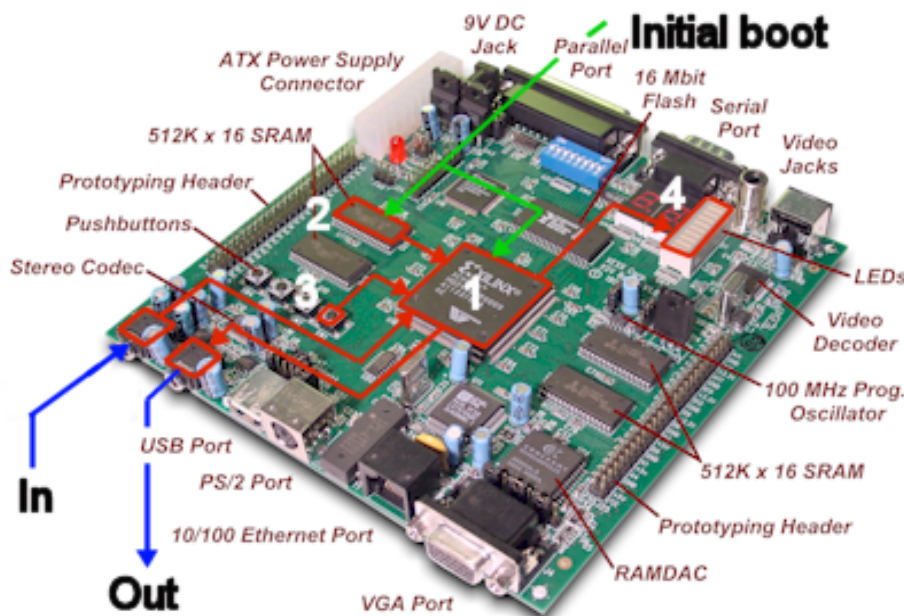


Lattice IP Core used in Real-time Lattice Demo on XESS Board

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XCV800-4 Design Summary	
Slices	
72 %	
Block RAMs	
100 %	
Frequency 33.492 MHz	

- 1) XESS Lattice Design
- 2) Startup configuration in SRAM
- 3) Lattice on/off
- 4) Info LEDs

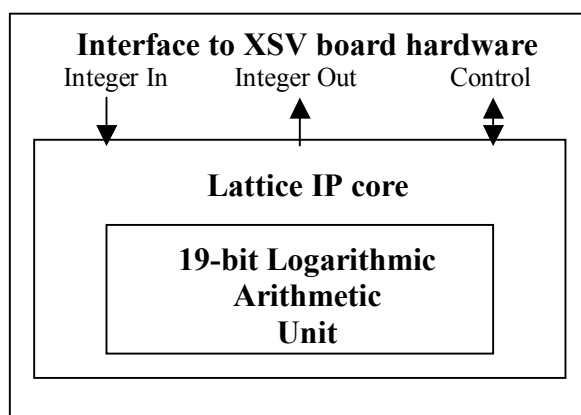
Parameters & Performance

Oscillator Division Factor	Clock Speed [MHz]	Audio Codec Division Factor	Audio Sampling Period [Hz]	Maximal pipe degree	Lattice degree	Mflops	Config. File**
3	33.33	2	31680	21	84	74.5	deg_084.XES
3	33.33	4	15840	43	172	76.3	deg_172.XES
3	33.33	8	7920	63*	252*	55.9	deg_252.XES

* Maximal degree allowed by Block RAM size reached

** Lattice design reads configuration from this file loaded into external RAM

Virtex XCV-800 Design structure



General information

Board

- Evaluation board XSV-800 from XESS company, <http://www.xess.com>

Demo

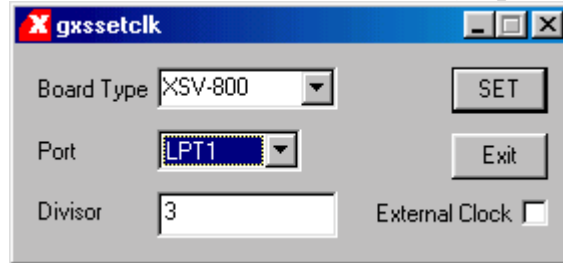
- Works with XSV-800 board & PC audio player as input to board
- Output sound can be heard in earphones
- Downloadable at <http://www.utia.cas.cz/ZS/projects/hsla>

Future work

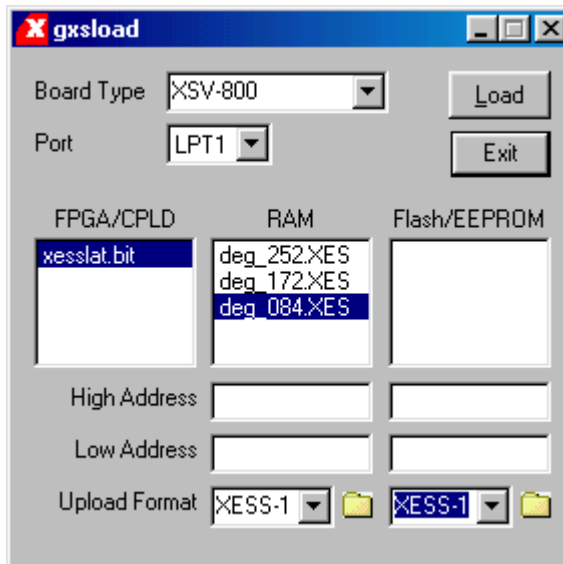
- Higher lattice degree
- Lattice IP Core Available

HOWTO run demo on XSV-800 evaluation board

1. Connect your XSV board to PC parallel port, power supply, audio output from PC sound card to input of XSV-800. Earphones or speakers can be connected directly to XSV-800 board output.
2. Set up oscillator division factor to XSV programmable oscillator. Follow instructions in XSV board manual (<http://www.xess.com>).



3. Load firstly configuration file to XSV SRAM (table on page 1). After it, load `xesslat.bit`.



4. Once the design is loaded. Watch the LED indicators on bargraph (4), (picture on page 1).
 - LED1: Input output interconnection indicator. Light = input signal goes to the earphones (driven by button (3))
 - LED2: Data are stored to SRAM. LED is on until maximum capacity is reached.
 - LED3: Lighting when initial delay is activated.
 - LED4: Synchronization LED. Led is glowing when algorithm is waiting for synchronization from *audio codec*. Higher light intensity indicates the lower efficiency of algorithm.
5. Choose one of prepared audio files (`sine.wav`, `step.wav`) and start audio playback to XSV board input from PC. Filtered output comes to earphones. You can switch to corrupted input by button (3).
6. If you are interested in Lattice IP core, our demo etc. please drop an e-mail to xpohl@utia.cas.cz.