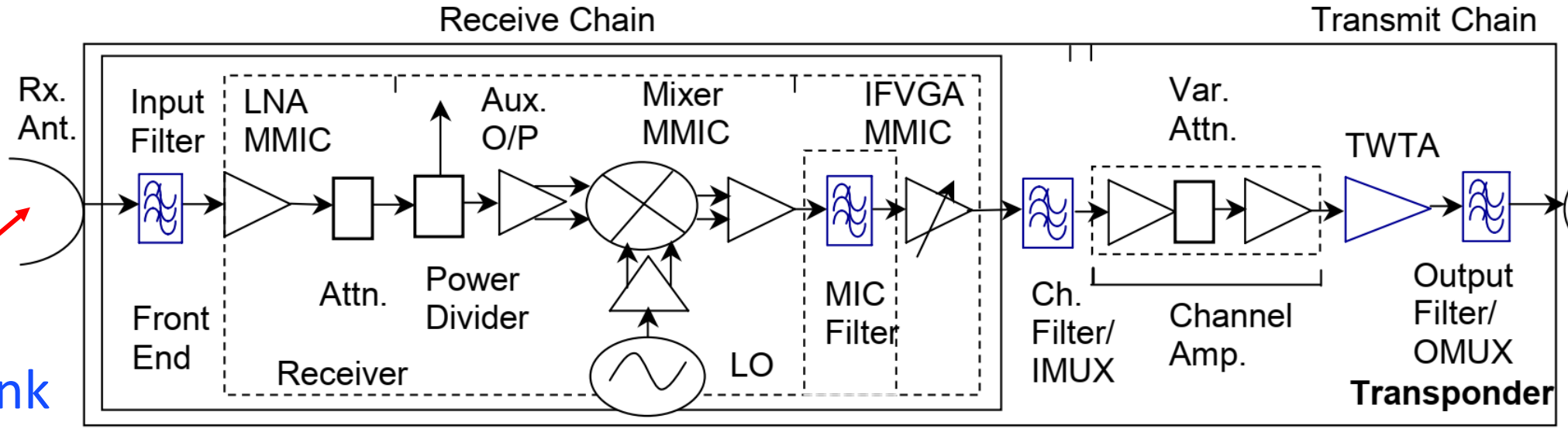
DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
ELETTRONICA E TELECOMUNICAZIONI

OPEN DIET 2022

Building Block per l'elaborazione RF

Dott. Pasquale Tommasino
pasquale.tommasino@uniroma1.it

Sistema di ricetrasmissione RF

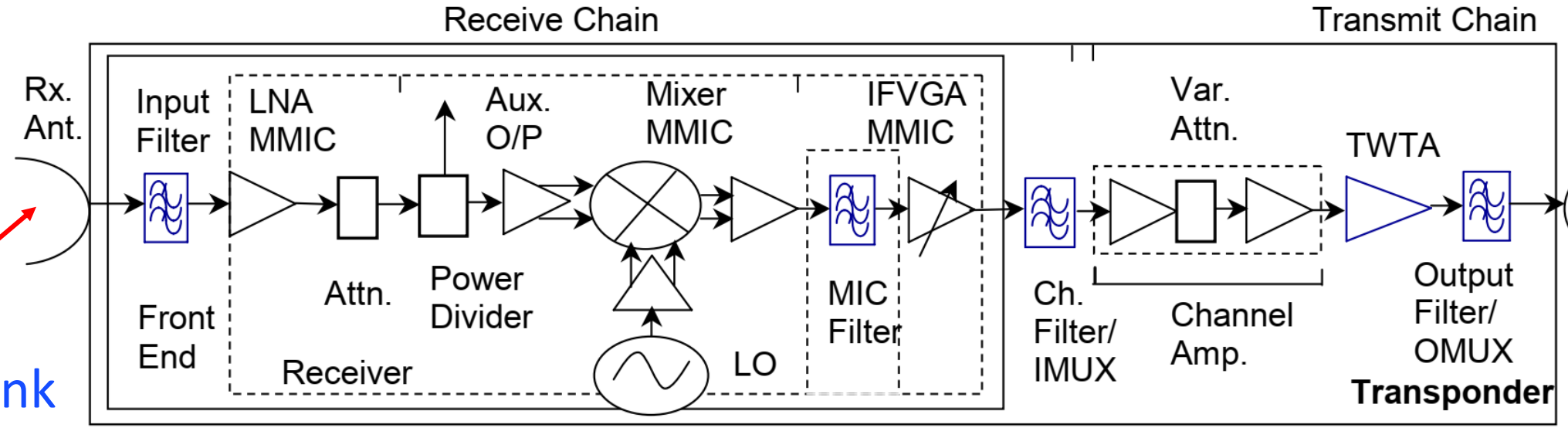


Up-link
5.6-6.4 GHz

Down-link
3.4-5.0 GHz

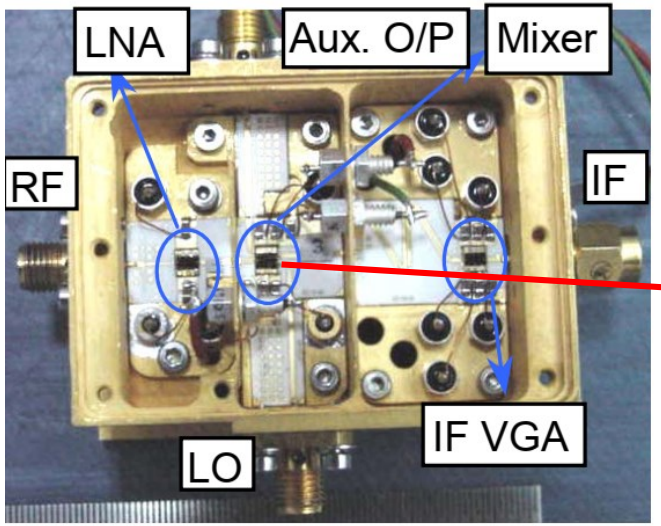
- Ripetitore satellitare
- Sistema rice-trasmittente terrestre
- Radar
- …

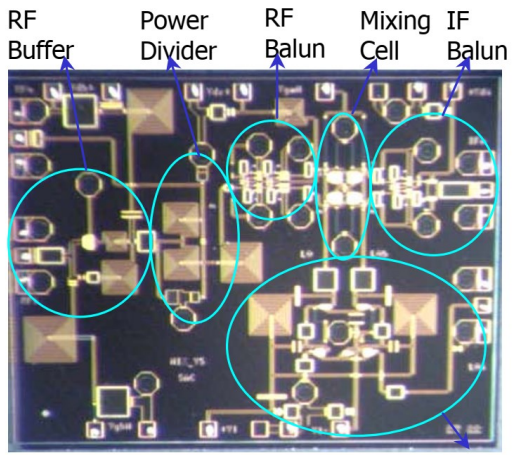
Sistema di ricetrasmissione RF



Up-link
5.6-6.4 GHz

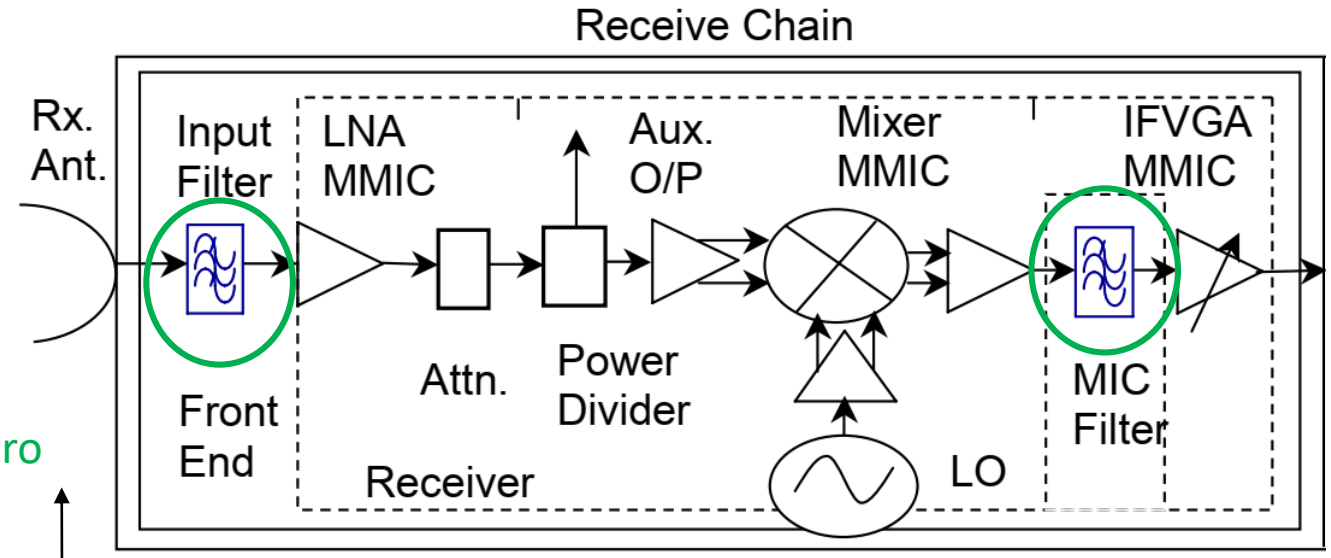
Down-link
3.4-5.0 GHz



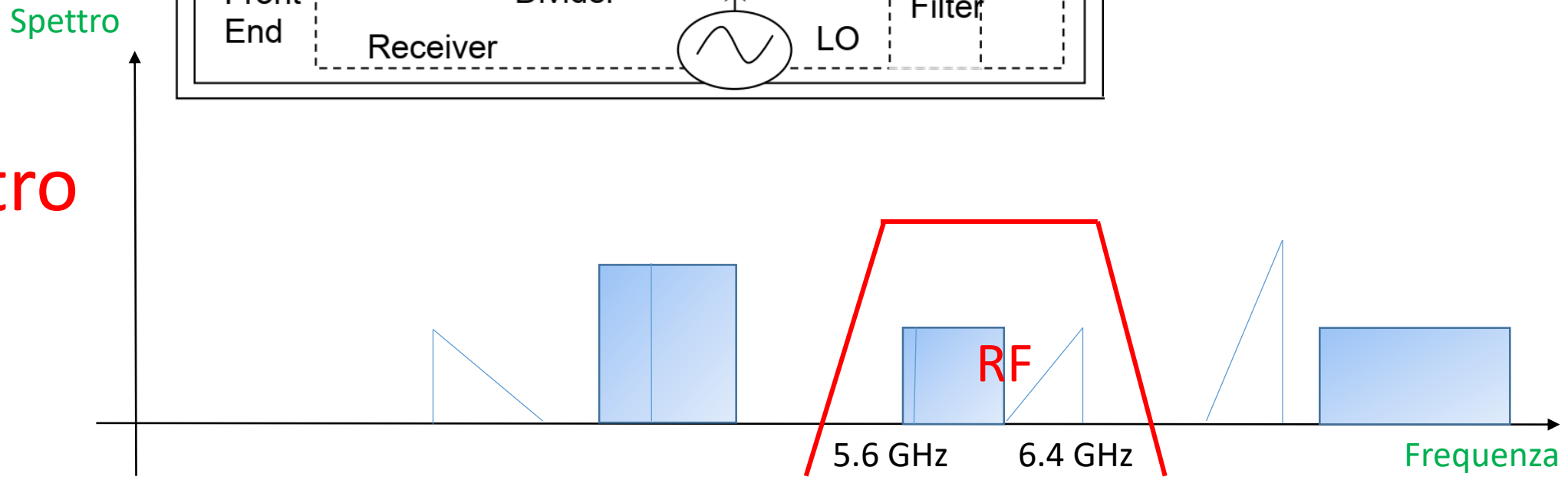


Mixer (2.6mmX2.0mm)

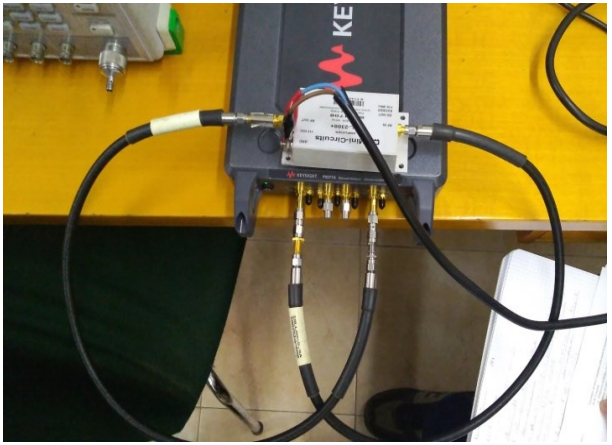
Building blocks di un ricevitore RF

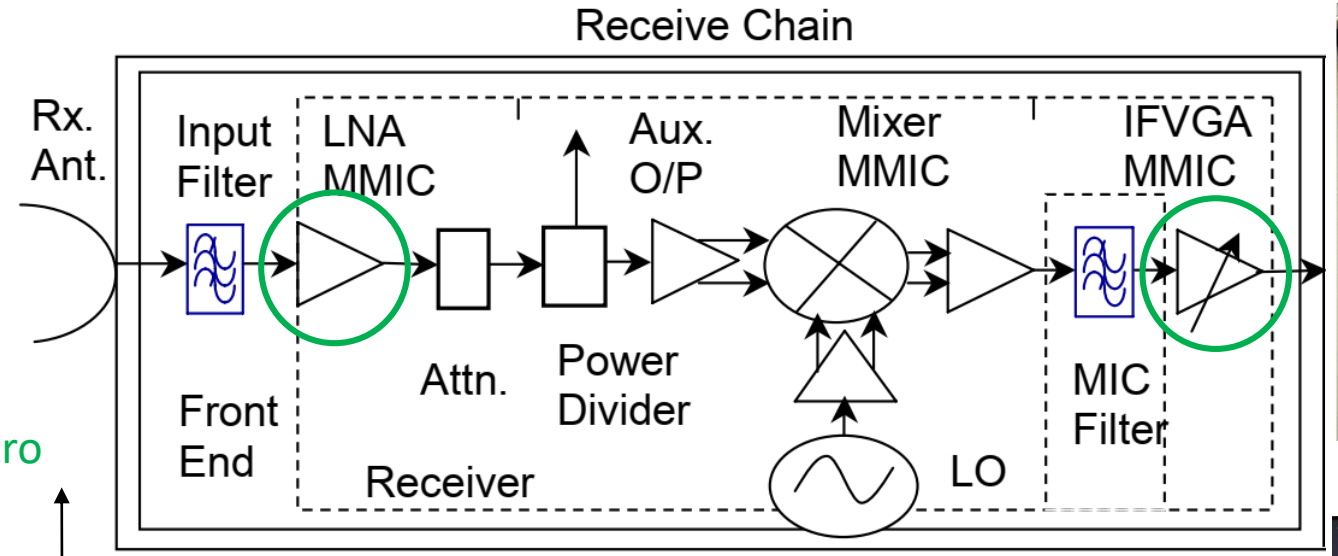


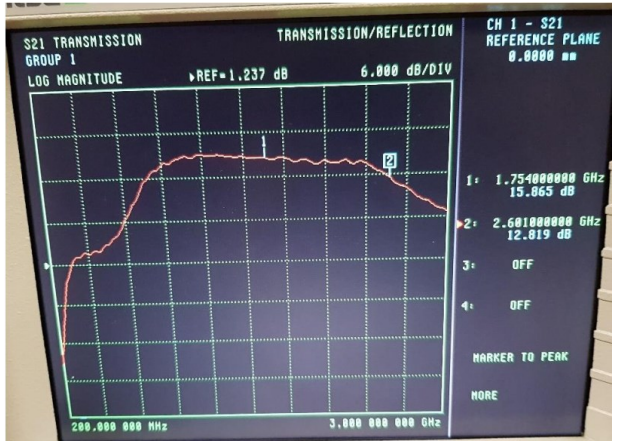
- Filtro



Building blocks di un ricevitore RF



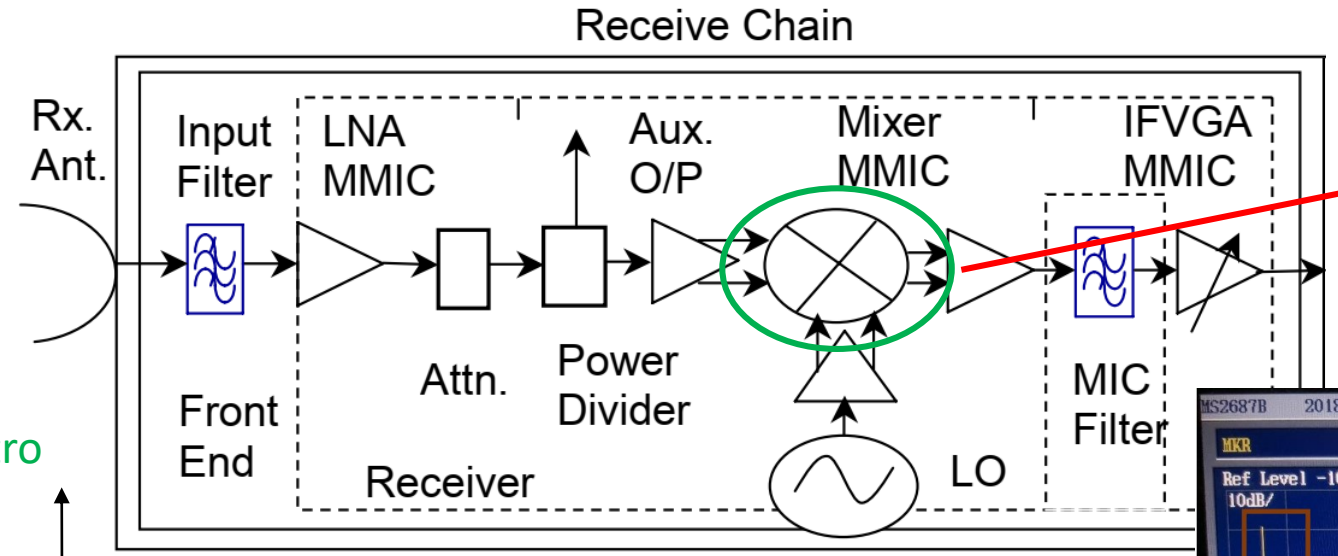




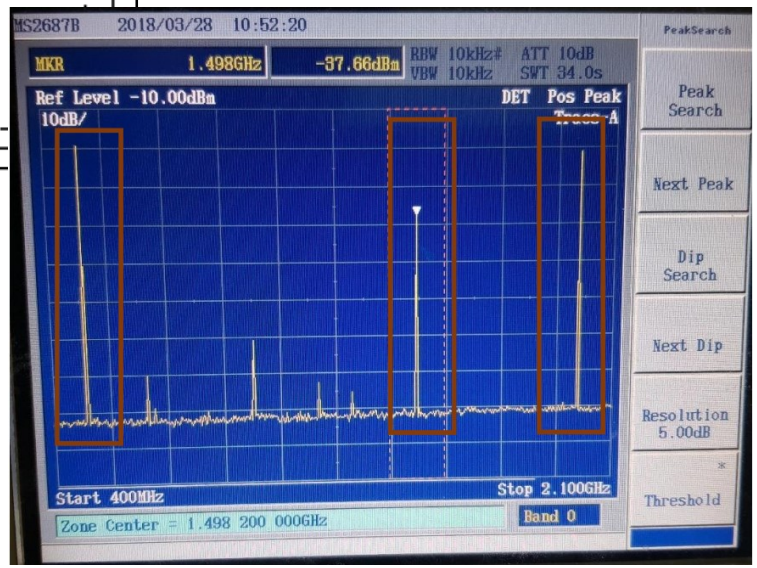
Spettro

- Filtro
- Amplificatore

Building blocks di un ricevitore RF

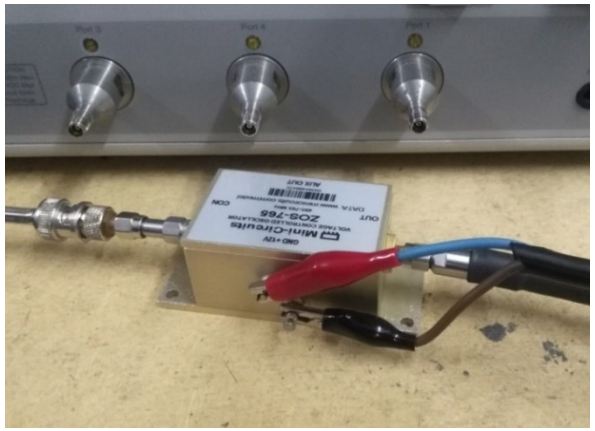


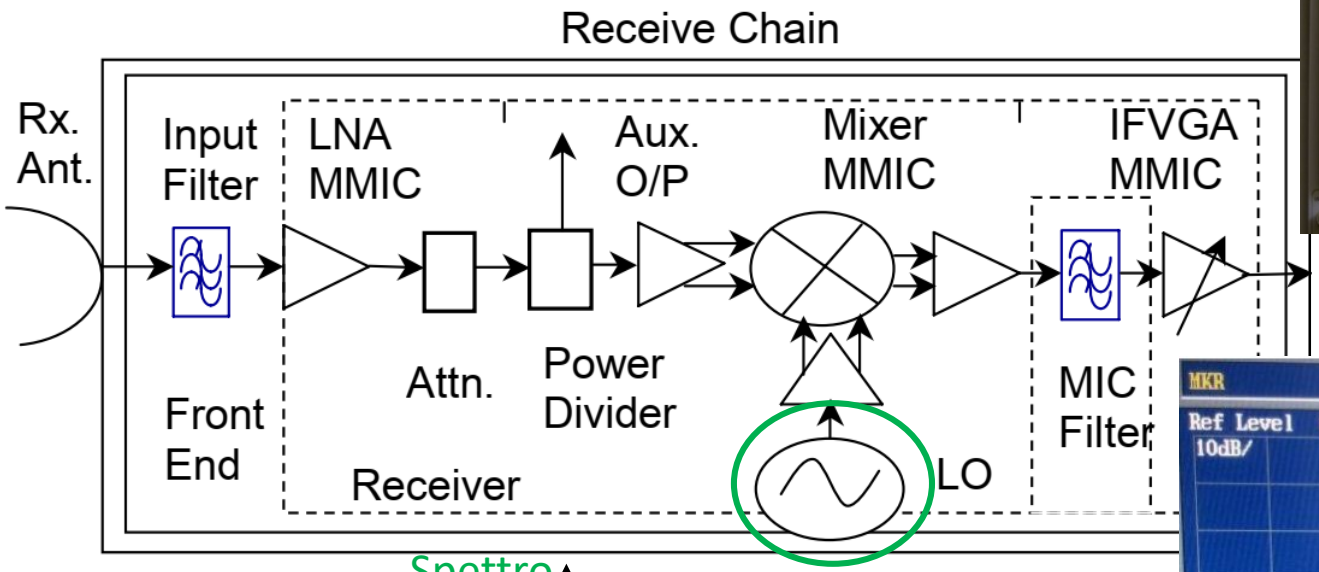
$f_{IF} = f_{RF} - f_{LO}$

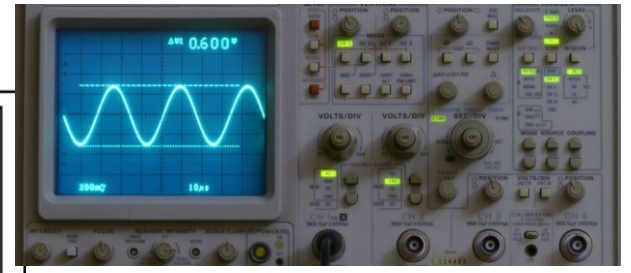


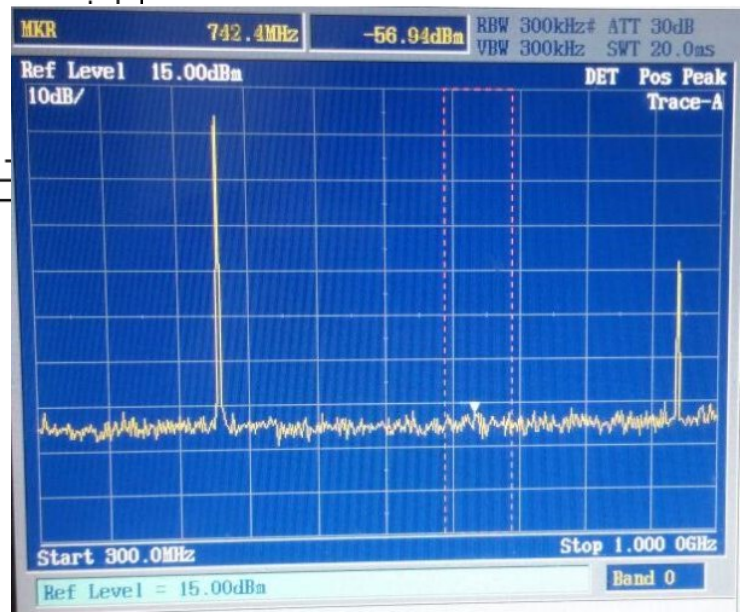
- Filtro
- Amplificatore
- Mixer

Building blocks di un ricevitore RF









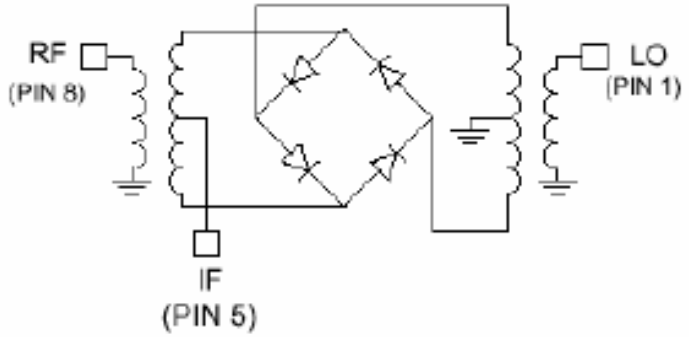
- Filtro
- Amplificatore
- Mixer
- Oscillatore locale

I singoli blocchi: Mixer

Figure di merito

- Guadagno di conversione: $G_c = P_{outIF} / P_{inRF}$
- Efficienza: $\eta = P_{outIF} / P_{ALIM}$
- Figura di Rumore: $F = SNR_{in} / SNR_{out}$
- …

Realizzazioni circuitali



Misure

Progetto IC