Unless otherwise specified (marked with an *) all the runs have been performed with the default options of the respective tool.

The following example implementations are compatible with two MT48LC4M16A2 memory chips in parallel (each SDRAM chips contains 64Mb with 4K rows, 4 banks, 256 columns and 16bits per word).

The results are provided for an SDRAM Controller with the following configuration generics (see Table 1):

'g_DATA_WIDTH'	32
g_ROW_BITS'	12
'g_COL_BITS'	8
'g_BANK_BITS'	2
'g_CAS_LATENCY'	2
'g_BURST_TYPE'	'0' (Sequential)
'g_BURST_LENGTH'	"011" (8)
'g_WR_BURST_MODE'	'0' (Programmed Burst Length)
'g_BUS_TURN_AROUND'	0
g_USE_ADVANCED_BST'	See Note
'g_INIT_DELAY'	100000 (100 µs)
'g_INIT_REFRESH_NUM'	8
'g_tREF'	64000000 (64 ms)
g_tCK'	10 or 6 (ns) for 100 MHz and 166 MHz respectively
'g_tRP'	20 (ns)
'g_tRAS'	44 (ns)
'g_tRCD'	20 (ns)
'g_tRC'	66 (ns)
'g_tRRD'	15 (ns)
'g_tRFC'	66 (ns)
'g_tWRa'	18 (ns)

'g_tWRm'	15 (ns)
'g_tXSR'	67 (ns)
g_tMRD'	2 (clock cycles)

The following constraints were added:

Clock period	10 ns or 6 ns (100 MHz or 133 MHz)
Input Data Setup	1.5 ns
Input Data Hold	0 ns
Clock to Output	0 to 4.5 ns

In the tables below two results are shown for each device, the 1st one is with *'g_USE_ADVANCED_BST'* set to TRUE and the second set to FALSE.

ALTERA

FPGA Type	Maximum 'clk' Frequency	Flip-Flops	ALUTs	ALMs	Logic Cells
MAX II (EPM2210F265C3)	63.55 MHz	267	-	-	929
	94.48 MHz	267	-	-	739
Cyclone III (EP3C5F256C6)	108 MHz*	263	-	-	779
	156.2 MHz	260	-	-	595
Stratix II (EP2S60F484C3)	138.6 MHz	264	547	402	-
	204.96 MHz	261	353	267	-
Stratix III (EP3SE110F780I3)	166.69 MHz*	279	525	433	-
	197.59 MHz	261	347	279	-
Stratix IV (EP4SGX70HF35I3)	182.35 MHz	262	529	411	-
	205.38 MHz	263	343	300	-

XILINX

FPGA Type	Maximum 'clk' Frequency	Flip-Flops	LUTs	Slices	Macrocells
CoolRunnerII (XC2C128-6-TQ144)	70.3 MHz	262	871	572	-
	108.5 MHz	261	580	364	-
Spartan3 (XC3S50-5PQ208)	111.1 MHz	271	754	273	-
	166.8 MHz	268	540	159	-
Virtex2 (XC2V40-4FG256)	134.5 MHz	262	867	499	-
	169.6 MHz	268	666	401	-
Virtex4	171.4 MHz	261	-	229	-

(XC4VLX15-12SF363)	178.6 MHz	265	-	235	-
Virtex5	169.6 MHz	246	700	242	-
(XC5VLX30-3FF324)	209.3 MHz	241	417	148	-