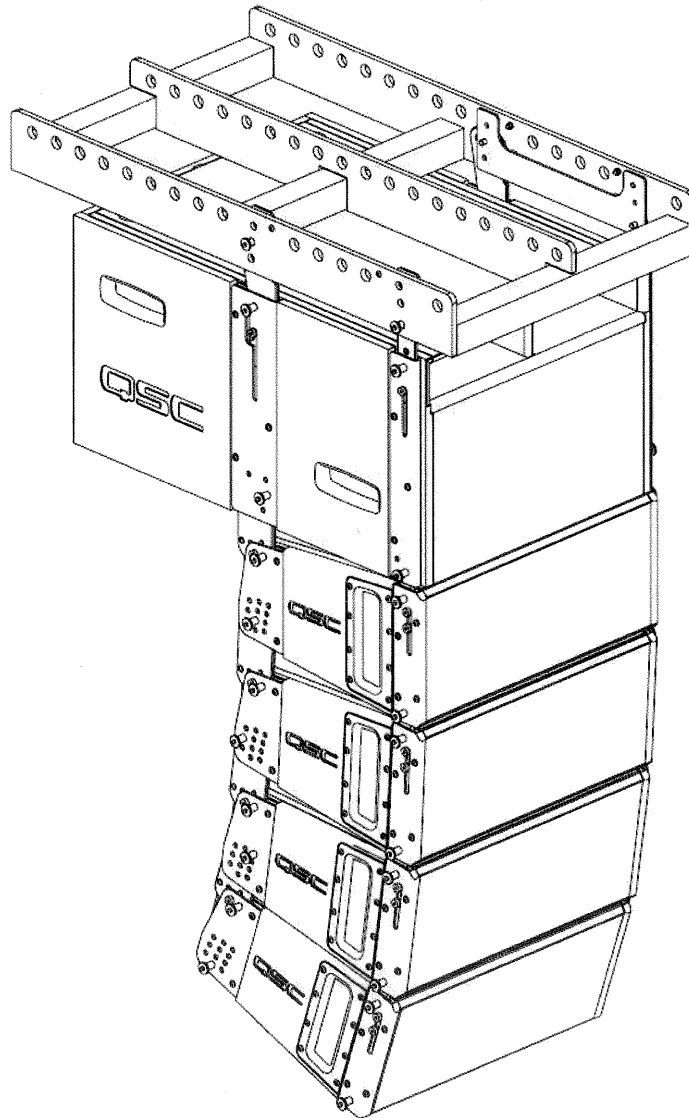


Structural Certification Wideline-8



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7.0 Fastener Testing**8.0** Test Results Summary


1.0 APPROVALS**Structural Certification**

PRODUCT	Wideline-8
REVISION	A
DATE ISSUED	11-5-07

Originated by:  Date: 11-5-07
Steve Tamasi
Mechanical Engineer
Loudspeaker R&D

Review by:  Date: 5-NOV. 2007
Mark Engebretson
VP R&D / Chief Systems Architect
R&D



Certified by:  Date: Nov. 5, 2007
Hanns Baumann
Registered Professional Engineer
BAUMANN ENGINEERING

3.0 OBJECTIVE

This document contains information that is required for Wideline-8 Structural Certification.

4.0 WORKING LOAD LIMITS AND DESIGN FACTORS

Table 1 lists the Wideline-8 suspension components and provides Working Load Limit data at various Design Factors. The tabulated Design Factors are for static loads only. The choice of which Design Factor to use will depend upon the jurisdiction and venue of installation, as well as the conditions of suspension. Dynamic conditions are determined by unknown, installation-specific factors and should be referred to a Licensed Structural Engineer for clarification before proceeding with any suspension of the equipment. The data presented is based upon the listed component weights:

COMPONENT	WEIGHT	7:1 DESIGN FACTOR		10:1 DESIGN FACTOR		12:1 DESIGN FACTOR	
EB3082 Extension Bar	27 lb 12.3 kg	1,306 lb	593.5 kg	914 lb	415.5 kg	762 lb	346.2 kg
AF3082-S Small Array Frame	11 lb 5.0 kg	746 lb	339.0 kg	522 lb	237.3 kg	435 lb	197.7 kg
AF3082-L Large Array Frame	27 lb 12.3 kg	1,274 lb	579.2 kg	892 lb	405.5 kg	743 lb	337.9 kg
PB3082 Pull Back Bar	3 lb 1.4 kg	434 lb	197.4 kg	304 lb	138.2 kg	253 lb	115.2 kg
WL3082 Line Array Module	38 lb 17.3 kg	651 lb	296.1 kg	456 lb	207.3 kg	380 lb	172.7 kg
WL212-sw Arrayable Subwoofer	109 lb 49.5 kg	1,274 lb	579.2 kg	892 lb	405.5 kg	743 lb	337.9 kg
AF8-10 Adaptor Frame	9 lb 4.1 kg	326 lb	148.1 kg	228 lb	103.6 kg	190 lb	86.4 kg
M8 Ball-lock pin*	n/a	1,810 lb	822.7 kg	1,267 lb	575.9 kg	1,056 lb	479.9 kg
M8 Shoulder Screw*	n/a	1,847 lb	839.4 kg	1,293 lb	587.6 kg	1,077 lb	489.6 kg
3/4" Fastener*	n/a	5,693 lb	2,587.8 kg	3,985 lb	1,811.4 kg	3,321 lb	1509.5 kg

* Working Load Limits are per fastener loaded in double shear. Data is for informational purposes only.

Table 1: Working Load Limits

5.0 NOMENCLATURE

The terms "Wideline-8", "Touring Line Array", "TLA" & "B01" all refer to the same product and may be used interchangeably.

6.0 CERTIFICATION OF COMPONENT WORKING LOAD LIMITS

The individual suspension components shown in Table 1 are to be structurally validated through testing. At least three (3) different samples of each component are to withstand a load at least ten (10) times greater than the Working Load Limit (WLL) at a 10:1 Design Factor shown in Table 1. For example, the AF3082-S Array Frame must withstand a load of not less than 5,220 lbs (522 lbs x 10).

The test loads are to be applied in a manner outlined later in this document. This will recreate some of the worst case loading scenarios that the components could foreseeable encounter under normal use assuming safe rigging practices are utilized.

All test are to be conducted and results fully documented per ISO 17025 (General requirements for the competence of testing and calibration laboratories).

Test Results Summary

See summary at end of report of samples tested, WLL requirements and test report information.

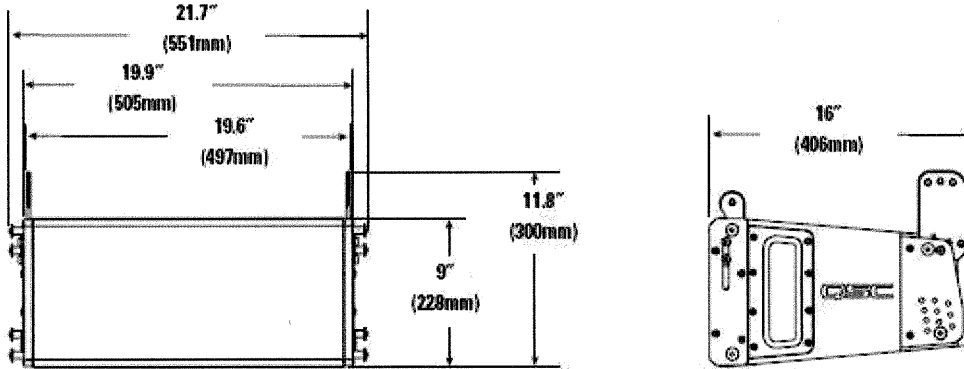
Lab Test Reports

See copy of test reports for additional testing details.

Material Certificates

Material Certificates have been obtained for all samples. Certificates are also obtained for all production rigging components as material verification.

6.1 WL3082 FULL-RANGE LINE ARRAY LOUDSPEAKER



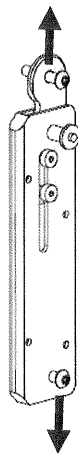
Test Information

TEST NAME: B01-TEST08
 COMPONENT(S): CH-000601, CH-000603
 MATERIAL: ALUMINUM 6061-T6
 DESCRIPTION: RIGGING, SPEAKER, FRONT
 WLL (lbs) 228

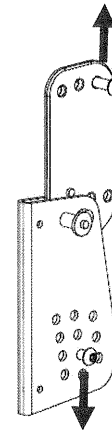
The test requirement will be 1/2 the original WLL as the loading is distributed over (2) sets of rigging assemblies.

TEST NAME: B01-TEST09
 COMPONENT(S): CH-000602, CH-000604
 MATERIAL: ALUMINUM 6061-T6
 DESCRIPTION: RIGGING, SPEAKER, REAR
 WLL (lbs) 228

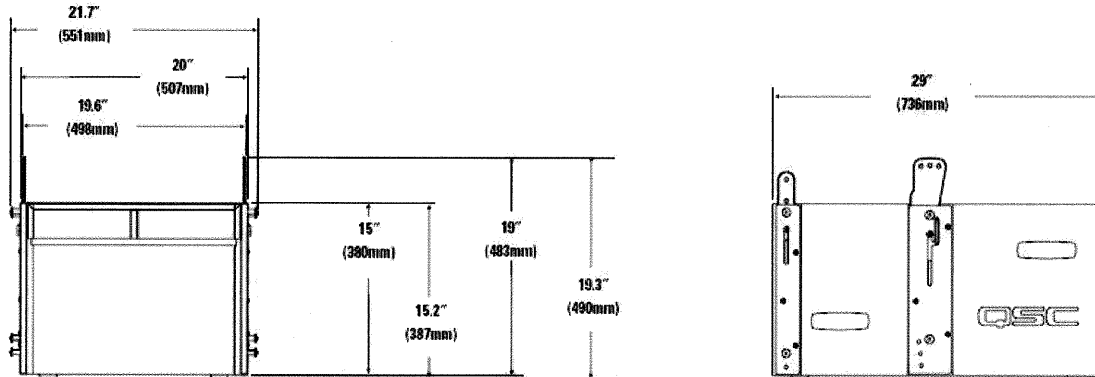
The test requirement will be 1/2 the original WLL as the loading is distributed over (2) sets of rigging assemblies.



B01-TEST08



B01-TEST09

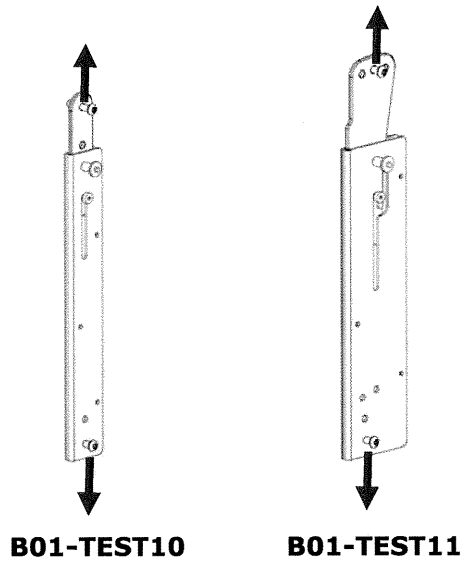
6.2 WL212-sw SUBWOOFER LINE ARRAY LOUDSPEAKER**Test Information**

TEST NAME: B01-TEST10
COMPONENT(S): CH-000651, CH-000653
MATERIAL: ALUMINUM 6061-T6
DESCRIPTION: RIGGING, SUB, FRONT
WLL (lbs) 446

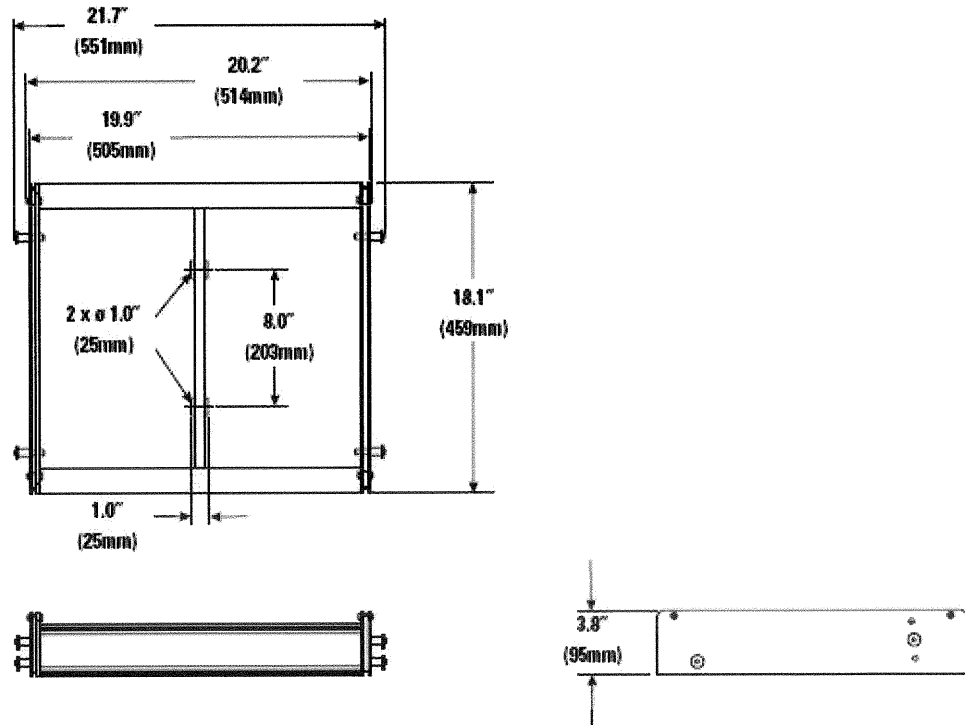
The test requirement will be 1/2 the WLL as the loading is distributed over (2) sets of rigging straps.

TEST NAME: B01-TEST11
COMPONENT(S): CH-000652, CH-000654
MATERIAL: ALUMINUM 6061-T6
DESCRIPTION: RIGGING, SUB, REAR
WLL (lbs) 446

The test requirement will be 1/2 the WLL as the loading is distributed over (2) sets of rigging straps.

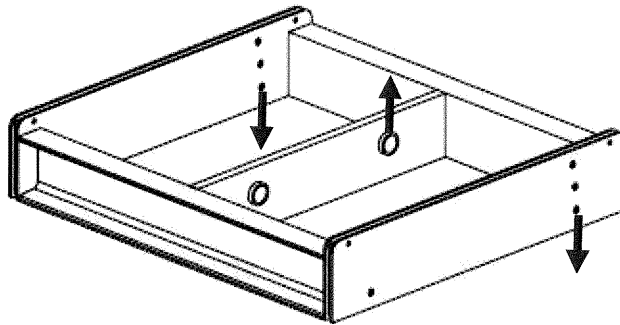


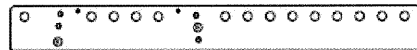
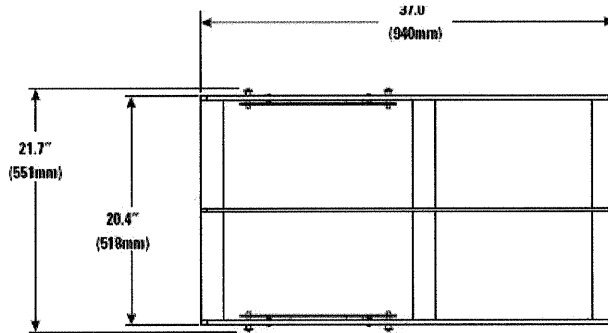
6.3 AF3082-S SMALL ARRAY FRAME



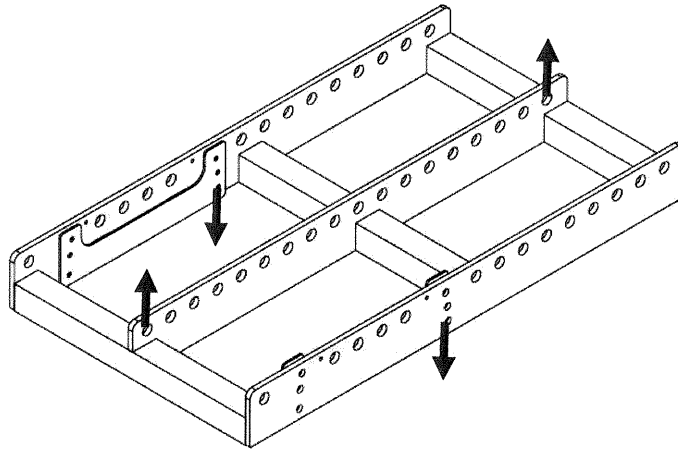
Test Information

TEST NAME:	B01-TEST03
COMPONENT(S):	CH-000610
MATERIAL:	ALUMINUM 6061-T6
DESCRIPTION:	ARRAY FRAME, SMALL
WLL (lbs)	522

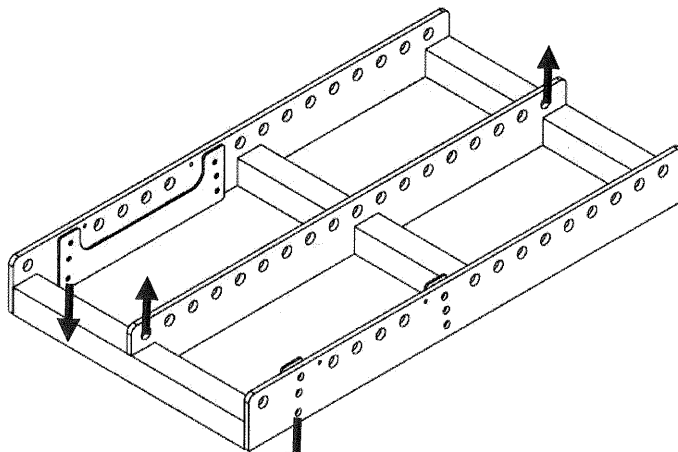
**B01-TEST03**

6.4 AF3082-L LARGE ARRAY FRAME**Test Information**

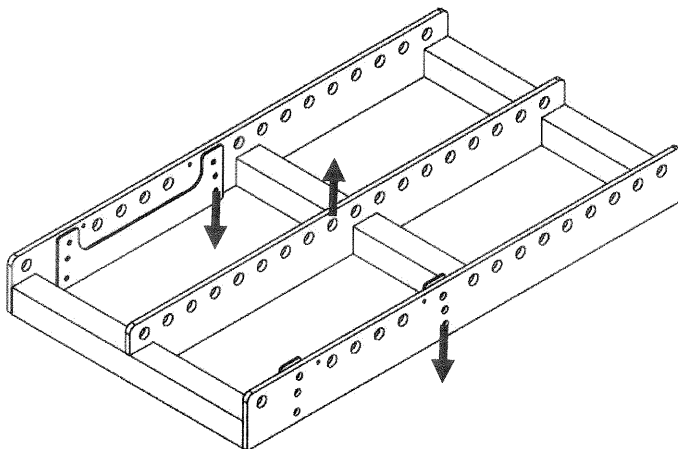
TEST NAME:	B01-TEST04-A, B01-TEST04-B, B01-TEST04-C
COMPONENT(S):	CH-000630
MATERIAL:	ALUMINUM 6061-T6 Sample B01049 & B01057 utilized 3/16" thk tube Sample B01084 & B01085 utilized 1/4" thk tube All subsequent production runs use 1/4" thk tube
DESCRIPTION:	ARRAY FRAME, LARGE
WLL (lbs)	892



B01-TEST04-A

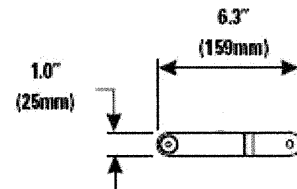
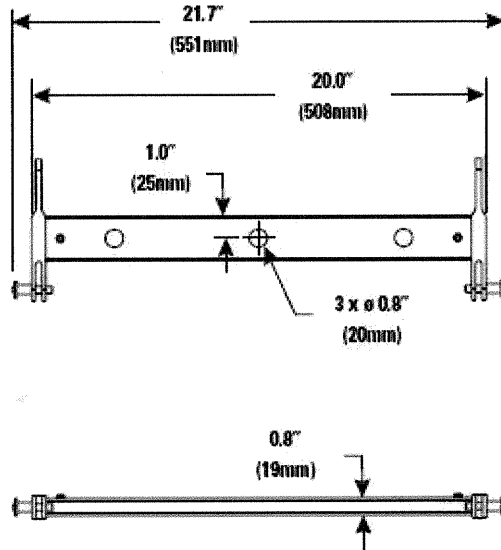


B01-TEST04-B



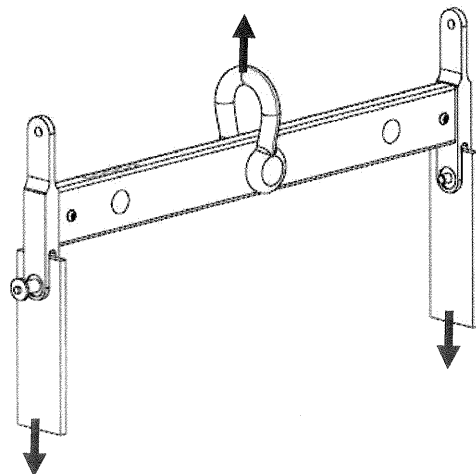
B01-TEST04-C

6.5 PB3082 PULL-BACK BAR



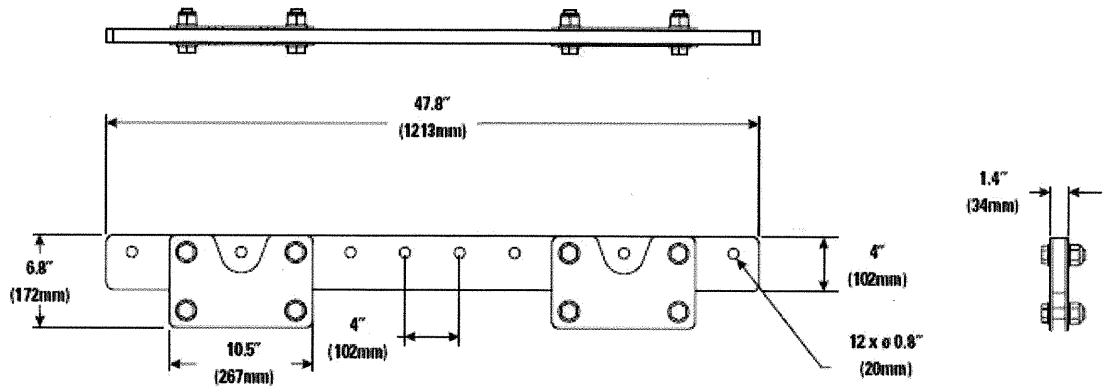
Test Information

TEST NAME:	B01-TEST06
COMPONENT(S):	CH-000680
MATERIAL:	ALUMINUM 6061-T6
DESCRIPTION:	PULL-BACK BAR
WLL (lbs)	304



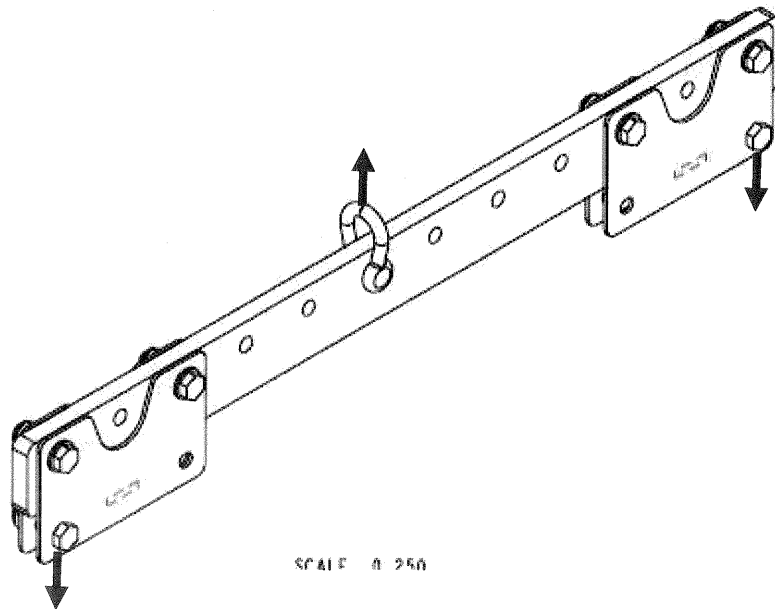
B01-TEST06

6.6 EB3082 EXTENSION BAR



Test Information

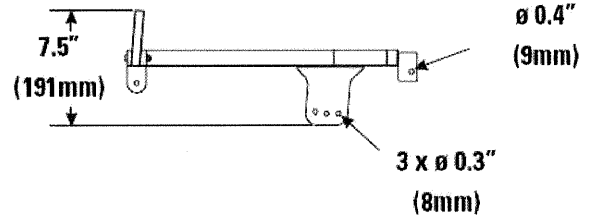
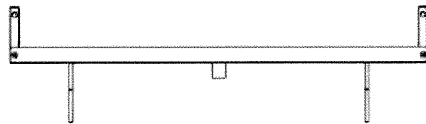
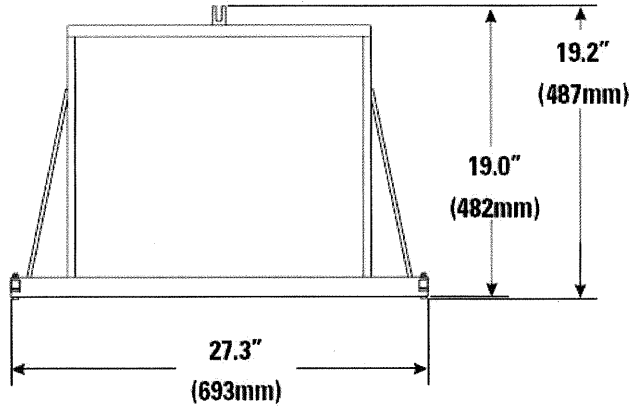
TEST NAME:	B01-TEST05
COMPONENT(S):	CH-000670
MATERIAL:	ALUMINUM 6061-T6
DESCRIPTION:	EXTENSION BAR
WLL (lbs)	914



SCALE: 1:1

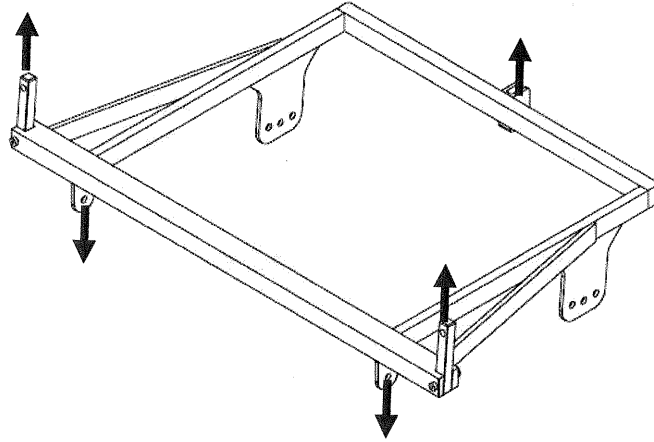
B01-TEST05

6.7 AF8-10 ARRAY FRAME ADAPTER

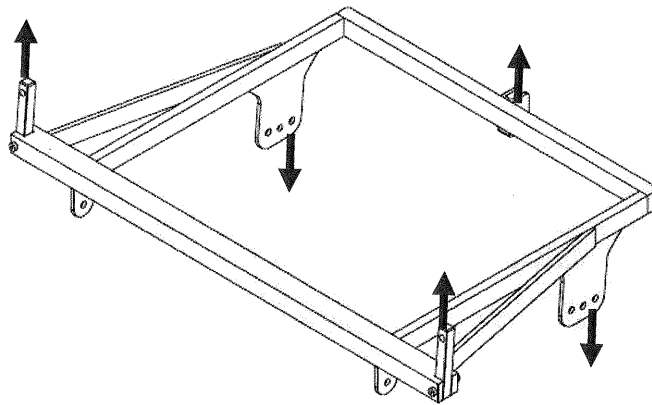


Test Information

TEST NAME:	B01-TEST07-A, B01-TEST07-B
COMPONENT(S):	CH-000700
MATERIAL:	ALUMINUM 6061-T6
DESCRIPTION:	ADAPTER ARRAY FRAME
WLL (lbs)	228



B01-TEST07-A



B01-TEST07-B

7.0 FASTENER TESTING

Fasteners that do not already have an existing grade or class rating will be subject to a double-shear test. Due to the high breaking strength of the fasteners, they will be subject to a proof load of at least ten (10) times the maximum working load. The fasteners may not necessarily be tested to the ultimate breaking strength.

The following fasteners have been subject to testing:

Component Name/Material:

M8 SHOULDER SCREW (SC-000123-00), Alloy Steel
M8 BALL LOCK PIN (HW-000099-00), Steel

The following fasteners will not be tested as they already have existing minimum strength ratings, based on the grade or class of the fastener.

3/4" Fastener (SC-000153-22), Grade 5
M6 SHOULDER SCREW, 30 L, (SC-000194-00), CLASS 12.9

**8.0 TEST RESULTS SUMMARY**

COMPONENT / TEST NAME:	SAMPLE NO:	REQUIRED WLL (LBS):	MAX LOAD APPLIED (lbs):	PROOF / ULTIMATE:	DESIGN FACTOR TESTED:	DATE TESTED:	REPORT NO:
WL3082, Line Array Module, front rigging							
B01-TEST08	B01058	228	5,639	ULTIMATE	24.7	2/26/07	270318
B01-TEST08	B01064	228	5,767	ULTIMATE	25.3	11/2/07	7547
B01-TEST08	B01065	228	5,461	ULTIMATE	24.0	11/2/07	7547
WL3082, Line Array Module, rear rigging							
B01-TEST09	B01059	228	5,603	ULTIMATE	24.6	2/26/07	270318
B01-TEST09	B01068	228	6,149	ULTIMATE	27.0	11/2/07	7547
B01-TEST09	B01069	228	6,342	ULTIMATE	27.8	11/2/07	7547
WL212-sw, Arrayable Subwoofer, front rigging							
B01-TEST10	B01060	446	6,467	ULTIMATE	14.5	2/26/07	270318
B01-TEST10	B01072	446	6,612	ULTIMATE	14.8	11/2/07	7547
B01-TEST10	B01073	446	6,159	ULTIMATE	13.8	11/2/07	7547
WL212-sw, Arrayable Subwoofer, rear rigging							
B01-TEST11	B01061	446	6,606	ULTIMATE	14.8	2/26/07	270318
B01-TEST11	B01076	446	6,259	ULTIMATE	14.0	11/2/07	7547
B01-TEST11	B01077	446	6,019	ULTIMATE	13.5	11/2/07	7547
AF3082-S, Small Array Frame							
B01-TEST03-A	B01048	522	8,345	ULTIMATE	16.0	11/28/06	262064
B01-TEST03-A	B01080	522	8,797	ULTIMATE	16.9	11/1/07	7547
B01-TEST03-A	B01081	522	8,879	ULTIMATE	17.0	11/1/07	7547
AF3082-L, Large Array Frame, test A							
B01-TEST04-A	B01057	892	13,951	ULTIMATE	15.6	11/28/06	262064
B01-TEST04-A	B01084	892	10,939	PROOF	12.3	11/1/07	7547
B01-TEST04-A	B01085	892	10,944	PROOF	12.3	11/1/07	7547
AF3082-L, Large Array Frame, test B							
B01-TEST04-B	B01049	892	10,299	ULTIMATE	11.5	11/28/06	262064
B01-TEST04-B	B01084	892	12,092	ULTIMATE	13.6	11/1/07	7547
B01-TEST04-B	B01085	892	10,946	PROOF	12.3	11/1/07	7547
AF3082-L, Large Array Frame, test C							
B01-TEST04-C	B01049	892	10,856	PROOF	12.2	11/28/06	262064
B01-TEST04-C	B01084	892	10,920	PROOF	12.2	11/1/07	7547
B01-TEST04-C	B01085	892	14,803	ULTIMATE	16.6	11/2/07	7547



COMPONENT / TEST NAME:	SAMPLE NO:	REQUIRED WLL (LBS):	MAX LOAD APPLIED (lbs):	PROOF / ULTIMATE:	DESIGN FACTOR TESTED:	DATE TESTED:	REPORT NO:
EB3082, Extension Bar							
B01-TEST05-X	B01050	914	13,119	ULTIMATE	14.4	11/28/06	262064
B01-TEST05-X	B01051	914	12,441	ULTIMATE	13.6	11/28/06	262064
B01-TEST05-X	B01088	914	10,420	ULTIMATE	11.4	11/2/07	7547
PB3082, Pull Back Bar							
B01-TEST06B-PB	B01052	304	6,351	ULTIMATE	20.9	11/28/06	262064
B01-TEST06A-PB	B01091	304	5,799	ULTIMATE	19.1	11/2/07	7547
B01-TEST06A-PB	B01092	304	6,329	ULTIMATE	20.8	11/2/07	7547
AF8-10, Adaptor Frame, front connection							
B01-TEST07A	B01062	228	2,811	PROOF	12.3	11/1/07	7547
B01-TEST07A	B01063	228	2,811	PROOF	12.3	11/1/07	7547
B01-TEST07A	B01095	228	2,853	PROOF	12.5	11/1/07	7547
B01-TEST07A	B01096	228	2,853	PROOF	12.5	11/1/07	7547
AF8-10, Adaptor Frame, rear connection							
B01-TEST07B	B01062	228	2,788	ULTIMATE	12.2	11/1/07	7547
B01-TEST07B	B01063	228	2,788	ULTIMATE	12.2	11/1/07	7547
B01-TEST07B	B01095	228	2,431	PROOF	10.7	11/1/07	7547
B01-TEST07B	B01096	228	2,431	PROOF	10.7	11/1/07	7547
M8 BALL LOCK PIN (HW-000128-00), SAME STRENGTH AS HW-000099-00 *							
HW-000099-00	ILA-90	446	14,675	PROOF	32.9	10/25/06	261791
HW-000099-00	ILA-91	446	10,031	PROOF	22.5	10/25/06	261791
HW-000099-00	ILA-130	446	11,061	PROOF	24.8	10/25/06	261791
HW-000099-00	ILA-131	446	11,539	PROOF	25.9	10/25/06	261791
HW-000099-00	ILA-132	446	11,035	PROOF	24.7	10/25/06	261791
M8 SHOULDER SCREW (SC-000123-00)*							
M8 SHOULDER SCREW	ILA-125	446	12,113	ULT	27.2	10/25/06	261791
M8 SHOULDER SCREW	ILA-126	446	12,138	ULT	27.2	10/25/06	261791
M8 SHOULDER SCREW	ILA-127	446	10,989	ULT	24.6	10/25/06	261791
M8 SHOULDER SCREW	ILA-128	446	12,399	ULT	27.8	10/25/06	261791
M8 SHOULDER SCREW	ILA-129	446	10,965	ULT	24.6	10/25/06	261791

* Fastener test data is provided for informational purposes only.