KT400A

7th Generation Performance Chipset for the AMD Athlon™ XP

KT400 - 31 Design Wins

"If you want to pick up an Athlon motherboard any time soon, you really ought to take a look at the KT400 models, Our recommendation is based quite simply on the high equipment standard and the undisputedly great performance with DDR333" October 2002

Manufacturer	Motherboard	Manufacturer	Motherboard
Asus	A7V8X	FIC	AN19E, AN19C
MSI	KT4V, KT4 Ultra KT4M	ECS	L7VTA, L7VTM
Gigabyte	GA-7VA, GA-7VAXP, GA-7VAXP Ultra	DFI	AD77 Infinity AD77 Max
Epox	EP-8K9A, EP-8K9A2	Biostar	M7VIT
Abit	KD-7G, AT7 Max2	Azza	KT400-ALH
		Acorp	7KT400
Aopen	AK77-8X AK77-8X Max, AK77-8XN	Soltek	SL-75FRV
Albatron	KX-400 8X	Freetech	A7F156
Shuttle	AK37GT/R	Iwill	KK400, KK400RS
Soyo	SY KT400 Dragon Ultra	Jetway	Polaris 400

VIA Apollo KT400A

? **7th Generation Socket A Chipset From VIA**

? **VIA FastStream64™ Technology Maximizes Performance with the new AMD Athlon XP 3000+ CPU, and leaves Nforce2 trailing**

? **AGP 8X with VIA Hyperion 4in1 Drivers For Maximum Frame Rates in Doom 'III' Generation Games**

? **First to Market Native Serial ATA support in the VT8237 South Bridge**

? **VIA XXXX Onboard Audio For Surround Gaming**

DualDDR: Cost Without Benefit

- **AMD 333MHz FSB is maxed out at 2.7GB/s, equivalent to the maximum theoretical bandwidth in a single channel DDR333 configuration**

- **Dual DDR configurations for the AMD Athlon™ XP are overkill and needlessly raise the cost of the platform**

- **The key to performance is the efficiency of the North Bridge memory controller and CPU interface**

	AMD Athlon™ XP 333MHz Front Side Bus Data Capacity	Theoretical Memory Bandwidth (DDR333)	Actual bandwidth	Efficiency
VIA KT333	**2700MB/s**	**2700MB/s**	**2520MB/s**	**93%**
Nvidia nforce2	**2700MB/s**	**5400MB/s**	**2599MB/s**	**48%**

Source: tech-report.com, Oct 1st 2002. Benchmark figures: Asus A7N8X (nforce2) vs Epox 8K3A (KT333) Identical System Configurations, Sisoft Sandra 2002 Memory (ALU)
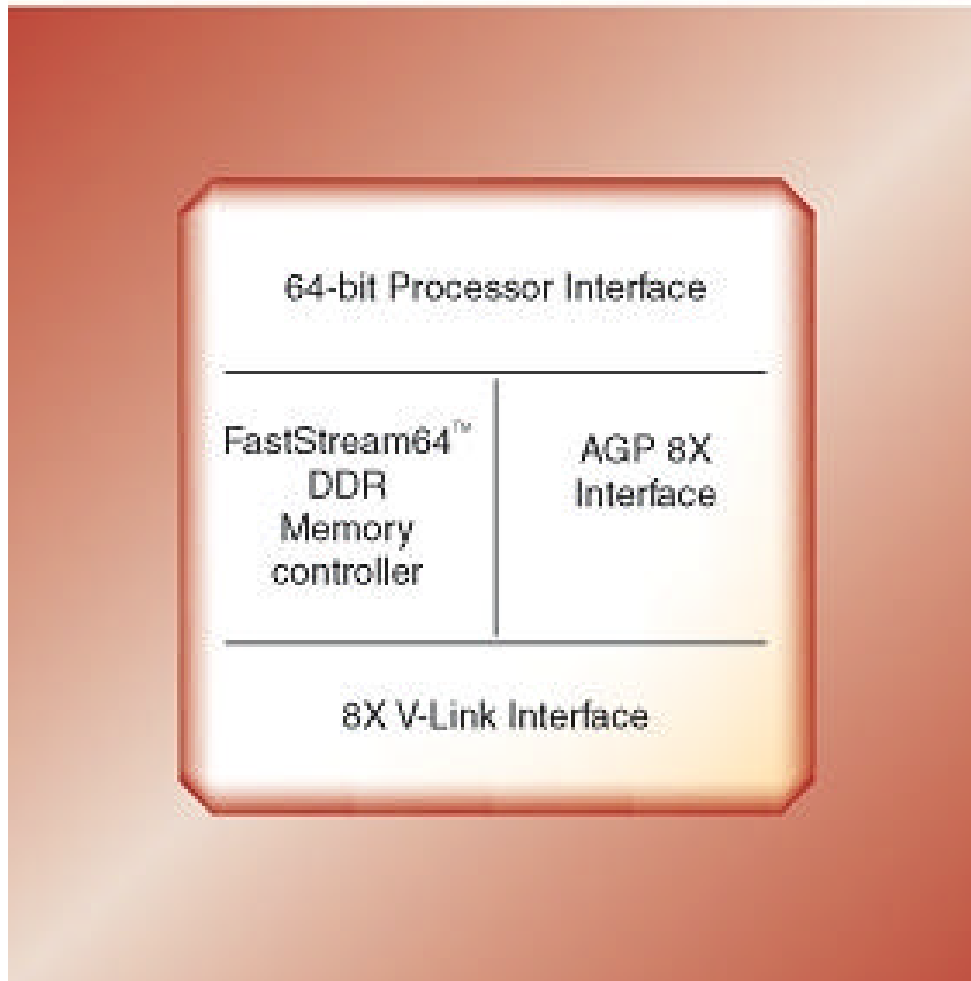
FastStream64™ Technology

? **FastStream64™ Technology enables the single channel 64-bit memory controller of the KT400A to out perform the Nforce2 Chipset in 128-bit mode**

? **VIA FastStream64™ Technology uses an expanded array of pretech buffers to reduce latency in the memory controller, enabling more intelligent read/write sequencing and extending performance at a lower transistor cost than dual channel implementations**

? **KT400A is designed to maximize performance in both synchronous (DDR333/333MHz FSB) & asynchronous (DDR400/333MHz FSB) modes**

KT400A North Bridge Summary

KT400A North Bridge Architecture

64-bit Processor Interface

FastStream64™ DDR Memory controller

AGP 8X Interface

8X V-Link Interface

- ? Leading Edge Performance Features
  - ? 200/266/333MHz Front Side Bus
  - ? Ultra-fast FastStream64 Memory Controller with 200/266/333/400MHz system bus
  - ? Support for up to 4GB High-Speed DDR200/266/333/400 SDRAM
  - ? 8X V-Link Architecture
    - ? Peak bandwidth of 533MB/s
  - ? AGP 8X with 2.1GB/s of dedicated bandwidth for the GPU
  - ? Supports full range of Socket A 462-pin AMD Athlon™ XP processors including the new 'Barton' core CPU's

VIA Confidential and Proprietary

Onboard Audio Superiority

VIA Audio

- **VIA VT1616 Six Channel Codec**
  - **Hi-performance solution in combination with VT8235/8237 SB**
  - **Higher Quality and Fidelity Than Nforce2 mainboards featuring inferior codec solutions**
  - **New level of AC'97 codec performance with full Sensaura support**
    - **EAX1**
    - **EAX2**
    - **A3D**
  - **DualMax -- hardware downmixing technology**
  - **CoolAmp – reduced heat for consistent performance**

Sensaura™
3D POSITIONAL AUDIO

Positional 3D
EAX 1.0
EAX 2.0
A3D™ 1.x compatibility
Bass Boost
I3DL2
Fast Panning 3D Algorithm fallback
MMX optimization
SSE2 optimization
Voice manager
Multichannel
Multidrive
Global Reverb
Multidrive 5.1

VIA: Leading The Way

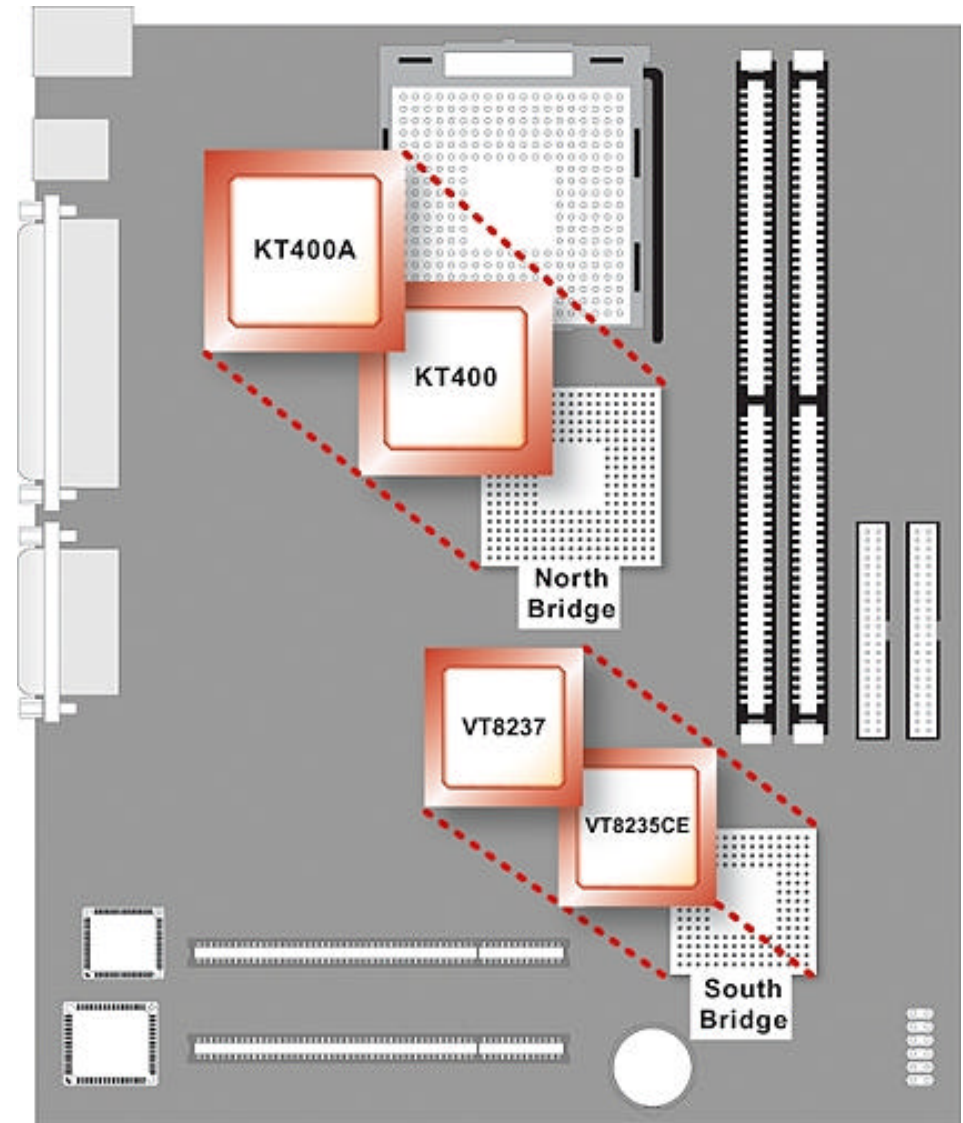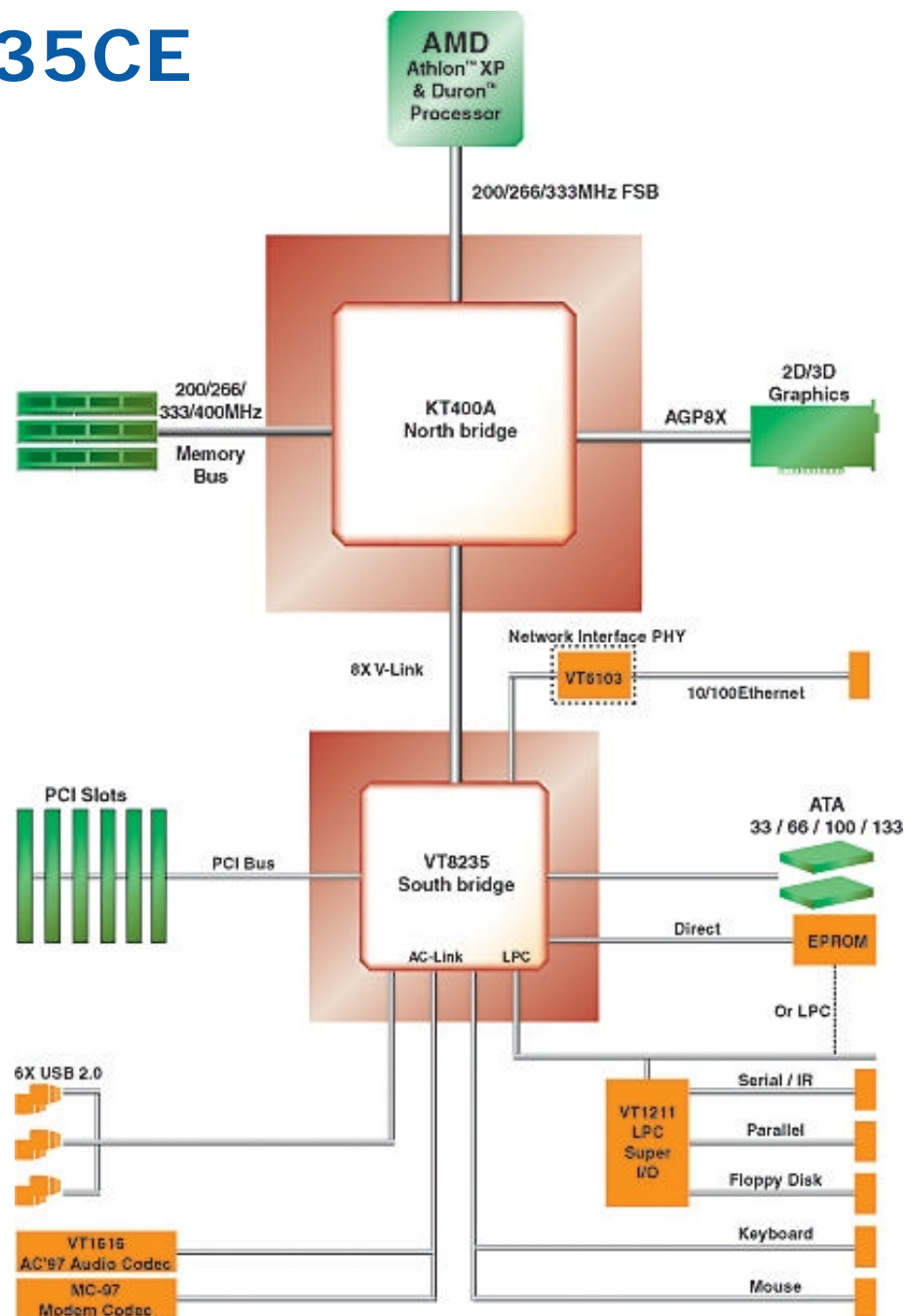| Discrete - Shipping Now	VT6420	? **1st Combined SATA, PATA & RAID Controller** ? **Supports 2 channels for up to 4 SATA Devices** ? **Supports 1 channel for up to 2 PATA Devices** ? **Supports RAID Levels 0,2,0+1 & JBOD** ? **SATAlite Interface allowing 2 additional channels with external phy** ? **Tiny 15mm BGA package**
Integrated - April	VT8237	? **Supports up to 4 SATA Devices** ? **Supports up to PATA Devices** ? **Supports 8 X USB 2.0** ? **Supports Ultra V-Link (1.06GB/s) Chip Interconnect** ? **Pin compatible with VT8235CE for simple mainboard upgrade**

VIA Modular Architecture Platform

- ? **V-MAP**
  - ? Pin-to-Pin Compatible South Bridge options
  - ? Drop-in North Bridge replacement for KT400

- ? **Seamless product transitions on a single motherboard platform**
  - ? Faster Time to Market
  - ? Lower Product Development, Validation, and Production costs

KT400A
KT400
North Bridge
VT8237
VT8235CE
South Bridge

KT400A + VT8235CE

- VIA FastStream™ Technology
- DDR266/333/400 Support
- 333MHz FSB
- AGP 8X
- 8X V-Link
- USB 2.0
- ATA-133
- 10/100 Fast Ethernet
- 6-ch. AC'97 Audio

AMD Athlon™ XP & Duron™ Processor

200/266/333MHz FSB

200/266/333/400MHz Memory Bus

KT400A North bridge

AGP8X

2D/3D Graphics

8X V-Link

Network Interface PHY
VT6103
10/100 Ethernet

PCI Slots

PCI Bus

VT8235 South bridge

ATA 33 / 66 / 100 / 133

Direct

EPROM

Or LPC

AC-Link LPC

6X USB 2.0

VT1211 LPC Super I/O

Serial / IR
Parallel
Floppy Disk
Keyboard
Mouse

VT1616 AC'97 Audio Codec

MC-97 Modem Codec
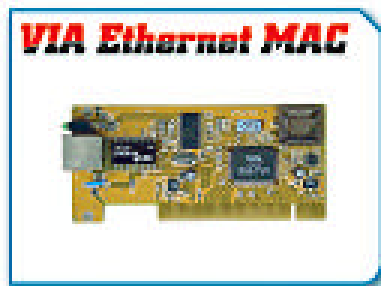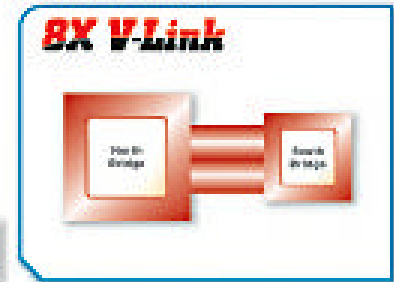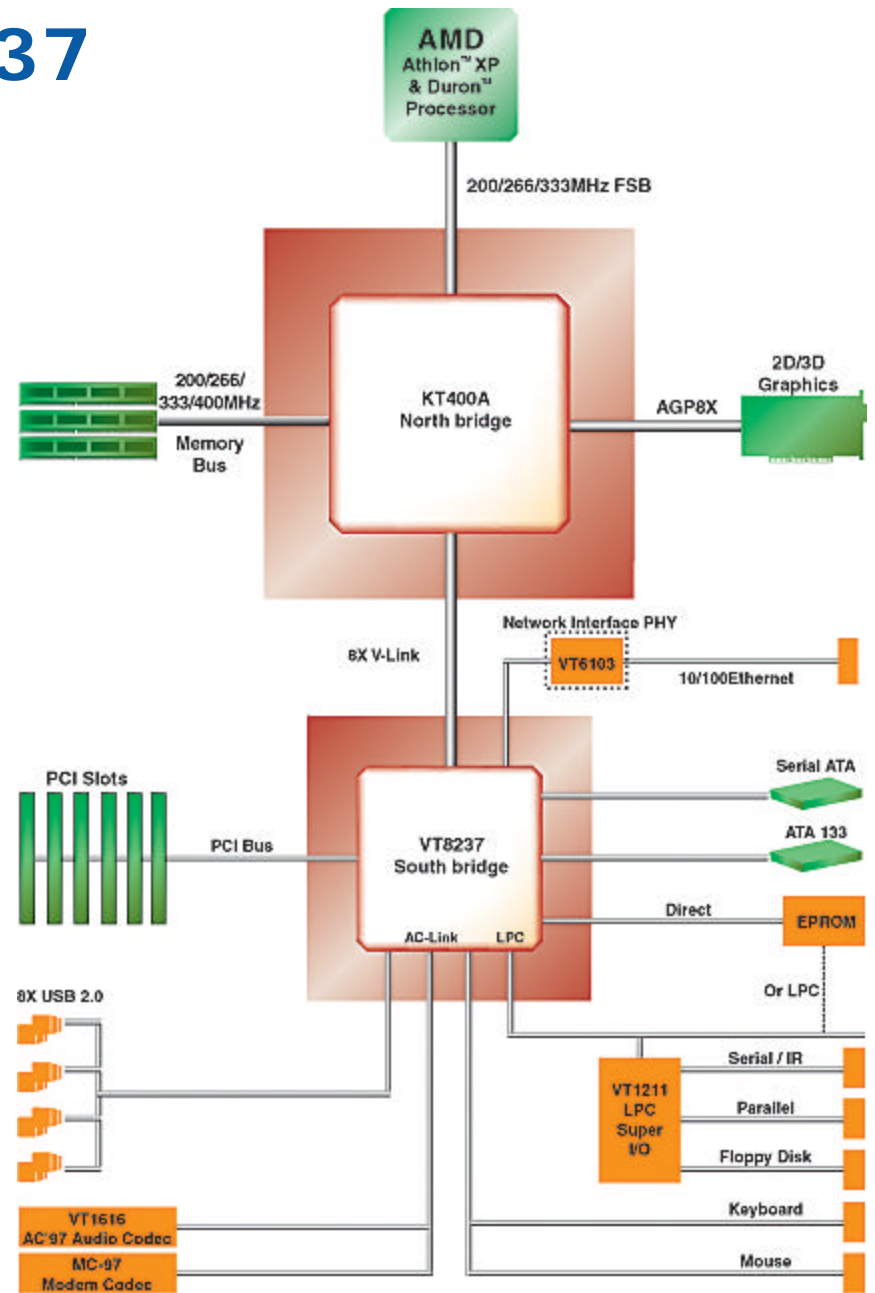
VT8235 – High Degree of Integration

VT8235 South Bridge Architecture

- 8X V-Link
- USB 2.0
- VIA Ethernet MAC
- ATA 133
- 6 Channel Audio
- MC'97 Modem
- LPC
- PCI Controller

VIA
VT8235
0130CE TAIWAN
28A1621974 © ®
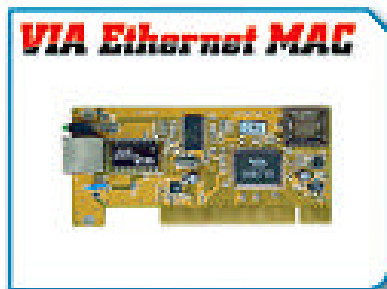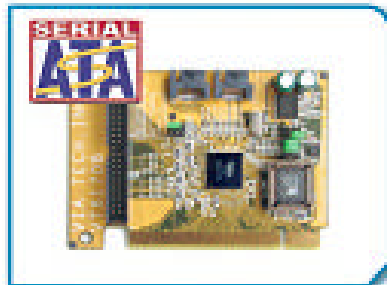
8X V-Link

VIA Ethernet MAC

USB

KT400A + VT8237

- VIA FastStream™ Technology
- DDR266/333/400 Support 333MHz FSB
- AGP 8X
- 8X V-Link
- USB 2.0
- SATA
- ATA-133
- 10/100 Fast Ethernet
- 6-ch. AC'97 Audio

AMD Athlon™ XP & Duron™ Processor

200/266/333MHz FSB

200/266/333/400MHz

Memory Bus

KT400A North bridge

AGP8X

2D/3D Graphics

8X V-Link

Network Interface PHY

VT6103

10/100Ethernet

PCI Slots

PCI Bus

VT8237 South bridge

Serial ATA

ATA 133

AC-Link   LPC

Direct

EPROM

Or LPC

8X USB 2.0

VT1211 LPC Super I/O

Serial / IR

Parallel

Floppy Disk

Keyboard

Mouse

VT1616 AC'97 Audio Codec

MC-97 Modem Codec

VT8237 – Connectivity in 2003

VT8237 South Bridge Architecture

- Ultra V-Link
- 8 USB 2.0 Ports
- VIA Ethernet MAC
- SATA/PATA 133
- 6 Channel Audio
- MC'97 Modem
- LPC
- PCI Controller

Ultra V-Link

6 Channel Audio

USB

VIA Ethernet MAC

VT8237
0130CD TAIWAN
12A1621974

Unified Performance Drivers

- **Maximum System Performance**

- **Maximum Compatibility and Stability**

- **Regular Updates**

- **Downloads and support at www.viaarena.com**

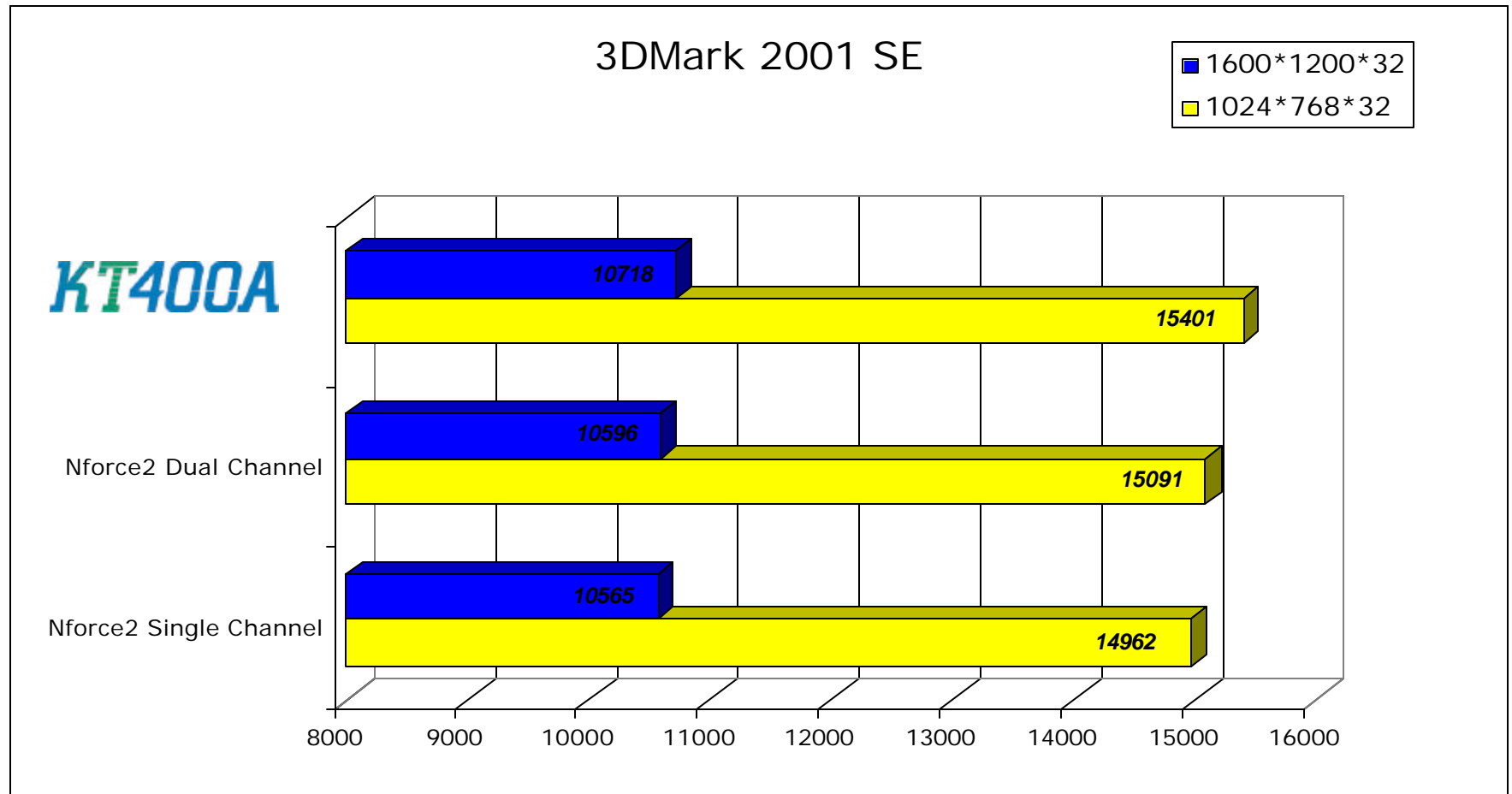- **Reducing Support Costs for VIA and VIA motherboard customers**

Performance Highlights

- ? **Single Channel KT400A faster than Dual Channel Nforce2!**

- ? **Two memory modules not required for fastest performance configuration saving system cost**

3D Graphics Performance - Second to None

3DMark 2001 SE

Legend:
- ■ 1600*1200*32
- □ 1024*768*32

KT400A:
- 1600*1200*32: 10718
- 1024*768*32: 15401

Nforce2 Dual Channel:
- 1600*1200*32: 10596
- 1024*768*32: 15091

Nforce2 Single Channel:
- 1600*1200*32: 10565
- 1024*768*32: 14962

X-axis: 8000 9000 10000 11000 12000 13000 14000 15000 16000
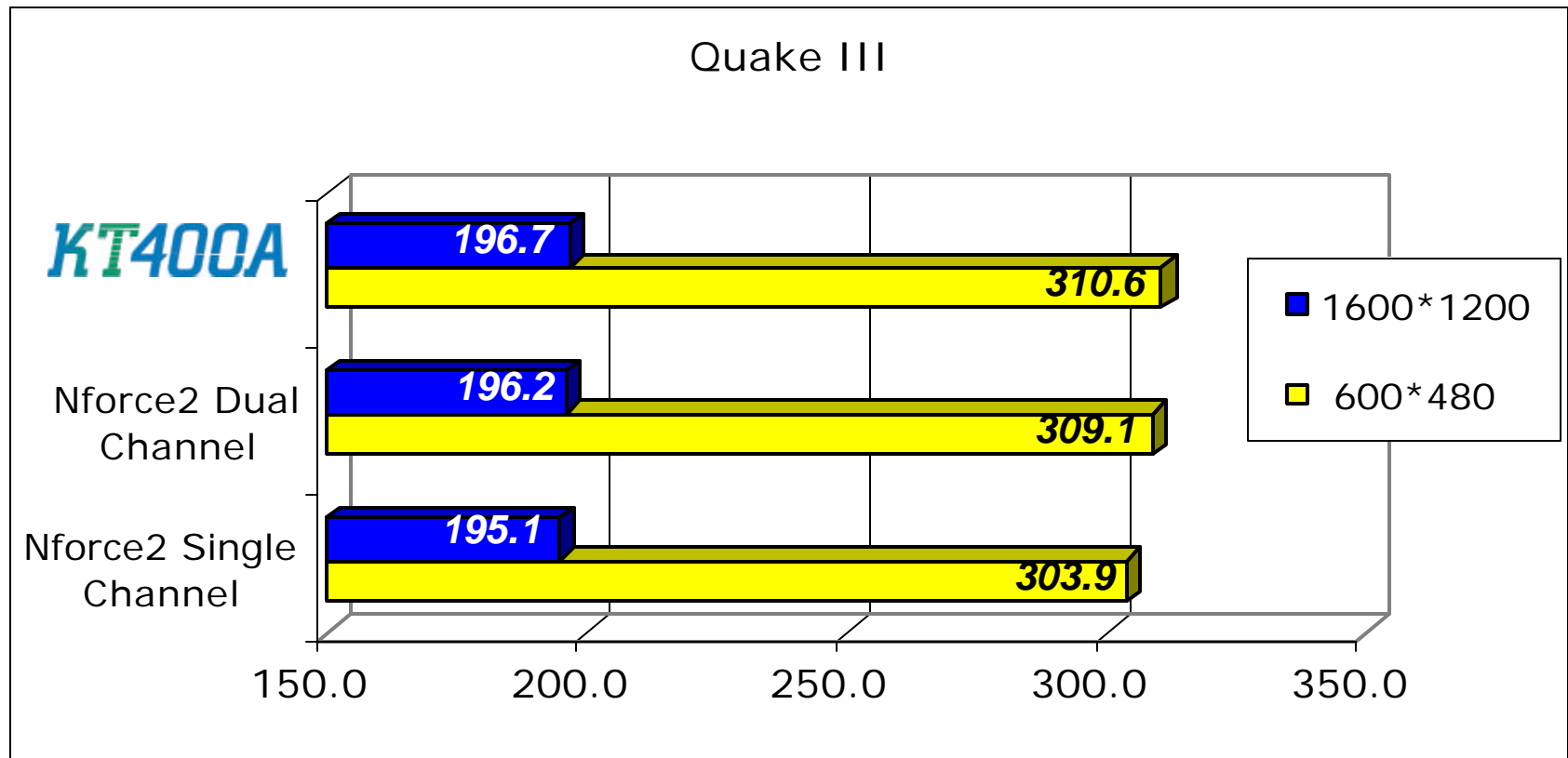
KT400A Test Set Up: KT400A Reference Board + AMD Athlon XP 2800+, 512MB Winbond DDR333, Maxtor DX740X-6L 40GBHDD, Windows® XP

Nforce2 Test Set Up: Asus A7N8X + AMD Athlon XP 2800+, 512MB Winbond DDR400 (2 x 256MB for Dual Channel set up),Maxtor DX740X-6L 40GBHDD, Windows® XP

KT400A: The Fastest Gaming Platform

Quake III

KT400A: 196.7 (1600*1200), 310.6 (600*480)
Nforce2 Dual Channel: 196.2 (1600*1200), 309.1 (600*480)
Nforce2 Single Channel: 195.1 (1600*1200), 303.9 (600*480)

Legend: ■ 1600*1200 □ 600*480
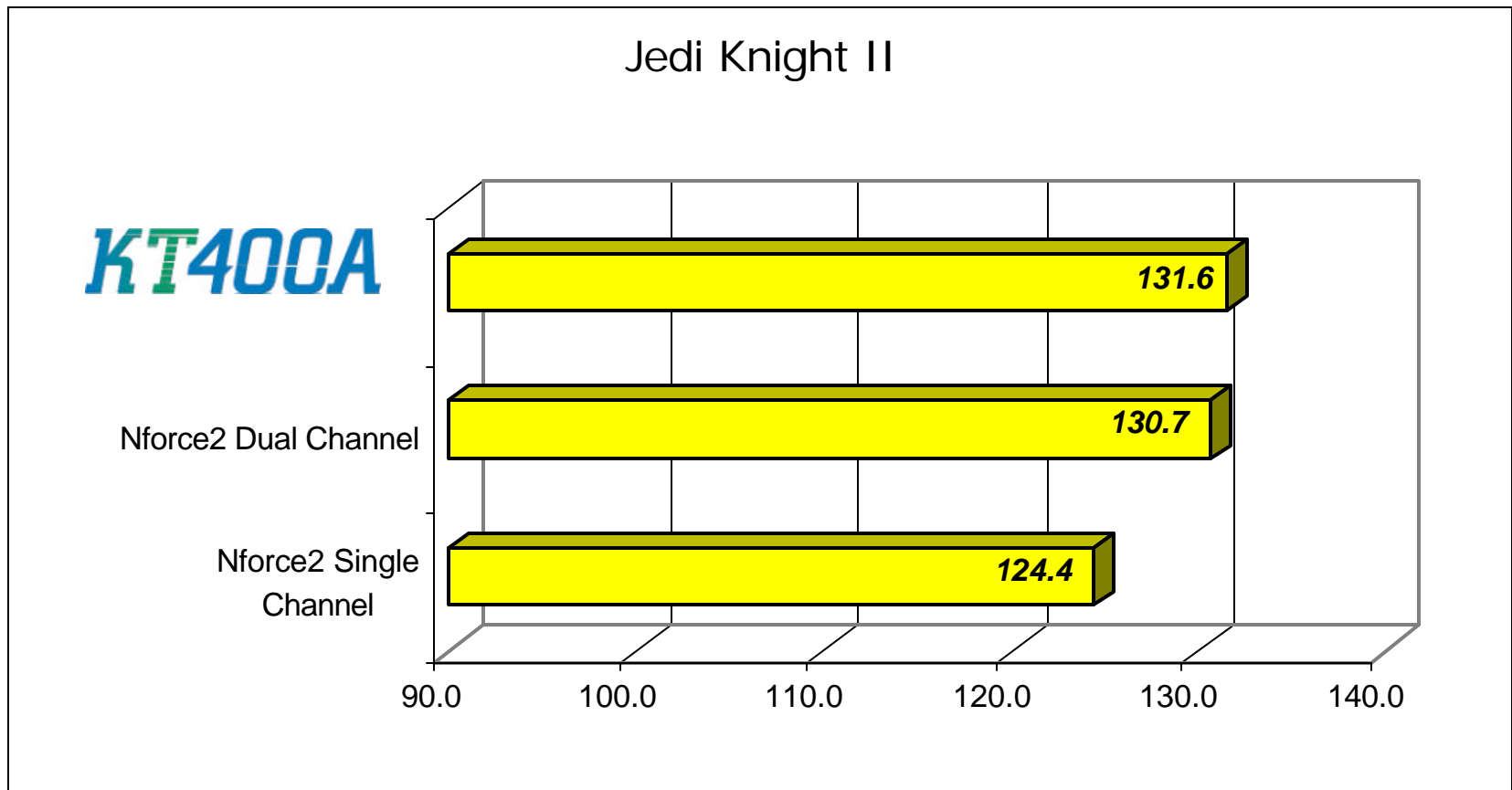
X-axis: 150.0 200.0 250.0 300.0 350.0

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Nforce2 Test Set Up: Asus A7N8X + AMD Athlon XP 2800+, 512MB Winbond DDR400 (2 x 256MB for Dual Channel set up),Maxtor DX740X-6L 40GBHDD, Windows® XP
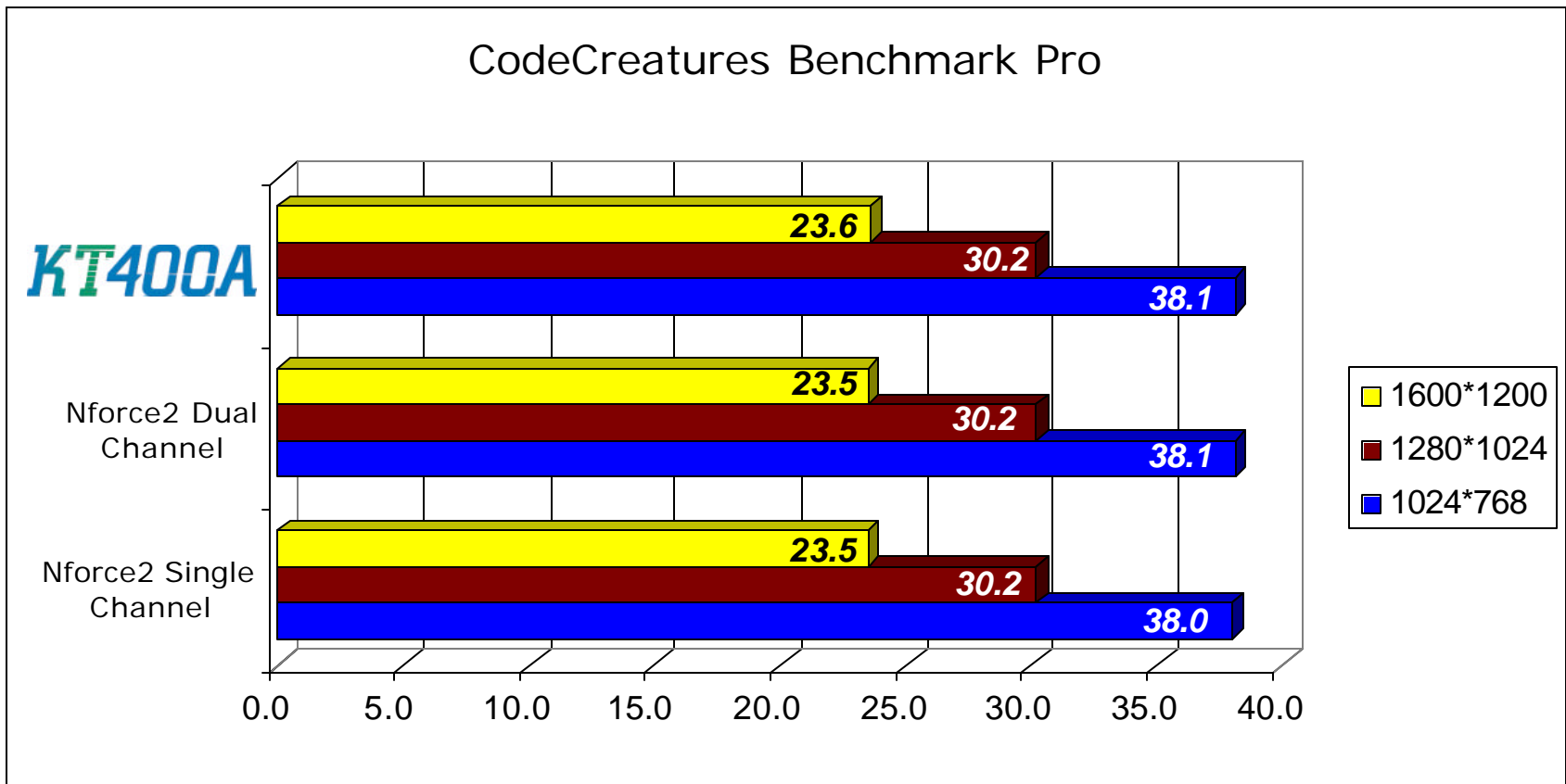
Jedi Knight II

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Great Performance in The Toughest Benchmarks

CodeCreatures Benchmark Pro

KT400A
- 1600*1200: 23.6
- 1280*1024: 30.2
- 1024*768: 38.1

Nforce2 Dual Channel
- 1600*1200: 23.5
- 1280*1024: 30.2
- 1024*768: 38.1

Nforce2 Single Channel
- 1600*1200: 23.5
- 1280*1024: 30.2
- 1024*768: 38.0

Legend:
- 1600*1200
- 1280*1024
- 1024*768

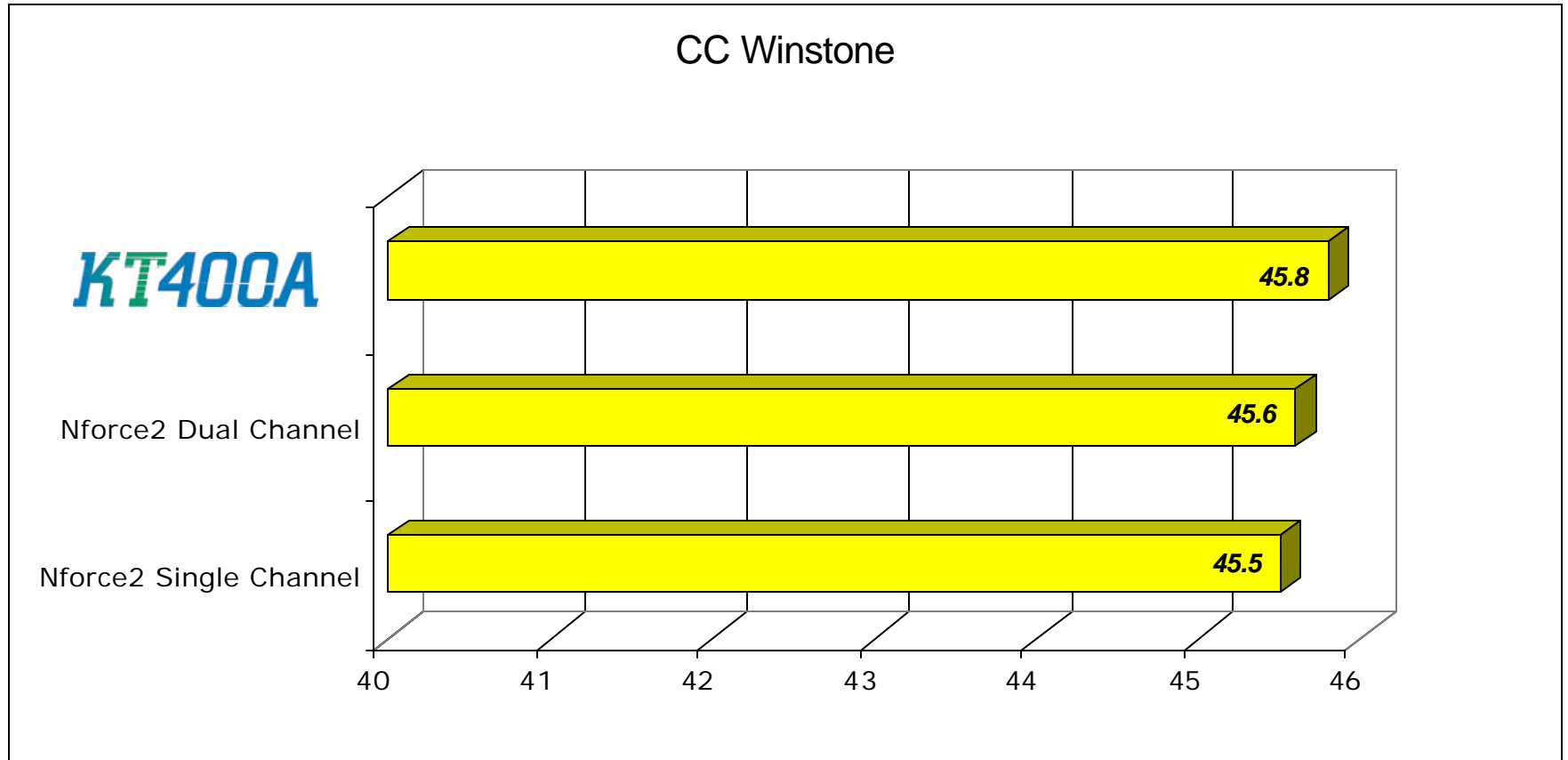X-axis: 0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0

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Content Creation Performance

CC Winstone

	Value
KT400A	45.8
Nforce2 Dual Channel	45.6
Nforce2 Single Channel	45.5

(Horizontal axis: 40, 41, 42, 43, 44, 45, 46)

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KT400A

Thanks for your time. Please Remember Publication Embargo until 4th March