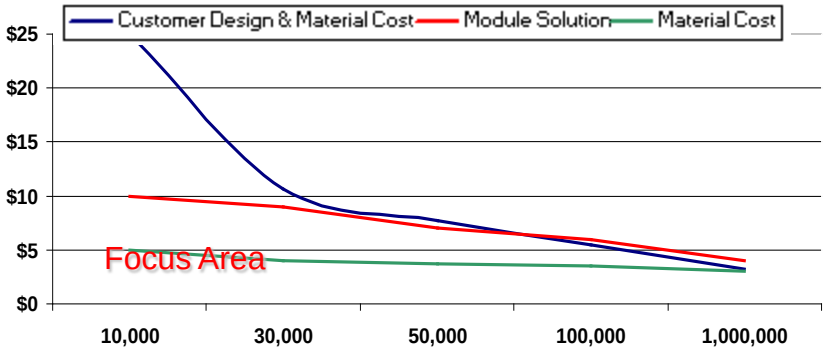
	Module	Discrete/On-board	Module Benefit
RF Design	Core competency of module vendor Heavy 1-time investment of module vendor	Expertise required for layout, signal routing, layer stack-up, interference, shielding	Lower RF team needs Less board design iterations
Size	Size optimized	Non module will require larger area on target PCB	Saves board area
Procurement	1 component	Non module will increase procured BOM elements management	Reduce operational costs
Assembly	1 component	Full BOM	Reduced production cost
Test	Module fully tested	Individually tested end-product	Reduced production cost
Quality	Modules are fully tested and provided as known good	RF expertise and test flows to cover connectivity subsystem	Increased quality
Yield Loss	Pre-yielded modules	Yield losses in production Failure analysis & rework costs	Reduced production cost

RF Module -

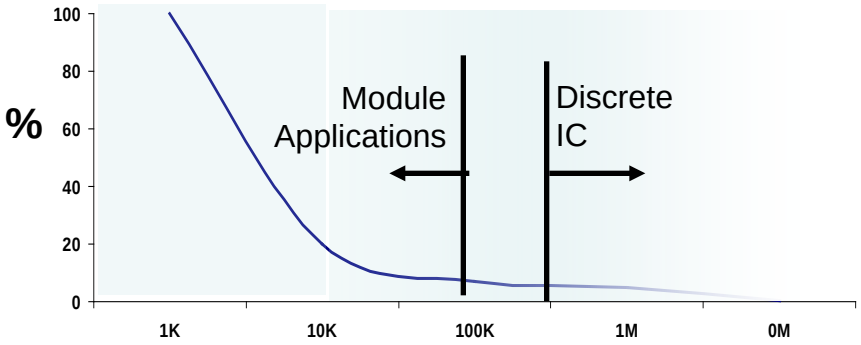
Module vs. Chip Cost



Customer Decision: Module vs Chip

- Initial Development / RF Certification & Testing --$181,970
  - Respin
  - Hardware Engineering
  - Firmware
  - Layout
  - Testing & Verification
  - Certification
- TOC = BOM + Mfg & Packaging

Module Adaption Rate



Module Adaption Considerations

- Time to market – Modules reduce time to market.
- Product Life – Modules are the best choice for products with a long life cycle, as a module life can be extended beyond IC life cycle by using a single footprint over several generations.