



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: **OSP – 0564 – 10**

**OSHPD Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Siemens Healthcare GmbH, Diagnostic Imaging, Computed Tomography

Manufacturer's Technical Representative: Ottmar Förstel

Mailing Address: Siemensstr. 3, 91301 Forchheim, Germany

Telephone: +49 9191 – 18 8761

Email: [ottmar.foerstel@siemens.com](mailto:ottmar.foerstel@siemens.com)

**Product Information**

Product Name: SOMATOM CT Systems

Product Type: Computed Tomography (CT) medical imaging system

Product Model Number: See Attachment

(List all unique product identification numbers and/or part numbers)

General Description: Multiple component system for producing Computed Tomography (CT) medical images for a wide variety of medical diagnostic results.

Mounting Description: Rigid floor mounted, see attachment.

**Applicant Information**

Applicant Company Name: W.E. Gundy & Associates, Inc.

Contact Person: Travis Soppe, SE

Mailing Address: 250 Bobwhite Ct, Suite 100, Boise, ID 83706

Telephone: (208) 342-5898 Ext. 115

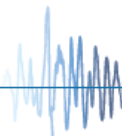
Email: [tsoppe@wegai.com](mailto:tsoppe@wegai.com)

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 05-07-2018

Title: President Company Name: W.E. Gundy & Associates, Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

Company Name: W.E. Gundy & Associates, Inc.

Name: Travis Soppe, SE California License Number: S6115

Mailing Address: 250 Bobwhite Ct, Suite 100, Boise, ID 83706

Telephone: (208) 342-5898 Ext. 115 Email: tsoppe@wegai.com

**Supports and Attachments Preapproval**

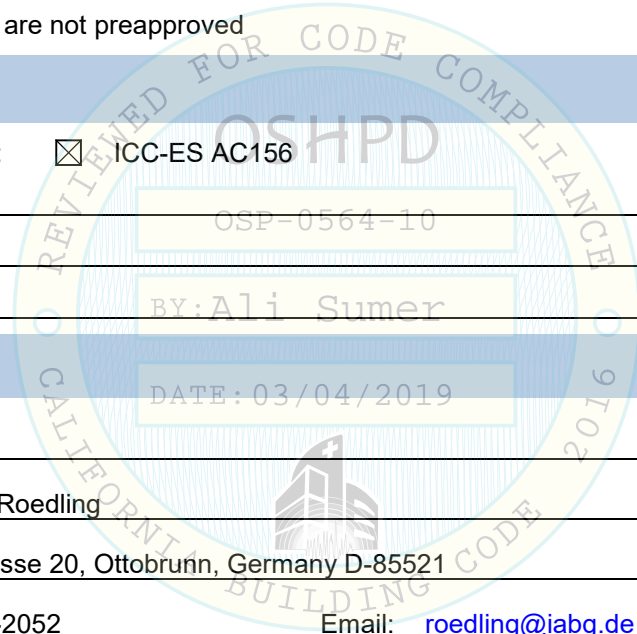
Supports and attachments are preapproved under OPM- \_\_\_\_\_  
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)

Supports and attachments are not preapproved

**Certification Method**

Testing in accordance with:  ICC-ES AC156

Other (Please Specify): \_\_\_\_\_



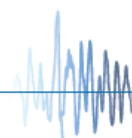
**Testing Laboratory**

Company Name: IABG mbH

Contact Name: Dr. Steffen Roedling

Mailing Address: Einsteinstrasse 20, Ottobrunn, Germany D-85521

Telephone: +49 (0) 89 / 6088-2052 Email: roedling@iabg.de





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: [X] Yes [ ] No

Design Basis of Equipment or Components (Fp/Wp) = See Attachment

SDS (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1); 2.50 (z/h = 0)

ap (In-structure equipment or component amplification factor) = See attachment

Rp (Equipment or component response modification factor) = See attachment

Omega\_0 (System overstrength factor) = See attachment

Ip (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0 (SDS = 2.00); 0 (SDS = 2.50)

Equipment or Component Natural Frequencies (Hz) = See attachment

Overall dimensions and weight (or range thereof) = See attachment

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: [ ] Yes [X] No

Design Basis of Equipment or Components (V/W) =

SDS (Design spectral response acceleration at short period, g) =

SD1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) = OSP-0564-10

Omega\_0 (System overstrength factor) =

Cd (Deflection amplification factor) = BY:Ali Sumer

Ip (Importance factor) = 1.5

Height to Center of Gravity above base = DATE: 03/04/2019

Equipment or Component Natural Frequencies (Hz) =

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2015: [ ] Yes [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [ ] Drawings [ ] Calculations [X] Manufacturer's Catalog

[X] Other(s) (Please Specify): Certified System Matrix, UUT Summary Sheets, Subcomponent Certification Letter

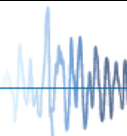
OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2022

Signature: [Signature] Date: March 3, 2019

Print Name: Ali Sumer Title: DSE

Special Seismic Certification Valid Up to : SDS (g) = See Above z/h = See Above

Condition of Approval (if applicable):



**TABLE 1**

**SIEMENS HEALTHCARE GmbH  
SPECIAL SEISMIC CERTIFICATION  
CERTIFIED SYSTEM AND COMPONENTS**



**Manufacturer:** Siemens Healthcare GmbH

**System:** SOMATOM CT Systems

**Seismic Certification Limits:**  $I_p = 1.5$  for  $S_{DS} = 2.5$  at  $z/h = 0$  and  $S_{DS} = 2.0$  at  $z/h = 1.0$  - See component specific design basis details below

System Component <sup>1</sup>	Siemens Part Number	Dimensions (in)			Weight (lb)	Mounting	UUT
		Width	Length	Height			
<b>Gantries</b>		Design Basis: $F_p/W_p = 2.40$ for $z/h = 1$ and $1.13$ for $z/h = 0$ with $a_p = 1.0$ , $R_p = 1.5$ , $\Omega_0 = 1.5$					
SOMATOM Edge Plus	10267000	93.7	36.8	78.0	4607	floor	UUT-1
SOMATOM Definition Edge	8098555	93.7	36.8	78.0	4851	floor	interpolated
SOMATOM Force	10742326	94.5	46.5	78.3	5900	floor	UUT-2
<b>Image Reconstruction Systems</b>		Design Basis: $F_p/W_p = 1.44$ for $z/h = 1$ and $1.13$ for $z/h = 0$ with $a_p = 1.0$ , $R_p = 2.5$ , $\Omega_0 = 2.0$					
PC IRSmx5a	10590110	8.3	17.7	26.8	52.8	floor	UUT-5
PC IRSmx5c	10590112	8.3	17.7	26.8	60.0	floor	interpolated
PC IRSmx5d	10590113	8.3	17.7	26.8	60.0	floor	interpolated
PC IRSmx5e	10590114	8.3	17.7	26.8	60.0	floor	interpolated
PC IRSmx5b	10590111	8.3	17.7	26.8	61.6	floor	UUT-6

Notes:

<sup>1</sup> All components are manufactured by Siemens Healthcare GmbH unless noted. Part numbers listed uniquely identify type of component, manufacturer, and material of construction for each sub-component within the tested units.

**TABLE 2**

**SIEMENS HEALTHCARE GmbH  
SPECIAL SEISMIC CERTIFICATION  
CERTIFIED SYSTEM AND COMPONENTS**



**Manufacturer:** Siemens Healthcare GmbH

**System:** SOMATOM CT Systems

**Seismic Certification Limits:**  $I_p = 1.5$  for  $S_{DS} = 2.5$  at  $z/h = 0$  and  $S_{DS} = 2.0$  at  $z/h = 1.0$  - See component specific design basis details below

System Component <sup>1</sup>	Siemens Part Number	Dimensions (in)			Weight (lb)			Mounting	UUT
		Width	Length	Height	Table	Patient	Total		
<b>PHS Patient Tables</b>		Design Basis: $F_p / W_p = 2.40$ for $z/h = 1$ and $1.13$ for $z/h = 0$ with $a_p = 1.0$ , $R_p = 1.5$ , $\Omega_0 = 1.5$							
PHS-4	8097144	29.5	95.7-158.7	18.9-36.2	933	0 - 415	933 - 1348	floor	UUT-4x
PHS-5	10742323	29.5	100.5-179.5	24.3-41.7	1066	0 - 415	1066 - 1475	floor	interpolated
PHS-4n	11268204	29.5	100.5-179.5	24.3-41.7	1060	0 - 415	1060 - 1475	floor	UUT-3
<b>MPT Patient Tables</b>		Design Basis: $F_p / W_p = 2.40$ for $z/h = 1$ and $1.13$ for $z/h = 0$ with $a_p = 1.0$ , $R_p = 1.5$ , $\Omega_0 = 1.5$							
MPT-2	8097102	29.5	95.7-174.4	21.6-36.2	1311	0 - 560	1311 - 1870	floor	UUT-5x
MPT-2n	11268202	29.5	96.3-175.0	22.0-36.2	1175	0 - 560	1175 - 1735	floor	interpolated
MPT-4	10742324	27.8	99.6-179.5	23.0-38.6	1258	0 - 560	1258 - 1818	floor	UUT-4

Notes:

- Patient tables utilize the same active components for each PHS-x and MPT-x configurations with the only difference being the non-active cover configuration.
- The "x" at the end of the UUT designation indicates a test was performed at a different time than the other UUT's.
- The UUT summary sheets detail the normal operating position used for the test and the simulated patient weight.

<sup>1</sup> All components are manufactured by Siemens Healthcare GmbH unless noted. Part numbers listed uniquely identify type of component, manufacturer, and material of construction for each sub-component within the tested units.

**TABLE 3**

**SIEMENS HEALTHCARE GmbH  
SPECIAL SEISMIC CERTIFICATION  
CERTIFIED SUBCOMPONENTS**



**Manufacturer:** Siemens Healthcare GmbH

**System:** SOMATOM CT Systems

Subcomponent <sup>1</sup>	Siemens Part Number	Dimensions (in)			Weight (lb)	UUT
		Width	Length	Height		
<b>Collimator</b>						
Type Z80S A	10742700	18.1	10.7	5.5	42	UUT-2
Type Z80S B	10742701	18.1	10.7	5.5	42	UUT-2
Type Z65	10589900	18.1	10.4	5.1	36	UUT-1
<b>X-Ray Tube Assembly</b>						
2x Vectron	10414460	16.1	16.9	11.1	144	UUT-2
Straton MX Sigma	11270277	17.0	9.8	11.1	84	UUT-1
Straton MX	8401825	17.0	9.8	11.1	84	interpolated
<b>High Voltage Tank</b>						
HVT MxT (2x)	10513610	19.8	12.3	12.4	89	UUT-2
HVT Matrix	8365707	11.8	19.3	12.4	89	UUT-1
<b>Detector</b>						
DMS P58A	10393130	45.7	14.1	17.8	154	UUT-2
DMS P58B	10393140	32.4	13.3	15.8	107	UUT-2
DMS P46F	10186150	46.0	18.7	12.2	151	UUT-1
<b>Slipring System</b>						
Type P58	10494903	3.0	62.2	62.2	152	UUT-2
Type P46	10187169	2.8	59.8	59.8	187	UUT-1
<b>Cooling System</b>						
Water Cooling - Glen Dimplex -	10742370	20.0	30.0	21.7	143	UUT-2
Water Cooling - Glen Dimplex -	10589647	16.7	25.7	20.3	130	UUT-1

Notes:

<sup>1</sup> All components are manufactured by Siemens Healthcare GmbH unless noted below the subcomponent name.

**UUT-1**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid floor mounted with 4 - M16 grade 12.9 bolts.



**Manufacturer:** Siemens Healthcare GmbH

**Component:** SOMATOM Edge Plus Gantry

**Model / Serial Number:** 10267000 / 122000

**UUT Function:** Continuous rotating detector for high-resolution data acquisition

**UUT Description:** Component of SOMATOM CT System

**Test Location:** IABG mbH, Germany

**Test Date:** December 2017

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Length	Height	FB	SS	V
4,607	93.7"	36.8"	78.0"	13.1	15.3	> 33

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

**UUT-2**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid floor mounted with 4 - M16 grade 12.9 bolts.



**Manufacturer:** Siemens Healthcare GmbH

**Component:** SOMATOM Force Gantry      **Model / Serial Number:** 10742326 / 75884

**UUT Function:** Continuous rotating detector for high-resolution data acquisition

**UUT Description:** Component of SOMATOM CT System

**Test Location:** IABG mbH, Germany

**Test Date:** December 2017

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Length	Height	FB	SS	V
5,900	94.5"	46.5"	78.3"	11.0	23.0	> 33

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.



**UUT-3**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid Floor mounted with 4 - M10 grade 12.9 bolts



**Manufacturer:** Siemens Healthcare GmbH

**Component:** PHS-4n Patient Table      **Model / Serial Number:** 11268204 / 1003

**UUT Function:** Motorized patient table for moving patient thru CT system

**UUT Description:** Component of SOMATOM CT Systems

**Test Location:** IABG mbH, Germany

**Test Date:** December 2017

**UUT PROPERTIES**

Weight (lb) with Patient	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Length	Height	FB	SS	V
1,475	29.5	100.4"-197.1"	24.6"-42.0"	3.4	2.6	9.7

The patient table moves vertically and horizontally to accommodate different patients and procedures. The system was tested in the normal operating position with a horizontal extension of 39.4" (139.8" length), vertical height of 36.2", and a total simulated patient weight of 415lbs.

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

**UUT-4**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid Floor mounted with 4 - M10 grade 12.9 bolts



**Manufacturer:** Siemens Healthcare GmbH

**Component:** MPT-4 Patient Table      **Model / Serial Number:** 10742324 / 1094

**UUT Function:** Motorized patient table for moving patient thru CT system

**UUT Description:** Component of SOMATOM CT Systems

**Test Location:** IABG mbH, Germany

**Test Date:** December 2017

**UUT PROPERTIES**

Weight (lb) with Patient	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Length	Height	FB	SS	V
1,817	27.8	99.6" - 179.5"	23.0" - 38.6"	3.0	> 33	14

The patient table moves vertically and horizontally to accommodate different patients and procedures. The system was tested in the normal operating position with a horizontal extension of 39.4" (139.0" length), vertical height of 36.2", and a total simulated patient weight of 560lbs.

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

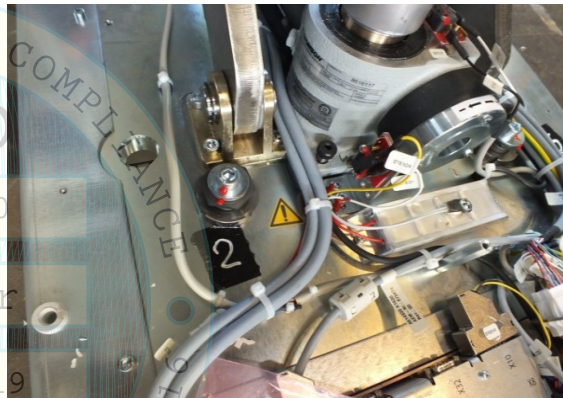
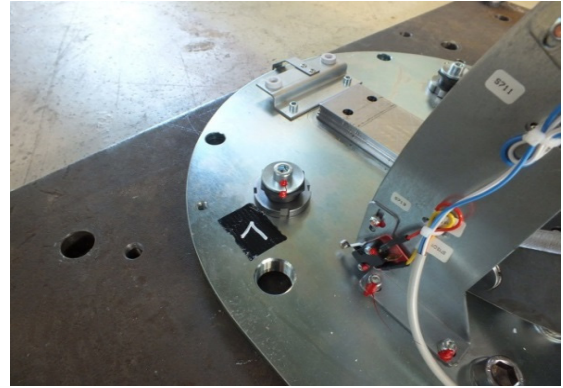
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

**UUT-4x**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid floor mounted with 4 - M10 bolts



DATE: 03/04/2019

**Manufacturer:** Siemens Healthcare GmbH

**Component:** PHS 4 - Patient Table      **Model / Serial Number:** 8097144 / 4481

**UUT Function:** Motorized table which moves a patient thru the circular opening in the CT system

**UUT Description:** Component of SOMATOM CT Systems

**Test Location:** IABG mbH, Germany      **Test Date:** August 2016

**UUT PROPERTIES**

Weight (lb) with Patient	Dimensions (inches)			Natural Fequency (Hz)		
	Width	Length	Height	FB	SS	V
1,241	29.5"	95.7" - 158.7"	18.9" - 36.2"	3.3	13.2	12.2

The patient table moves vertically and horizontally to accomodate different patients and procedures. The system was tested in the tallest configuration (36.2") with a normal operating horizontal extension of 39.4" (total length = 135.1") and a total simulated patient weight of 308lbs.

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

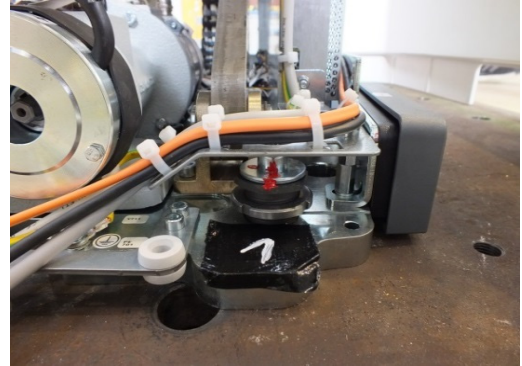
Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

**UUT-5x**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid floor mounted with 4 - M10 bolts



DATE: 03/04/2019

**Manufacturer:** Siemens Healthcare GmbH

**Component:** MPT 2 - Patient Table

**Model / Serial Number:** 8097102 / 2197

**UUT Function:** Motorized table which moves a patient thru the circular opening in the CT system

**UUT Description:** Component of SOMATOM CT Systems

**Test Location:** IABG mbH, Germany

**Test Date:** August 2016

**UUT PROPERTIES**

Weight (lb) with Patient	Dimensions (inches)			Natural Frequency (Hz)		
	Depth	Length	Height	FB	SS	V
1,619	29.5"	95.7" - 174.4"	21.6" - 36.2"	4.7	22.6	14.6

The patient table moves vertically and horizontally to accommodate different patients and procedures. The system was tested in the tallest configuration (36.2") with the normal operating horizontal extension of 39.4" (total length = 135.1") and a total simulated patient weight of 308lbs.

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

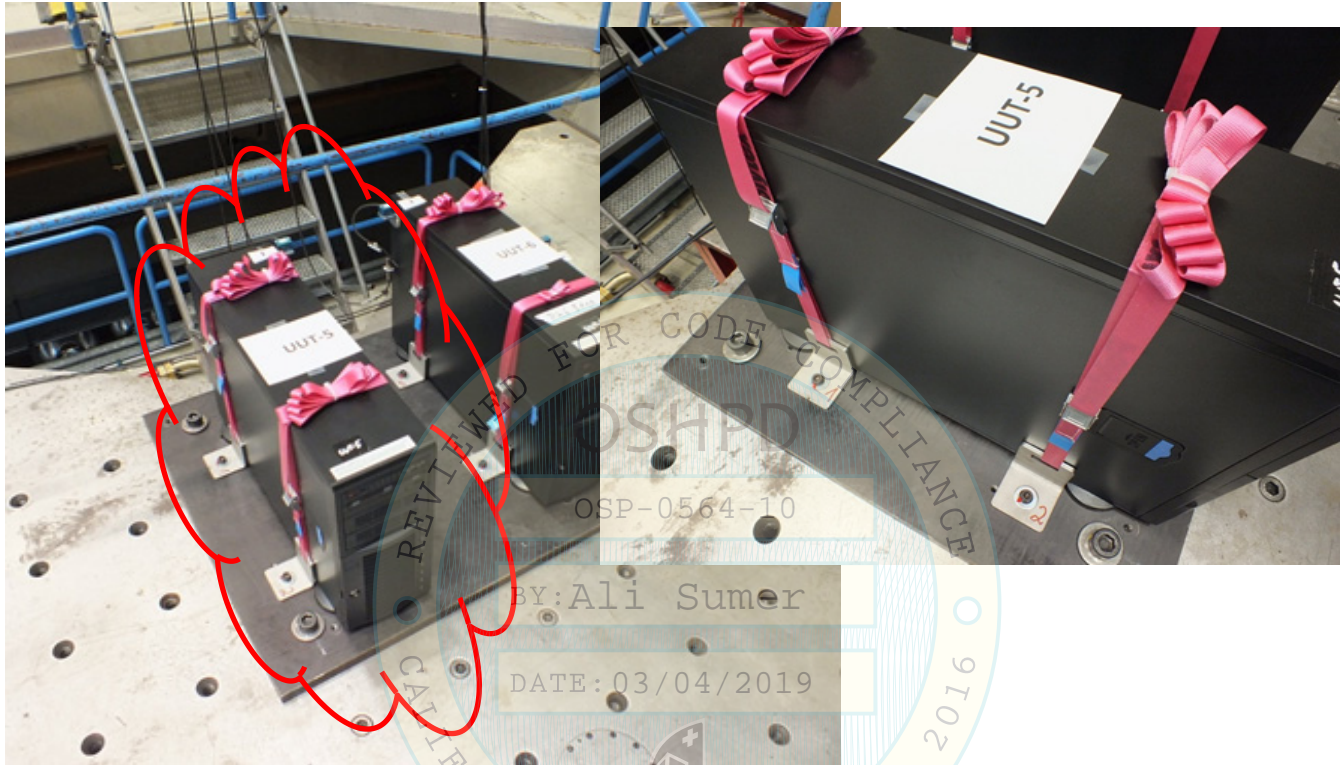
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

**UUT-5**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid Floor mounting using Siemens provided seismic restraint kit SN:10432402. Seismic restraint kit includes a 1" wide hand tightened cam buckle strap (560lb WLL) looped thru angle brackets positioned on each side of the unit. The angle brackets are attached to the table with individual M10 grade 8.8 bolts.



**Manufacturer:** Siemens Healthcare GmbH

**Component:** PC IRSmx5a Imaging System

**Model / Serial Number:** 10590110 / 00903

**UUT Function:** Computational processing for image system

**UUT Description:** Component of SOMATOM CT Systems

**Test Location:** IABG mbH, Germany

**Test Date:** December 2017

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
53	8.3"	17.7"	26.8"	> 33	27.4	> 33

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

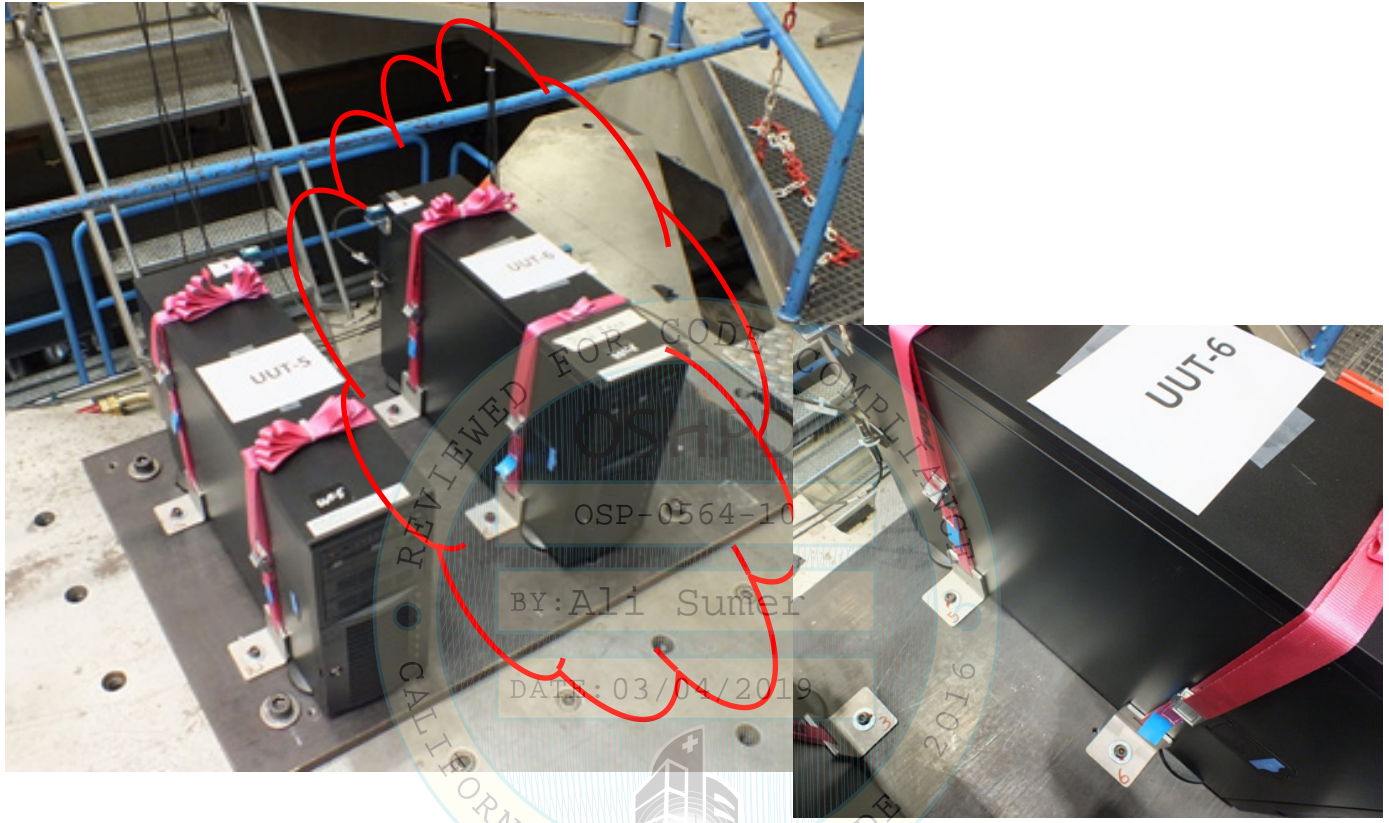
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

**UUT-6**

**UNIT UNDER TEST (UUT)  
SUMMARY SHEET**



**Mounting Details:** Rigid Floor mounting using Siemens provided seismic restraint kit SN:10432402. Seismic restraint kit includes a 1" wide hand tightened cam buckle strap (560lb WLL) looped thru angle brackets positioned on each side of the unit. The angle brackets are attached to the table with individual M10 grade 8.8 bolts.



**Manufacturer:** Siemens Healthcare GmbH  
**Component:** PC IRSmx5b Imaging System | **Model / Serial Number:** 10590111 / 00903  
**UUT Function:** Computational processing for image system  
**UUT Description:** Component of SOMATOM CT Systems  
**Test Location:** IABG mbH, Germany | **Test Date:** December 2017

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
62	8.3"	17.7"	26.8"	> 33	30.3	> 33

**SEISMIC TEST PARAMETERS**

Building Code / Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40		
	2.50	0.0	1.5			1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.