MAIT

Handbook:
Ensuring your new PC is truly
'new and genuine'

INDEX

1. PREAMBLE

The Indian IT sector is a key to the Indian growth story. While there is little doubt that India today is at the threshold of defining the next phase of globalization, there is much that needs to be done as a concerted effort to enable this transformation.

As per the MAIT-IMRB study, the total PC market, with desktop computer and notebooks taken together, crossed 6.34 million units in FY 2006-07 and is expected to grow at 20% for the next few years. While the corporate sector accounts for a significant proportion of the market, the home market is fast gathering steam.

With rapid growth in consumption couples with high price sensitivity, the IT industry in India faces the challenge of spurious/counterfeit hardware products and components being sold as new or genuine. Piracy in software products is also very significant. Sometimes vendors may also adopt this as an entry strategy or as a strategy to consolidate their position in the Indian PC Market.

In the recent past, there have been several instances of supply of spurious material to enterprises/ organizations. In effect, this amounts to the organization not getting what they actually ordered for, buying material that in the long run would defeat the very purpose for which it be deployed. In short, the organization is being cheated.

Use of such components also impacts users as the reliability of sustained operation of the PC lowers. Frequent system failure arising due to usage of counterfeit or repaired components reduces user productivity levels and increases the Total Cost of Ownership. These components also lower the useful life of a PC resulting in need for earlier than standard replacement period.

The need for ecosystem, therefore, is to come together and address this issue on all fronts- awareness/ education; legal and enforcement.

There is another stark issue of hardware dumping rampant in global market which is finding its way to India.

It has been found that following fraudulent practices are prevalent in the industry:

1. <u>Refurbished Monitors</u> – In monitors, old CRT monitors are fitted in new outer casings. These CRT monitors are usually discarded from developed countries like US and Europe.
2. <u>B Grade (New but Low Quality) Monitors</u> – B Grade CRT usage in place of new monitors.
   - ➢ <u>B Grade LCD Monitors</u> – In LCD monitors, panels used are B grade; number of spots may be higher, response time & brightness of lower specs than what is stated.
3. <u>OS Counterfeited</u> – In PCs, counterfeiters buy legitimate software and copy the box design and packaging. Using sophisticated and expensive copiers, thousands of illegal CDs are created in a day.
4. <u>Pirated OS</u> – In Operating systems pirated OS software with fake Certificates of Authenticity are used. They look as good as the real ones.
5. <u>Refurbished HDD</u> – In hard disk drives, the factory repaired hard disk drives, which are mainly used in the warranty replacements are used in the new machines. Same is the case with floppy drive and Optical disk drives.
6. <u>Low Quality Memory Module</u> – Memory chips are remarked or downgraded wafers are plastic packed and remarked with names of well-known brands.
7. <u>Counterfeited consumables</u> – Counterfeited consumables such as printer cartridges etc are used.
8. <u>Fraudulently Marked SMPS</u> – In power supplies, wrong marking of the voltage is done.
9. <u>Support Services</u>: Customers order services from OEM over and above standard parts warranty as part of their procurement. Typically, the supplier takes only standard parts warranty from OEM not ordering the value add on services from OEM.

Over and above this, there is the practice of branded bare boxes being supplied through front ending dealers who add on sub-assemblies and supply the full system. In effect, customer gets a product that is not factory integrated and tested.

This manual is an endeavor to not only spread awareness among users and , but also to suggest ways and means to check the genuineness of hardware components and software in your computer.

2. PC COMPONENT RISK AREAS

This section deals with the potential counterfeiting risk areas associated various PC components
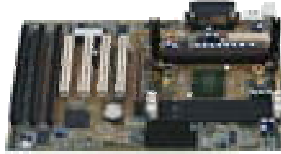
a. Motherboards Risk Area:

1. Components used are of low class quality that do not give reliable operation in the long run
2. Design on margin : Minimal components are used with Protection & Filtration circuitry omitted to reduce cost
3. Poor Circuit design unsuitable for sustaining stress due to environmental changes viz. temperature & humidity
4. Motherboards not ESD (Electro Static Discharge) compliant. ESD phenomenon can degrade the component life causing unreliable machine operation
5. Minimum use of arresters & fuse which are responsible for short circuit & over voltage protection
6. Compatibility parameters are not considered while designing, e.g. Bios is not compatible with the processor to utilize its complete features.
7. PCB material is of degraded quality which results in delamination & warpage.
8. Use low quality CMOS battery which may lose CMOS data frequently.

b. Monitor Risk Area

1. Repaired or refurbished monitor housed in new bezel carrying new monitor logo
2. Old picture tube with new polished & new yoke coil
3. B grade picture tube
4. Monitor Certifications like MPR II missing
5. Low quality PCB & components used for Monitor circuitry
6. Improper shielding & earthing of picture tube.

c. Hard Disk Risk Area:

1. Assembled machine may have Repaired or Refurbished Hard disk
2. Hard disk without antistatic rubber covering
3. ESD precautions not taken care of while handling & packing the HDD

d. CPU Risk Area:

1. Remarked CPU – Specs written on the CPU are different from the actual one.
2. Source of purchase not from the reliable vendors
3. Use of in-appropriate cheap fan sinks which may not match with the thermal requirements of the CPU resulting in the CPU running at reduced speed giving poor performance


e. Memory Module Risk Area:

1. Memory module with "Hacked SPD" data : The timing details programmed in the SPD can be tweaked to run a lower specs memory module at a higher speed, which may create reliability issues. (*When a computer is booted /started, serial presence detect (SPD) is information stored in an electrically erasable programmable read-only memory (EEPROM) chip on a synchronous dynamic random access memory (SDRAM) memory module that tells the basic input/output system (BIOS) the module's size, data width, speed, and voltage*)
2. Remarked Memory module with half good chips that may use fake IC marking i.e faking industry leaders' symbol / logo.
3. Repaired or refurbished module
4. While handling no ESD precautions are taken care
5. Does not follow JEDEC standard requirements, example like compromising on the gold finger contacts plating thickness etc.

f. Operating System Risk Area:

1. Pirated Version with incomplete features
2. Illegal version
3. Does not get updated with required hot-fixes which may result in security or system stability issues
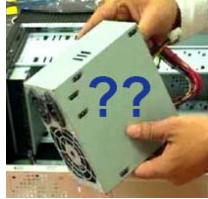
g. Power Supply Risk Area:

1. Most of the gray market systems use SMPS having beefed-up label specs wherein the actual power rating of the SMPS is lower than the one specified in the label
2. Many a times SMPS used for all the systems is the one that comes bundled with chassis from the chassis vendors. The right approach is to first calculate system power budget and then decide which SMPS to use
3. SMPS used does not comply to basic certifications like FCC or CE or UL
4. Short circuit & over voltage protection circuitry are deliberately removed to lower costs thereby reducing the system relability

h. Keyboard:

1. Semi mechanical keyboards with mechanical switches mounted on membrane instead of Mechanical switches mounted on the through-hole-PCB get sold in the market as mechanical keyboards at the price of mechanical keyboard. These semi-mechanical keyboards have a keystroke life of 10 million keystrokes instead of 50 million keystrokes in case of a true mechanical keyboard
2. May have wrong marking of keyboard's key strokes operation (a 5 million key-stroke keyboard can be easily marked as 20 million key strokes keyboard)
3. May not have adequate pull strength (strain relief) built in the connector area, which may lead to connectors coming out when pulled harshly
4. PC99 color standards for connectors may not be adhered to
5. Carbon Ink used in circuit designing of poor quality
6. Pressure pads are of poor quality which causes key-stucking
7. Cables used are of shorten length
8. Unshielded cable with poor quality connector

i. Mouse:

1. May use resistive sensor type scroll wheel which may lose its functionality in the long run (optical scroll wheel sensor is better).
2. No ergonomics factor goes into its design which may lead to (RSI : Repetitive Stress Injury)
3. Cables used are of shorten length to lower cost
4. Unshielded cable with poor quality connector

j. Packing & Chassis:

1. No protection from long term (non-working) storage in higher humidity area, does not contain inbuilt silica-gel protection for PCs.
2. No qualification on Packing, to check its suitability for Indian transport condition
3. No adequate information stickers pasted on the PC (like ATX SMPS warning labels for the service technicians to take adequate precautions while servicing)
4. No usage of aesthetically color matched sub-systems
5. Not maintaining certain critical "KEEP-OUT Zones" during assembling a motherboard on a chassis which may lead to short-circuiting during upgrading/servicing the PCs.
6. No usage of rust proof metal on building the chassis.

k. Harness (all cables):

1. Harness is not tested for maximum speed handling
2. Does not carry required pull strength (which is important during servicing/upgrading)
3. Quality of cables is not up to the mark which becomes brittle or intermittent in long run.
4. Connectors & headers are not firmly gripped in to the cables

l. Certifications:

1. In many cases, the PCs quoted do not have certifications on a given operating system. Operating System Certification is a mark of Hardware and Software compatibility

3. CHECK POINTS

This section elaborates various check points that users / buyers can use to check genuiness of various components.

a.   How to check CPU Overclocking :

CPU-Z is a utility to find out whether a processor installed in a machine is **Over-clocked or Not**. Once this utility is run on a machine, it gives complete **Actual** information about the processor e.g. Processor's Core Speed, Multiplier, etc. Multiplier is the ratio of processors Core Speed and Bus Speed as shown in figure below

sSpec Number is also known as specification number. It is a five character string (SL36W, XL2XL, etc.) that is printed or etched on the processor, and used to identify the processor. By knowing the processor's sSpec Number, you can find out the processor's core speed, cache size and speed, etc.

Goto http://processorfinder.intel.com. Enter **sSpec Number** or the **Processor Order Code** in the relevant field on and click **Find**. All **Actual** details regarding the processor shall be displayed on this webpage by Intel.

Please find the screenshots of one of the Intel Processors for your reference as given below :

Intel Celeron D Processor 320 (2.4 GHz, 256 KB L2 Cache, 533 MHz FSB), &
> **Screenshot 1 :** Results obtained after running the CPU-Z Utility
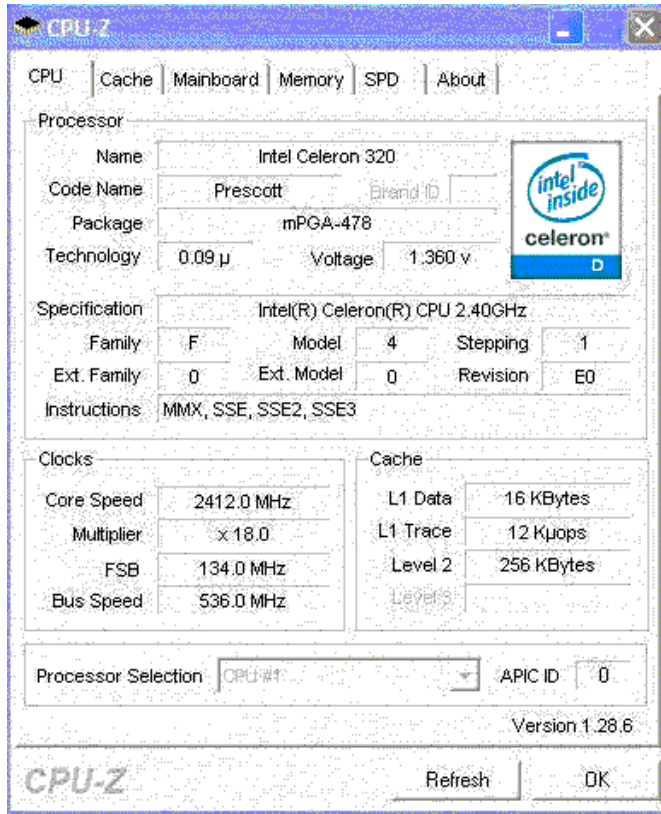> **Screenshot 2 :** Results obtained from the sSPEC Number

How to compare the results obtained from the two Screenshots ?

Although both the methods are entirely independent of each other and are fully reliable, equation of results obtained from both further validates the findings. Therefore, in such cases, the Processor Core Frequency and the Multiplier / Bus-to-Core Ratio
will essentially be the same in both the results.

SCREENSHOTS
for Intel Celeron D Processor 320 (2.4 GHz, 256 KB L2 Cache, 533 MHz FSB)

Screenshot 1 : Results obtained after running the CPU-Z Utility

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Screenshot 2 : Results obtained from the sSPEC Number

b. How to check refurbished Hard Disk :

Method 1 (*for Hard Disk of Seagate Make*) :

i.   Physically check the Date Code as given on the Hard Disk Sticker. The date code is a 5-Digit no. e.g. 01015. The date code is to be read as explained below :

Code : YYWWD
YY : Year from July to June. YY stands for last two digits of the ending year. e.g. 03 for YY would mean July 2002 to June 2003 and 23 for YY would mean July 2022 to June 2023.
WW : Work Week. 01 means first week of July and 52 means last week of June; All weeks starting from Monday.
D : Day of the week

Therefore, Date Code 01015 shall be read as 5th Day of 1st Week (starting from Monday) of year July 2000 to June 2001**!!!**

ii.   Install & Run the **HD Tune 2.10** (*attached*) utility on your PC. As shown below, this utility gives complete details regarding Hard Disk including the Hard Disk Manufacturer's Part Number and Hard Disk Serial Number. Using this information, actual date of manufacturing of HDD can be verified from the Manufacturer.

A mismatch in the two dates shall confirm that the actual Hard Disk Information has been Tampered with and the Hard Disk is actually older than shown on the **Replaced Sticker** of the Hard Disk.
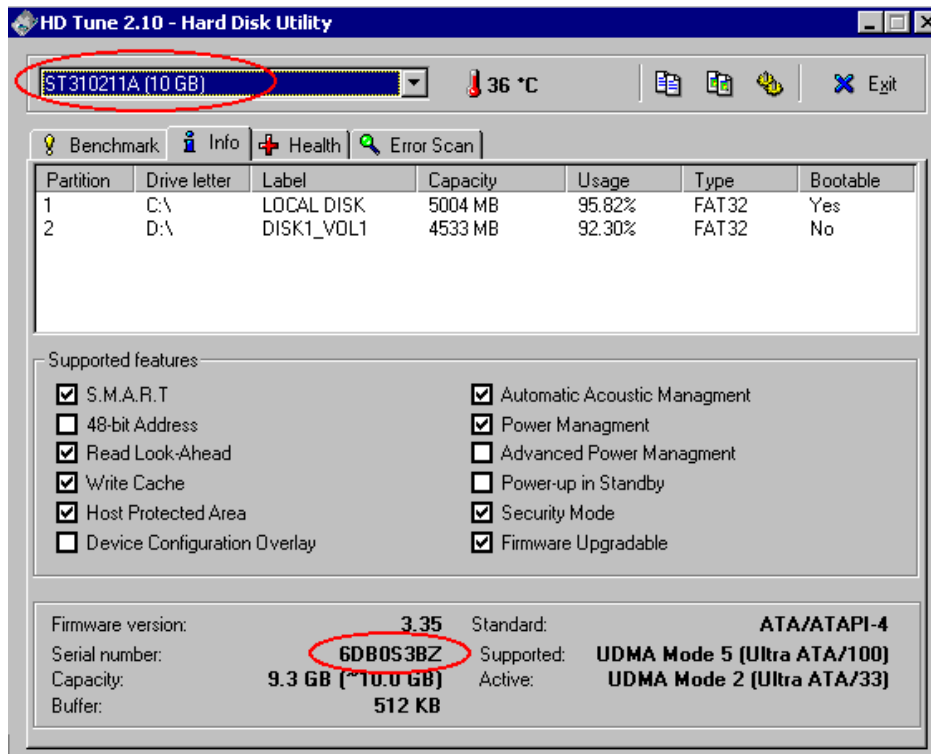
Method 2 (*for Hard Disk of Seagate Make*) :

Seagate affixes a Label/ Sticker in its repair facilities for refurbished Hard Disk Drives. The label contains all of the product information included on the original product label, but is **Bordered in Green** and marked "**Certified Repaired HDD**", to signify that the drive is a refurbished product. (Please see picture below).

Check for this information on the Hard Disk to ascertain whether the Hard Disk is refurbished or not.

c. How to check Duplicate / Fake Windows XP Professional Operating System :

- o Goto http://www.microsoft.com/resources/howtotell/ww/windows/default.mspx. The same web-page can be accessed by selecting "**Is this copy of Windows Legal**" from the "Help Menu" in the "My Computer" window of your desktop.
- o Click on "**Validate Now**" button under "**Run the Windows Validation Assistant**"; **or alternately** select from the drop down menu under "**Compare your Anti-Piracy Features**" your acquisition method and click on "**Compare Now**" button.
- o Complete the steps that follow. This online utility shall verify whether your Windows XP Professional is **Genuine or not**

d. How to check for Pure Mechanical Keyboards :

i.   Physical Inspection – A Pure Mechanical Keyboard shall have switches mounted on the through-hole-PCB.
ii. Vendor Certification – The keyboard vendor should certify that the keyboard shall support 1 keystroke life of 50 mn keystrokes.
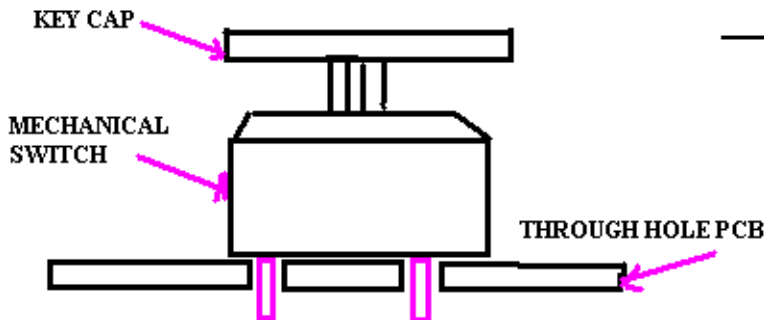
Difference between A Mechanical, Membrane & Semi-Mechanical Keyboard is as explained below

MEMBRANE KEYBOARD
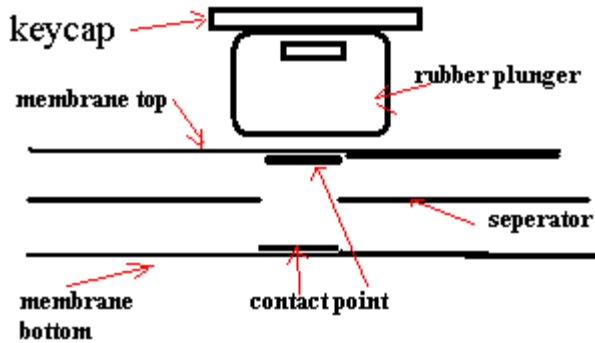
This is a **MEMBRANE KBD** with the switches having rubber plunger and membranes in between.
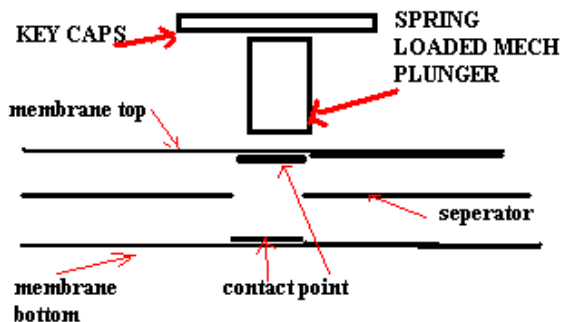Key Life: 10 Million operations

MECHANICAL KEYBOARD

This is a **PURE MECHANICAL KBD** with the Mechanical switches mounted on the through hole PCB.
Key Life: 50 million operations

BENQ KEYBOARD-MECHANICAL + MEMBRANE

SEMI-MECHANICAL KEYBOARD

This is **SEMI MECHANICAL KBD** having MECHANICAL SWITCHES but **membranes** in between. This can not be called as a PURE MECHANICAL KBD because of the membrane being used.
Key Life: 10 Million operations

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