

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 sensitivitygood selectivityversatile	large chip sizehigh current consumptionI/Q mismatch	military use