

**FOR IMMEDIATE RELEASE**

**NEC and Hitachi to jointly develop Liquid Cooling System for Desktop PC, with  
world first Liquid Cooled Hard Disk Drive**

New system realizes PCs quieter than the average home DVD recorder

TOKYO, Japan, July 30, 2007 --- NEC Corporation (TSE : 6701/NASDAQ: NIPNY), NEC Personal Products, Ltd., and Hitachi, Ltd. (TSE: 6501/NYSE: HIT) have jointly developed a new liquid cooling system for desktop PCs, which reduces PC operating noise to approximately 1/3 that of current models in Japan (\*1). The new system has been realized by adopting Hitachi's world-leading (\*2), advanced CPU liquid cooling cold plate (\*3), and the world's first (\*4) hard disk drive (HDD) liquid cooling cold plate, jointly developed by NEC and Hitachi. Realized by Hitachi's advanced liquid cooling technology and NEC's cutting edge PC development design technology, the new system succeeds in reducing noise level of liquid cooled PCs from approximately 30 decibels (db, \*5) to 25db (\*6) at maximum operation, a noise level quieter than that of the average home DVD recorder (\*7). The new system will be employed in NEC brand consumer desktop PCs for the Japanese market in the near future.

**Features of the new silent liquid cooling system**

1. CPU liquid cooling cold plate with world class liquid cooling capability  
An increase in the heat conduction of the liquid cooling cold plate by more than double that of conventional cold plates was realized by creating multiple extremely fine grooves of approximately 0.09mm in width in the heat exchanger fin inside the liquid cooling cold plate and by optimizing the liquid coolant flow channel design by adopting a newly developed "down-flow method" (\*8) and considering the size of the die (\*9) for pin-point channeling.
2. Less noise generation by adoption of world's first HDD liquid cooling cold plate  
In addition to the adoption of a high performance CPU liquid cooling cold plate, NEC

and Hitachi have also realized the world's first HDD liquid cooling cold plate. NEC and Hitachi were able to wrap the entire HDD in high performance noise absorbing material and vibration insulation as the HDD liquid cooling cold plate enables effective reduction of the rise in temperature of the HDD, achieving a reduction in noise of the HDD by more than 10db. In addition, use of a low speed radiator fan(less than 1000rpm), a low operating noise micro-pump, and high performance noise absorbing material made it possible to lower the noise of the whole system.

In recent years, the heat value and heat density of PCs has been increasing along with enhancement of CPU performance and memory capacity; making it essential to not only cool the CPU, but also other devices such as the HDD. As a result, systems that simultaneously realize significant enhancements in cooling efficiency and low noise through the slow down of cooling fans are being highly sought after.

In addition, AV functions are being increasingly incorporated into consumer PCs, so a noise level that doesn't distract from AV operation is highly desirable. By employing a new, cutting edge, silent liquid cooling system, NEC and Hitachi have enabled development of an extremely quiet desktop PC and through it hope to contribute to the greater spread of desktop PCs with advanced AV functions.

- \*1. Compared with VALUESTAR X sold in Japan that features a liquid cooling system (announced in September, 2005). The new liquid cooling system generates the same level of noise as three VALUESTAR X PCs.
- \*2. As of July 30, 2007, according to independent research carried out by Hitachi, Ltd. World leading in terms of heat conduction efficiency (conduction of heat from CPU to the coolant).
- \*3. Liquid cooling cold plate: a part that cools a heat source by circulating antifreeze liquid within that part.
- \*4. As of July 30, 2007, according to independent research carried out by Hitachi, Ltd.
- \*5. 30db is equivalent to the whispering of a human voice.
- \*6. 25db is equivalent to the silence of a hearing examination room.
- \*7. According to independent research carried out by NEC. Compared with DVD recorders for home use.
- \*8. Down-flow method: a method that antifreeze liquid poured from the top of the liquid cooling cold plate.
- \*9. Silicon chip used as the core part of the CPU.

**About NEC Corporation**

NEC Corporation (NASDAQ: NIPNY) is one of the world's leading providers of Internet, broadband network and enterprise business solutions dedicated to meeting the specialized needs of its diverse and global base of customers. NEC delivers tailored solutions in the key fields of computer, networking and electron devices, by integrating its technical strengths in IT and Networks, and by providing advanced semiconductor solutions through NEC Electronics Corporation. The NEC Group employs more than 150,000 people worldwide.

For additional information, please visit the NEC home page at: <http://www.nec.com>

\* Newsroom: <http://www.nec.co.jp/press/en/>

**About Hitachi, Ltd.**

Hitachi, Ltd., (NYSE: HIT / TSE: 6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 384,000 employees worldwide. Fiscal 2006 (ended March 31, 2007) consolidated revenues totaled 10,247 billion yen (\$86.8 billion). The company offers a wide range of systems, products and services in market sectors including information systems, electronic devices, power and industrial systems, consumer products, materials and financial services. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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