

SPEED.PRECISION.PERFORMANCE.

DDR3

Registered DIMM

Two Register vs. One Register



Inphi's 882 (B2) Value Proposition

- Free power saving can be achieved using a single Inphi 882 register with strong strength driver rather than using two 882 registers with moderate strength driver
- The reliability of the overall DIMM also increases by using fewer components
- Costs also decrease not only with reduction of one 882 but also the associated BOM (capacitors and resistors)
- Fewer components also translate to increased routing area. This increases yield because of better SI for signals and allows the RDIMM to run at a higher frequencies

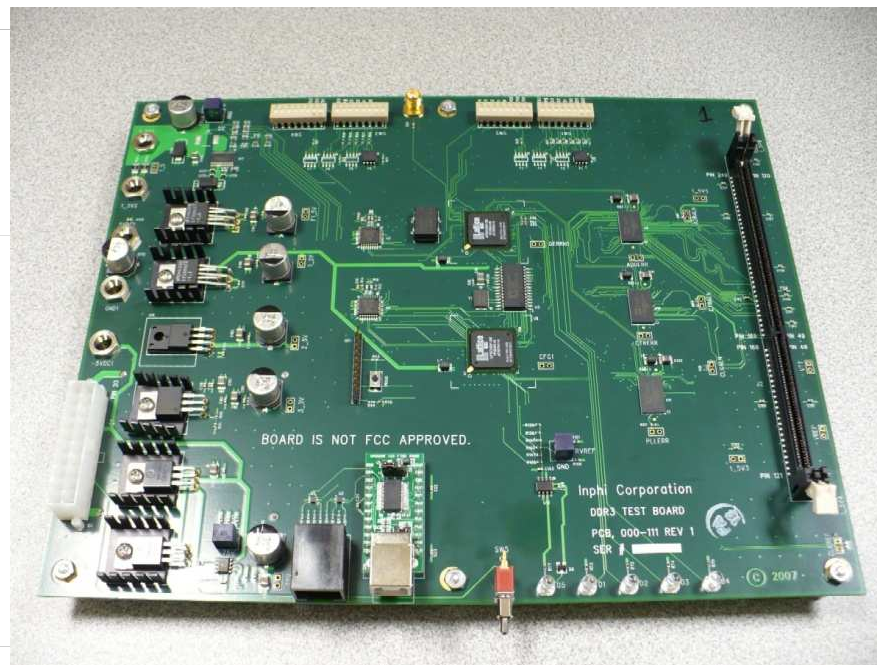
Platform: 882 TestBoard

Clk Freq: 400 MHz, 533 MHz, 667MHz, 800MHz

V_{DD} Supply: 1.5V

Power Supply Meter

Using the IDD2N pattern
(precharge standby current)





Two Register Case

Assumptions:

1. One register is in mirror mode
2. IBT is off on mirrored register
3. Drive strength for both C/A and Clock are Moderate Drive

Breakdown of Power for each 882 Register	Freq (MHz)	400	533	667	800
Two Register Power: Base on <i>Two Core Power + One IBT Power + Two Mod I/O Power + Two Mod Clock Power</i>					
Total Current: Two Register (mA)		1,116.00	1,182.00	1,248.00	1,308.00
Total Power: Two Register (mW)		1,674.00	1,773.00	1,872.00	1,962.00

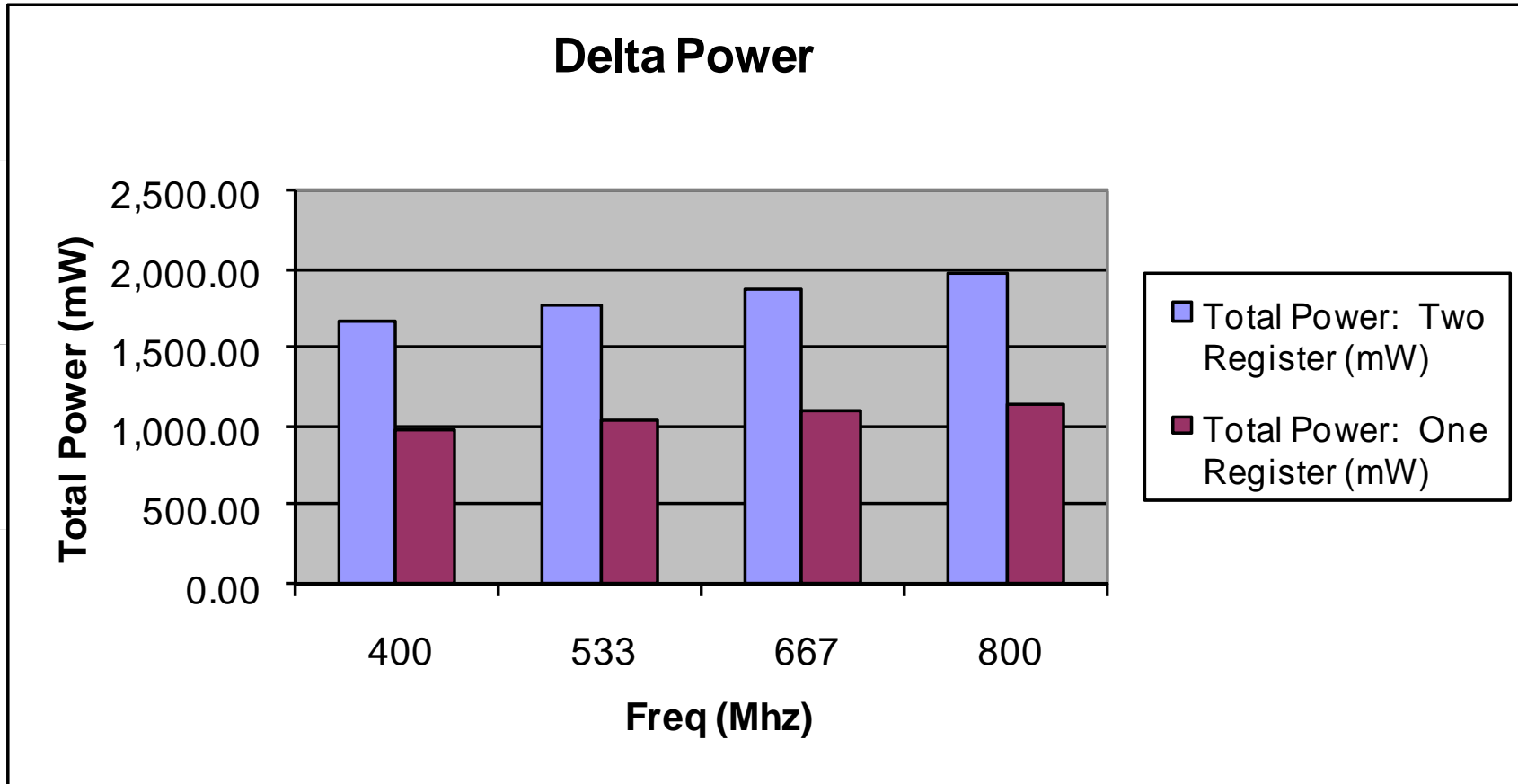


Single Register Case

Assumptions:

1. C/A and Clock drive strength are set at Strong Drive

Breakdown of Power for each 882 Register	Freq (MHz)	400	533	667	800
One Register Power: Base on <i>One Core Power + One IBT Power + One Strong I/O Power + One Strong Clock Power</i>					
Total Current: One Register (mA)		657.00	692.00	726.00	758.00
Total Power: One Register (mW)		985.50	1,038.00	1,089.00	1,137.00



Saving in Current (mA)		459.00	490.00	522.00	550.00
Saving in Power (mW)		688.50	735.00	783.00	825.00
% Saving		41.13%	41.46%	41.83%	42.05%