_{LO}$

IF Input  
 $f_{IF}$

Local Oscillator  $f_{LO}$

