

Make vs. Buy Chipset vs. Wi.232DTS solution

The Wi.232DTS module cost advantage



High volume application example



Automated Meter Reading

- Target volume = 10,000 units/month
- Target sales price = \$50.00

Business Case

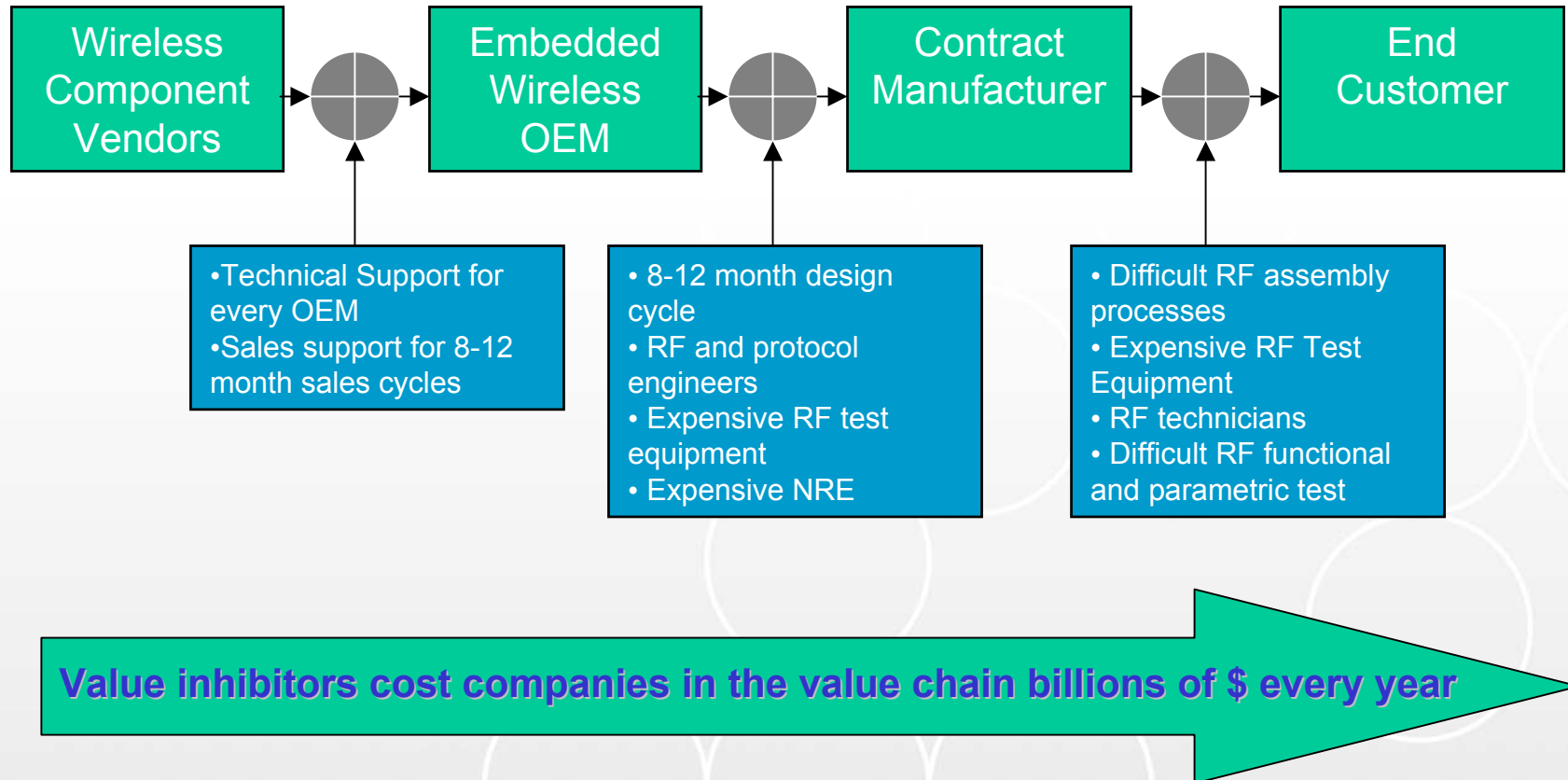
In this presentation we will:

- Evaluate how the Wi.232DTS module impacts the value chain
- Calculate cost and cash flow for discrete design
- Calculate cost and cash flow for Wi.232DTS based design
- Compare cash flow and profit of discrete design vs. Wi.232DTS design

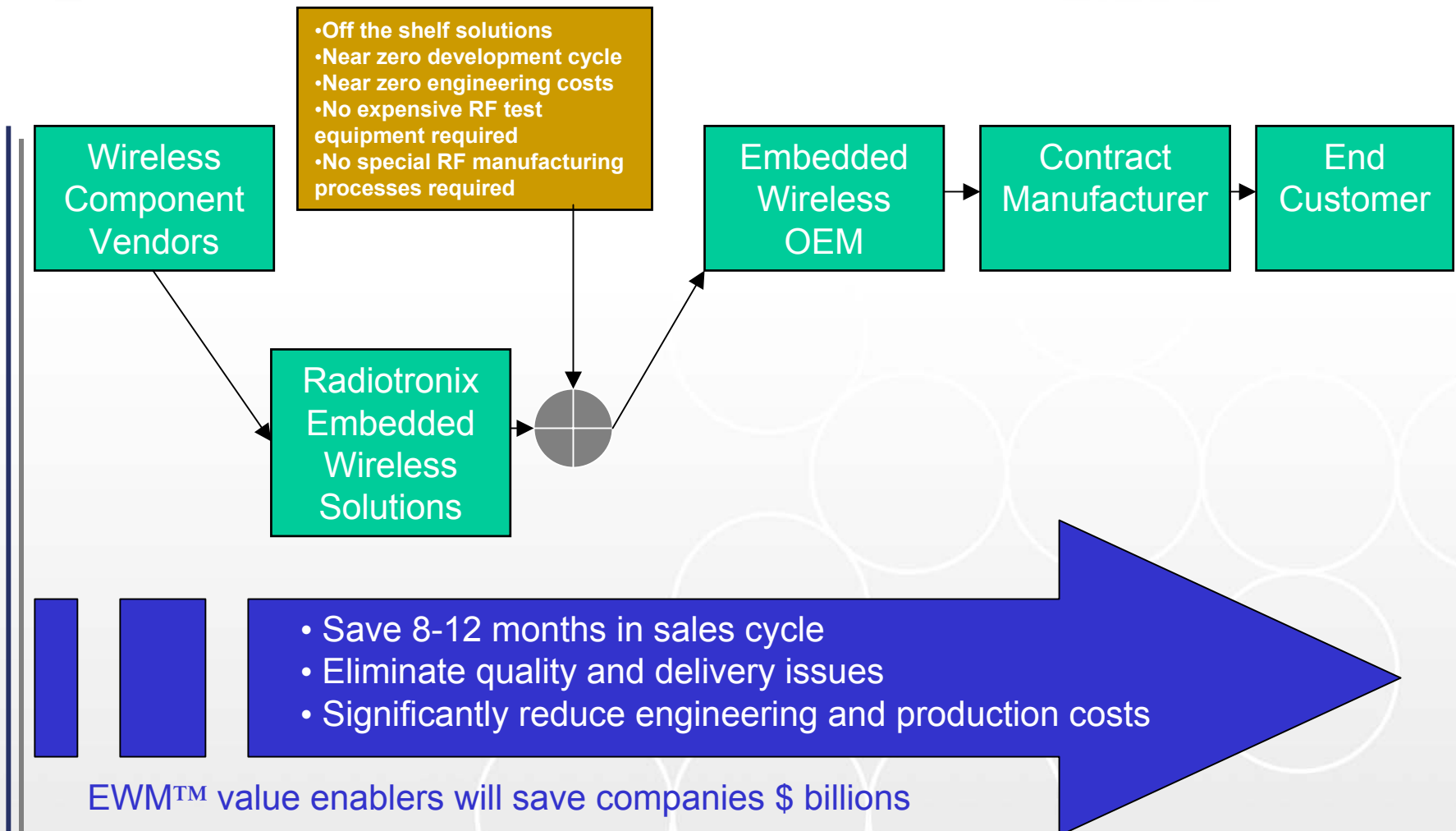
Calculations will include:

- Development labor cost with overhead loading
- Equipment cost
- Tooling
- Production cost accounting for yield
- Cost of RF and non-RF circuitry

Value Inhibitors within the traditional value chain



Value enablers with Embedded Wireless Modules



Chipset Solution



Labor costs

	# Required	Monthly Cost	Overhead	Total Cost
Project Manager	1	\$ 6,667	30%	\$ 8,667
Hardware Engineer	2	\$ 5,833	30%	\$ 15,167
Software Engineer	2	\$ 5,000	30%	\$ 13,000
Test Engineer	1	\$ 4,167	30%	\$ 5,417

- 12-month design cycle
- Not all engineers are required at all times
- Monthly labor cost ranges from \$28K to \$42K
- Estimated labor cost for project is **\$514,584.00**

Equipment cost

	Cost	Monthly Cost
Spectrum Analyzers	\$ 24,000.00	\$ 1,333.33
Network Analyzer	\$ 30,000.00	\$ 1,666.67
Signal Generators	\$ 5,000.00	\$ 277.78
Modulation Analyzer	\$ 6,000.00	\$ 333.33
Radio Test Set	\$ 6,000.00	\$ 333.33
EMI Test Set	Rental	\$ 1,500.00
RF Simulation Software	\$ 10,000.00	\$ 555.56
EM Simulators	\$ 15,000.00	\$ 833.33
C-Compilers	\$ 2,500.00	\$ 138.89
Assembly Compilers	\$ 500.00	\$ 27.78
RF Test Fixutre	\$ 6,000.00	\$ 333.33
	\$ 105,000.00	\$ 7,333.33

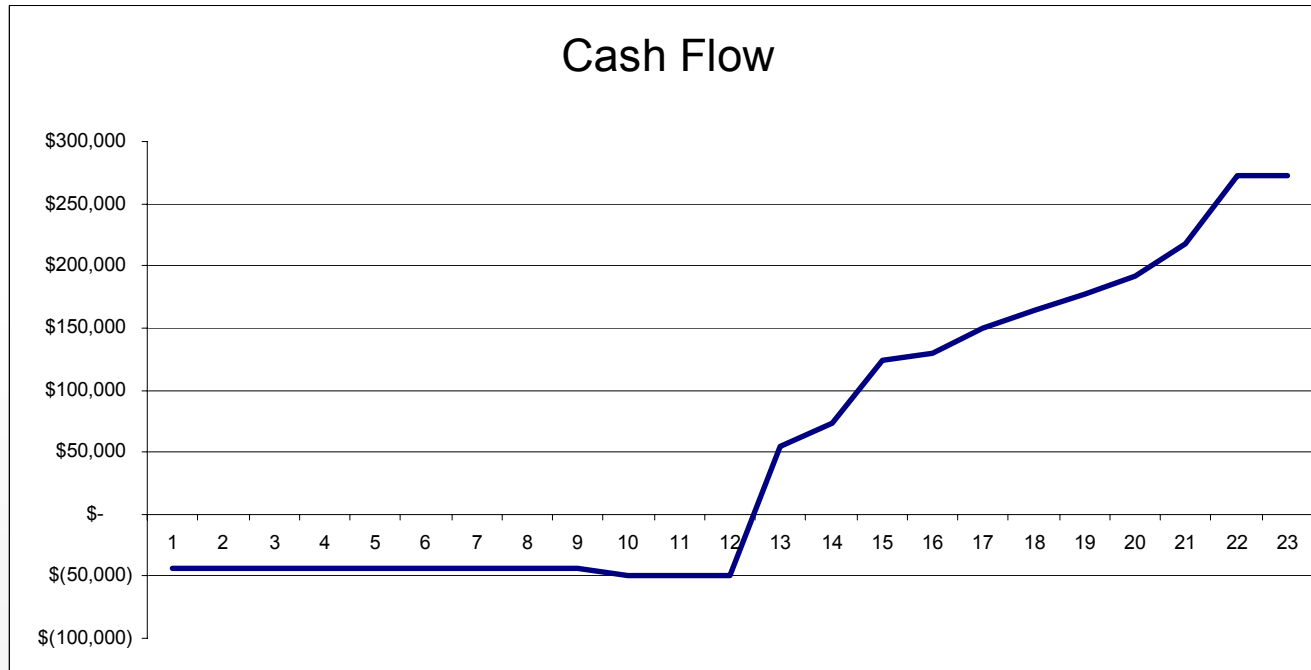
- Costs are amortized over a 12 month period
- Estimated equipment cost for project is **\$105,000.00**

Production Cost - Chipset Solution

BOM Cost	\$ 8.20
Assembly Cost	\$ 1.86
Non RF BOM cost	\$ 10.00
Yield	85%
Final Cost	\$ 23.60

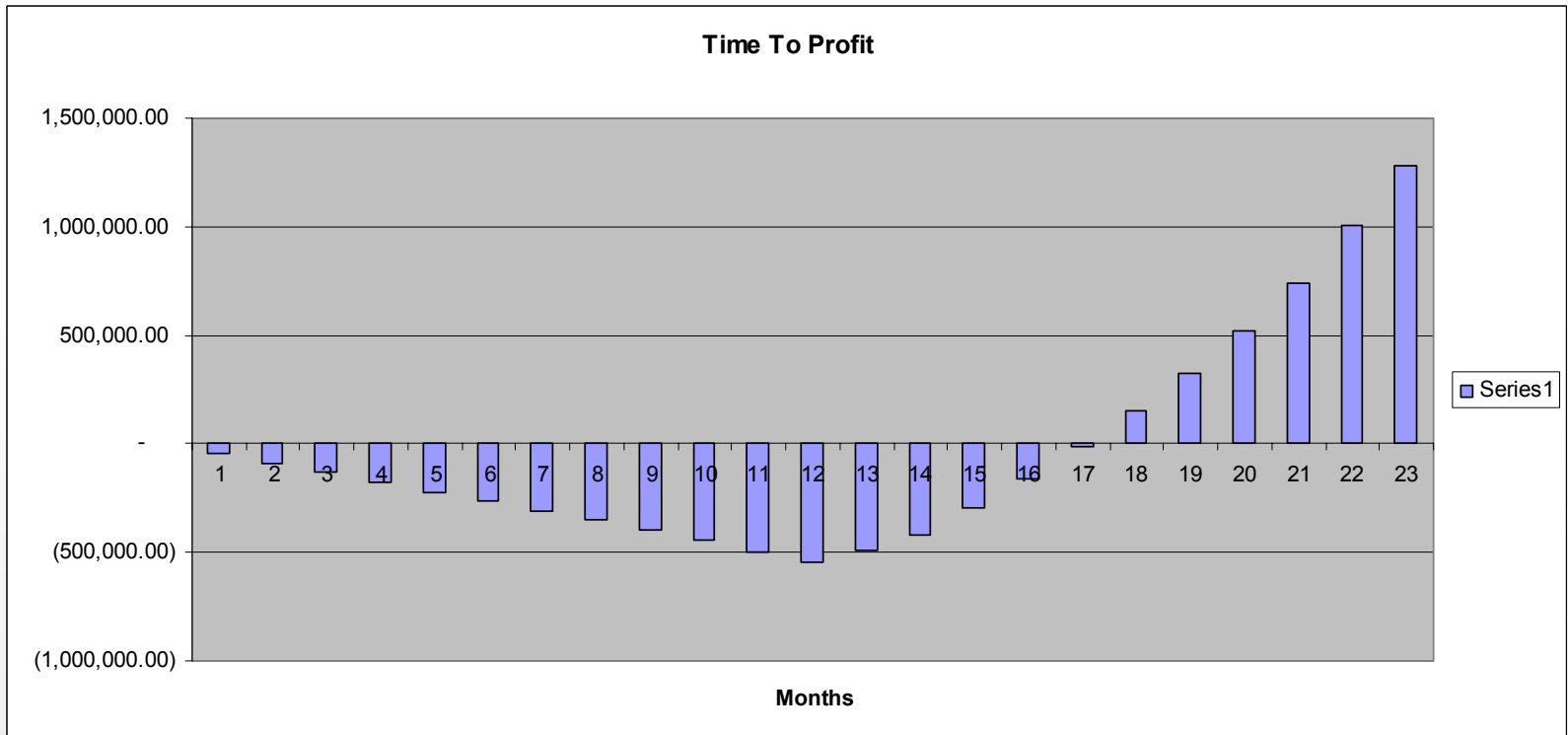
Yield affects RF and non-RF costs

Cash Flow for Chipset Solution



- Cash flow is not positive until month sixteen
- Peak cash outlay is \$500,000

Time To Profit – Chipset solution



Profitability in 18 months

Wi.232DTS Solution



Labor costs

	# Required	Monthly Cost	Overhead	Total Cost
Project Manager	1	\$ 6,667	30%	\$ 8,667
Hardware Engineer	1	\$ 5,833	30%	\$ 7,583
Software Engineer	1	\$ 5,000	30%	\$ 6,500
Test Engineer	1	\$ 4,167	30%	\$ 5,417

- 6-month design cycle
- Not all engineers are required at all times
- Monthly labor cost ranges from \$5K to \$28K
- Estimated labor cost for project is **\$168,000**

Equipment cost

	Cost	Monthly Cost
Spectrum Analyzers	\$ -	\$ -
Network Analyzer	\$ -	\$ -
Signal Generators	\$ -	\$ -
Modulation Analyzer	\$ -	\$ -
Radio Test Set	\$ 6,000.00	\$ 333.33
EMI Test Set		\$ -
RF Simulation Software	\$ -	\$ -
EM Simulators	\$ -	\$ -
C-Compilers	\$ 2,500.00	\$ 138.89
Assembly Compilers	\$ 500.00	\$ 27.78
RF Test Fixture	\$ -	\$ -
	\$ 9,000.00	\$ 500.00

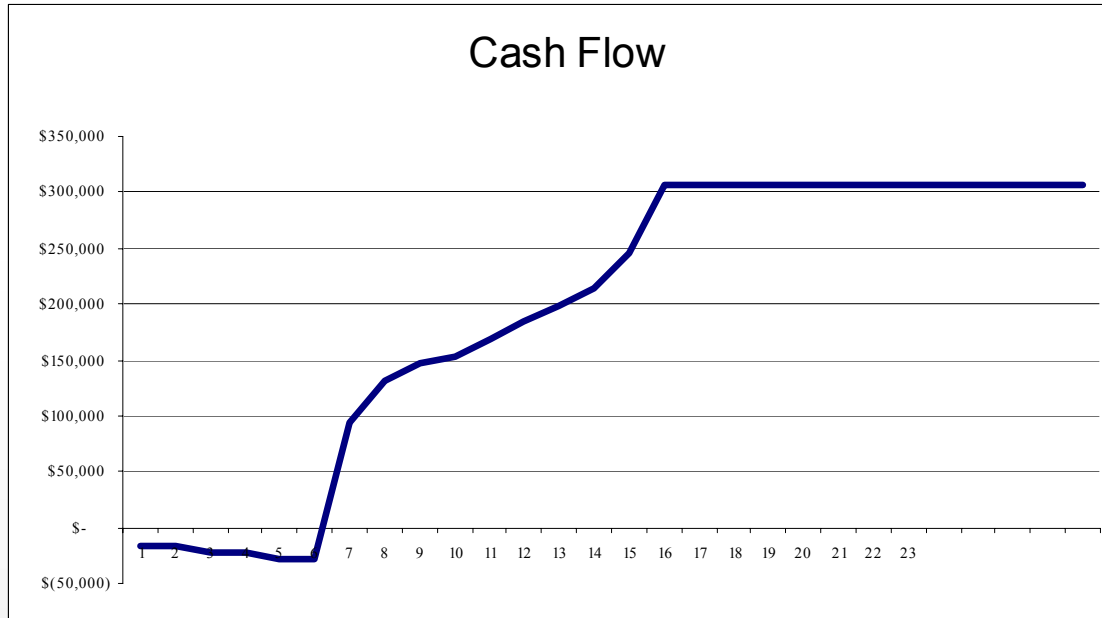
- Costs are amortized over a 12 month period
- Estimated equipment cost for project is **\$9,000.00**

Production Cost - Wi.232 Solution

Wi.232 Cost	\$ 10.00
Assembly Cost	\$ -
Non RF BOM cost	\$ 10.00
Yield	100%
Final Cost	\$20.00

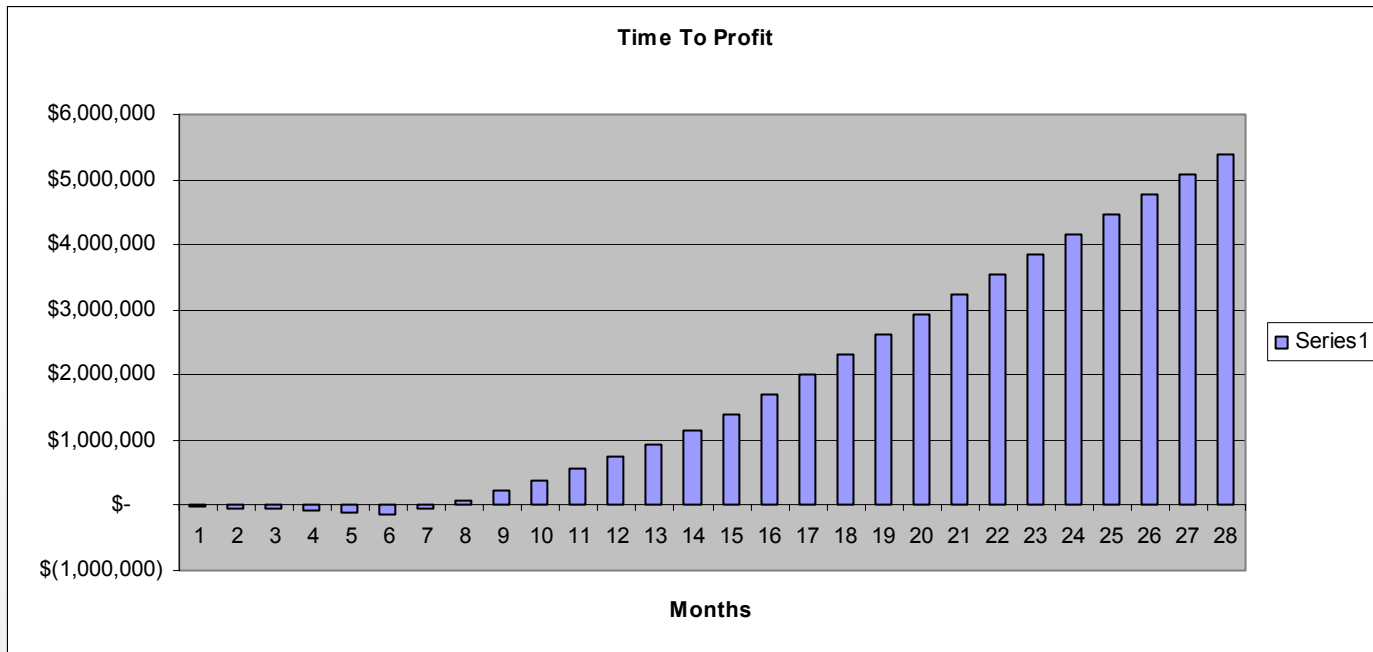
**Modules are pre-tested therefore...
Yield losses due to RF are eliminated**

Cash Flow for Wi.232DTS Solution



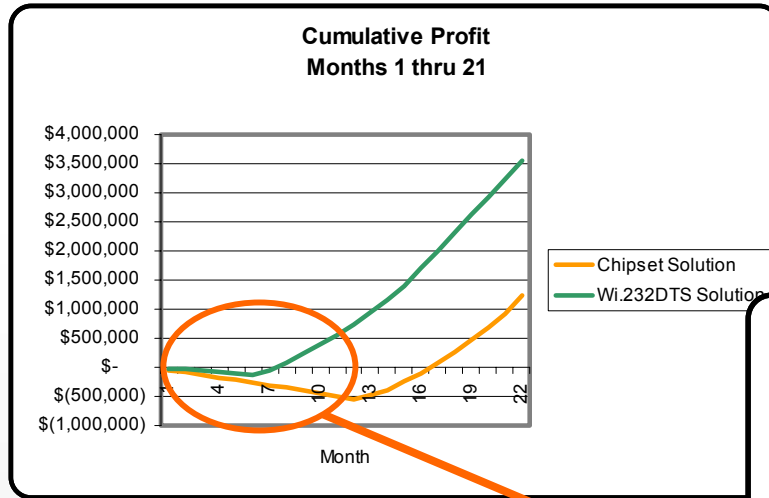
- Cash flow is not positive until month seven
- Peak cash outlay is \$137,333

Time to Profit – Wi232DTS solution

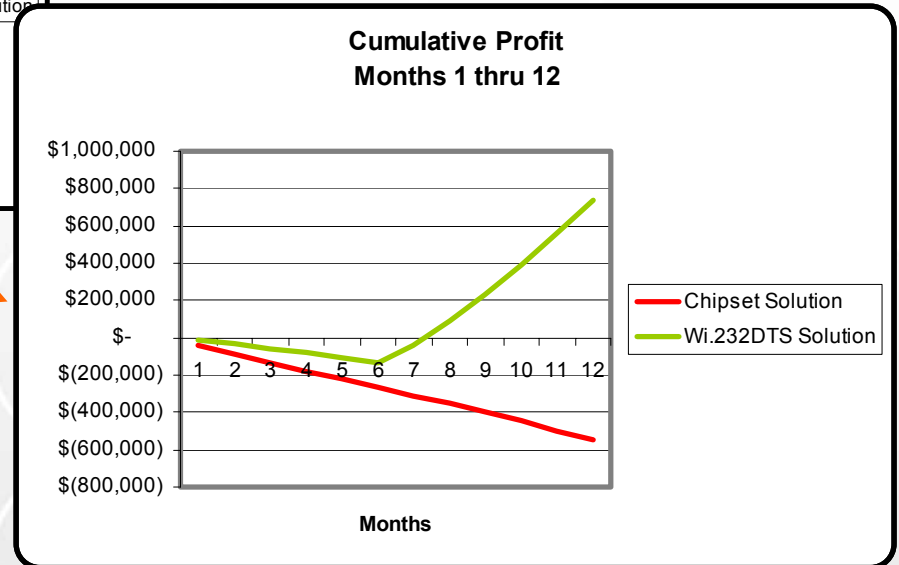


Data Comparison

Cumulative profit comparison



- Wi.232DTS solution profitable in 8 months
- Chipset solution profitable in 17 month



- Wi.232DTS 23 month profit is **\$5.4M**
- Chipset 23 month profit is \$1.5M

Conclusion

Wi.232DTS solution is more cost effective because:

- Requires less labor – savings of **\$346,000**
- Requires less equipment – savings of **\$96,000**
- Requires less cash – requires **\$410,000** less cash to finish
- Shorter time-to-market – get to market **6 months earlier**
- Lower production cost – savings of **\$85,000** for first 100,000 units
- Shorter time-to-profitability – additional **\$3.8 million profit** in first 24 months