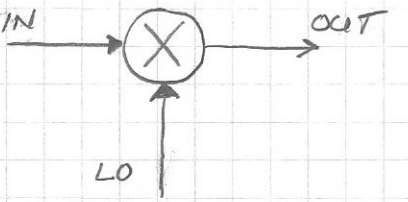
RF MIXERS IN HETERODYNE APPLICATIONS



- COMBINES THE IN AND LO SIGNALS USING NON-LINEAR DEVICES/OPERATION

- THIS RESULTS IN INTERMODULATION PRODUCTS AT THE OUTPUT

$$f_{OUT} = \pm m f_{IN} \pm n f_{LO}$$

COMPONENTS OF f_{OUT}:

1ST
- f_{IN}
- f_{LO}

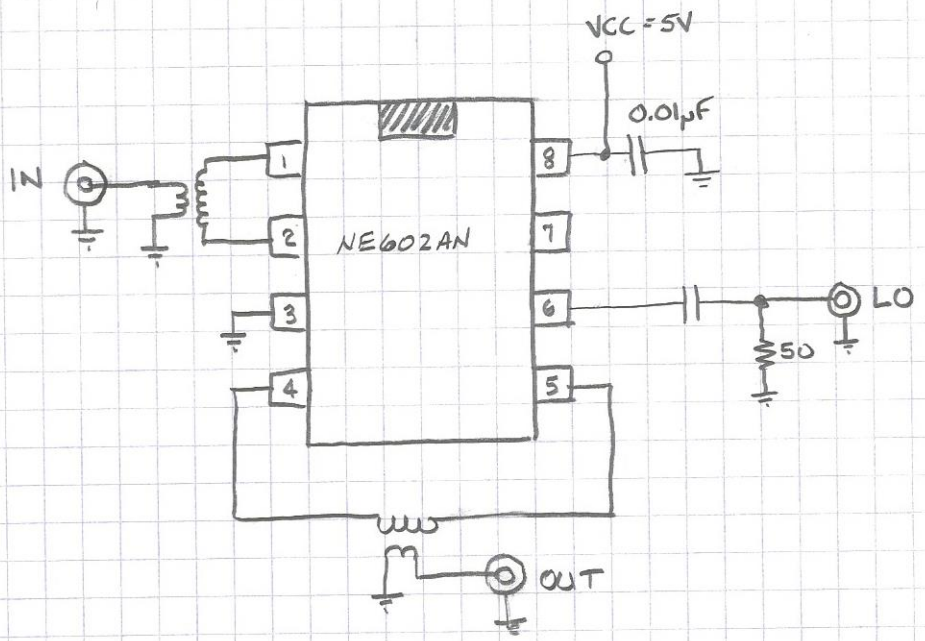
2ND
- $f_{LO} - f_{IN}$ OR $f_{IN} - f_{LO}$ ←
- $f_{LO} + f_{IN}$

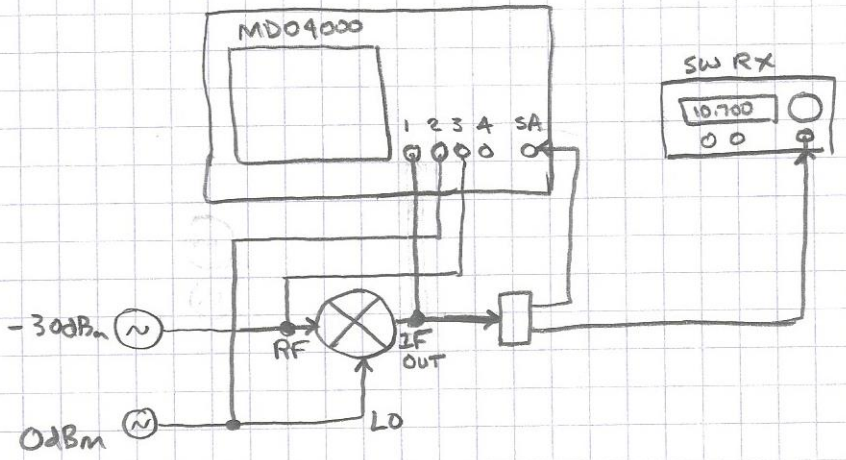
3rd
- $2f_{LO} - f_{IN}$
- $2f_{LO} + f_{IN}$
- $f_{LO} - 2f_{IN}$
- $f_{LO} + 2f_{IN}$

etc.

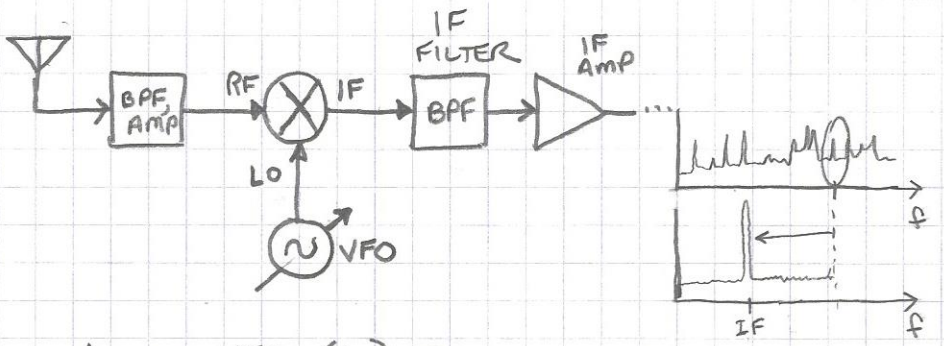
1ST ORDER PRODUCTS ARE OFTEN MINIMIZED THROUGH USE OF BALANCED DESIGN (SINGLE OR DOUBLE BALANCED)

W2AEW


VCC = 5V
0.01μF
IN
1
2
3
4
8
7
6
5
NE602AN
LO
50
OUT


MDO4000
1 2 3 4 SA
SW RX
10.700
-30dBm
RF
IF
OUT
LO
0dBm

MIXERS: RECEIVER APPLICATION EXAMPLE



- ADJUST VFO (LO) FREQUENCY TO CONVERT/TRANSLATE DESIRED RF SIGNAL TO THE IF FREQUENCY

- MOST OFTEN: $f_{IF} = f_{RF} - f_{LO}$

  OR

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

- IF FILTER ISOLATES/SELECTS THE DESIRED PRODUCT