

**ATCA-AMC.0 Carrier – AMC Modules
Shock-Vibration-Seismic
Test Results**

Viswa Sharma

viswa.sharma@coredgenetworks.com

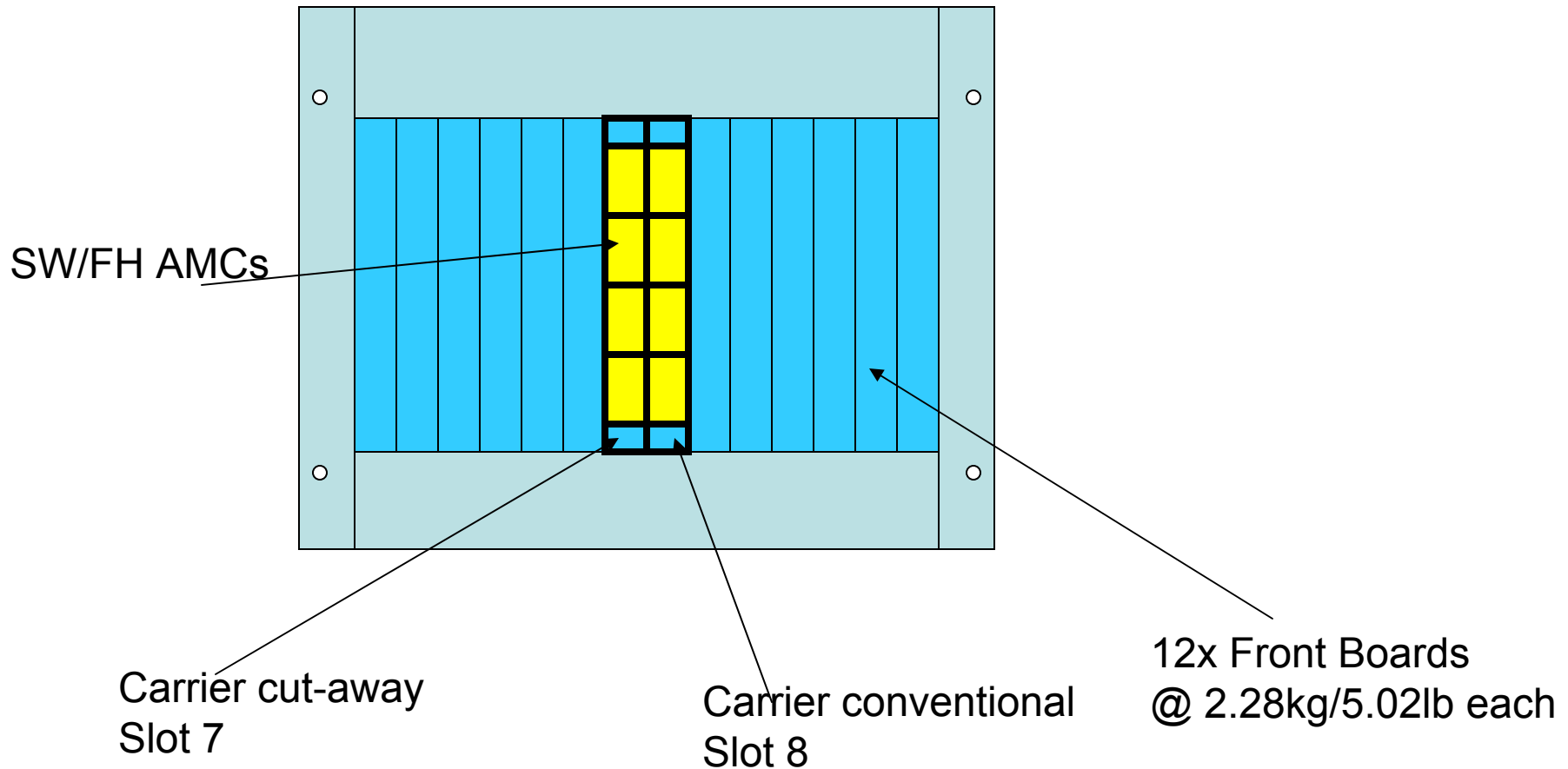
Per Test Set-up

Presented By Eike Waltz

Rittal/Kaparel

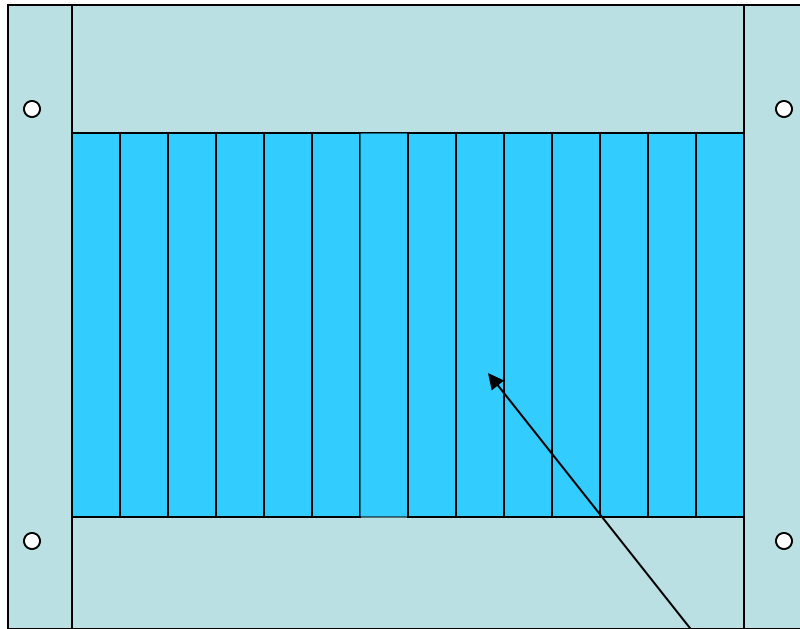
eikewaltz@cs.com

Required Test Configuration ATCA 14slot Shelf – Front View



Required Test Configuration

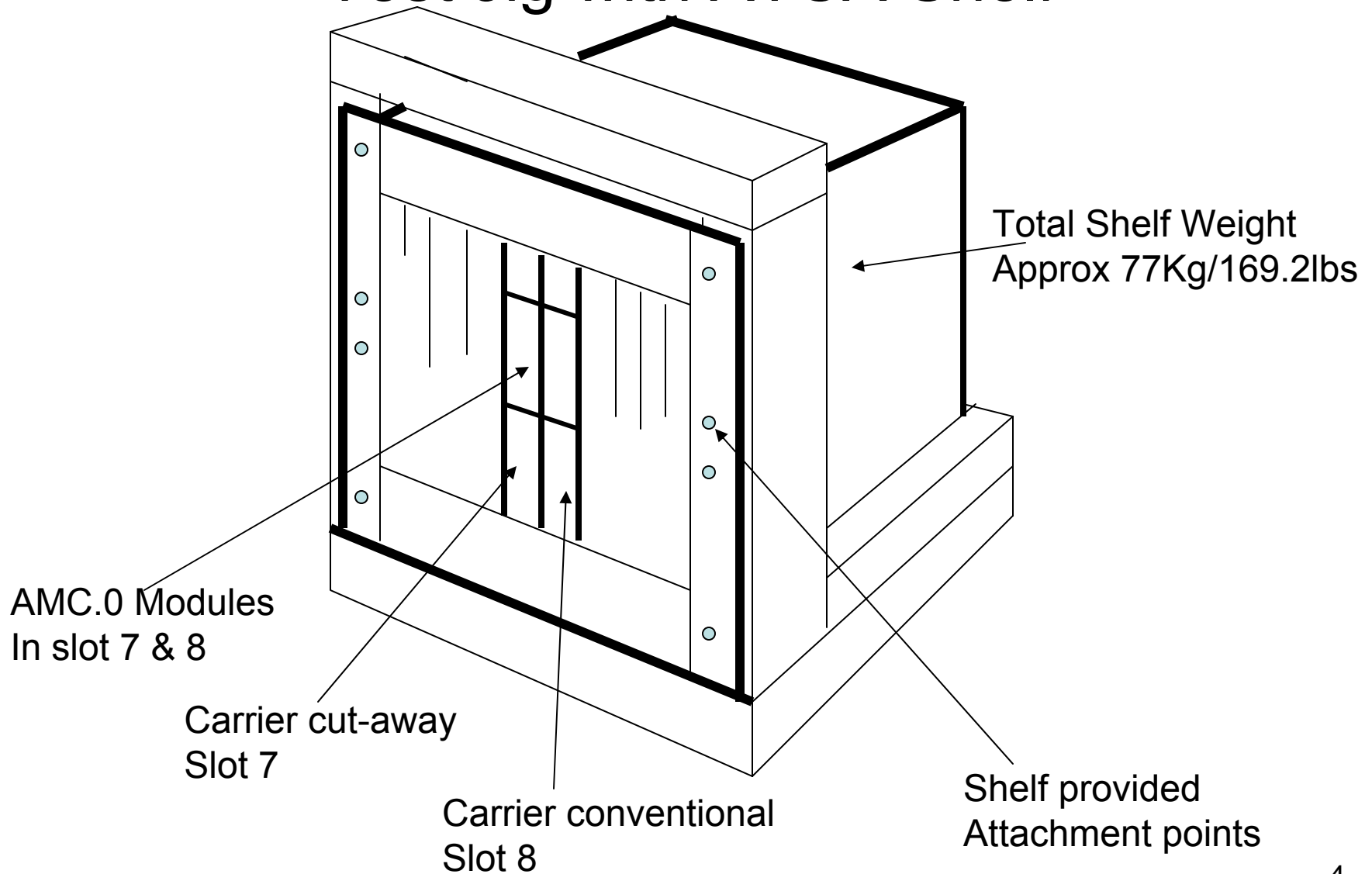
ATCA 14slot Shelf – Rear View



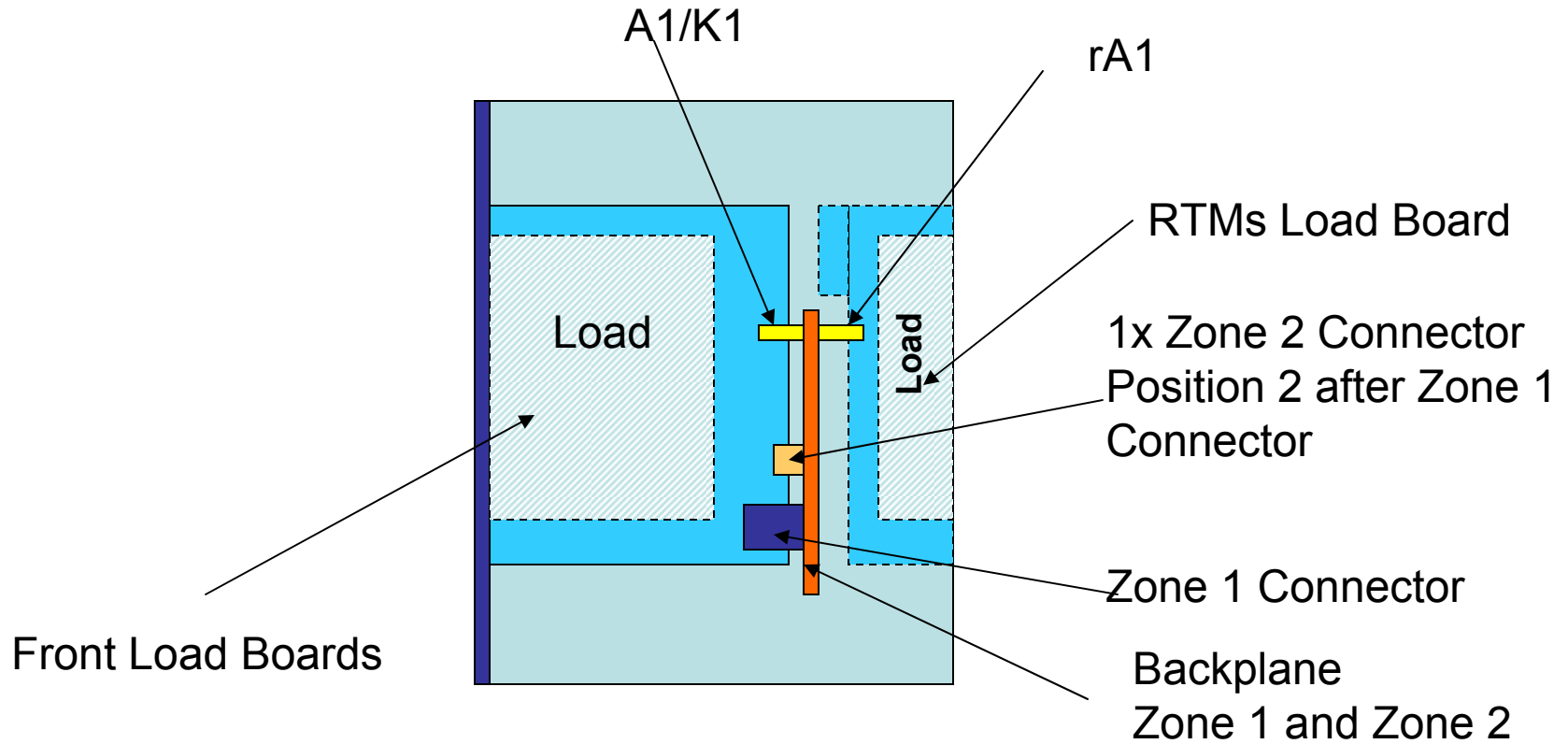
14x RTM Load Boards
@ 0.85kg/1.88lb each

Required Test Configuration

Test Jig with ATCA Shelf

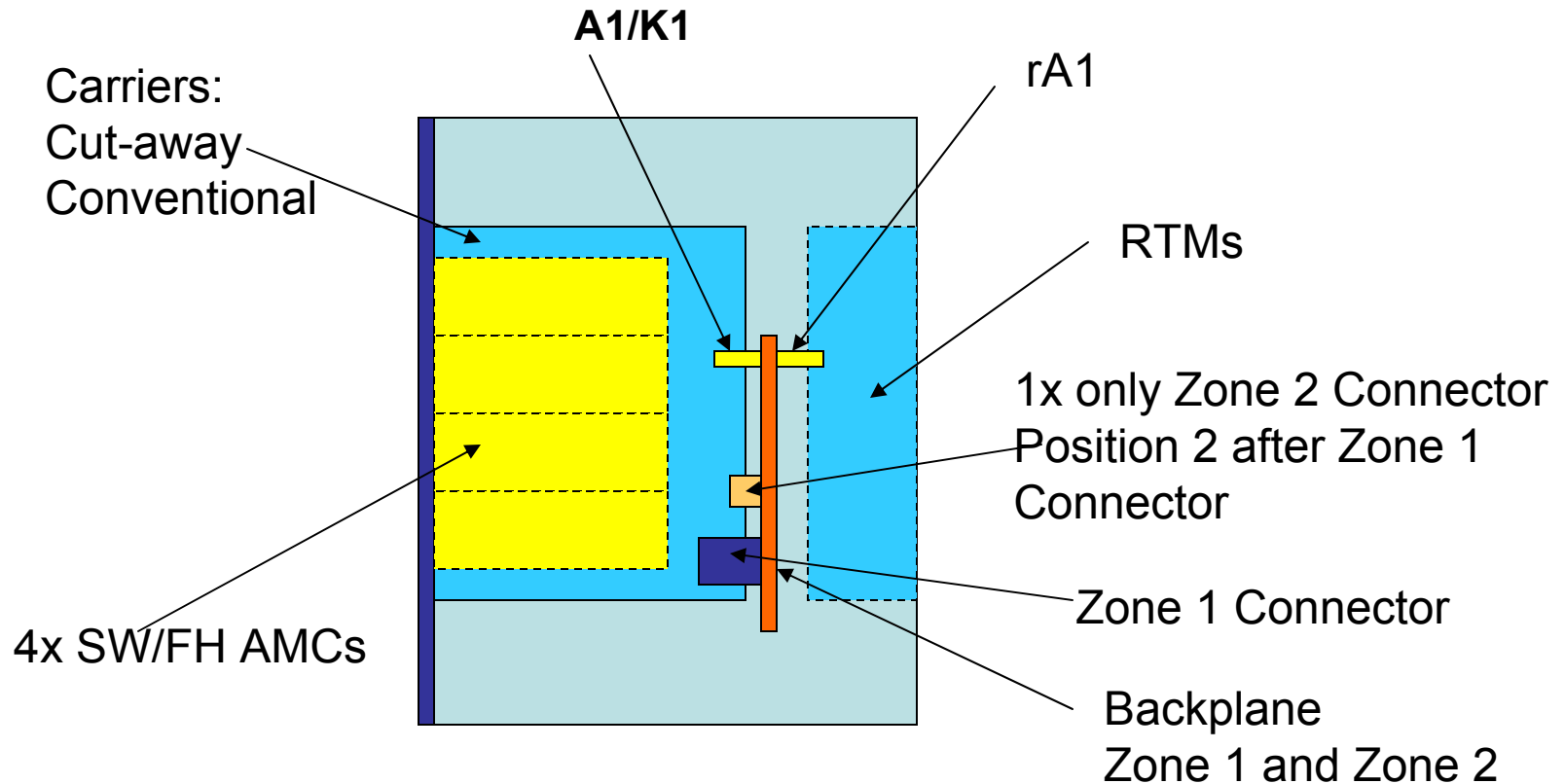


Required ATCA Shelf Configuration details— Sectional Side View

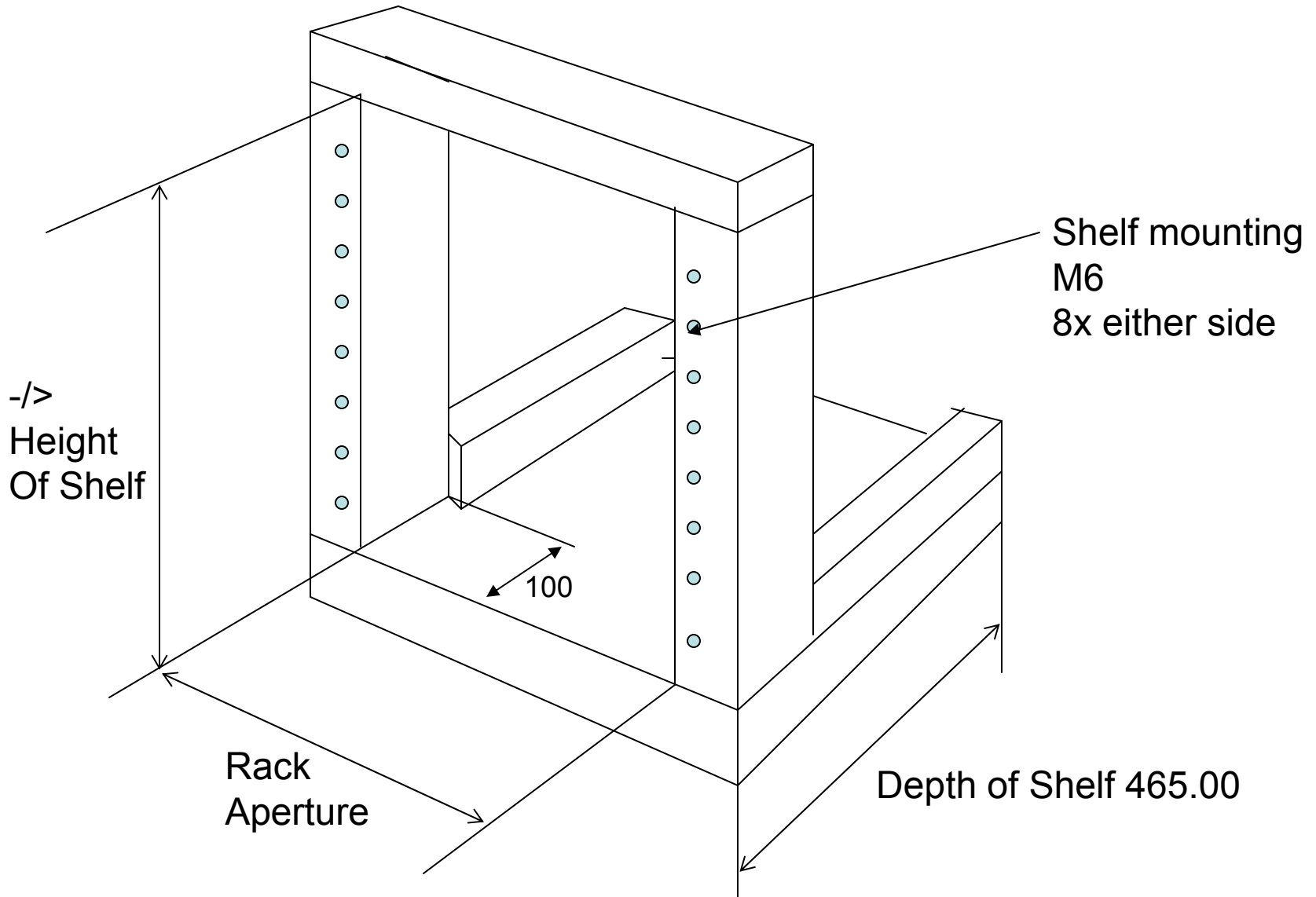


Required Test Configuration Details

ATCA Shelf – Sectional Side View



Required Test Jig



Actual Test Configuration

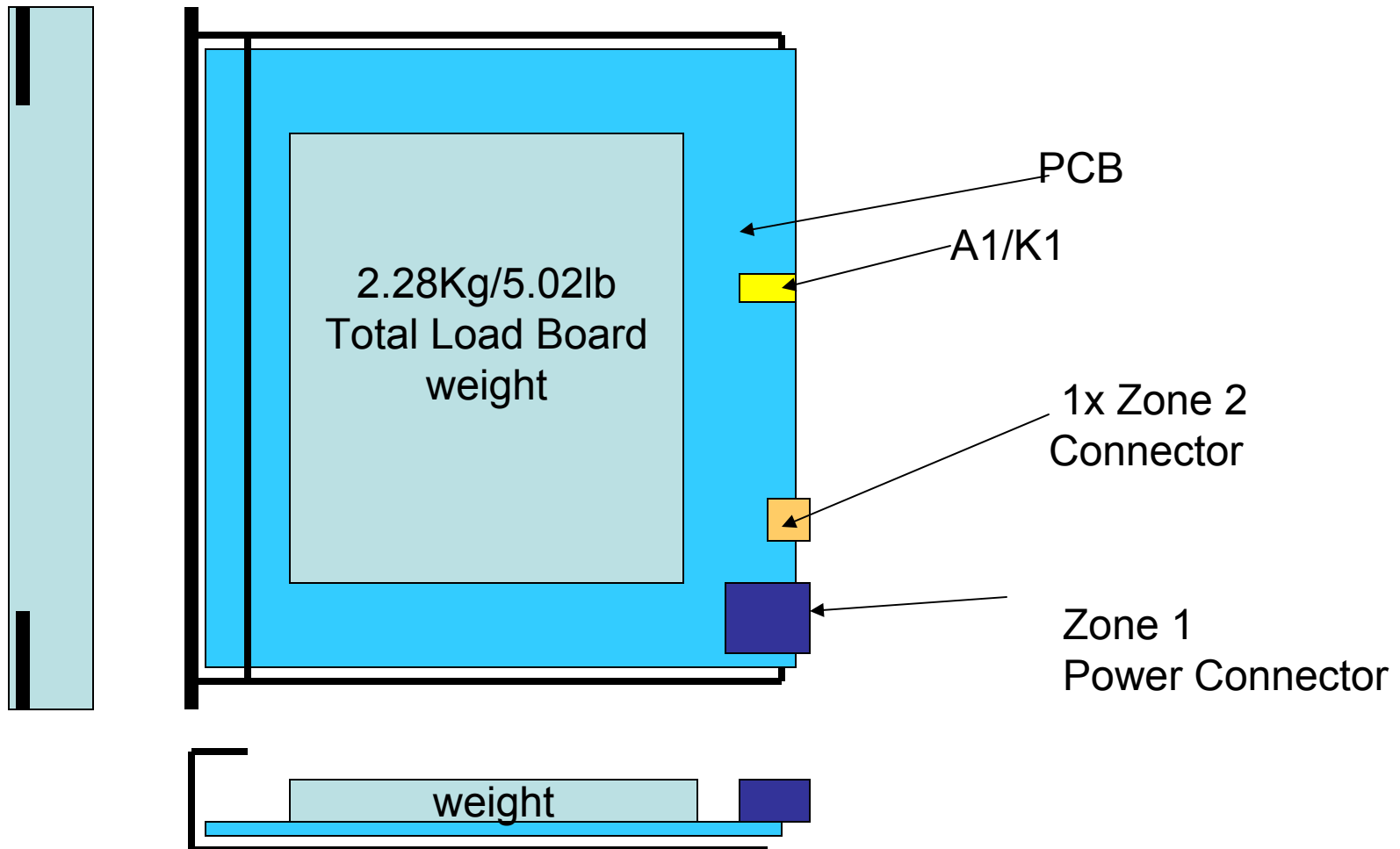
ATCA 14 slot Shelf and Test Jig– Front View



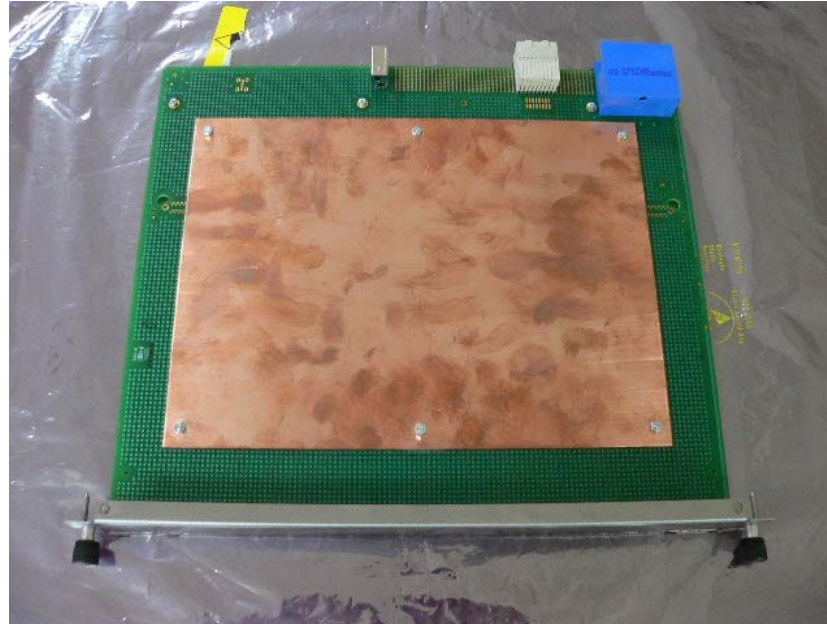
14 slots Chassis RITTAL- Model 3688460, S/N 2227000545
All Other Components by CoreEdge Networks

Required test Configuration ATCA Front Load Board

Face Plate must be retained in the Shelf by Alignment Pins and M3 Screws



Actual Test Configuration ATCA Front Load Board

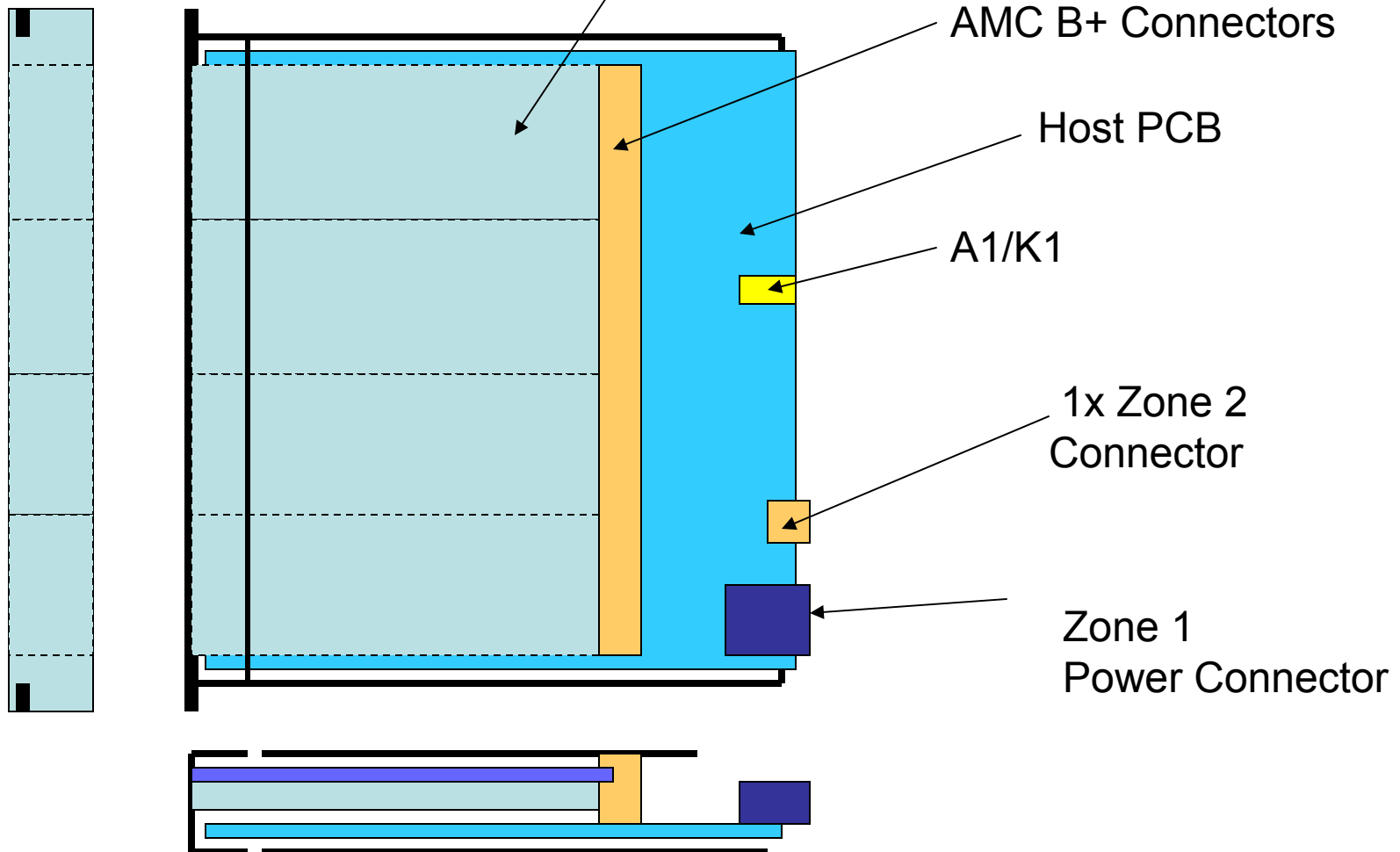


**CoreEdge Networks ATCA Front Load card
Rittal with 2.28 Kg Load**

Required Test Configuration ATCA AMC Carrier-Cutaway

Face Plate must be retained in the Shelf by Alignment Pins and M3 Screws

Module Total Weight:
SW/FH = 0.350Kg



Actual Test Configuration ATCA AMC Carrier-Cutaway



CorEdge Networks
Mechanicals

Top Cover

Bottom Cover

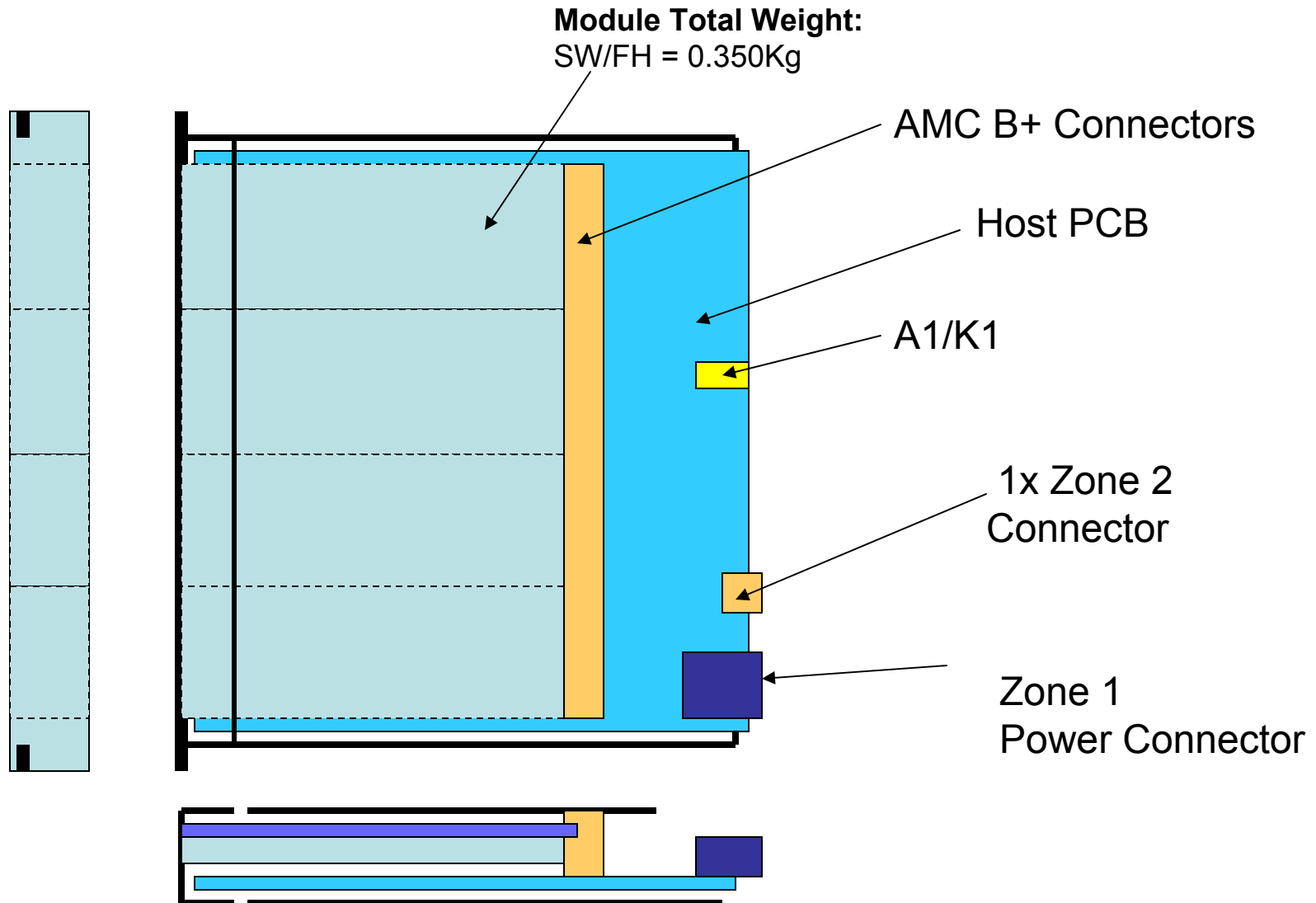
Carrier Handle

AMC Latch

CoreEdge Networks Cutaway Carrier Card S/N D151306 in slot 7 of chassis, with
CorEdge Networks AMC Load card (with 0.35 kg Rittal load) in BAY 1
CorEdge Networks **AMC RL10 card (D12005592)** in BAY 2
CorEdge Networks **AMC RL10 card (D12005604)** in BAY 3
CorEdge Networks AMC Load card (with 0.35 kg Rittal load) in BAY 4

ATCA AMC Carrier-Conventional

Face Plate must be retained in the Shelf by Alignment Pins and M3 Screws



Actual Test Configuration

ATCA AMC Carrier-Conventional



CorEdge Networks
Mechanicals

Top Cover

Bottom Cover

Carrier Handle

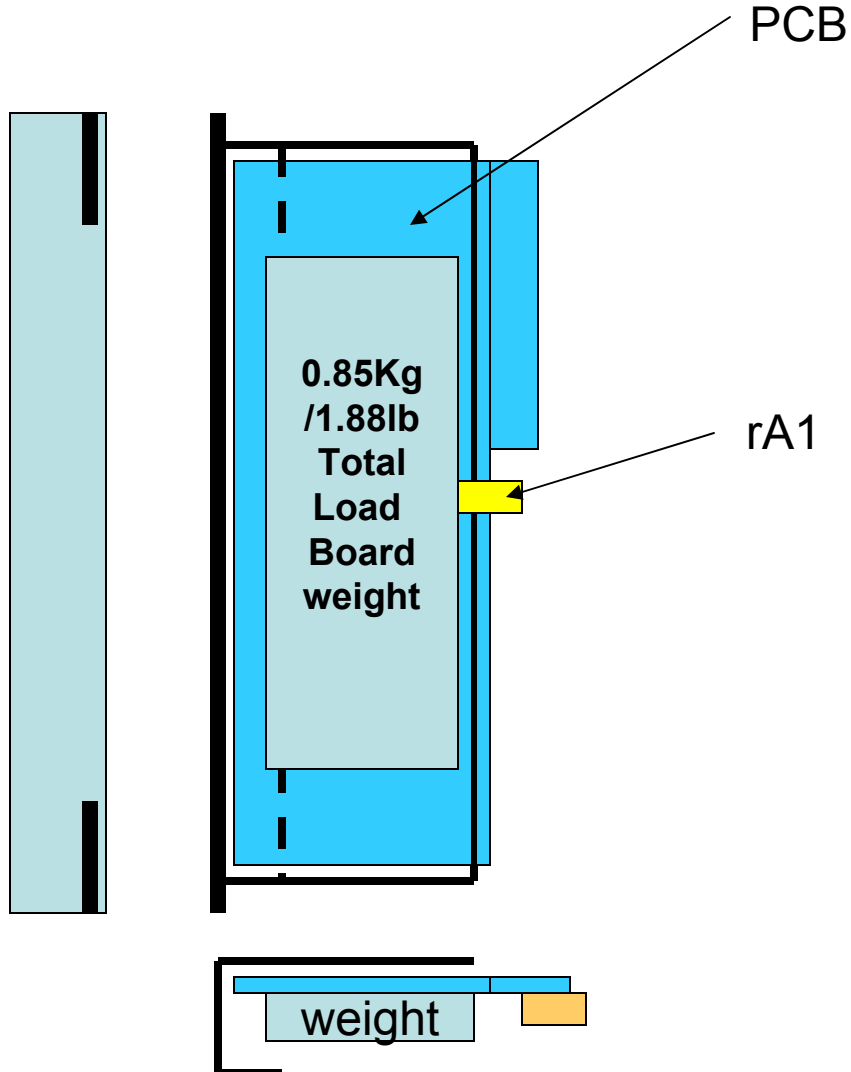
AMC Latch

CorEdge Networks Conventional Carrier Card S/N D151308 in slot 8 of chassis with:
CorEdge AMC Load Card (with Rittal 0.35 kg load) in BAY 1
CorEdge Networks AMC RL10 Card (D12005592) in BAY 2
CorEdge Networks RL10 AMC (VA01#010) in BAY 3
CorEdge AMC Load Card with Rittal 0.35 kg load) in BAY 4

Required Test Configuration

ATCA RTM Load Board

Face Plate must be retained in the Shelf by Alignment Pins and M3 Screws



Actual Test Configuration ATCA RTM Load Board



CoreEdge RTM Load Card
With 0.85Kg Rittal Load

Specified Test requirements

- Shock: See IEC 61587-1 Performance Level DL1
- Vibration: See IEC 61587-1 Performance Level DL1
- Seismic: See IEC 61587-2 Waveform A

See ANSI T1.329

See NEBS Level 3, Zone 4

Exception:

The Test Set up as shown in this document **shall** be used.

- N/A

Test Location and Instruments For Shock and Vibration Testing

Test were performed at :
Engineering Technology Division,
Inventec Enterprise Systems Corp, Taiwan.
www.inventec.com

Test Instruments Used

Vibrator : LDS Model V870 MKII

Vibrator : LDS Model V875 MKII

Accelerometer : Kistler, Type: 8704B100M1

Accelerometer : Kistler, Type: 8732A500

Vibration Test Procedure

- 1 Mount the specimen to be tested on the table of the vibration machine.
2. The specimen should be securely fastened in a fixture.
3. Set the vibration tester to provide the sine wave form 10~60Hz on deflection of 0.075mm to 60~150Hz on acceleration of 9.8m/s to the specimen.
- 4 Set the transient time on 1 octave/min. The measured position of accelerometer is shown as Figure 1.0 (Next Slide)

Vibration Test

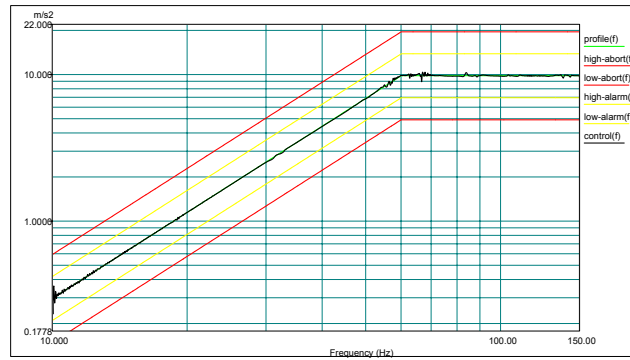
5. Perform the exciting vibration 10 frequency cycles in one axis.
6. Repeat step #2 to #5 in three orthogonal axes.
7. Search the specimen's resonance point from 10~150Hz, on acceleration of 2 m/s².

Resonance Test

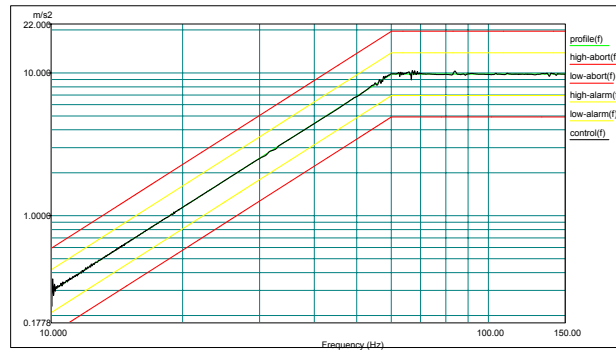
8. Resonance with a magnification factor of 3 to 4 shall have the vibration amplitude increased until the magnification factor reaches 7 to 8. This level shall be maintained for a period of not less than 10 min.

Non-operational sine Vibration Test

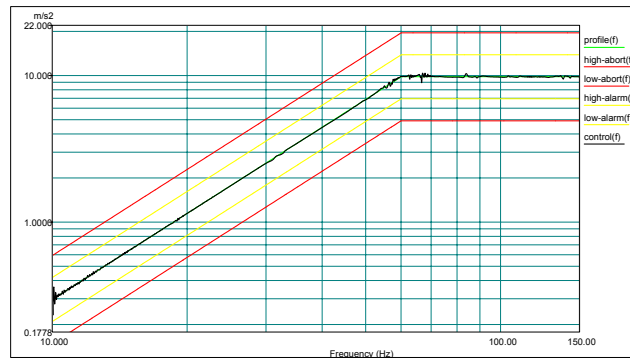
Z Axis



X Axis

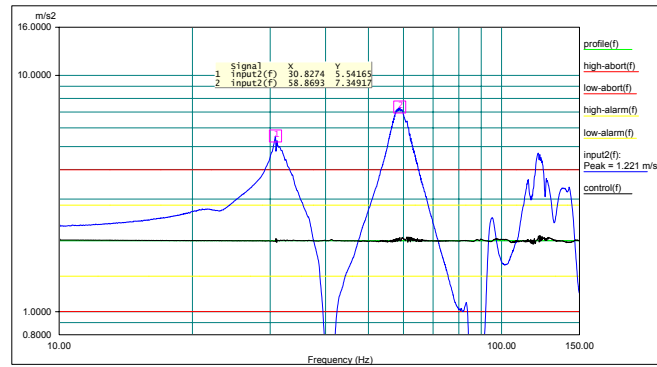


Y Axis

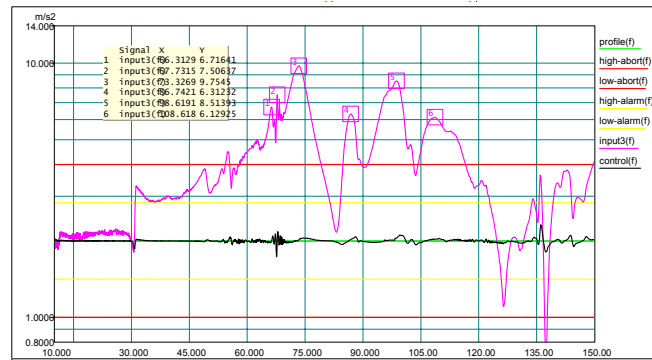


Non-operational sine Sweep Test

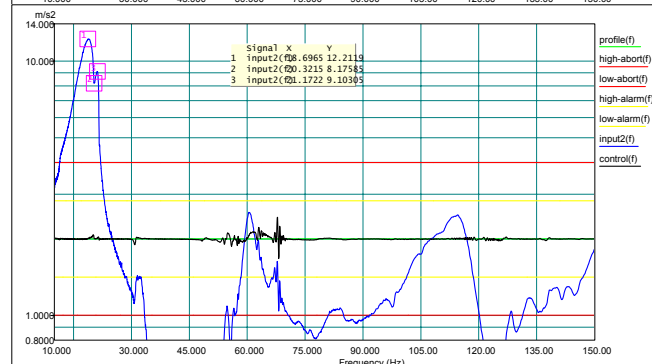
Z Axis



X Axis



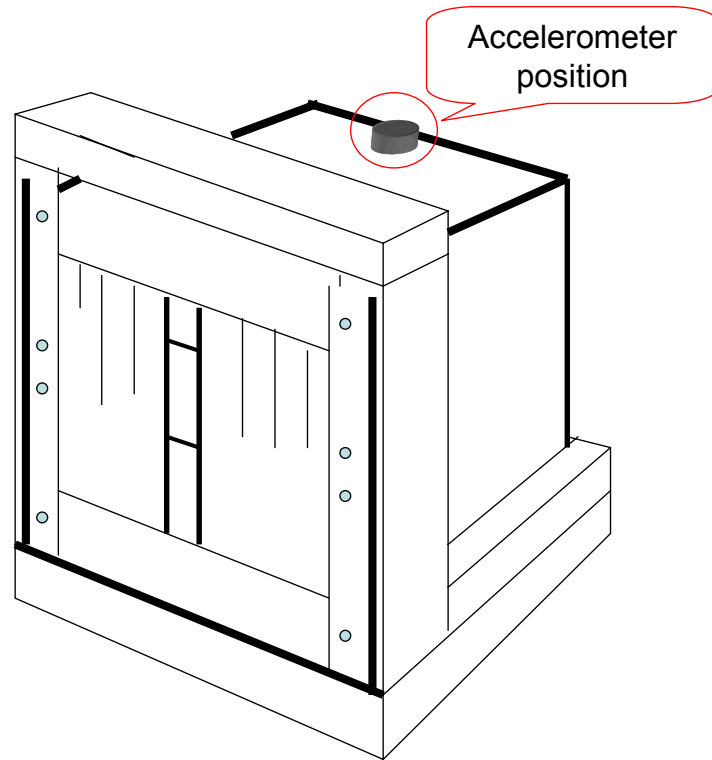
Y Axis



Shock Test Procedure

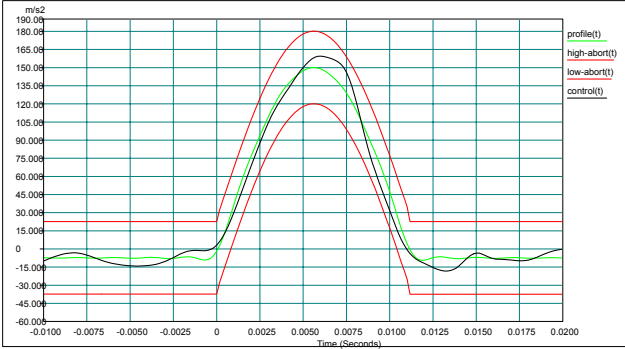
1. Check and setup the test specimens in good conditions and the correct configurations. Run the test programs successfully for at least two hours.
2. Mount the specimen to be tested on the table of the shock machine. The position of accelerometer is shown as . (Figure -2 Next Slide)
4. The specimen should be securely fastened in a fixture. The fixture is similar in shape and configuration of the product and should be as rigid as possible so as not to distort the shock pulse imparted the product.
- 5 Set the shock tester to provide the required impacts to the specimen.
6. Perform 3 shocks per face.
7. Repeat step #3 to #7 for all of six faces in three orthogonal axes (x-y-z).
8. Visual and function check to the test specimen.

Accelerometer Position on the theTest Jig

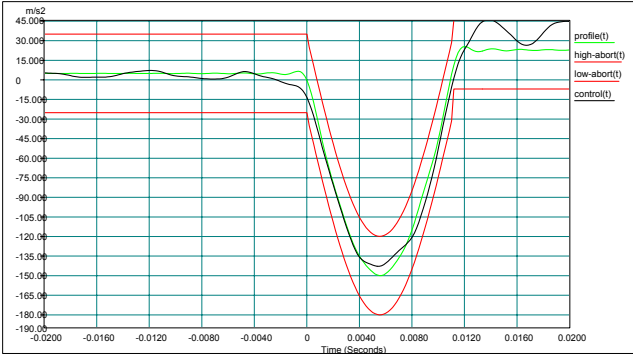


Shock Test Details

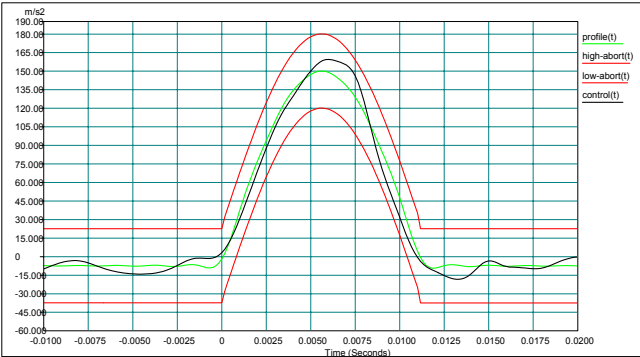
Top



Bottom

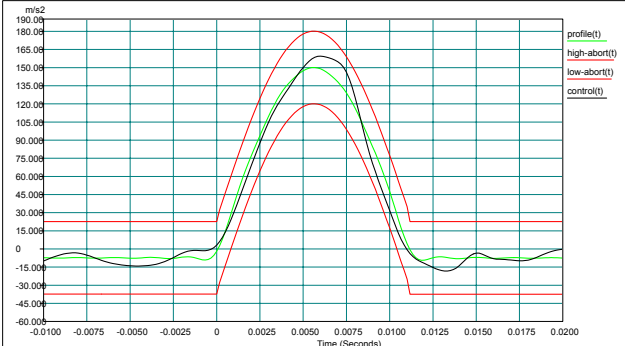


Left

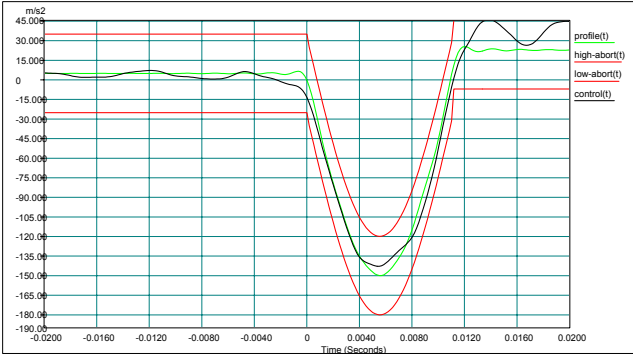


Shock Test Details

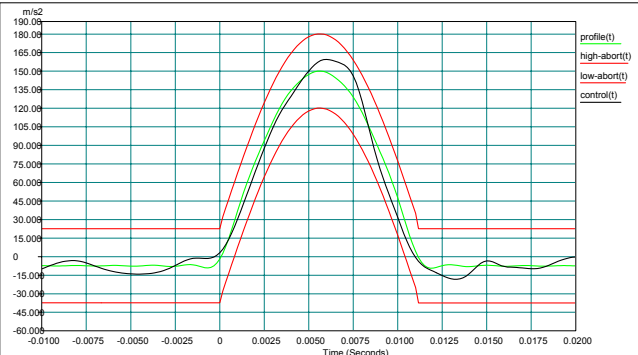
Right



Front

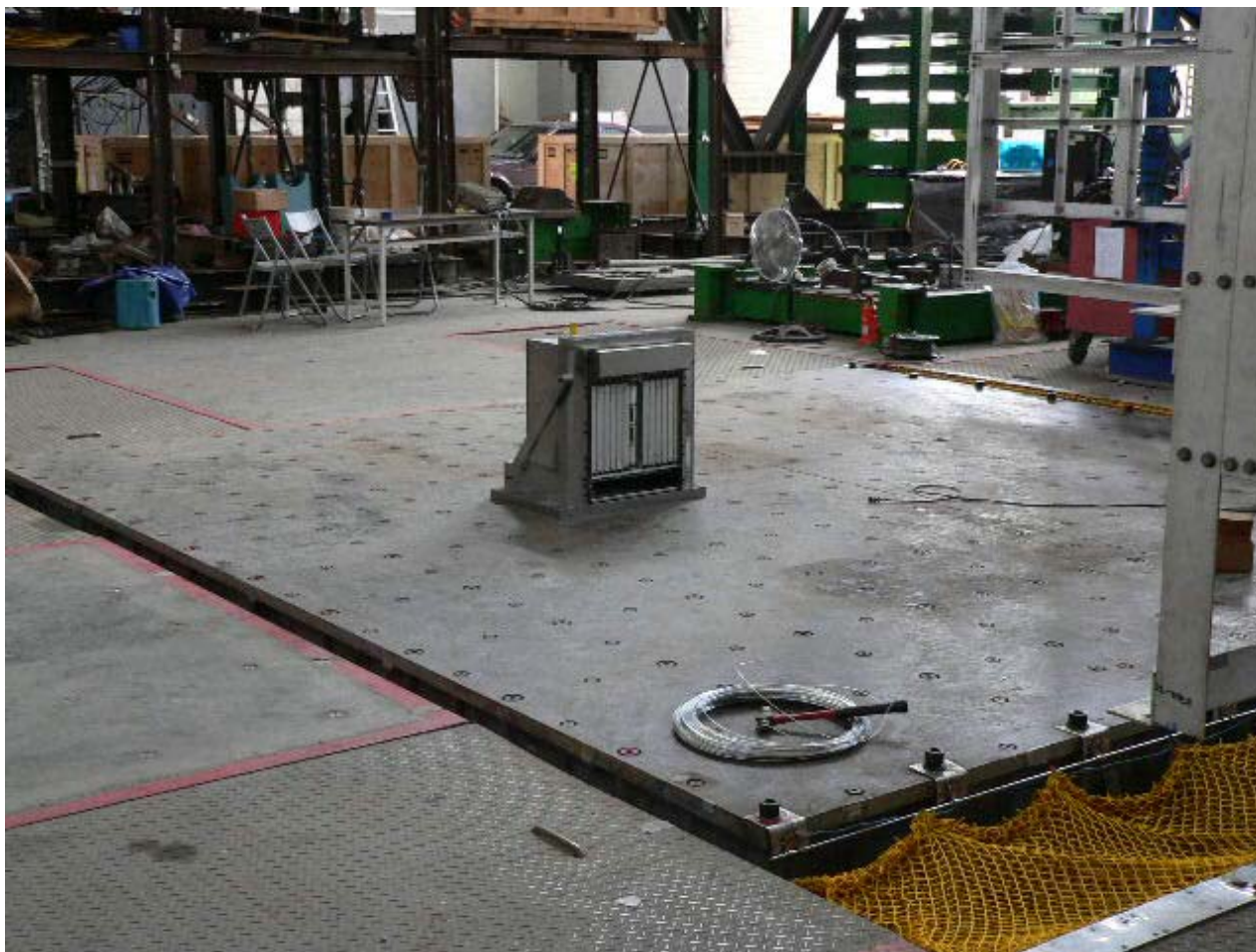


Rear



Seismic Test

Conducted at National Center for Research on Earthquake Engineering
Taipei 106, Taiwan, R.O.C.



Seismic Test Procedure

The seismic test of cabinets or racks shall be performed using a shaker table with the enclosures fully loaded (see Slide #7).

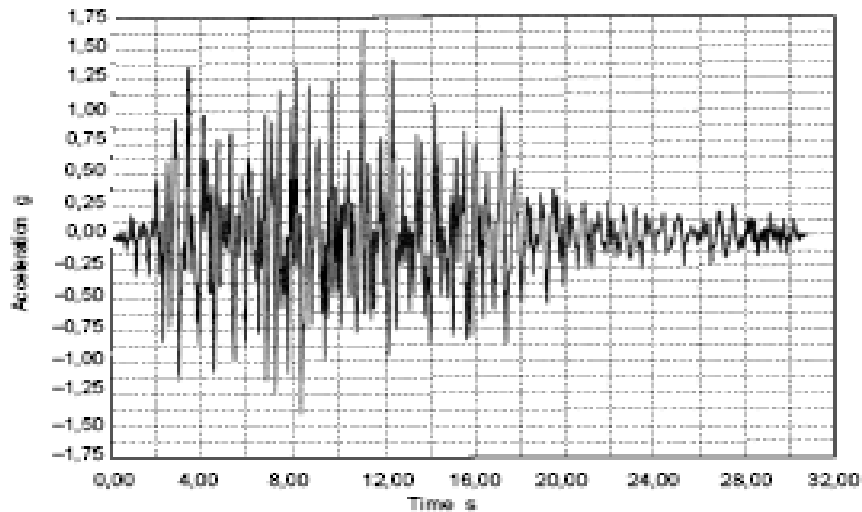
The test wave for the seismic test shall be a synthesized waveform as describe in figures 3.

The zero period acceleration of the test wave shall conform to the values of the severity levels shown in table 2 in accordance with the requirement level.

The test response spectrum of the waveform shall match or exceed the required response spectrum. For reference, see IEC 60068-2-57 as indicated in figures 4. The duration shall be as indicated in figures 4.

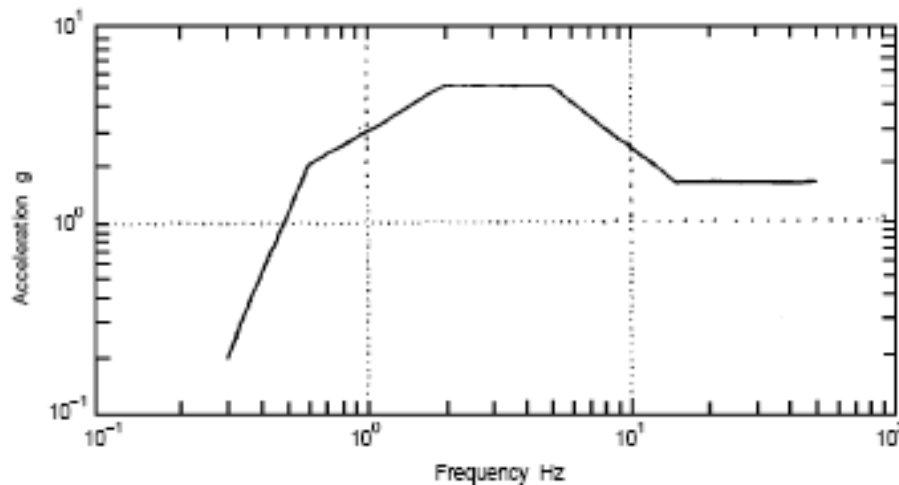
Seismic tests should be performed by accelerations of single axis. Refer to clause 15 of IEC 60068-3-3 and 9.3.1 of IEC 60068-2-57.

Seismic Test procedure



MFC 257-4/2000

Figure 3 – Seismic synthesized waveform A



MFC 2575/2000

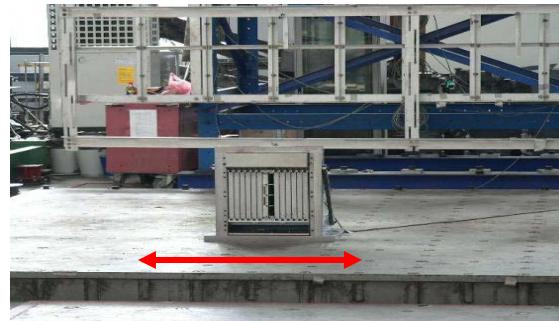
Figure 4 – Required response spectra for figure 3

Non-operational sine Vibration Test

X



Y



Z



Test Results

No Abnormalities Found