Melexis
Microelectronic Integrated Systems

RF Receiver Topologies in Brief

Receiver Topology	Advantages	Challenges	Remarks
Single Super-heterodyne	• ease of implementation • well proven and reliable • good sensitivity • good large signal handling • good selectivity • low spurious emissions • low current consumption	• RF front-end filter required for image rejection • narrowband reception difficult	Melexis ICs: TH71101, TH71111
Double Super-heterodyne	• well proven and reliable • very good sensitivity • good large signal handling • very good selectivity (ideal for narrowband) • low spurious emissions • low to medium current consumption	• RF front-end filter required for image rejection, but can be a simple LC tank because of high first IF (yields about 20dB)	Melexis ICs: TH71102, TH71112
Direct Conversion (homodyne, zero-IF)	• well proven and reliable • good sensitivity • good selectivity • inherent image rejection (no image at all) • low to medium current consumption	• LO leakage • DC offsets • I/Q mismatch • narrowband reception difficult	common use in handsets and pagers
Low IF	• good sensitivity • good selectivity • inherent image rejection (but limited to 20 to 30dB) • medium current consumption	• DC offsets • I/Q mismatch • narrowband reception difficult	in some handsets
Digital IF	• good sensitivity • good selectivity • versatile	• large chip size • high current consumption • I/Q mismatch	military use