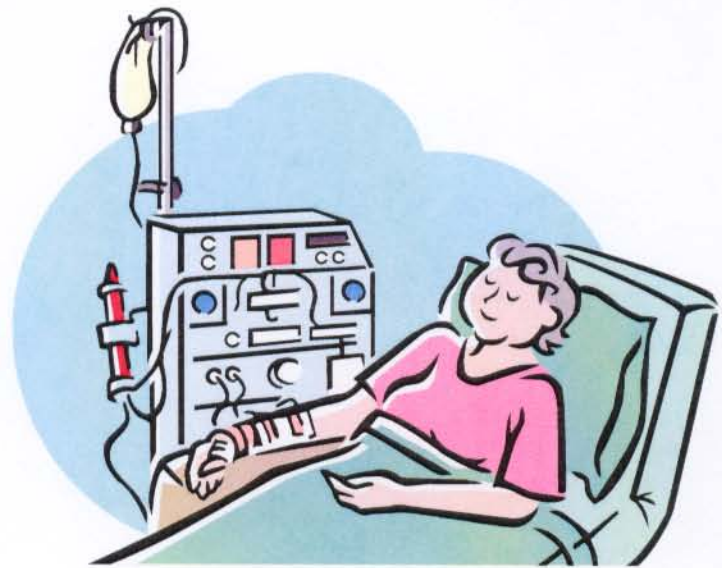




Consumer

Versus



Hospital Grade

Audio Video Equipment – White Paper
Important Compliance Information for the Healthcare Professional

Consumer versus Healthcare Grade Audio Video Equipment

White Paper

BACKGROUND

Hospitals considering the purchase of Consumer Grade audio video equipment for use in their facility often ask the following questions,

“Why not purchase and install a regular consumer TV from a discount store in my hospital? They are less expensive”.

“Aren't the Consumer televisions also Underwriter Listed and safe to use?”

“Is Hospital Grade really that important?”

“Can I really get into trouble by using a Consumer product?”

These questions are easily answered once the basics of product safety and compliance are understood.

PRODUCT SAFETY STANDARDS

Products sold in North America are first tested by an accredited laboratory to recognized safety standards before being sold on the open market. These standards address product safety with particular attention directed towards a product's construction and safe performance. The current safety standard to which a majority of all television and audio products are evaluated is *UL6500 – Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use*. UL6500 is actually a North Americanized version of the International Electrotechnical Commission (IEC) *Standard 60065, Audio, Video, and Similar Electronic Apparatus – Safety Requirements*. Both standards contain additional requirements for products that are used in specialized applications. Such applications include,

UL 6500, annex H

- Outdoor and Wet Locations
- Apparatus to be Connected to Telecommunications Networks
- Under-cabinet Mounted Apparatus
- In-Wall Mounted Apparatus
- Video Apparatus for use in Healthcare Facilities**

Products tested for use in these specialized applications carry classifications indicating compliance to additional and more stringent requirements.

A quick comparison chart between some of the classification requirements for a regular Consumer versus Hospital Grade product reveals some very important differences.

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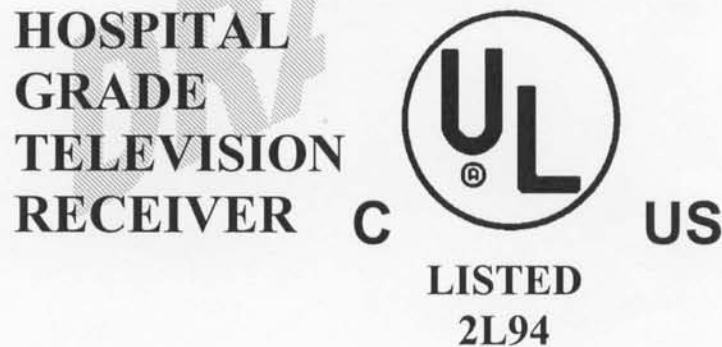
TOPIC	CONSUMER	HOSPITAL GRADE	COMMENTS
Maximum Operational Temperature Rise	60° C UL6500.7.1.5	25° C UL6500.H.7.1.5	Plastic enclosures that can be touched are required to operate at a much reduced temperature in the hospital environment. 60°C = 140°F.
Maximum AC Leakage Current	500 microamperes UL6500.9.1.1	100 microamperes UL6500.H.9.1.1	AC powered products that can be touched are limited to a much lower leakage (shock) current.
Spilled Liquids & Foreign Objects	4mm Enclosure Openings allowed on any Surface. UL6500.9.1.8	No Enclosure Openings allowed on Non-Vertical Surfaces UL6500.H.9.1.8	Spilled liquids and foreign objects can more easily enter a consumer product increasing the risk of shock or fire.
Signaling and Nurse Call Controls	Not Supported	Supported - Must use a UL1069 Listed Product UL6500.H.1.1.1	Signaling and Nurse Call controls used with audio and video products must meet additional reliability and safety criteria. Consumer grade products have no such requirement.
Enclosure Impact Withstand	3.5 Joules UL6500.12.1.3	7 Joules UL6500.H.12.1.3	The enclosure used in the hospital grade product is required to withstand twice the force from an impact. The hospital product would prove more durable and less easy to damage.
Control Transformer Construction and Grounding	Transformer meets consumer construction and safety requirements UL6500.14.3.4	Transformer construction and performance must meet stringent UL2601-1 Hospital safety requirements UL6500.H.14.3.4	The hospital grade product's transformer that powers connections for external accessories must meet stringent Hospital requirements.
Power Switch	Single Pole Power Line Switch allowed UL6500.14.6.1.1	All Pole Power Switch required UL6500.H.14.6.1.1	The Hospital Grade product's power switch opens both conductors of the power line completely disconnecting all power. If a consumer product with a single pole power switch were connected to a miss-wired wall outlet, power would not be completely "switched off" leaving a possible shock or fire hazard.
Power Cord with Grounding Wire	Not Required UL6500.15.1.1	Third Wire Grounding Conductor Required UL6500.H.15.1.1	The Hospital Grade product uses a dedicated grounding conductor to safely carry away any fault currents. The Consumer product does not offer a safety ground.
Hospital Grade AC Plug	Not Required UL6500.15.1.1	Required UL6500.H.15.1.1	The hospital grade plug offers improved mechanical properties that provide stronger connection, visual polarity identification, and a grounding conductor pin. The consumer product plug lacks these stricter requirements.
Wheels and Casters	No Minimum Size Required UL6500.17.8	10 cm Minimum Size Required UL6500.17.8	Wheels or casters on an apparatus or cart must meet a minimum size requirement for hospital use. The consumer product can use a smaller wheel increasing the chances of tipping and possible injury.

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REGULATORY

Regulators such as the National Fire Protection Agency (NFPA), Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the National Electrical Code (NEC) recognize the importance of equipment safety and have issued detailed regulations. In general, the importance of using a safety listed product appropriate for use in the patient care area is emphasized.

How is a product identified as appropriate to use in a healthcare facility? An example product label bearing the Hospital Grade or Healthcare listing is critical to qualify a product as “appropriate for use”. An example label is shown below bearing the necessary listing information.



SUMMARY

A healthcare provider should remember that the special construction and performance requirements of a Hospital Grade product enhance safety and protect the patient and their hospital. As an example, what if a patient received a shock and injury from a television? Consider the legal consequences of using a consumer grade television in a healthcare environment. A litigant could easily prove negligence on behalf of the healthcare provider since they did not specify equipment that was “appropriate for use”, but instead used a common consumer television and exposed the patient (their client) to undo risk. Once the differences are understood, the choice between selecting a Consumer or Hospital Grade television becomes a “no brainer” – no additional thought process required!

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