TOSHIBA
Leading Innovation ≫

Ruggedized for Retail

The WILLPOS B10

.

WHITEPAPER

Executive summary

The TOSHIBA TEC Corporation was formed some 60 years ago and during this time has manufactured over 6.2 million Retail units. These have been shipped and installed into retail environments all over the globe.

Toshiba is one of the world's largest dedicated manufacturers of retail equipment, supporting the entire life cycle of products, from the design concept, manufacture and delivery to installation and finally recycling.

With 18,000 staff focusing solely on retail, Toshiba's belief, vision, and passion is installed in its products.

The retail industry is considered as one of the harshest working environments; EPOS solutions need to be designed with the durability to withstand the wear and tear and extreme operating hours required.

The recent economic climate has increased the requirement for low-cost solutions. Unfortunately this has led many retailers into purchasing what appear to be cost-effective retail products. The reality is many of these products have been adapted for use within the retail sector, not specifically designed for use in this sector.

During the design and manufacture stages, Toshiba equipment undergoes the most extreme testing in the industry often compared with Military standards.

The term "Retail Hardened" is a concept loosely used by many manufacturers. This document helps to explain why Toshiba hardware is truly ruggedized for the Retail environment. The investment made in Toshiba products by many retailers over Toshiba's 60 year history has proven, time and time again, that Toshiba hardware provides a stable platform unique in the Retail sector for reliability, serviceability and an industry leading reduced total cost of ownership.

Introduction

Toshiba supports the entire life cycle of every product produced, from design, manufacture, service and support, to the recycling of products.

The product journey plays an important part of the design, with over 60 years of experience; Toshiba products have been delivered into virtually every environment imaginable.

The extremes of temperature, humidity, dust, dirt, and impact damage are all common factors to a harsh retail environment.

Toshiba understands the reliability of the point of sale is key to any retail business, from the smallest of retailers with one terminal where failure results in the inability to trade, to the largest, where the problem of unreliability can be intensified and the costs magnified.

Downtime is hugely costly to both income and customer satisfaction.

The following sections will explain some of the tests Toshiba products are subjected to during the design and manufacture stages. Toshiba also introduce the new WILLPOS B10. The retail hardened WILLPOS B10 has been specifically designed as a retail alternative to using a PC on Drawer solution.

Manufacturing and Testing

Heat is a major contributor to early component failure; the temperature chamber ensures equipment can withstand this.

Temperature and Humidity Chamber

The temperature and humidity chamber replicates some of the harshest environments Toshiba products will ever see, from the heat of a desert, the humidity of a rain forest, to the freezing temperatures of the North and South poles. Toshiba products are put through several cycles to ensure they can survive these extreme conditions.

This simulates and checks:

- Part / Product Storage – we simulate cold storage, damp warehousing.

- Real life shipping and transportation environments that range from hot to cold with extensive cold and hot periods. This helps to ensure when Toshiba products are delivered they work first time and continue to work.

- During this process Toshiba check to make sure the components don't come loose or disconnect.

From a warm warehouse to a cold lorry, a shop doorway to a hot counter, the temperature extremes at the start and during product life are extreme.

Thermal Shock Chamber

The thermal shock chamber checks Toshiba hardware can resist sudden changes in temperature and prolonged extreme exposure.

The actual test involves a sudden change in temperature of 30 Degrees from hot to cold over a repeated period.

At each cycle stage of the tests Toshiba check that the solder joints, seals, and circuit boards remain intact and have not degraded or failed during the process.

This simulates and checks:

- Shipping / packing – The simulation of loading goods from a warm warehouse to a cold lorry for transport.

- The use of equipment in fast-food environments that have extremes of temperatures during trading periods.

Moved, shaken but not blurred.

Functional Flex Testing

Toshiba CPU and PCB boards endure the rigours of the flex test; this repeatedly flexes the components. During this process Toshiba monitors the functionality, checking the solder joints do not crack and cause failures or that any of the components come loose and fall off.

This simulates many situations in a tough retail environment, transportation, mobile installations, and even the vibrations from the cash drawer being opened and closed. Toshiba check to ensure the equipment does not lock up, reboot or blue screen.

**Dirt, dust and hair, all common contaminants in everyday life**

The Sand & Dust Chamber

Over the lifetime of the equipment dust, dirt, skin, hair, and various contaminants build up and surround the components. This can cause many problems including overheating. The design of Toshiba products aims to ensure they run as cool as possible. We know heat is a major cause of early component failure.

Toshiba's sand and dust chamber replicates and accelerates this process by pulsing high pressured dust and sand all over the equipment. The chamber is used to ensure the seals remain in tact and are able to cope with the dirt and debris the product will encounter during its lifetime.

Liquid drips and spills are common; Toshiba's design ensures minimum damage.
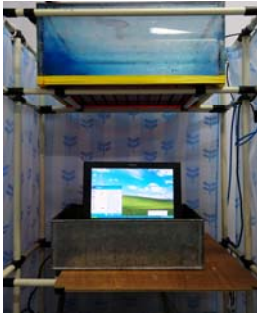
Drip and Spillage Tests

Drinks and other liquid spillages can have disastrous effects on the equipment. Toshiba perform several liquid tests, the first being the drip test which is important to ensure the product design and seals route the liquid away from the core components within the equipment. The second of these tests simulates the spilling of a large drink over the product, which is a common occurrence in bar and restaurant environments.

Dropped, kicked and chucked into a lorry, Toshiba test every situation that products may encounter during their life cycle

Equipment Packaging Drop Test

Toshiba consider every element of the product design, from the resilience of the hardware to the robust / rigidity of the packaging. Toshiba perform several phases of drop testing, simulating the item falling off shelving for example. These tests are performed at several heights to ensure the packaging protects the product contained within. After each phase, Toshiba physically checks, tests, and runs the equipment to ensure no damage and that everything functions correctly.

Summary

The tests previously described are just a few of over 100 individual tests performed on Toshiba equipment in our own laboratories by Toshiba engineers. Every aspect of every test Toshiba perform excels those of standard consumer PC grade equipment. The severities of these tests ensure Toshiba products have a long life and provide a return on investment to the retailer.

WILLPOS B10

The reliability requirements of the PC market and retail are very different

PC On Drawer Common Issues

Introduction

TOSHIBA TEC has designed a direct retail replacement for PC on Drawer and PC workstations used within the retail sector. Toshiba product design overcomes many common problems and restrictions highlighted by retailers when using standard consumer grade PC equipment.

The WILLPOS B10 provides a stable, scalable, and functional platform enabling every retailer to enjoy the benefits of a premium retail solution.

The following section provides an insight into the problems commonly experienced by retailers using PC on Drawer equipment and the additional benefits of using the WILLPOS B10.

Reliability

The design of consumer grade equipment is very different to that of retail. The average life of consumer grade equipment ranges from 18 months to 3 years and is very much dependant on use. Most consumer grade equipment is designed to operate less than 9 hours a day, way below standard retailer operating hours.

TOSHIBA TEC's WILLPOS B10 is designed for continuous use over a 5 year period, ensuring the product is ruggedized to withstand retail wear and tear, and provide the retailer a 24 / 7 stable platform.

Toshiba products are designed for retail, not adapted for use in retail.

Product Life and Supportability

The consumer electronics market moves at such a pace, always trying to ensure the latest CPU is used, and the fastest chipset is installed. This is the key disadvantage of using PC grade equipment. It is very common to see PC models become end of life within 6 months of sale. Parts become increasingly difficult to source leading to a higher cost for component spares, making it both uneconomical and time consuming for retailers to support or expand their existing equipment.

The cost to recreate and support software builds is also of great concern to many retailers. The time to create, deploy, and manage multiple software builds is both time consuming and costly.

The Toshiba WILLPOS B10 has a stable sales life of at least 5 years; during this period not one component will ever change. The model ordered today, will remain exactly the same during its entire sales life. At the end of its sales life, Toshiba continue to provide spares and components for up to a further 7 years.

In summary the Toshiba WILLPOS B10 reduces costs, is completely scalable, and provides a supportable platform for up to 12 years.

At TOSHIBA TEC we believe the size and versatility of the product is as important as the design.

Size, Placement and Cosmetics

The design of the WILLPOS B10 provides retailers with the flexibility of installation. Unlike many PC on Drawer solutions, the WILLPOS B10 provides a small footprint and the versatility to place the product in both horizontal and vertical installations.

Toshiba understand no retail store is ever the same shape or size. The WILLPOS B10 allows flexibility in product placement and counter design, not currently provided by standard PC on Drawer solutions.

The WILLPOS B10 and peripherals are available in both Cool Black and Fresh White colour options. The design and appearance of a retail store and the equipment used are a contributing factor in many purchase requirements. With PC on Drawer solutions peripheral colour coding is often not possible.

On the rare occasion there is a problem it's important the repair is fast and efficient

Serviceability

The WILLPOS B10 is the only product in its class to provide a fast change, front loading hard drive. Toshiba's tool-less product design ensures access to upgrade the memory is easy and efficient, whilst protecting the retailer and equipment at all times.

The chassis has been designed not only for easy maintenance, with fast access to internal components like memory and BIOS battery, but also to protect the retailer by preventing access to components while power is still applied. The safety of the retailer and products are of key importance to TOSHIBA TEC.

TOSHIBA TEC has been providing optional service maintenance for over 60 years. All Toshiba engineers are dedicated and focus solely on retail, providing customers with one of the on the leading maintenance and service provisions in the market.

TOSHIBA TEC ensures products are as caring to the environment as possible

Environmentally friendly

Toshiba's design and manufacture ensure products do not contain any substance that is harmful to both the user and environment. All products including the WILLPOS B10 are fully RoHS compliant.
Toshiba ensure harmful substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls or polibromodifenileteres are not used within or during the product manufacture.

The balance of performance and energy usage is a key concept in the design of Toshiba products

The compatibility of the WILLPOS B10 provides a versatile solution for every retailer

Dual screen options provide the base for a multimedia solution, enabling promotions and advertising

Energy Efficiency

The design of the WILLPOS B10 is a perfect balance between performance and energy usage.

The careful balance in design ensures Toshiba products are efficient yet powerful enough to support many different POS applications. They are also designed not to generate excess and unnecessary heat which can drastically reduce the life of the product.

The initial hardware purchase only represents 20% of the total cost of ownership, an important factor often not considered by the manufacturers of PC on Drawer solutions. Up to 45% of the total cost of ownership is incurred from actual use of the product.

Functionality and Benefits

The technology used within the WILLPOS B10 is specifically designed for use within the retail sector. The WILLPOS B10 is designed to power all of the peripherals directly from the terminal without the need to have multiple power supplies and unnecessary additional cabling.

Powered Ports

The use of both powered multi voltage serial ports and multi voltage USB ports provide flexibility and upgradability not provided by a PC on Drawer solution.

LVDS Technology

Toshiba also use Low Voltage Differential Signaling Technology which enables merging of multiple cables containing both power and data into one. This helps to reduce service and support issues.

Dual Screen Options

The combined provision of both LVDS and VGA ports make dual screen options available. This combination is generally only available with a premium retail offering and rarely with a PC on Drawer solution.

OS Support

The WILLPOS B10 is an open architecture platform able to run a number of embedded operating systems, OS designed and streamlined for Retail use.

Windows XP®, WEPOS®, POSReady 2009®, SUSE®

General PC on Drawer manufacturers provide high cost consumer OS versions, providing extended redundant functionality, never used in the Retail Sector.

USSD & SSD Options

To add to an already market leading resilient solution Toshiba also provide the provision for additional technology, allowing upgrade options for both SSD and USSD memory. The versatility and possible use of this technology is endless, from data backup storage to thin client operation.