Seismic Testing and Certification of Series 700F and SureImage Model 700F/M Power Conditioners

What is Special Seismic Certification Preapproval?
The Office of Statewide Health Planning and Development (OSHPD) is a California government department that monitors the planning and oversight of hospital construction. OSHPD mandates that any equipment required to withstand an earthquake **and function afterwards**, be approved via shake-table testing. Equipment that falls under this mandate is typically life safety such as emergency lighting, MRI/CT scan machines, emergency room tables, etc. and all support equipment such as transformers, panel boards and generators. The OSP (OSHPD Seismic Preapproval) is a voluntary program in which equipment manufacturers perform seismic testing of representative samples of a product line and have certain models or the entire product line preapproved for such installations. This approach reduces the time required for an overseeing engineer to locate and select equipment. The preapproved manufacturers are listed on the OSHPD website.

To what standard were the 700F and 700F/M models tested, and what standards do they satisfy?
Testing and reporting was completed to the following standard:

> *ICC - AC156: "Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components and Systems".*

This standard satisfies OSHPD, CBC 2013 as well as IBC 2015. This means that the 700F and 700F/M models carry verification testing that most of the country recognizes, not exclusive to the hospital market in California.

Is this seismic test "pass/fail" or tested to a certain level?
The seismic testing is performed to a certain S_{DS} level (S_{DS} is the design level for the spectral response acceleration; essentially how fast the ground moves during an earthquake). S_{DS} is determined by USGS maps of the United States and varies depending on proximity to a fault line, ground composition and several other factors. The worst case S_{DS} level in the United States is 2.0 (see page 2 for a map of the U.S.).

The following table displays the S_{DS} values to which the 700F and 700F/M models were tested.

Test Performed	S_{DS}	Z/H	I_P
ICC-ES AC 156 (10kVA only)	2	1	1.5
	3.2	0	
ICC-ES AC 156 (>10kVA)	1.25	1	1.5
	2	0	

The term Z/H is a height ratio of where the equipment will be installed vs. the overall height of the building. For example, ground level would be 0 and the roof would be 1. I_P is the importance factor as defined by ASCE standard 7-10. If the equipment must stay operative after the seismic event, then the I_P

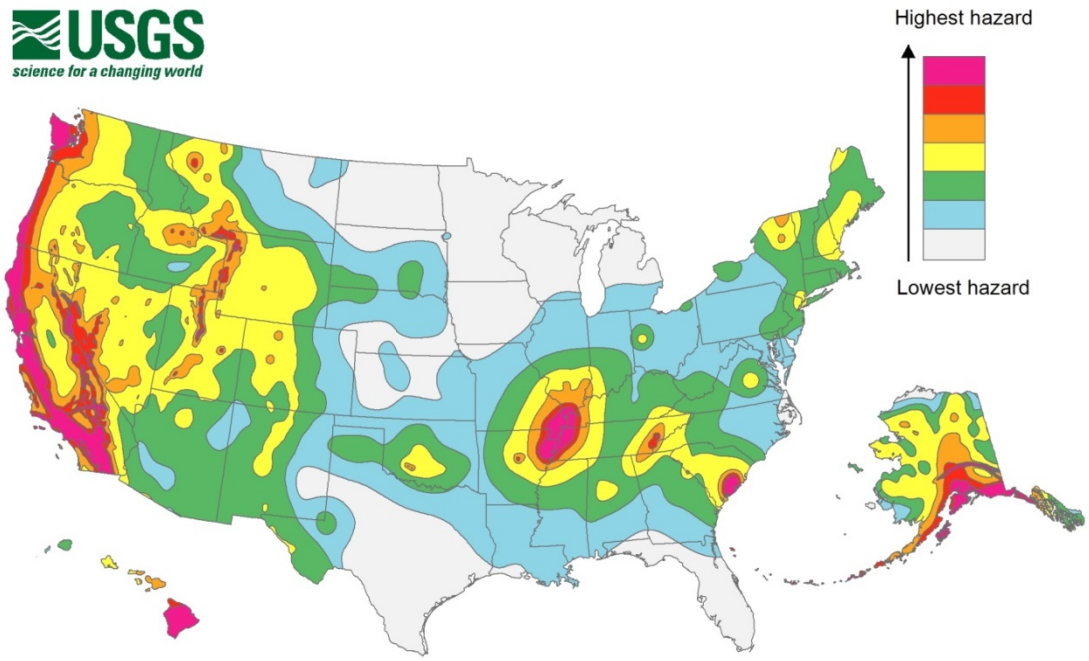
must be 1.5. This is the case involving life safety and supporting equipment. This (I_P) number plays into the equations that determine how much force the unit must withstand during the seismic testing.

Are the 700F and 700F/M models custom-designed to meet the certified S_{DS} level?
OSHPD preapproved models do require factory modifications to the cabinet frame and internal structure. These models need to be specified at the time of quotation and order. In addition, the mounting configuration is specific to these seismic-certified models. The unit must be rigid base mounted with (4) 1/2" grade 5 (or better) bolts, and supplied 2.25” diameter fender washers. Mounting instructions are provided with each unit.

Products covered:

8	B	L	X	-	10K – 150K,	-	7F
	C	S			60K(i) – 260K(i)		7F/M
	D	N					
		LN					

Options: Factory-provided under/over voltage trip, extended regulation range, output breakers, input/output power meters, and internal bypass switch (standard on 700F/M models).



Hazard levels across the United States

Web links:
OHSPD OSP link
Series 700F Product Webpage
SureImage_Model 700F/M Product Webpage