High-Level Design Benchmark Report

Engineers are faced with FPGA designs that continue to get larger and more complex while design cycles get shorter. To manage complex designs quickly, many engineers use High-Level design languages (VHDL or Verilog HDL) to describe their designs, and synthesis tools to implement the logic based on the design's constraints.

Actel's FPGAs are ideal for High-Level design flows. With a synthesis friendly, fine-grained logic structure, and support from all the major synthesis vendors; Actel's FPGAs allow designers to use High-Level design flows to manage complex designs and achieve high performance, all within the time-frame of ever-shortening design cycles.

The following tables, grouped by market segment, are a few-examples of complex designs where engineers used Actel's FPGAs with synthesis flows to solve their tough design problems.

Table 1 • Networking

Customer Constraint (MHz)	Actel Target Device	Device Utilization (%)	Actel Performance (MHz)
32	32200DX-3	91%	34.6
20	32200DX	95%	20.6
33	1240XL	74%	38.8
66.7	14100A-3	74%	69.9
20	32200-2	81%	21.7
33	1280XL-2	89%	33.7
25	A1225XL	58%	27.4
8	32140DX	91%	8.3
15	A1240XL	32%	29
43.5	A32140DX	70%	44
33	A1225XL-1		33.7
50	A1425A-3	76%	52.9

Table 2 • Telecom

Customer Constraint (MHz)	Actel Target Device	Device Utilization (%)	Actel Performance (MHz)
19.4	A14V15	94%	23.3
19.4	A1225XLV, STD (3.3 V)	47%	24.6

Table 3 • Military Hi/Rel

Customer Constraint (MHz)	Actel Target Device	Device Utilization (%)	Actel Performance (MHz)
50	32200DX	27%	54.6
6	A1280RH	92%	13.4
16	1280RH	50%	17

Table 4 • Miscellaneous

Customer Constraint (MHz)	Actel Target Device	Device Utilization (%)	Actel Performance (MHz)
33	A1225XL	62%	34.9
51.5	A1415A-2	56.50%	81.9
19.4	A14V15	95%	23.3
31.3	14V40A	92%	31.3
33	A14100A	88%	33
66.7	1415A-3	70%	71.4
33	A1440-2	50%	33
50	A1425A-3	77%	62
27	A32140DX	87%	27
33	A1460A-2	75%	33
33	A14100BP-2	77%	34.7

Table 4 • *Miscellaneous (Continued)*

Customer Constraint (MHz)	Actel Target Device	Device Utilization (%)	Actel Performance (MHz)
25	A1280XL	89%	26.2
27	A1240XL	76%	35

The following tools are used in benchmarking:

- Actel's ACTmap
- Exemplar's Galileo
- Synopsys's FPGA Compiler
- Synplicity's Synplify

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