

**Vehicle Research and Test Center
FMVSS 213 Side Impact Testing
Q3s 3 Year Old**

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Summary Report

October – November 2021

**Prepared For
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SECTION 1
PURPOSE AND SUMMARY FOR 3 YEAR OLD Q3s

The purpose of this test series was to evaluate current CRS side impact protection measures in the FMVSS 213 side impact testing condition.

SUMMARY

A Q3s 3 year old dummy (serial number 004) was secured in the left rear occupant position (position 4 or P4) in a forward facing or rearward facing child restraint system (CRS). The 3 year old Q3s dummy was instrumented with head, spine, and pelvis triaxial accelerometers, head angular velocities, upper neck and lumbar force and moment load cells, pubic load cells to measure lateral forces, and shoulder and thorax deflection potentiometers to measure lateral deflection. During this test series the dummy was restrained with a 3-point seatbelt with top tether (SB3PT&T), lower anchors and top tether (LATCH), 3-point seatbelt (SB3PT) or lower anchors only (LA Only).

Section 2 contains testing performed using a forward facing CRS. Section 3 contains testing using a rearward facing CRS. Section 4 contains the dummy certification information.

SECTION 2
FORWARD FACING CRS TEST SUMMARY

TEST DUMMY INFORMATION

Description	Position # 4 CRS
ATD Type/Serial No.	Q3s 3 Year Old/004
Restraint System	SB3PT&T, LATCH
CRS Direction	Forward Facing
Foam Cushion	WB15, WB16

CAMERA POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin	mm	0.00	0.00	0.00
Overhead Wide	mm	-572.56	401.94	-1221.89
Front	mm	1086.11	558.44	214.06

DUMMY POSITIONING

CRS: Britax Advocate – Forward Facing – SB3PT&T

TRC Test Number: S211020-1

VRTC Test Number: SIDE_384



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.11	-0.23	0.03
Front of Sliding Seat	mm	-154.87	672.07	576.17
Point S1	mm	-148.20	391.82	621.94
Point S2	mm	-150.38	1050.06	625.15
Sliding Seat Corner	mm	-162.65	372.46	561.08
Honeycomb Corner	mm	-322.92	96.36	583.76
Z point	mm	-771.14	1070.78	686.22
Back of Sliding Seat	mm	-891.48	671.45	3.87
Front of Base	mm	-179.60	671.89	380.41
Top of Seat	mm	-829.74	672.57	-38.85
Top of Headrest	mm	-827.63	668.43	-114.08
Top of Head	mm	-643.13	669.14	-83.82
Front of Face	mm	-537.96	670.31	-9.51
Left Head CG	mm	-625.22	603.62	0.59
Left Shoulder	mm	-607.64	564.87	138.08
Chest Clip	mm	-491.66	670.40	100.17
Buckle	mm	-346.38	669.35	262.18
CRS 1	mm	-670.05	421.56	24.53
CRS 4	mm	-613.52	489.30	293.18
CRS 2	mm	-427.07	472.45	366.60
CRS 3	mm	-280.37	460.47	331.92

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Left Knee Outer	mm	-230.74	563.48	244.47
Left Knee Top	mm	-236.77	589.04	220.70
Left Leg Up	mm	-155.24	585.58	266.40
Left Leg Down	mm	-92.21	587.30	326.82
Left Ankle	mm	-71.08	563.12	389.19
Right Knee Outer	mm	-227.92	772.36	243.36
Right Knee Top	mm	-231.25	746.55	218.69
Right Leg Up	mm	-152.62	747.70	265.59
Right Leg Down	mm	-90.11	744.72	325.95
Right Ankle	mm	-70.31	766.28	385.59

DUMMY INJURY

HIC (15 ms)	783
Chest Clip (3 ms)	89.41 g

DUMMY POSITIONING

CRS: Maxi Cosi Pria – Forward Facing – SB3PT&T

TRC Test Number: S211020-2

VRTC Test Number: SIDE_385



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.18	-0.20	0.13
Front of Sliding Seat	mm	-154.82	672.84	576.45
Point S1	mm	-148.25	392.33	621.86
Point S2	mm	-150.36	1050.58	625.11
Sliding Seat Corner	mm	-162.71	373.06	561.08
Honeycomb Corner	mm	-317.03	96.64	581.94
Z point	mm	-770.71	1071.01	685.30
Back of Sliding Seat	mm	-893.08	978.05	4.46
Front of Base	mm	-196.60	671.90	456.39
Top of Seat	mm	-823.67	671.00	-32.70
Top of Headrest	mm	-805.32	675.62	-106.11
Top of Head	mm	-638.08	671.33	-105.98
Front of Face	mm	-535.87	672.73	-28.07
Left Head CG	mm	-621.75	604.49	-22.71
Right Head CG	mm	-619.63	740.22	-21.91
Left Shoulder	mm	-574.96	561.66	114.33
Chest Clip	mm	-491.13	673.50	88.08
Buckle	mm	-364.98	672.20	242.93
CRS 1	mm	-757.44	536.26	53.46
CRS 4	mm	-638.94	537.17	307.32

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 2	mm	-456.59	509.90	350.76
CRS 3	mm	-300.14	532.73	403.37
Left Knee Outer	mm	-249.10	567.83	235.28
Left Knee Top	mm	-256.72	591.87	210.32
Left Leg Up	mm	-171.12	589.99	226.34
Left Leg Down	mm	-90.82	592.67	257.08
Left Ankle	mm	-45.23	572.06	308.84
Right Knee Outer	mm	-250.99	767.31	235.33
Right Knee Top	mm	-257.55	742.45	210.41
Right Leg Up	mm	-174.11	743.28	223.65
Right Leg Down	mm	-91.80	741.25	252.42
Right Ankle	mm	-49.54	761.88	298.62

DUMMY INJURY

HIC (15 ms)	746
Chest Clip (3 ms)	81.78 g

DUMMY POSITIONING

CRS: Diono Radian 3QXT – Forward Facing – SB3PT&T

TRC Test Number: S211021-1

VRTC Test Number: SIDE_386



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.02	-0.29	0.09
Front of Sliding Seat	mm	-154.41	671.67	576.18
Point S1	mm	-147.87	391.24	621.94
Point S2	mm	-149.52	1049.74	625.88
Sliding Seat Corner	mm	-162.31	371.95	561.14
Honeycomb Corner	mm	-317.02	96.80	579.29
Z point	mm	-770.28	1070.18	685.78
Back of Sliding Seat	mm	-893.45	977.61	5.34
Front of Base	mm	-202.04	669.71	466.15
Top of Seat	mm	-853.71	672.70	-74.24
Top of Headrest	mm	-797.43	673.54	-94.23
Top of Head	mm	-616.01	671.84	-82.72
Front of Face	mm	-523.37	671.91	6.28
Left Head CG	mm	-609.65	604.95	1.53
Right Head CG	mm	-605.97	739.62	3.08
Left Shoulder	mm	-578.27	559.22	144.38
Chest Clip	mm	-494.30	670.46	122.70
Buckle	mm	-373.91	671.27	279.14
CRS 1	mm	-682.74	483.83	37.23
CRS 4	mm	-582.35	468.42	290.76

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 2	mm	-484.05	482.97	388.39
CRS 3	mm	-315.01	499.72	460.26
Left Knee Outer	mm	-252.28	569.27	306.80
Left Knee Top	mm	-255.22	593.17	280.84
Left Leg Up	mm	-174.10	591.34	313.21
Left Leg Down	mm	-100.81	594.06	358.86
Left Ankle	mm	-65.92	571.16	417.44
Right Knee Outer	mm	-256.57	767.66	306.00
Right Knee Top	mm	-257.48	742.76	279.01
Right Leg Up	mm	-178.42	745.08	311.17
Right Leg Down	mm	-105.61	743.34	357.98
Right Ankle	mm	-73.49	766.77	413.48

DUMMY INJURY

HIC (15 ms)	573
Chest Clip (3 ms)	104.43 g

DUMMY POSITIONING

CRS: Evenflo Tribute – Forward Facing – SB3PT&T

TRC Test Number: S211021-2

VRTC Test Number: SIDE_387



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.60	-0.28	0.31
Front of Sliding Seat	mm	-155.18	671.62	576.38
Point S1	mm	-148.48	391.46	622.11
Point S2	mm	-150.50	1049.73	626.05
Sliding Seat Corner	mm	-162.85	371.89	561.32
Honeycomb Corner	mm	-318.10	96.39	581.70
Z point	mm	-771.33	1069.90	685.84
Back of Sliding Seat	mm	-894.58	977.06	5.90
Front of Base	mm	-205.10	672.44	385.80
Top of Seat	mm	-802.91	671.81	-23.92
Top of Head	mm	-675.14	669.17	-66.55
Front of Face	mm	-571.31	671.49	9.29
Left Head CG	mm	-658.28	604.67	18.16
Right Head CG	mm	-653.83	738.94	15.42
Left Shoulder	mm	-614.14	559.77	156.72
Chest Clip	mm	-525.17	672.23	126.58
Buckle	mm	-391.36	670.38	265.48
CRS 1	mm	-774.78	537.67	82.59
CRS 4	mm	-657.82	534.77	326.37
CRS 2	mm	-488.18	512.77	370.79
CRS 3	mm	-344.25	506.97	321.10

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Left Knee Outer	mm	-269.35	570.34	282.54
Left Knee Top	mm	-275.60	594.93	257.46
Left Leg Up	mm	-191.76	593.86	282.34
Left Leg Down	mm	-115.08	596.54	322.15
Left Ankle	mm	-76.08	574.62	378.27
Right Knee Outer	mm	-270.42	771.71	277.96
Right Knee Top	mm	-273.81	745.70	253.51
Right Leg Up	mm	-191.70	749.59	284.85
Right Leg Down	mm	-120.01	751.21	332.03
Right Ankle	mm	-87.99	774.19	386.80

DUMMY INJURY

HIC (15 ms)	781
Chest Clip (3 ms)	89.61 g

DUMMY POSITIONING

CRS: Graco Nautilus 65 LX – Forward Facing – SB3PT&T

TRC Test Number: S211025-1

VRTC Test Number: SIDE_388



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.06	-0.40	0.09
Front of Sliding Seat	mm	-154.86	672.61	576.38
Point S1	mm	-148.23	392.27	622.51
Point S2	mm	-150.35	1050.50	625.19
Sliding Seat Corner	mm	-162.69	372.97	561.10
Honeycomb Corner	mm	-326.01	96.78	584.91
Z point	mm	-771.93	1070.67	685.09
Back of Sliding Seat	mm	-894.38	977.61	5.00
Front of Base	mm	-218.35	672.85	430.96
Top of Seat	mm	-780.08	672.04	10.73
Top of Headrest	mm	-800.14	671.02	-133.90
Top of Head	mm	-619.51	669.20	-85.80
Front of Face	mm	-531.22	669.25	6.75
Left Head CG	mm	-616.54	600.35	-2.56
Right Head CG	mm	-615.38	735.21	1.70
Left Shoulder	mm	-592.17	552.22	143.36
Chest Clip	mm	-508.72	671.83	116.34
Buckle	mm	-406.45	671.66	268.05
CRS 1	mm	-715.02	468.07	66.76
CRS 4	mm	-656.59	533.34	335.05
CRS 2	mm	-518.67	457.32	370.81

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 3	mm	-378.34	434.82	322.09
Left Knee Outer	mm	-284.39	567.86	302.28
Left Knee Top	mm	-289.00	592.23	276.70
Left Leg Up	mm	-205.97	590.99	296.90
Left Leg Down	mm	-126.53	592.86	332.22
Left Ankle	mm	-84.17	571.67	384.35
Right Knee Outer	mm	-290.08	776.13	304.23
Right Knee Top	mm	-291.54	751.41	276.66
Right Leg Up	mm	-211.39	754.52	297.88
Right Leg Down	mm	-131.49	752.64	333.86
Right Ankle	mm	-94.23	774.28	383.57

DUMMY INJURY

HIC (15 ms)	513
Chest Clip (3 ms)	84.78 g

DUMMY POSITIONING

CRS: Nuna Rava – Forward Facing – SB3PT&T

TRC Test Number: S211025-2

VRTC Test Number: SIDE_389



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.18	-0.19	0.10
Front of Sliding Seat	mm	-154.90	671.70	576.07
Point S1	mm	-148.14	391.30	622.12
Point S2	mm	-150.34	1049.57	625.60
Sliding Seat Corner	mm	-162.62	372.04	561.05
Honeycomb Corner	mm	-313.26	96.10	585.24
Z point	mm	-771.77	1069.11	686.18
Back of Sliding Seat	mm	-894.31	976.86	5.38
Front of Base	mm	-256.26	670.58	469.34
Top of Seat	mm	-826.17	668.75	-55.75
Top of Headrest	mm	-803.11	673.07	-143.43
Top of Head	mm	-671.65	669.71	-114.53
Front of Face	mm	-575.71	669.16	-28.32
Left Head CG	mm	-663.11	602.22	-30.36
Right Head CG	mm	-658.35	737.50	-28.98
Left Shoulder	mm	-628.03	554.95	111.69
Chest Clip	mm	-541.01	672.53	82.79
Buckle	mm	-417.07	671.10	235.69
CRS 1	mm	-661.47	451.52	38.90
CRS 4	mm	-568.68	480.94	297.88
CRS 2	mm	-501.73	479.21	321.76

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 3	mm	-356.54	470.61	291.30
Left Knee Outer	mm	-291.75	568.36	253.82
Left Knee Top	mm	-296.63	592.99	228.56
Left Leg Up	mm	-214.93	592.13	262.70
Left Leg Down	mm	-143.77	596.39	311.34
Left Ankle	mm	-110.49	575.74	372.47
Right Knee Outer	mm	-295.87	771.31	254.47
Right Knee Top	mm	-297.23	746.17	226.62
Right Leg Up	mm	-217.62	748.79	259.66
Right Leg Down	mm	-144.32	747.26	309.03
Right Ankle	mm	-115.56	768.99	362.62

DUMMY INJURY

HIC (15 ms)	500
Chest Clip (3 ms)	97.81 g

DUMMY POSITIONING

CRS: Baby Trend Hybrid 3-in-1 – Forward Facing – SB3PT&T

TRC Test Number: S211026-1

VRTC Test Number: SIDE_390



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.23	-0.23	0.10
Front of Sliding Seat	mm	-154.87	671.56	576.40
Point S1	mm	-148.30	391.26	621.47
Point S2	mm	-150.31	1049.64	625.25
Sliding Seat Corner	mm	-162.76	371.82	561.13
Honeycomb Corner	mm	-315.22	96.71	582.30
Z point	mm	-771.73	1069.30	686.66
Back of Sliding Seat	mm	-894.78	976.94	5.68
Front of Base	mm	-223.42	672.92	414.17
Top of Headrest	mm	-854.17	673.09	-146.07
Top of Head	mm	-632.03	669.61	-57.35
Front of Face	mm	-546.31	671.72	38.51
Left Head CG	mm	-631.64	602.77	28.39
Right Head CG	mm	-630.77	739.15	30.41
Left Shoulder	mm	-610.96	558.94	173.64
Chest Clip	mm	-522.02	670.94	153.12
Buckle	mm	-419.04	671.79	286.79
CRS 1	mm	-704.20	479.71	59.66
CRS 4	mm	-606.14	468.37	315.92
CRS 2	mm	-506.64	465.24	400.81

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 3	mm	-341.19	436.61	446.36
Left Knee Outer	mm	-298.74	566.98	332.58
Left Knee Top	mm	-303.69	590.49	306.80
Left Leg Up	mm	-222.64	584.86	311.02
Left Leg Down	mm	-137.43	583.47	328.71
Left Ankle	mm	-85.43	560.42	373.56
Right Knee Outer	mm	-302.06	770.05	323.78
Right Knee Top	mm	-306.35	747.00	297.66
Right Leg Up	mm	-226.25	747.74	305.75
Right Leg Down	mm	-142.66	744.45	326.90
Right Ankle	mm	-95.31	763.17	372.63

DUMMY INJURY

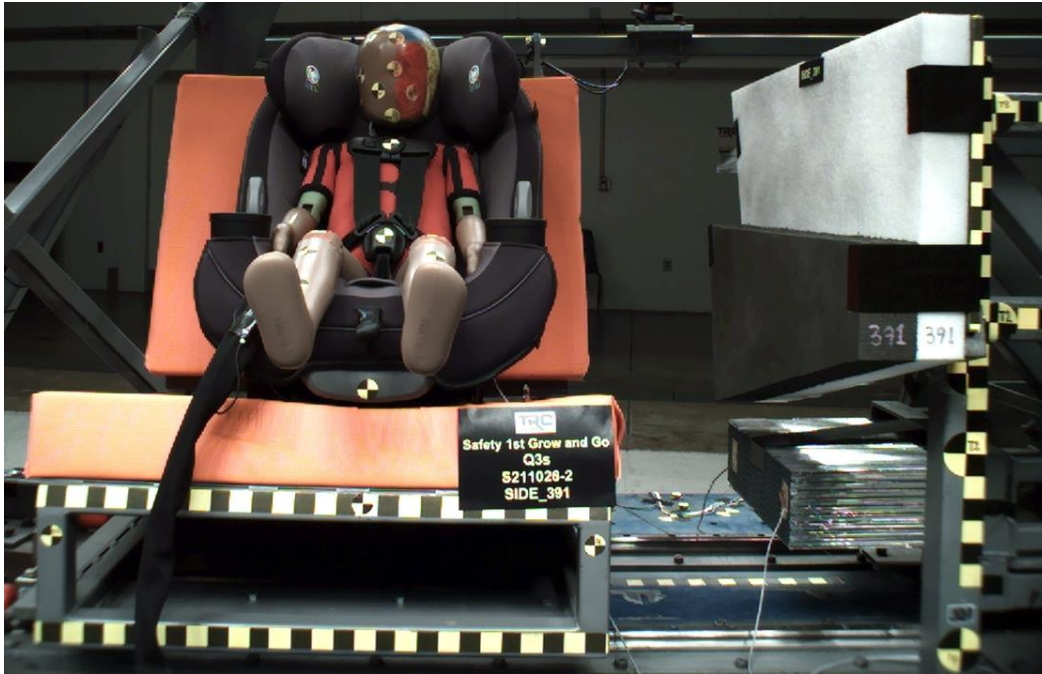
HIC (15 ms)	816
Chest Clip (3 ms)	76.97 g

DUMMY POSITIONING

CRS: Safety 1st Grow and Go – Forward Facing – LATCH

TRC Test Number: S211026-2

VRTC Test Number: SIDE_391



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.07	-0.15	0.10
Front of Sliding Seat	mm	-154.79	673.05	576.38
Point S1	mm	-148.22	392.52	622.16
Point S2	mm	-150.26	1050.97	625.52
Sliding Seat Corner	mm	-162.61	373.39	560.96
Honeycomb Corner	mm	-319.36	96.87	579.60
Z point	mm	-771.42	1071.02	686.83
Back of Sliding Seat	mm	-894.19	978.51	5.49
Front of Base	mm	-182.67	671.59	442.46
Top of Seat	mm	-822.43	673.72	-33.48
Top of Headrest	mm	-803.09	672.59	-94.43
Top of Head	mm	-630.90	670.14	-82.89
Front of Face	mm	-536.56	670.34	5.00
Left Head CG	mm	-624.11	604.20	2.66
Right Head CG	mm	-620.91	738.58	1.94
Left Shoulder	mm	-589.60	559.27	147.27
Chest Clip	mm	-502.84	672.34	122.27
Buckle	mm	-388.41	670.75	261.04
CRS 1	mm	-766.87	535.20	29.85
CRS 4	mm	-676.32	535.67	291.59
CRS 2	mm	-480.03	518.16	393.95

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 3	mm	-327.38	534.13	434.74
Left Knee Outer	mm	-275.72	569.06	282.01
Left Knee Top	mm	-282.24	593.39	256.37
Left Leg Up	mm	-196.80	591.28	277.65
Left Leg Down	mm	-118.87	593.59	313.55
Left Ankle	mm	-77.10	572.71	368.75
Right Knee Outer	mm	-276.71	773.29	277.33
Right Knee Top	mm	-281.75	748.67	251.91
Right Leg Up	mm	-199.36	750.45	274.34
Right Leg Down	mm	-119.94	748.98	310.17
Right Ankle	mm	-81.95	772.00	358.98

DUMMY INJURY

HIC (15 ms)	833
Chest Clip (3 ms)	85.54 g

DUMMY POSITIONING

CRS: Cybex Sirona M – Forward Facing – SB3PT&T

TRC Test Number: S211027-1

VRTC Test Number: SIDE_392



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.17	-0.19	0.10
Front of Sliding Seat	mm	-154.85	672.50	576.36
Point S1	mm	-148.19	392.21	621.93
Point S2	mm	-150.32	1050.48	625.24
Sliding Seat Corner	mm	-162.67	372.87	561.07
Honeycomb Corner	mm	-324.67	96.75	584.36
Z point	mm	-771.17	1070.59	686.84
Back of Sliding Seat	mm	-894.67	978.03	5.76
Front of Base	mm	-165.23	673.07	435.56
Top of Seat	mm	-795.49	670.64	-30.63
Top of Headrest	mm	-745.14	673.36	-58.41
Top of Head	mm	-630.87	669.95	-99.33
Front of Face	mm	-536.83	671.81	-9.51
Left Head CG	mm	-621.82	601.52	-15.76
Right Head CG	mm	-622.46	737.22	-12.62
Left Shoulder	mm	-594.42	554.30	125.68
Chest Clip	mm	-502.32	671.22	92.70
Buckle	mm	-372.33	671.52	278.15
CRS 1	mm	-630.09	449.87	7.72
CRS 4	mm	-572.39	453.95	275.29

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 2	mm	-458.23	459.16	371.95
CRS 3	mm	-312.57	461.76	324.84
Left Knee Outer	mm	-255.13	567.45	266.13
Left Knee Top	mm	-262.16	589.97	239.01
Left Leg Up	mm	-178.44	591.68	254.15
Left Leg Down	mm	-97.21	598.40	283.88
Left Ankle	mm	-52.04	580.65	334.55
Right Knee Outer	mm	-258.31	774.47	265.72
Right Knee Top	mm	-261.91	749.82	238.61
Right Leg Up	mm	-181.19	753.99	256.20
Right Leg Down	mm	-100.41	754.98	288.87
Right Ankle	mm	-60.39	776.67	337.94

DUMMY INJURY

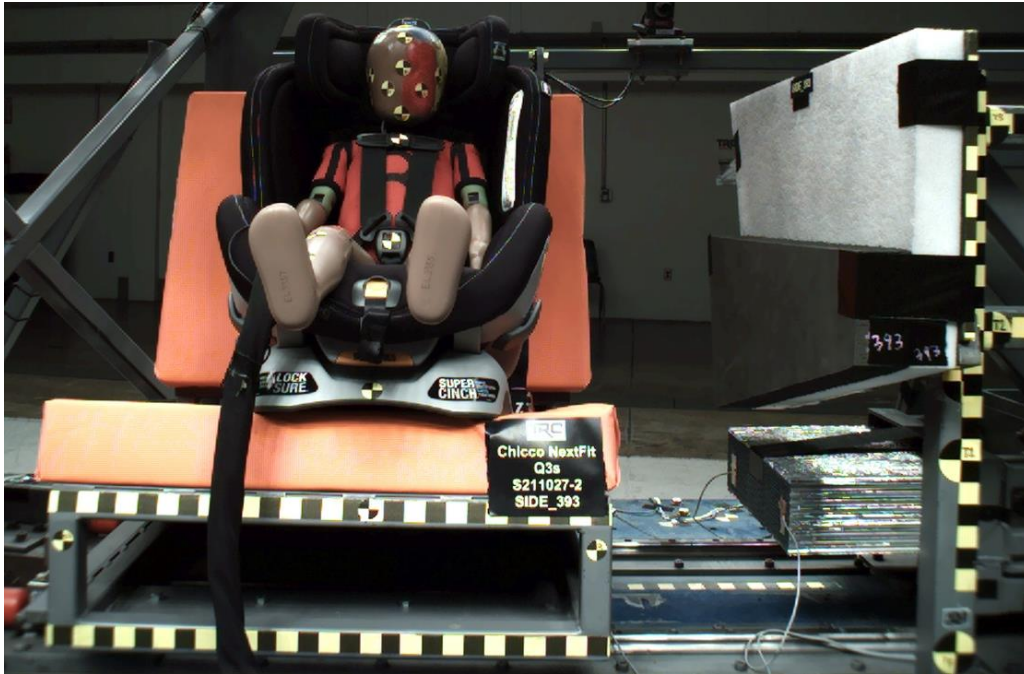
HIC (15 ms)	590
Chest Clip (3 ms)	105.29 g

DUMMY POSITIONING

CRS: Chicco NextFit – Forward Facing – LATCH

TRC Test Number: S211027-2

VRTC Test Number: SIDE_393



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.25	-0.13	0.14
Front of Sliding Seat	mm	-154.87	673.10	576.68
Point S1	mm	-148.35	392.62	621.96
Point S2	mm	-150.45	1051.02	625.30
Sliding Seat Corner	mm	-162.83	373.34	561.06
Honeycomb Corner	mm	-318.81	96.24	586.17
Z point	mm	-771.97	1070.57	686.42
Back of Sliding Seat	mm	-895.38	978.14	5.92
Front of Base	mm	-167.70	672.34	430.37
Top of Seat	mm	-795.32	670.36	-46.26
Top of Headrest	mm	-785.46	673.73	-145.79
Top of Head	mm	-642.80	668.68	-106.14
Front of Face	mm	-545.87	668.88	-20.26
Left Head CG	mm	-631.81	600.47	-22.91
Right Head CG	mm	-630.28	735.39	-19.84
Left Shoulder	mm	-594.30	555.94	117.90
Chest Clip	mm	-512.16	669.84	95.65
Buckle	mm	-389.68	669.54	254.76
CRS 1	mm	-641.27	460.42	53.54
CRS 4	mm	-541.13	472.21	306.21

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
CRS 2	mm	-444.61	459.84	324.66
CRS 3	mm	-306.58	451.41	267.28
Left Knee Outer	mm	-258.77	571.94	259.71
Left Knee Top	mm	-265.49	596.21	234.26
Left Leg Up	mm	-183.44	593.99	238.97
Left Leg Down	mm	-98.87	594.94	258.15
Left Ankle	mm	-47.40	572.93	301.26
Right Knee Outer	mm	-264.42	769.34	260.74
Right Knee Top	mm	-267.83	744.64	231.98
Right Leg Up	mm	-187.32	748.39	241.99
Right Leg Down	mm	-104.04	748.92	265.78
Right Ankle	mm	-59.45	771.46	309.01

DUMMY INJURY

HIC (15 ms)	714
Chest Clip (3 ms)	95.98 g

SECTION 3
REARWARD FACING CRS TEST SUMMARY

TEST DUMMY INFORMATION

Description	Position # 4 CRS
ATD Type/Serial No.	Q3s 3 Year Old/004
Restraint System	LA Only, SB3PT
CRS Direction	Rearward Facing
Foam Cushion	WB15, WB16

CAMERA POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin	mm	0.00	0.00	0.00
Overhead Wide	mm	-572.56	401.94	-1221.89
Front	mm	1086.11	558.44	214.06

DUMMY POSITIONING

CRS: Graco 4Ever – Rearward Facing – LA Only

TRC Test Number: S211102-1

VRTC Test Number: SIDE_395



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.09	-0.17	0.09
Front of Sliding Seat	mm	-154.82	672.79	576.42
Sliding Seat Corner	mm	-162.58	373.08	561.06
Point S1	mm	-148.17	392.29	621.94
Point S2	mm	-150.34	1050.60	625.42
Honeycomb Corner	mm	-317.08	96.24	580.70
Z point	mm	-771.78	1070.18	686.42
Back of Sliding Seat	mm	-892.19	671.82	4.52
CRS base center top	mm	-190.21	673.81	423.52
CRS mid height	mm	-168.25	671.07	238.09
CRS top of the seat	mm	-32.04	669.56	55.23
CRS top of headrest	mm	-25.58	670.78	-88.53
CRS bottom Center	mm	-678.85	671.08	247.65
Top of Head	mm	-173.81	674.03	-78.15
Front of Face	mm	-284.83	673.32	-11.99
Head CG Right	mm	-202.37	606.90	5.04
Head CG Left	mm	-200.04	741.39	2.79
Chest Clip	mm	-345.92	673.76	91.92
Buckle	mm	-482.09	670.56	222.21
Right Knee Out	mm	-606.45	582.13	220.52

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Right Leg Up	mm	-633.00	607.84	146.21
Right Leg Down	mm	-694.90	607.48	85.14
Right Ankle	mm	-752.60	580.96	64.90
Left Knee Out	mm	-612.49	753.40	218.13
Left Leg Up	mm	-636.98	735.84	142.48
Left Leg Down	mm	-697.91	739.68	81.24
Left Ankle	mm	-762.28	767.47	61.16
CRS 1	mm	-90.69	525.22	144.31
CRS 4	mm	-254.09	533.95	367.27
CRS 2	mm	-415.92	436.80	307.37
CRS 3	mm	-564.23	462.54	291.88

DUMMY INJURY

HIC (15 ms)	691
Chest Clip (3 ms)	91.81 g

DUMMY POSITIONING

CRS: Cosco Scenera Next – Rearward Facing – SB3PT

TRC Test Number: S211103-1

VRTC Test Number: SIDE_396



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.73	-0.28	0.36
Front of Sliding Seat	mm	-155.10	672.00	576.63
Sliding Seat Corner	mm	-163.01	371.96	561.36
Point S1	mm	-148.53	391.49	622.12
Point S2	mm	-150.66	1049.67	625.70
Honeycomb Corner	mm	-315.80	97.94	581.73
Z point	mm	-771.51	1068.56	683.35
Back of Sliding Seat	mm	-891.94	669.12	3.13
CRS mid height	mm	-125.88	673.91	196.57
CRS top of the seat	mm	-15.90	673.50	86.58
CRS bottom Center	mm	-693.10	672.91	300.84
Top of Head	mm	-148.96	672.05	13.01
Front of Face	mm	-272.62	670.14	54.52
Head CG Right	mm	-195.25	601.95	84.99
Head CG Left	mm	-191.25	736.57	87.51
Shoulder	mm	-250.14	554.12	215.56
Chest Clip	mm	-353.04	669.60	157.47
Buckle	mm	-523.40	671.38	284.15
Right Knee Out	mm	-618.74	563.92	235.43

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Right Leg Up	mm	-639.28	578.10	156.13
Right Leg Down	mm	-693.66	565.44	90.09
Right Ankle	mm	-746.88	531.49	67.81
Left Knee Out	mm	-623.85	780.96	240.36
Left Leg Up	mm	-640.89	773.24	160.43
Left Leg Down	mm	-695.43	785.72	94.65
Left Ankle	mm	-756.45	815.97	72.10
CRS 1	mm	-163.36	531.11	124.22
CRS 4	mm	-360.73	505.34	311.30
CRS 2	mm	-463.48	503.64	364.24
CRS 3	mm	-605.19	538.49	413.76

DUMMY INJURY

HIC (15 ms)	599
Chest Clip (3 ms)	66.66 g

DUMMY POSITIONING

CRS: Clek Foonf – Rearward Facing – SB3PT

TRC Test Number: S211103-2

VRTC Test Number: SIDE_397



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.33	0.04	0.05
Front of Sliding Seat	mm	-154.92	672.67	576.19
Sliding Seat Corner	mm	-162.75	373.04	561.05
Point S1	mm	-148.30	392.22	622.02
Point S2	mm	-150.39	1050.55	625.30
Honeycomb Corner	mm	-316.99	97.43	582.73
Z point	mm	-771.96	1070.13	685.89
Back of Sliding Seat	mm	-892.29	672.07	4.47
CRS base center top	mm	-237.15	671.91	446.03
CRS mid height	mm	-140.60	674.38	213.34
CRS top of the seat	mm	-4.49	672.97	-53.66
CRS top of headrest	mm	4.20	669.95	-144.02
CRS bottom Center	mm	-660.27	673.28	166.15
Top of Head	mm	-146.83	673.78	-179.18
Front of Face	mm	-259.71	672.59	-114.82
Head CG Right	mm	-176.20	606.66	-96.85
Head CG Left	mm	-174.39	741.70	-99.22
Chest Clip	mm	-320.25	669.37	0.48
Buckle	mm	-469.38	672.76	168.49
Right Knee Out	mm	-574.41	554.98	119.60

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Right Leg Up	mm	-625.71	563.08	55.36
Right Leg Down	mm	-701.47	542.66	18.14
Right Ankle	mm	-755.33	504.73	20.57
Left Knee Out	mm	-584.62	790.06	121.39
Left Leg Up	mm	-629.58	779.34	53.87
Left Leg Down	mm	-704.59	792.01	13.12
Left Ankle	mm	-768.42	825.18	13.16
CRS 1	mm	-138.63	471.05	0.10
CRS 4	mm	-313.38	465.68	212.82
CRS 2	mm	-416.64	463.76	262.93
CRS 3	mm	-558.86	456.92	207.86

DUMMY INJURY

HIC (15 ms)	497
Chest Clip (3 ms)	86.03 g

DUMMY POSITIONING

CRS: Evenflo Tribute – Rearward Facing – SB3PT

TRC Test Number: S211103-3

VRTC Test Number: SIDE_398



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.06	-0.22	0.02
Front of Sliding Seat	mm	-154.83	671.24	576.23
Sliding Seat Corner	mm	-162.63	371.56	561.00
Point S1	mm	-148.20	390.91	621.92
Point S2	mm	-150.29	1049.48	625.54
Honeycomb Corner	mm	-316.47	95.99	579.46
Z point	mm	-771.73	1068.95	685.93
Back of Sliding Seat	mm	-891.54	671.67	3.86
CRS mid height	mm	-100.70	669.57	224.10
CRS top of the seat	mm	32.31	670.56	56.73
CRS top of base	mm	-663.38	670.92	314.37
CRS bottom Center	mm	-617.45	673.71	259.30
Top of Head	mm	-94.17	674.34	-20.99
Front of Face	mm	-216.03	671.85	25.38
Head CG Right	mm	-136.84	606.57	53.86
Head CG Left	mm	-133.58	741.12	53.81
Shoulder	mm	-185.81	559.83	177.71
Chest Clip	mm	-293.65	673.16	132.83
Buckle	mm	-450.38	670.70	244.24
Right Knee Out	mm	-572.12	589.32	224.28

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Right Leg Up	mm	-608.10	614.24	155.14
Right Leg Down	mm	-677.54	611.23	102.06
Right Ankle	mm	-735.73	582.55	89.63
Left Knee Out	mm	-570.25	761.80	223.09
Left Leg Up	mm	-605.86	742.15	152.19
Left Leg Down	mm	-675.22	743.51	101.54
Left Ankle	mm	-741.25	768.06	89.80
CRS 1	mm	-104.87	507.62	108.56
CRS 4	mm	-292.45	498.17	303.17
CRS 2	mm	-387.88	511.37	367.39
CRS 3	mm	-540.02	533.38	359.60

DUMMY INJURY

HIC (15 ms)	621
Chest Clip (3 ms)	82.68 g

DUMMY POSITIONING

CRS: Baby Trend Protect – Rearward Facing – LA Only

TRC Test Number: S211104-1

VRTC Test Number: SIDE_399



DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin Post	mm	-0.07	-0.26	0.03
Front of Sliding Seat	mm	-154.81	671.73	576.24
Sliding Seat Corner	mm	-162.71	372.12	561.10
Point S1	mm	-148.23	391.45	621.82
Point S2	mm	-150.31	1049.75	625.33
Honeycomb Corner	mm	-324.08	96.54	582.00
Z point	mm	-771.43	1069.24	685.62
Back of Sliding Seat	mm	-892.10	671.15	4.33
CRS base center top	mm	-218.30	671.81	448.74
CRS mid height	mm	-23.62	672.83	142.42
CRS top of the seat	mm	66.53	673.15	-49.81
CRS bottom Center	mm	-694.46	671.72	247.60
Top of Head	mm	-123.06	670.08	-33.10
Front of Face	mm	-244.23	669.31	12.41
Head CG Right	mm	-165.48	600.43	40.43
Head CG Left	mm	-161.85	736.52	44.18
Shoulder	mm	-216.32	552.93	167.60
Chest Clip	mm	-328.74	672.40	120.20
Buckle	mm	-504.36	668.44	262.01
Right Knee Out	mm	-594.26	547.91	214.22

DUMMY POSITIONING FARO MEASUREMENTS, CONTINUED

Description	Units	X	Y	Z
Right Leg Up	mm	-627.93	556.99	139.64
Right Leg Down	mm	-691.43	537.07	84.01
Right Ankle	mm	-744.22	498.83	72.11
Left Knee Out	mm	-599.59	793.74	224.25
Left Leg Up	mm	-628.50	792.53	147.89
Left Leg Down	mm	-691.77	808.13	92.08
Left Ankle	mm	-756.42	836.67	80.92
CRS 1	mm	-39.88	538.60	152.76
CRS 4	mm	-228.02	535.88	341.21
CRS 2	mm	-433.25	464.37	342.09
CRS 3	mm	-584.08	533.36	378.79

DUMMY INJURY

HIC (15 ms)	1194
Chest Clip (3 ms)	96.30 g

SECTION 4
DUMMY CALIBRATION DATA

Q3s Head Front Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

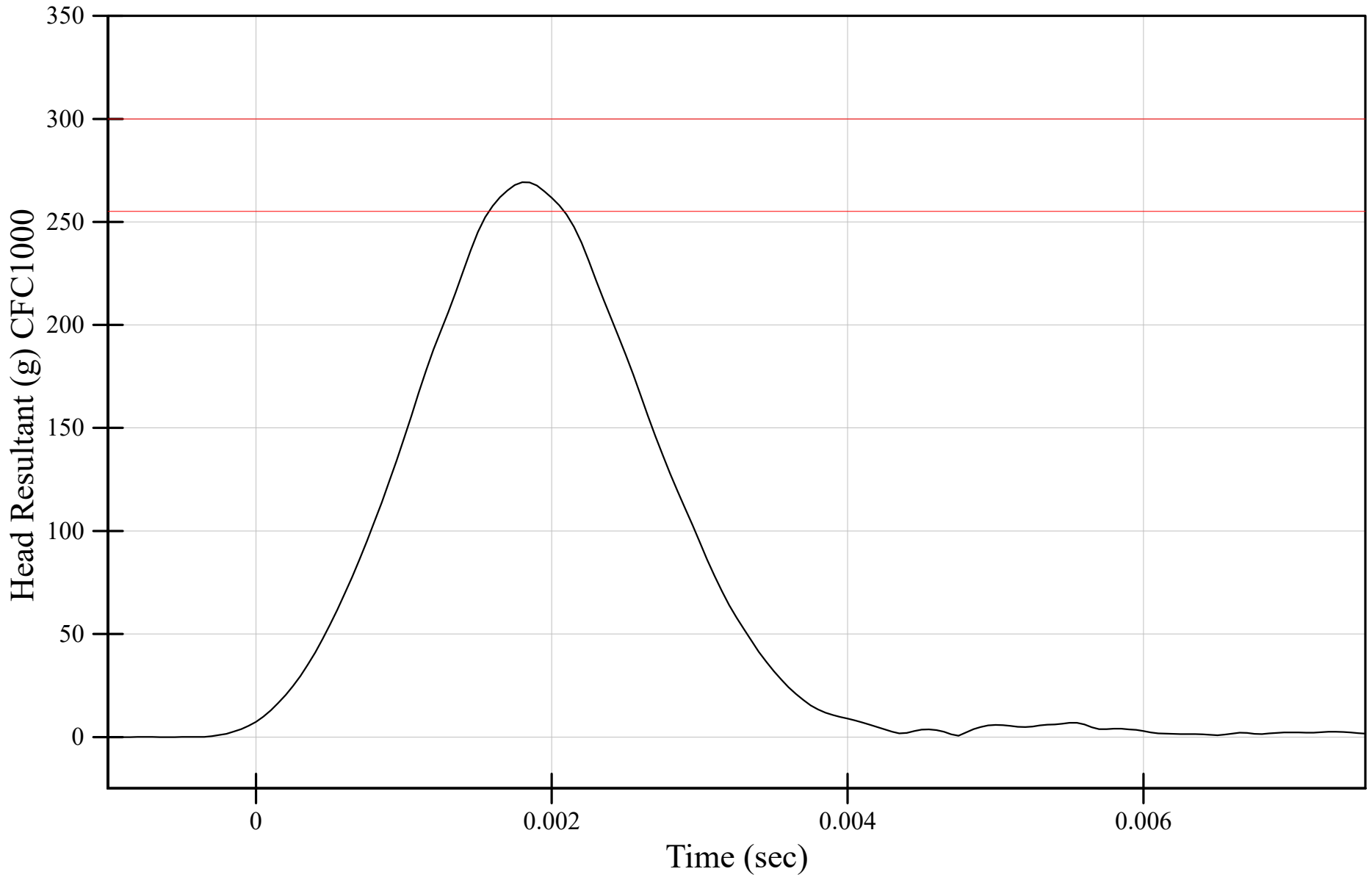
Head: 08020

Test ID: 211006-1
Test Date: 10/6/2021
Test Time: 6:59 AM

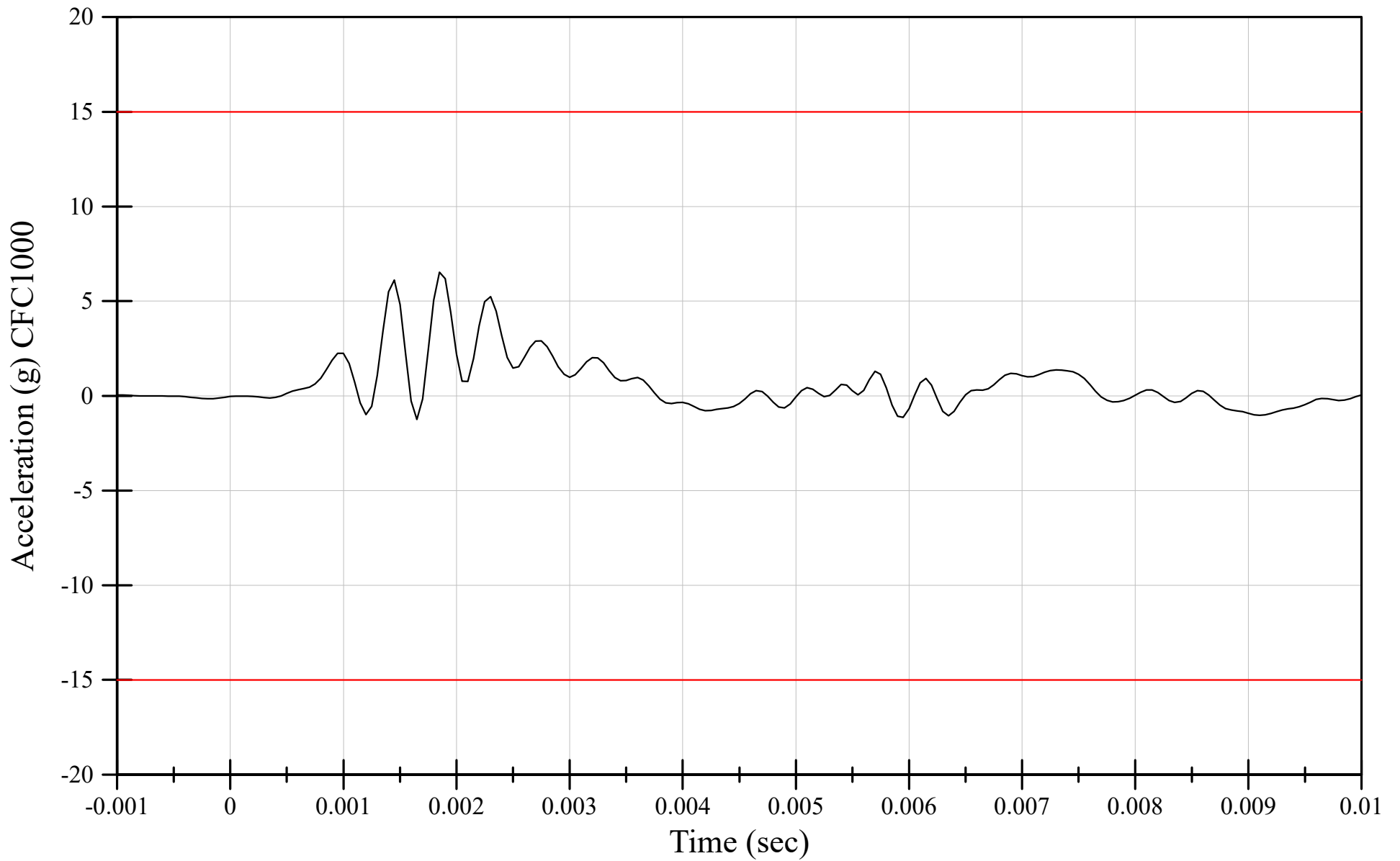
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	20.6	Pass
Test Humidity (%)	10 - 70	68	Pass
Peak Resultant Acceleration (g)	255.0 - 300.0	269.3	Pass
Peak Acceleration, y-axis (g)	-15.00 - 15.00	6.52	Pass

Q3s Head Front Qualification
Peak Resultant Acceleration
Head Serial Number: 08020



Q3s Head Front Qualification
Peak Lateral Y Acceleration
Head Serial Number: 08020



Q3s Head Left Lateral Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

Head: 08020

Test ID: 211004-13

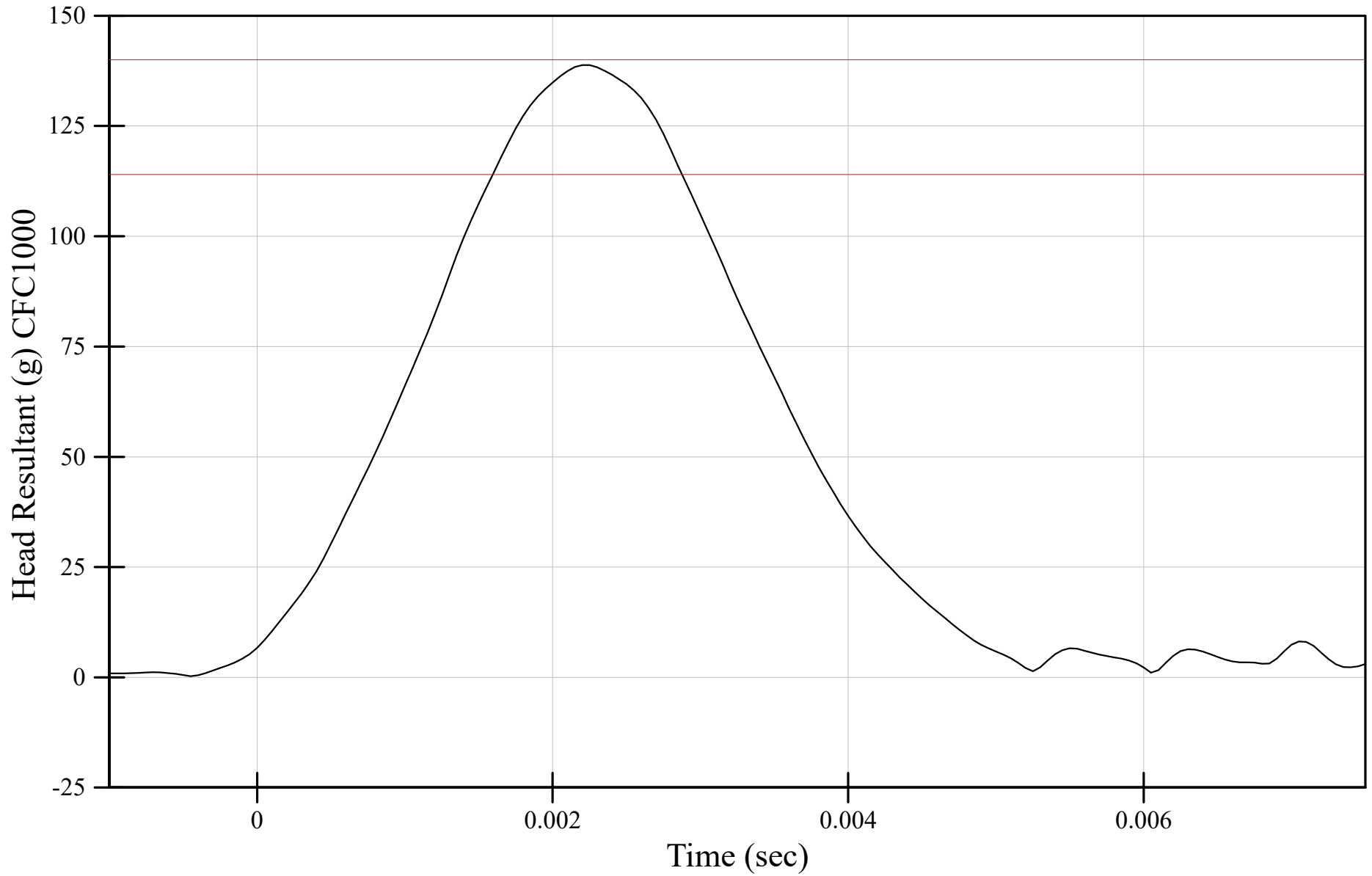
Test Date: 10/4/2021

Test Time: 3:56 PM

Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.3	Pass
Test Humidity (%)	10 - 70	59	Pass
Peak Resultant Acceleration (g)	114.0 - 140.0	138.8	Pass
Peak Acceleration, x-axis (g)	-15.00 - 15.00	11.03	Pass

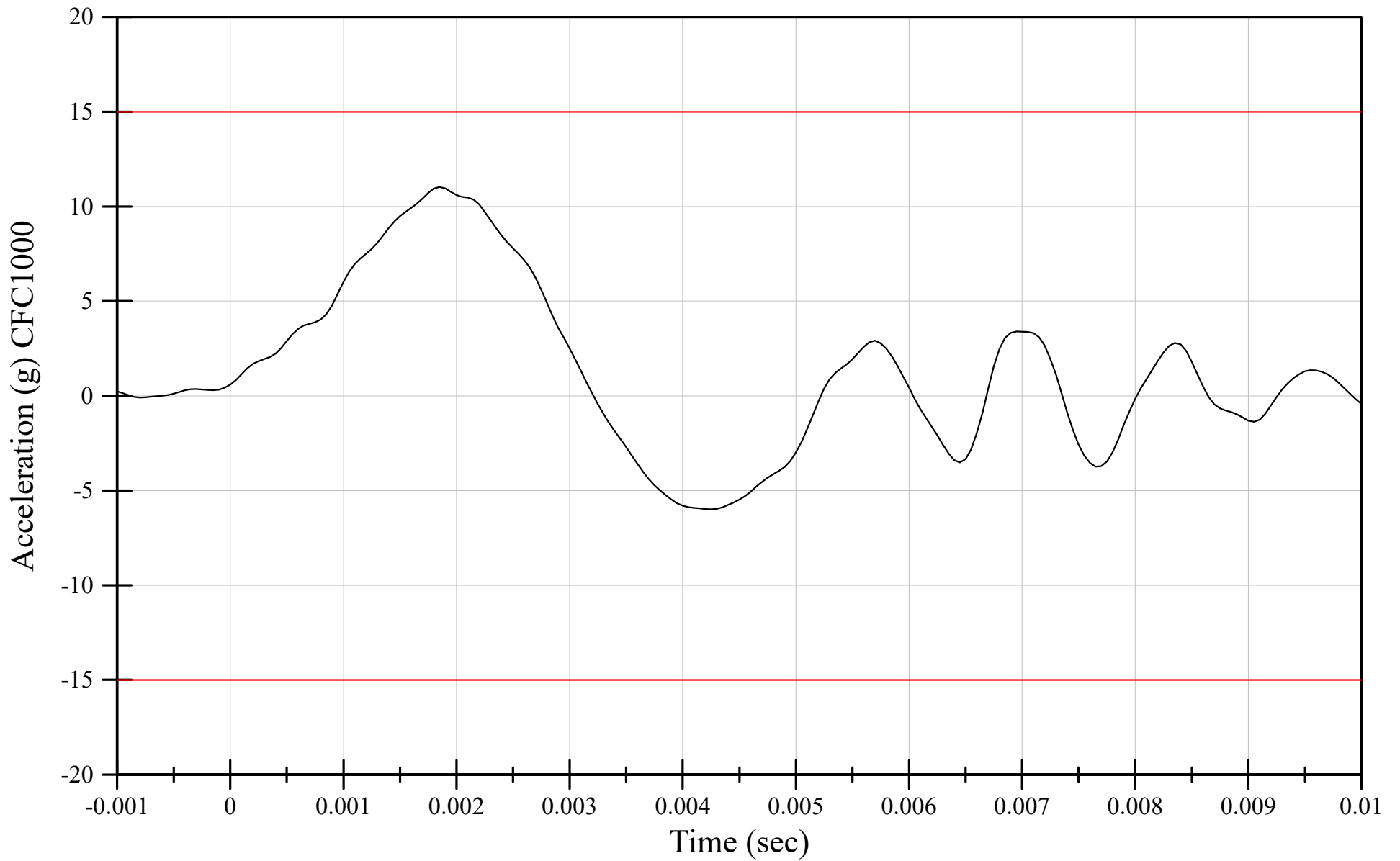
Q3s Head Left Lateral Qualification
Peak Resultant Acceleration
Head Serial Number: 08020



Q3s Head Left Lateral Qualification

Peak Lateral X Acceleration

Head Serial Number: 08020



Q3s Head Right Lateral Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

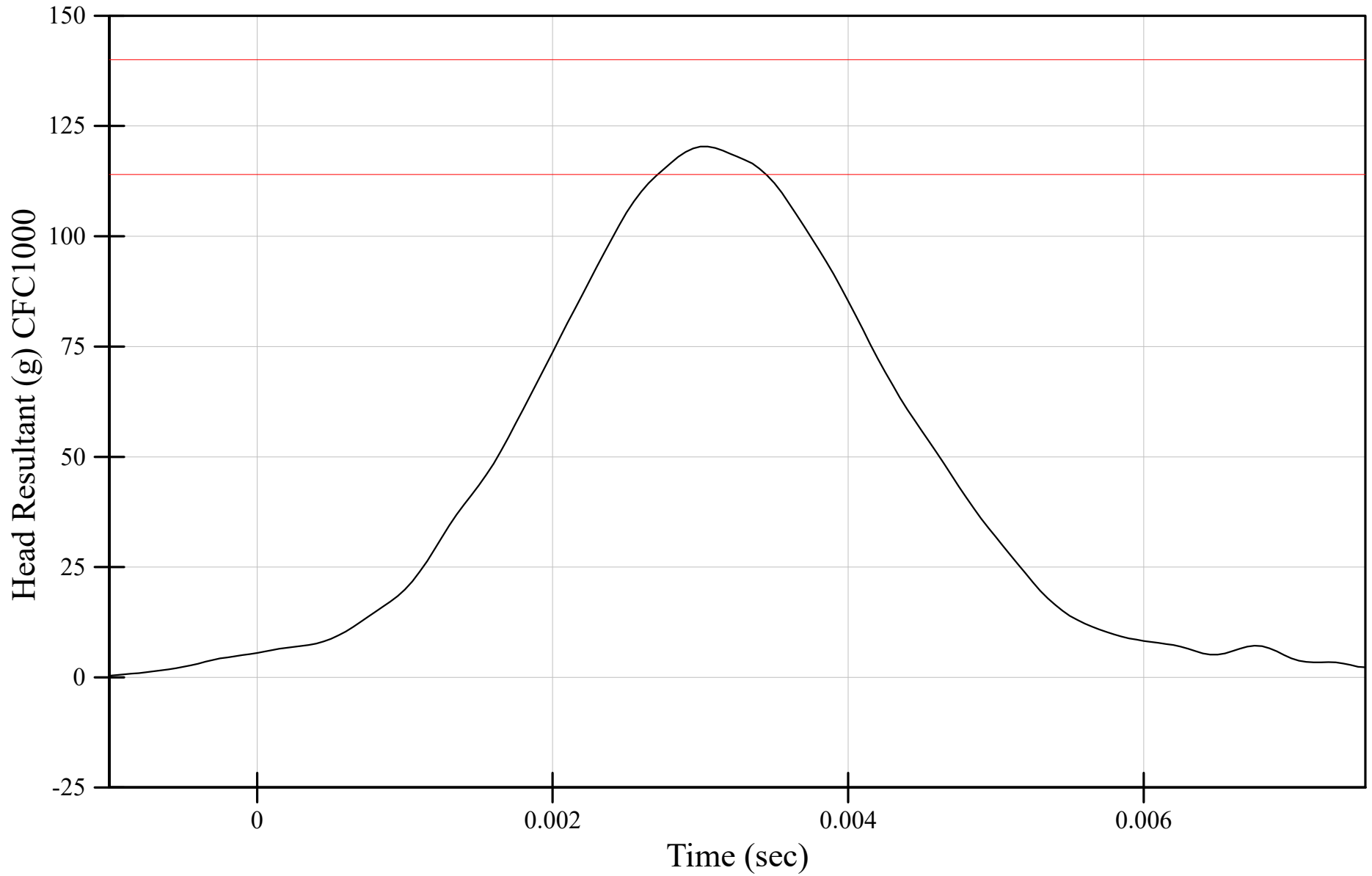
Head: 08020

Test ID: 211005-2
Test Date: 10/5/2021
Test Time: 6:32 AM

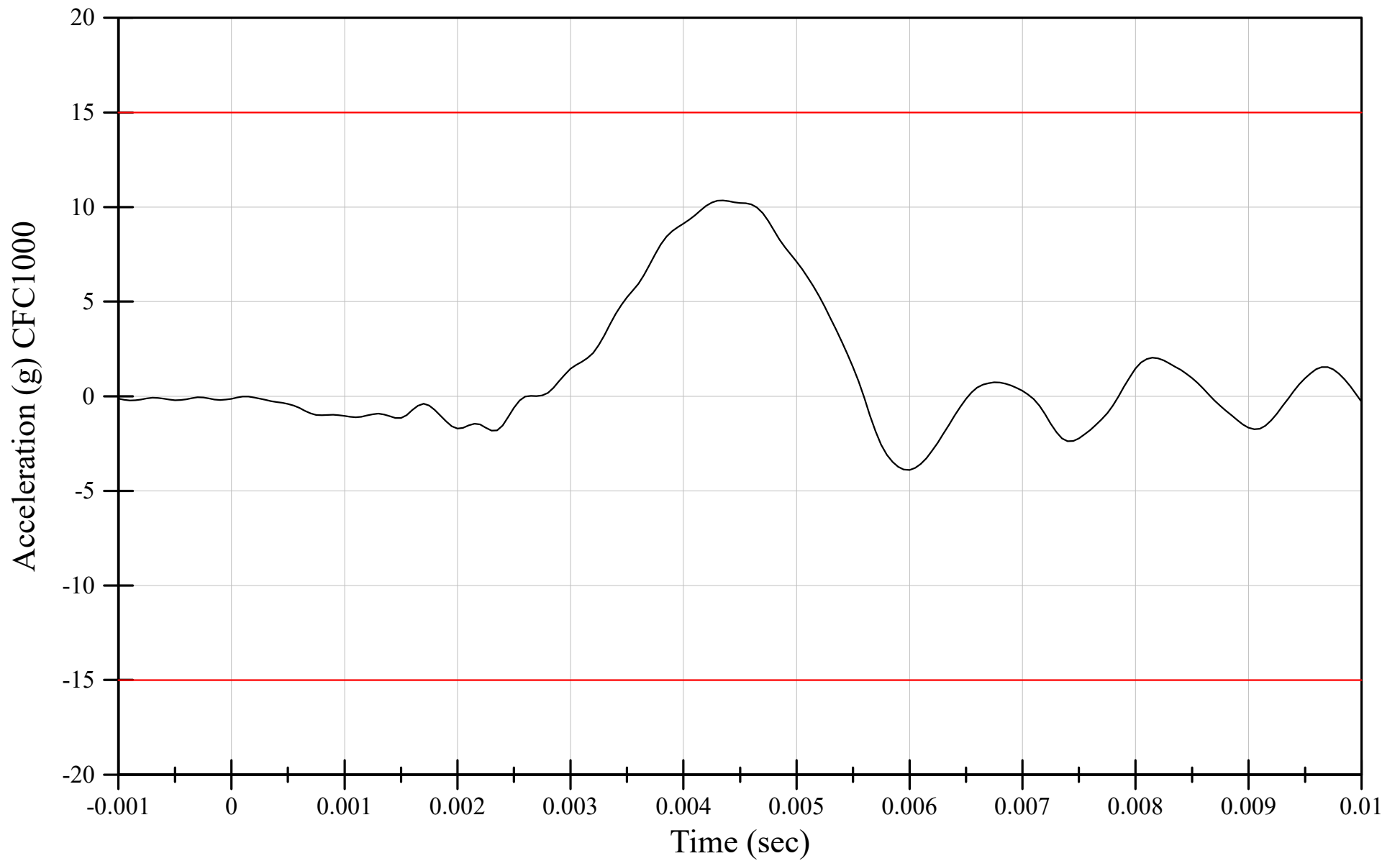
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.7	Pass
Test Humidity (%)	10 - 70	63	Pass
Peak Resultant Acceleration (g)	114.0 - 140.0	120.3	Pass
Peak Acceleration, x-axis (g)	-15.00 - 15.00	10.36	Pass

Q3s Head Right Lateral Qualification
Peak Resultant Acceleration
Head Serial Number: 08020



Q3s Head Right Lateral Qualification
Peak Lateral X Acceleration
Head Serial Number: 08020



Q3s Neck Flexion Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

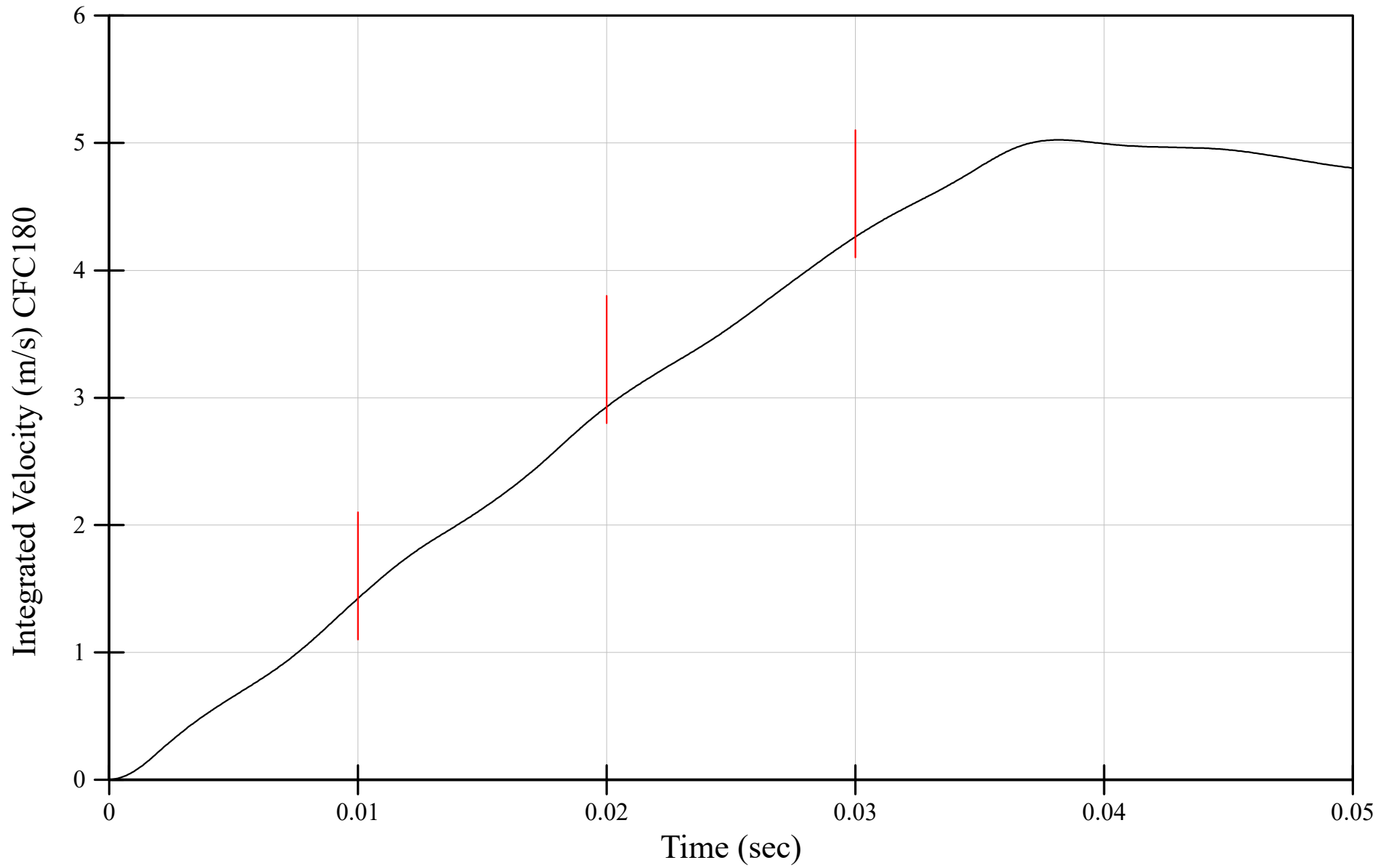
Neck: EA2520

Test ID: 211006-8
Test Date: 10/6/2021
Test Time: 10:20 AM

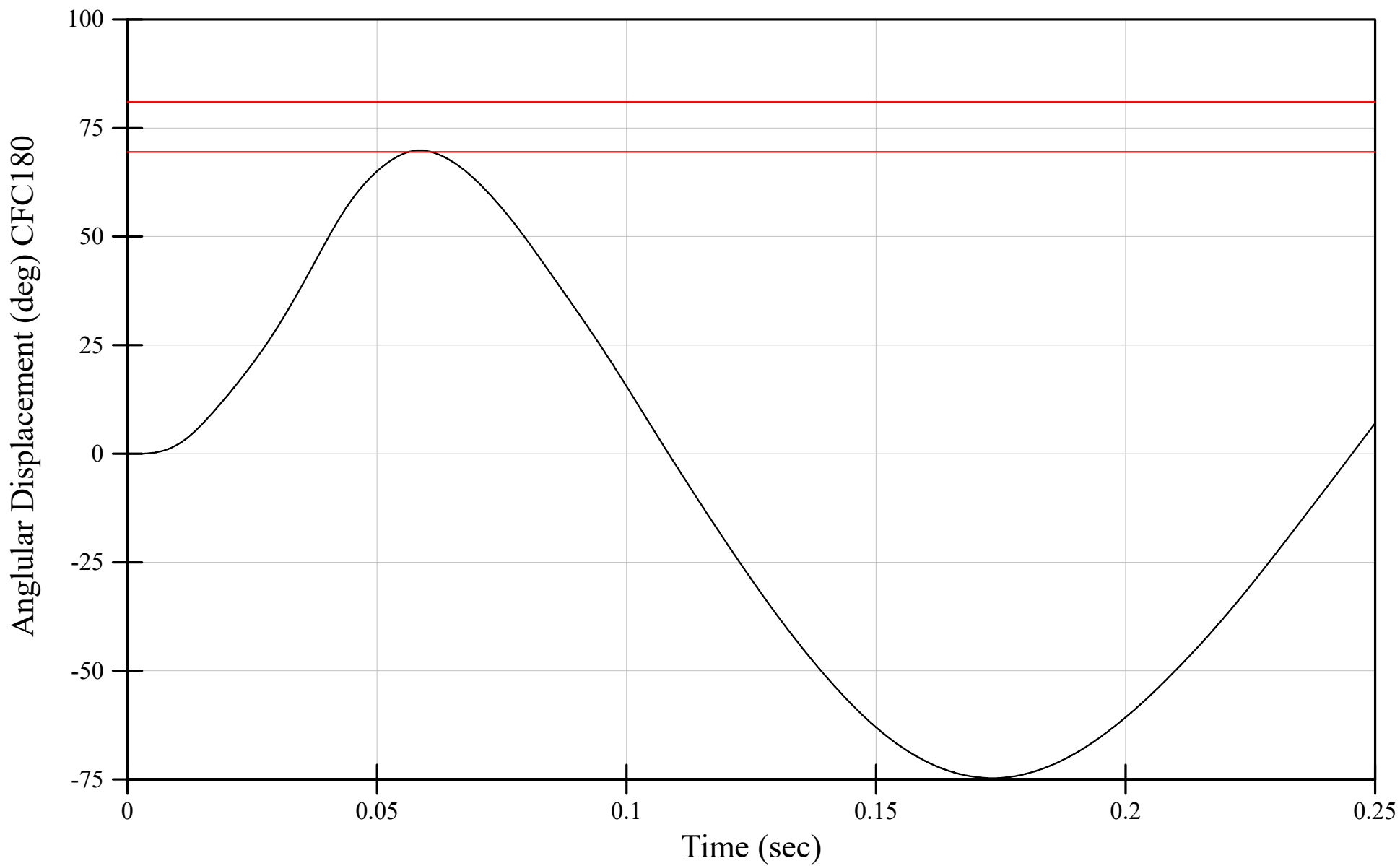
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.9	Pass
Test Humidity (%)	10 - 70	67	Pass
Test Velocity (m/s)	4.60 - 4.80	4.70	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	1.10 - 2.10	1.42	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	2.80 - 3.80	2.93	Pass
Pendulum Velocity at 30 ms after T0 (m/s)	4.10 - 5.10	4.26	Pass
Peak Headform Flexion Angle (deg)	69.5 - 81.0	69.9	Pass
Peak Headform Flexion Angle Decay			
Time to 0 degrees (ms)	45.0 - 55.0	49.9	Pass
Peak Upper Neck My (Nm)	43.2 - 50.7	47.8	Pass

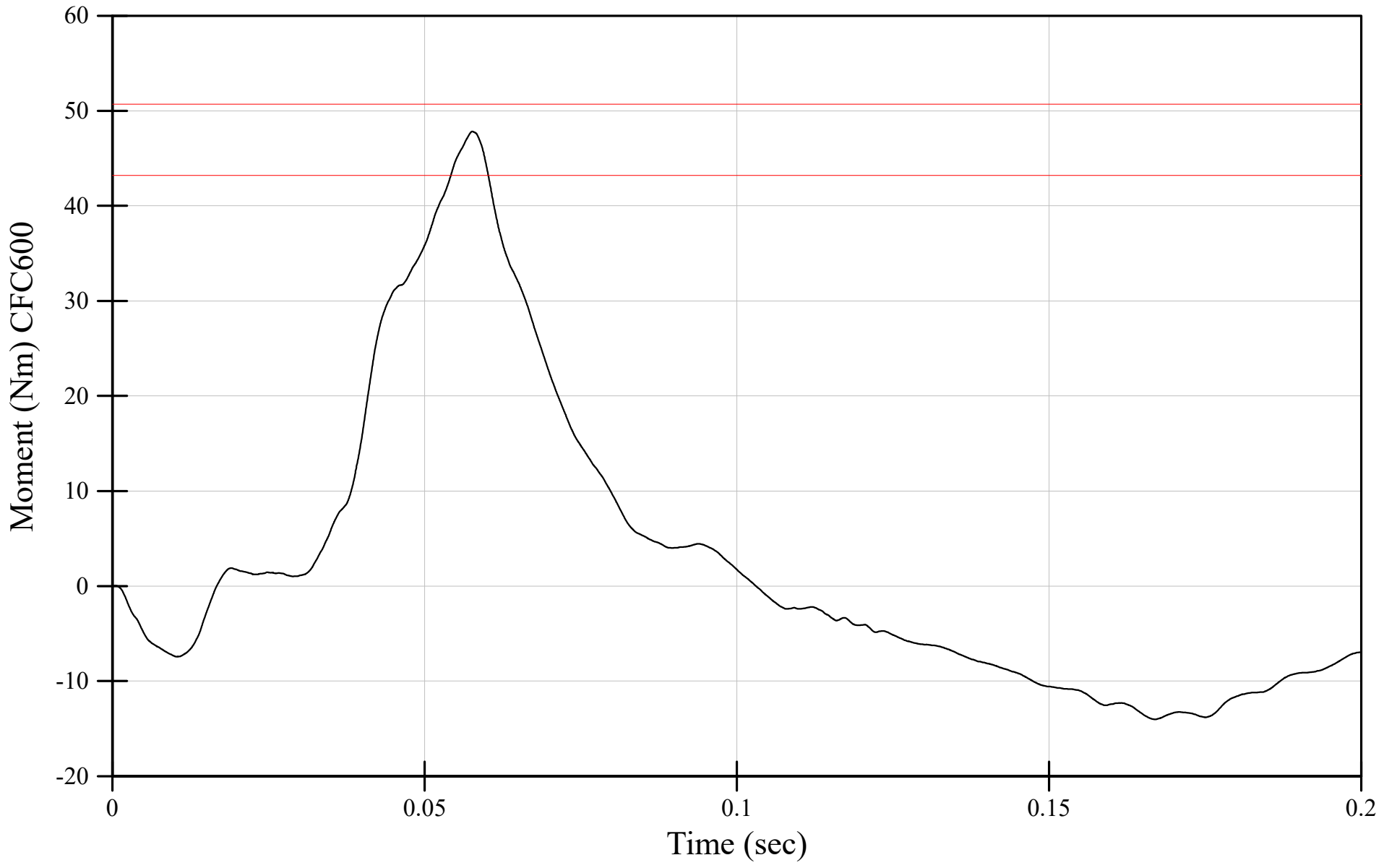
Q3s Neck Flexion Qualification
Probe Acceleration
Neck Serial Number: EA2520



Q3s Neck Flexion Qualification
Peak Headform Flexion Angle
Neck Serial Number: EA2520



Q3s Neck Flexion Qualification
Peak Upper Neck Y Moment
Neck Serial Number: EA2520



Q3s Neck Left Lateral Qualification

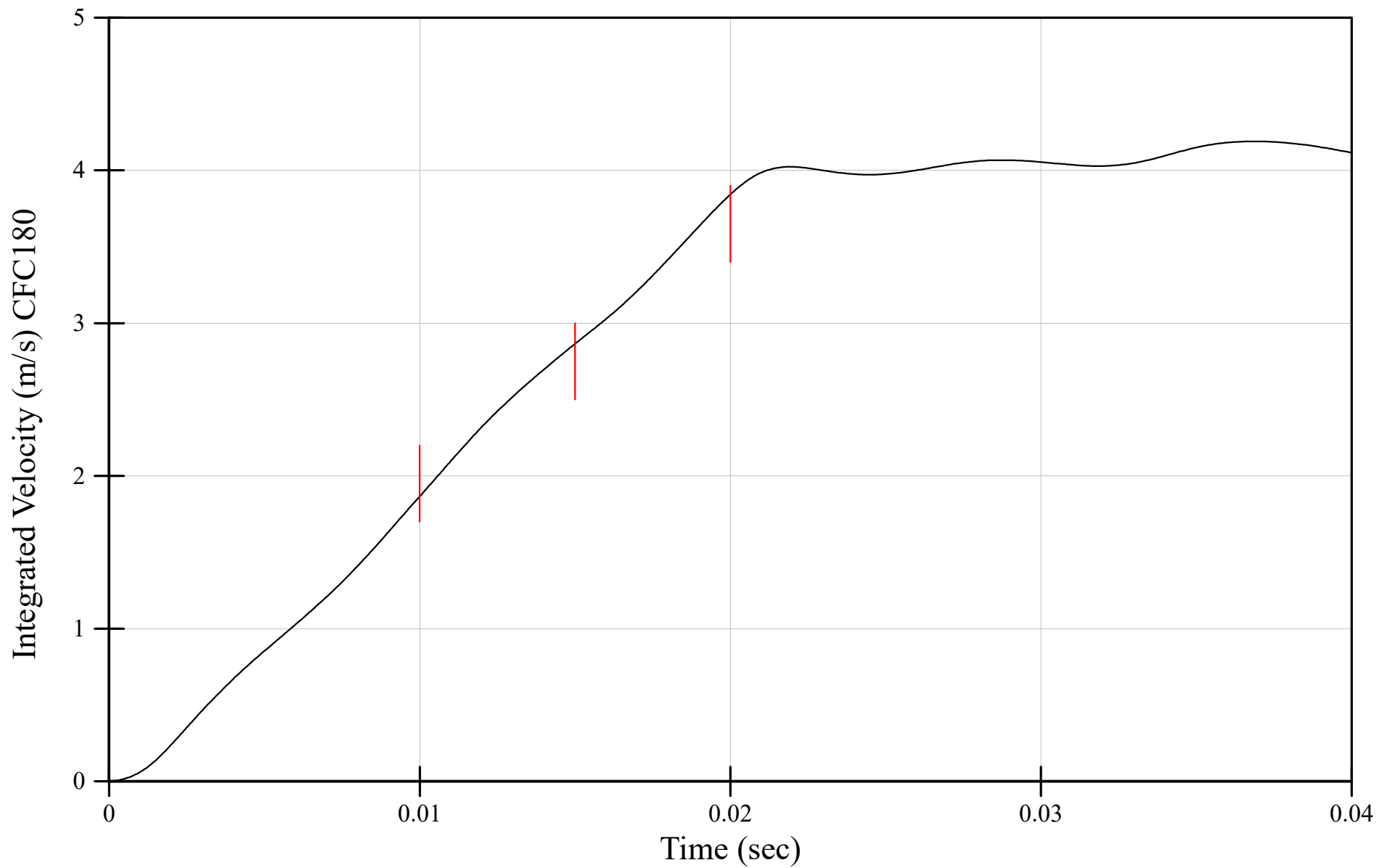
Test Results Summary

Dummy Serial Number: 004

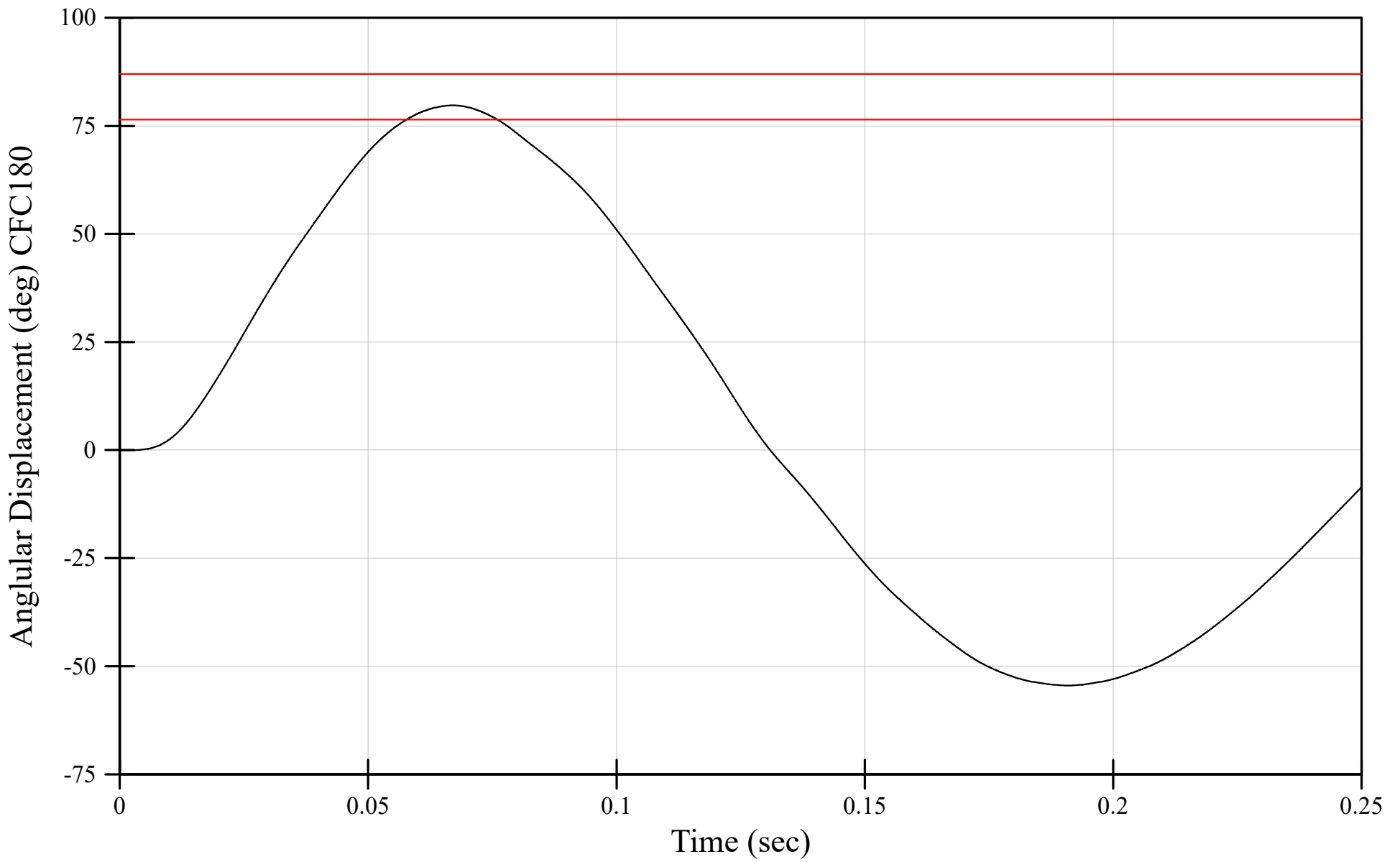
<p><u>Tested Components</u></p> <p>Neck: EA2520</p>	<p>Test ID: 211006-19</p> <p>Test Date: 10/6/2021</p> <p>Test Time: 3:59 PM</p>
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Test Results			
<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.2	Pass
Test Humidity (%)	10 - 70	66	Pass
Test Velocity (m/s)	3.70 - 3.90	3.81	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	1.7 - 2.2	1.9	Pass
Pendulum Velocity at 15 ms after T0 (m/s)	2.5 - 3.0	2.9	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	3.4 - 3.9	3.8	Pass
Peak Headform Flexion Angle (deg)	76.5 - 87.0	79.7	Pass
Peak Headform Flexion Angle Decay			
Time to 0 degrees (ms)	61.0 - 71.0	64.0	Pass
Peak Upper Neck X-Axis Moment (Nm)	25.3 - 32.0	28.0	Pass

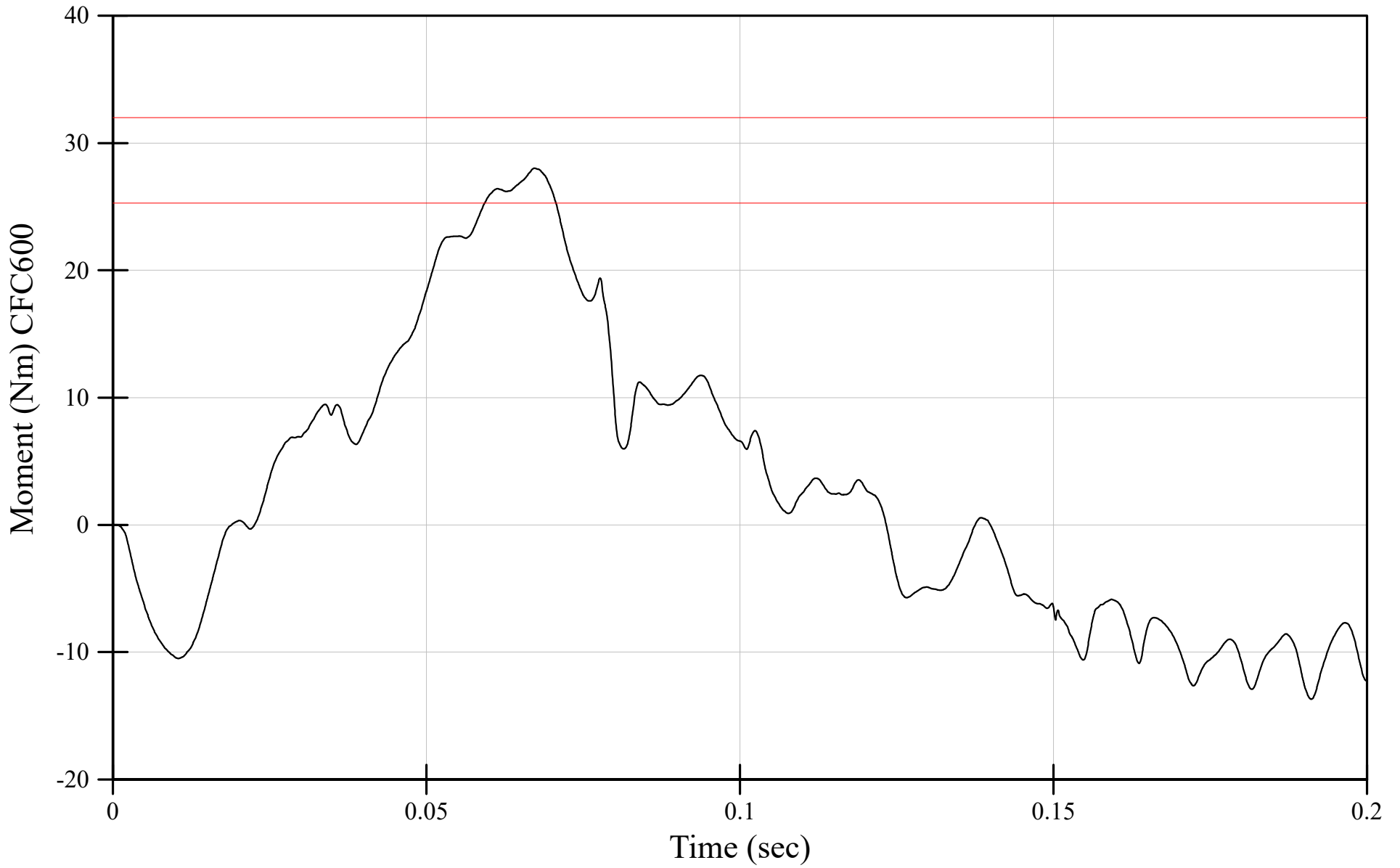
Q3s Neck Left Lateral Qualification
Pendulum Velocity
Neck Serial Number: EA2520



Q3s Neck Left Lateral Qualification
Peak Headform Flexion Angle
Neck Serial Number: EA2520



Q3s Neck Left Lateral Qualification
Peak Upper Neck X Moment
Neck Serial Number: EA2520



Q3s Neck Right Lateral Qualification

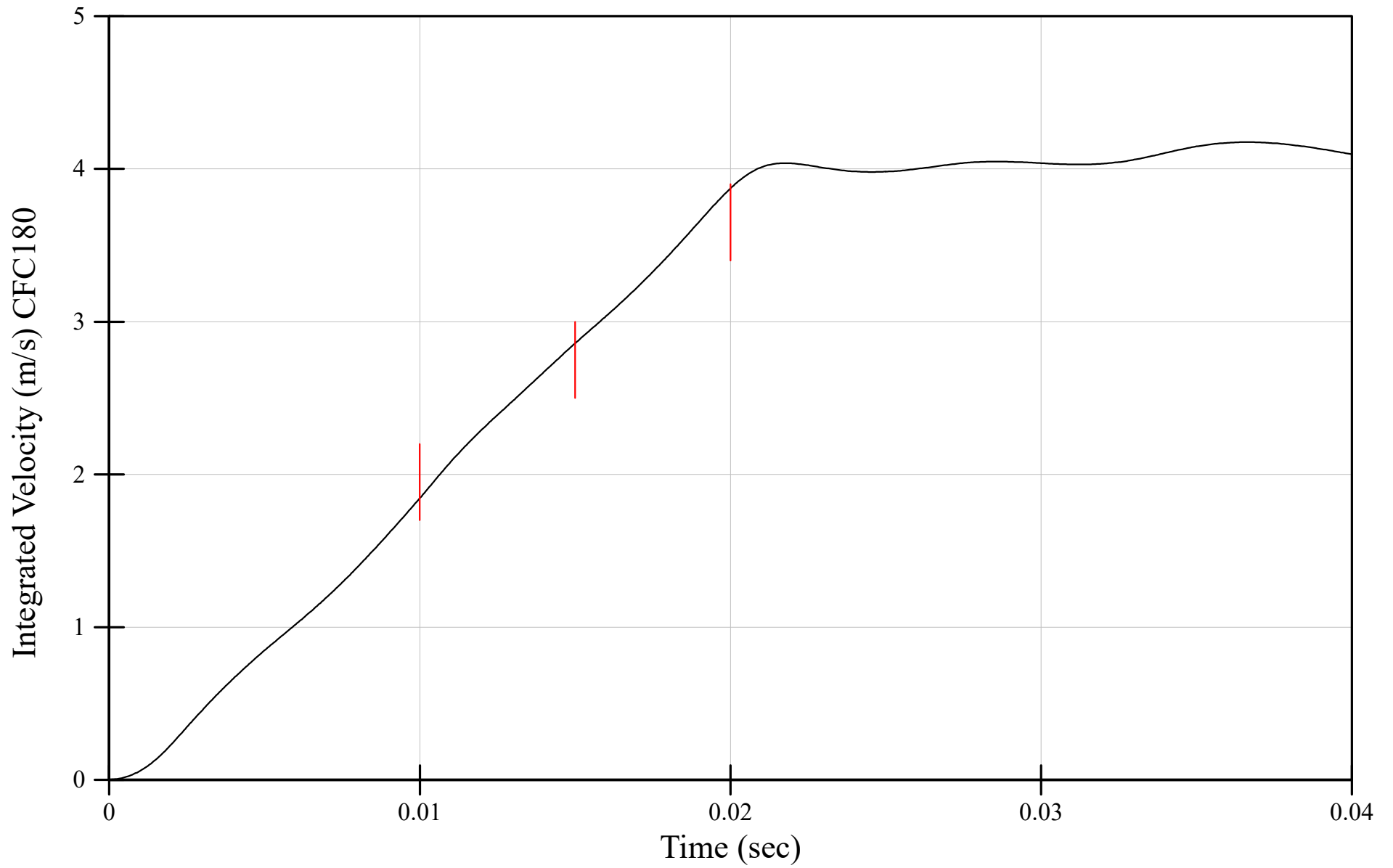
Test Results Summary

Dummy Serial Number: 004

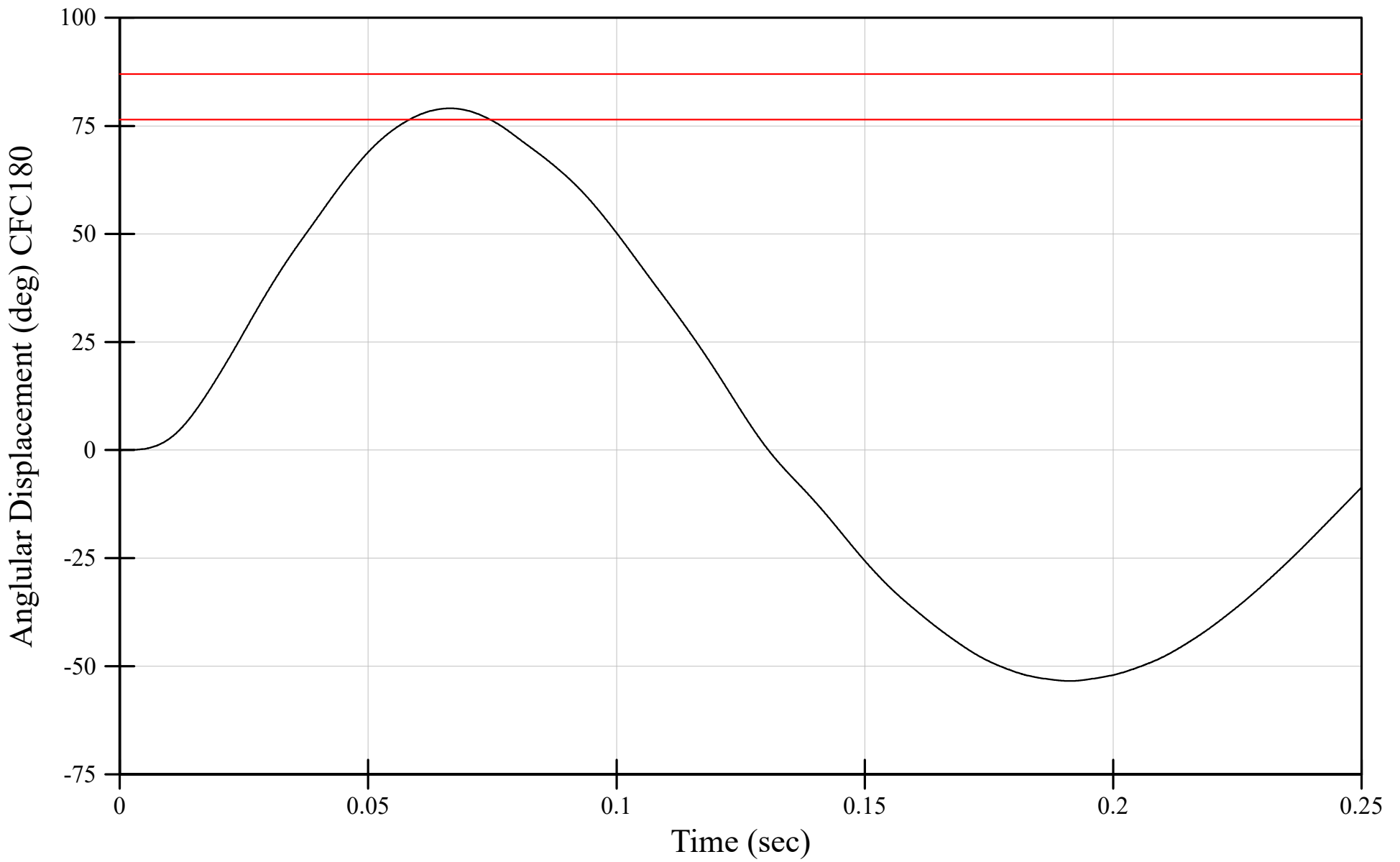
<p><u>Tested Components</u></p> <p>Neck: EA2520</p>	<p>Test ID: 211006-17</p> <p>Test Date: 10/6/2021</p> <p>Test Time: 3:20 PM</p>
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Test Results			
<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	22.2	Pass
Test Humidity (%)	10 - 70	65	Pass
Test Velocity (m/s)	3.70 - 3.90	3.83	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	1.7 - 2.2	1.8	Pass
Pendulum Velocity at 15 ms after T0 (m/s)	2.5 - 3.0	2.9	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	3.4 - 3.9	3.9	Pass
Peak Headform Flexion Angle (deg)	76.5 - 87.0	79.1	Pass
Peak Headform Flexion Angle Decay			
Time to 0 degrees (ms)	61.0 - 71.0	64.1	Pass
Peak Upper Neck X-Axis Moment (Nm)	-32.0 - (-25.3)	-27.8	Pass

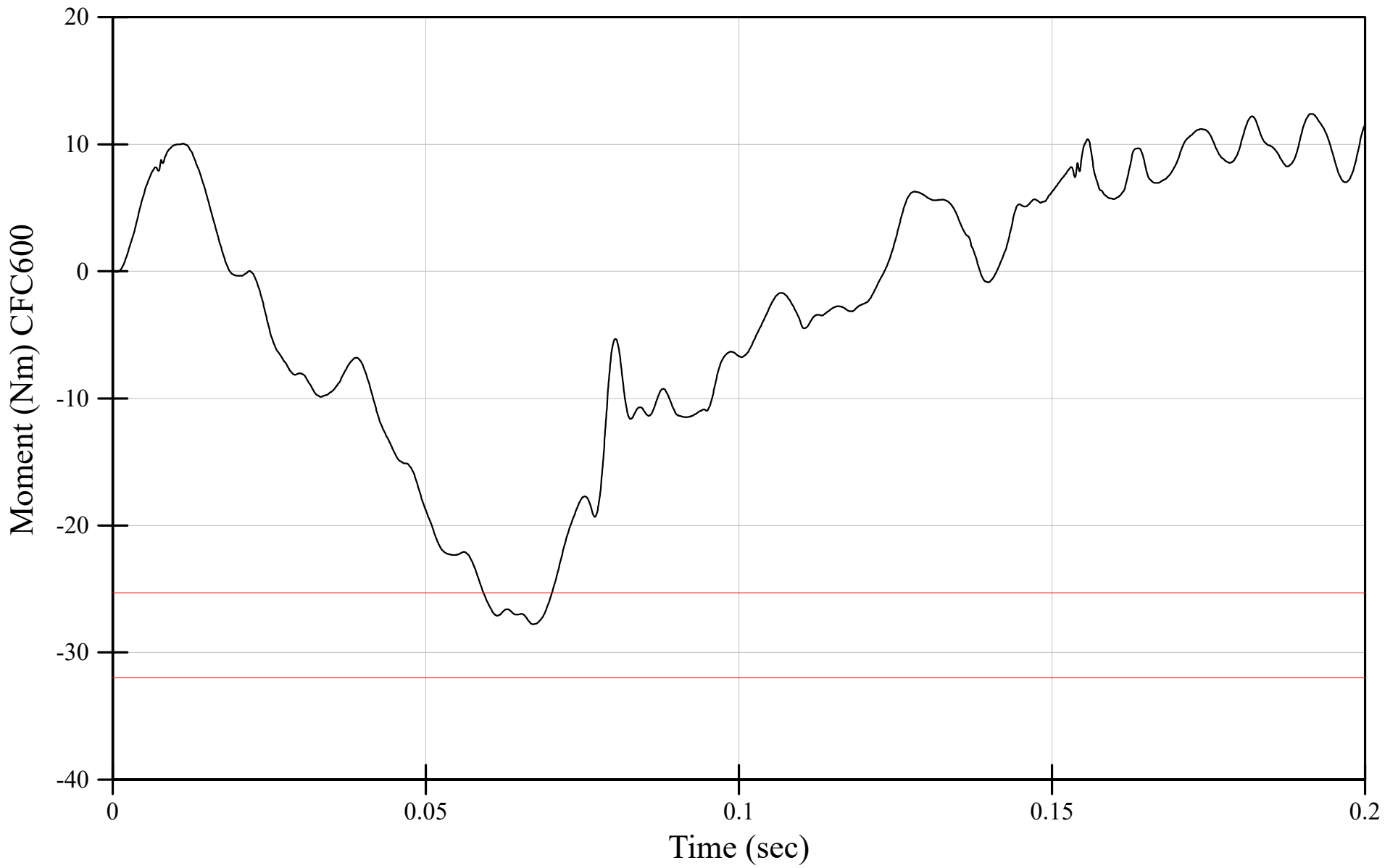
Q3s Neck Right Lateral Qualification
Pendulum Velocity
Neck Serial Number: EA2520



Q3s Neck Right Lateral Qualification
Peak Headform Flexion Angle
Neck Serial Number: EA2520



Q3s Neck Right Lateral Qualification
Peak Upper Neck X Moment
Neck Serial Number: EA2520



Q3s Neck Left Torsion Qualification

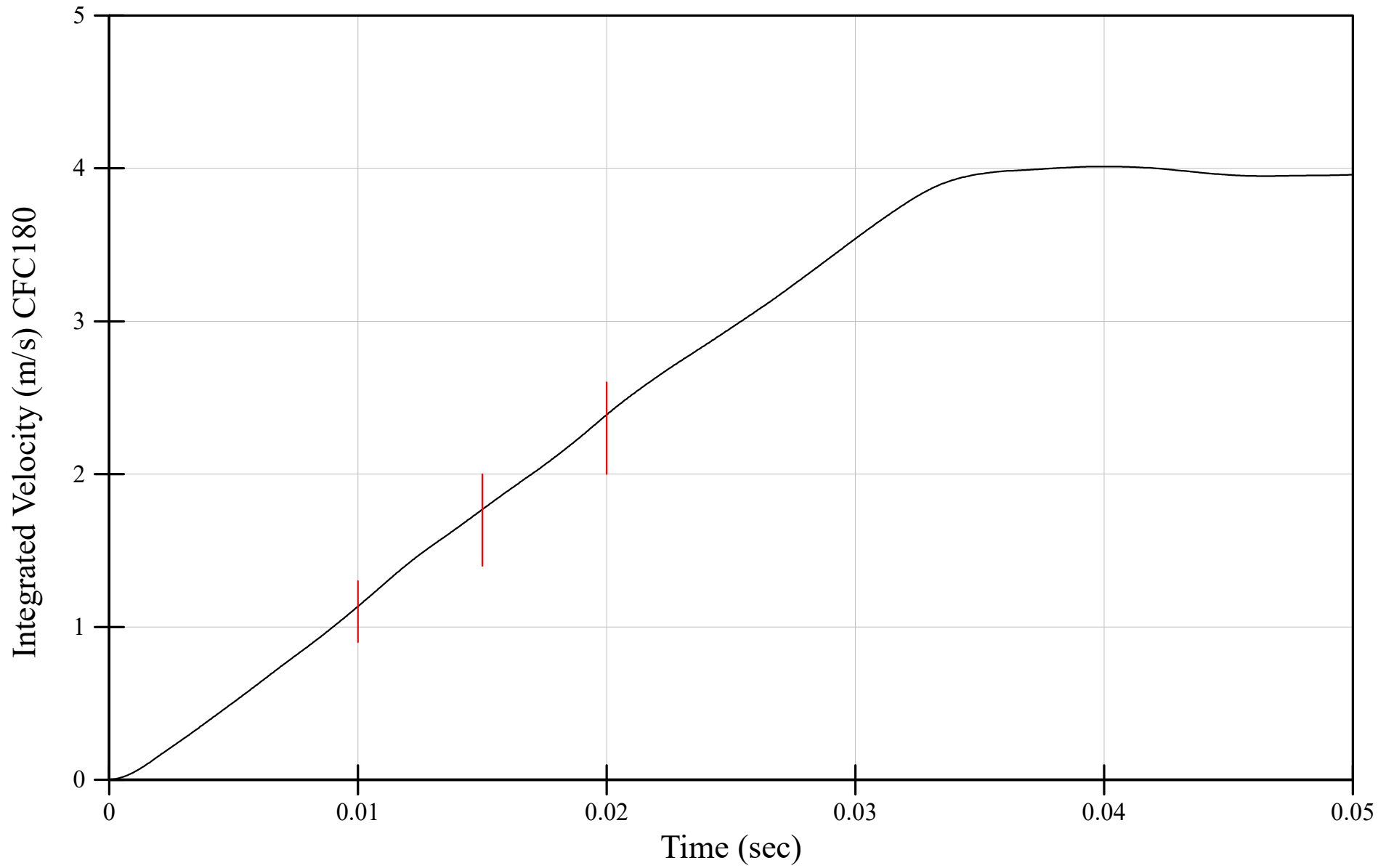
Test Results Summary

Dummy Serial Number: 004

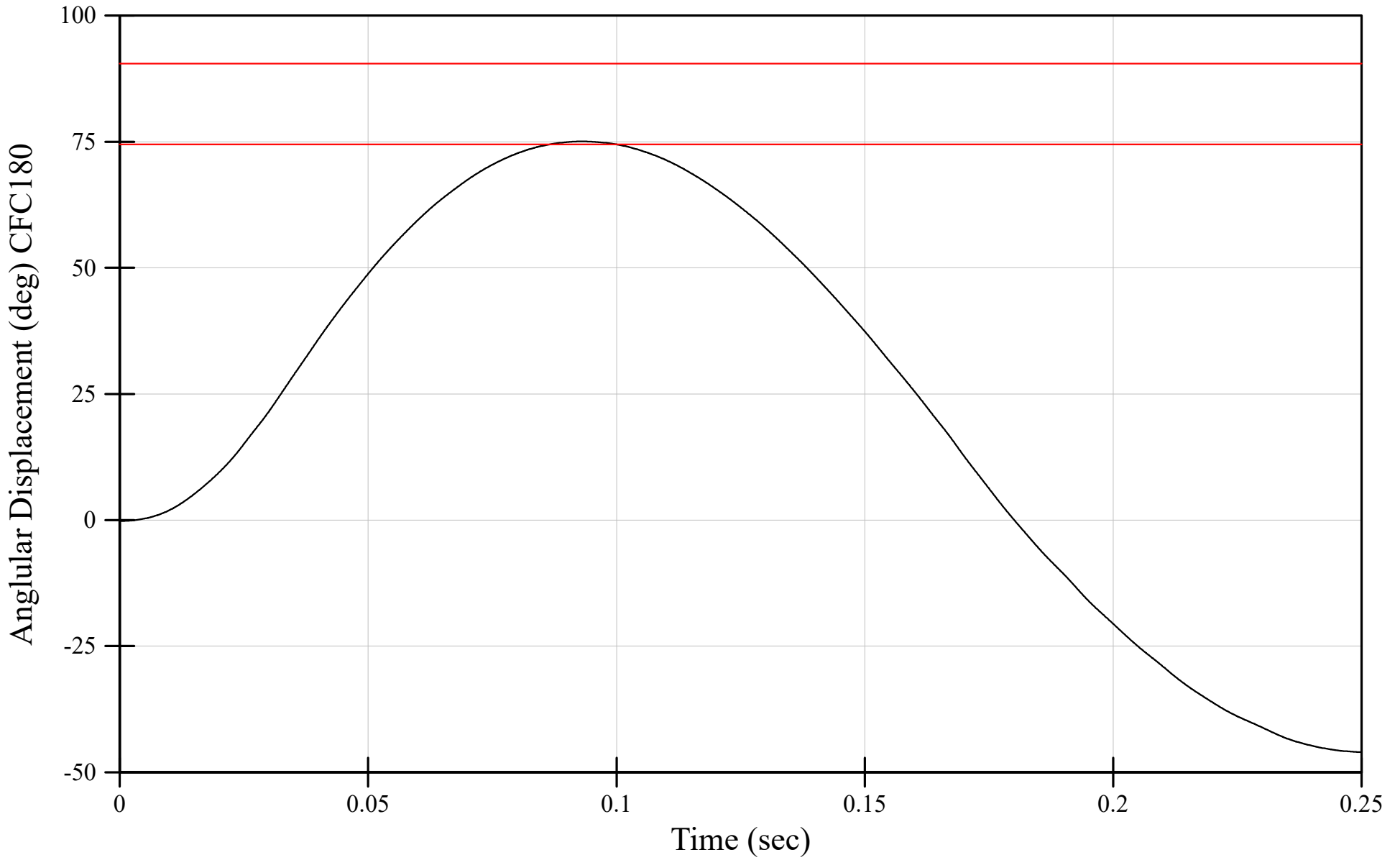
<p><u>Tested Components</u></p> <p>Neck: EA2520</p>	<p>Test ID: 211007-3</p> <p>Test Date: 10/7/2021</p> <p>Test Time: 11:59 AM</p>
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Test Results			
<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.8	Pass
Test Humidity (%)	10 - 70	68	Pass
Test Velocity (m/s)	3.50 - 3.70	3.63	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	0.9 - 1.3	1.1	Pass
Pendulum Velocity at 15 ms after T0 (m/s)	1.4 - 2.0	1.8	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	2.0 - 2.6	2.4	Pass
Peak Fixture Rotation (deg)	74.5 - 90.5	75.1	Pass
Peak Fixture Rotation Decay			
Time to 0 degrees (ms)	85 - 100	87.1	Pass
Peak Upper Neck Z-Axis Moment (Nm)	8.0 - 10.0	9.1	Pass

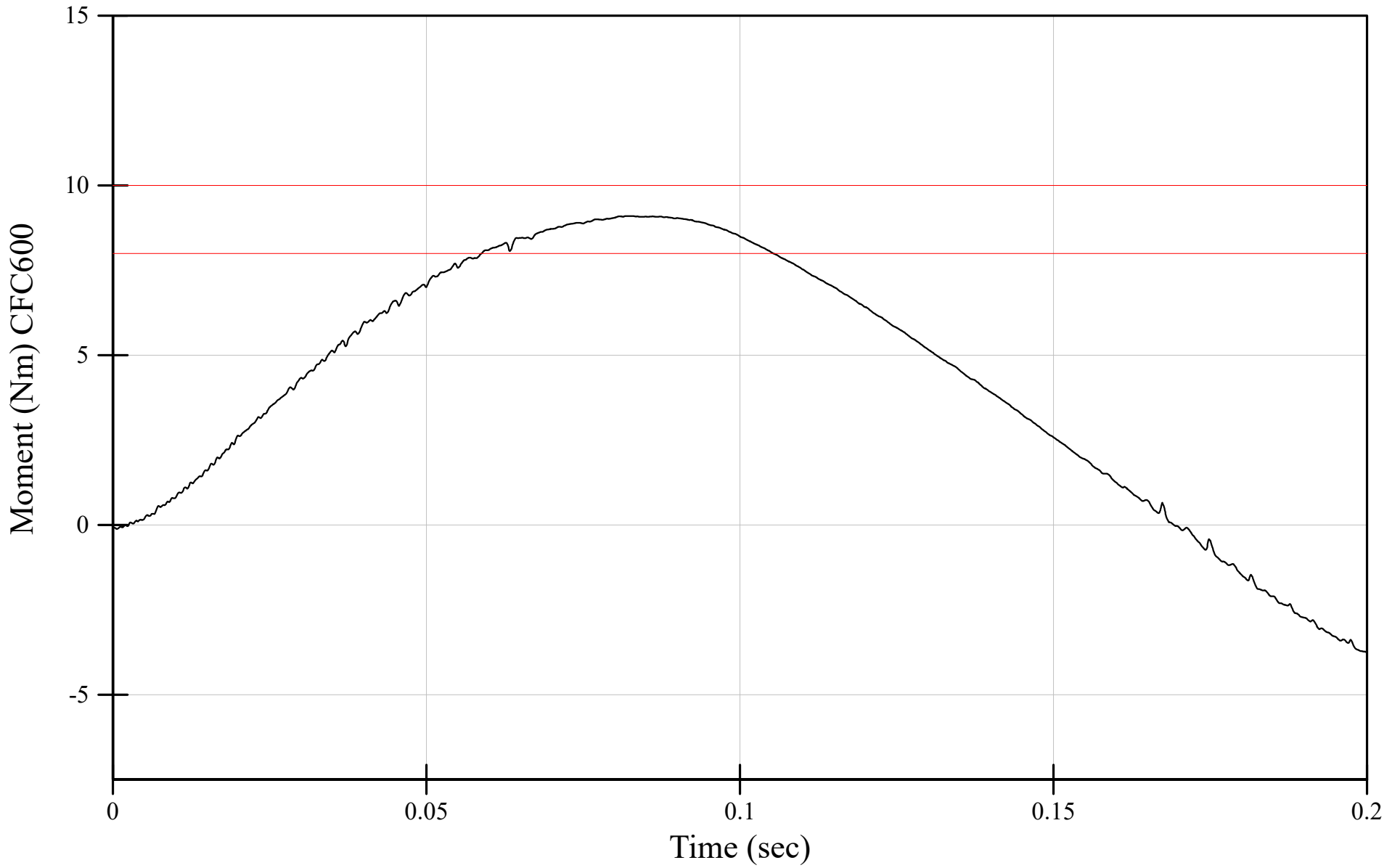
Q3s Neck Left Torsion Qualification
Pendulum Velocity
Neck Serial Number: EA2520



Q3s Neck Left Torsion Qualification
Peak Fixture Rotation Angle
Neck Serial Number: EA2520



Q3s Neck Left Torsion Qualification
Peak Upper Neck Z Moment
Neck Serial Number: EA2520



Q3s Neck Right Torsion Qualification

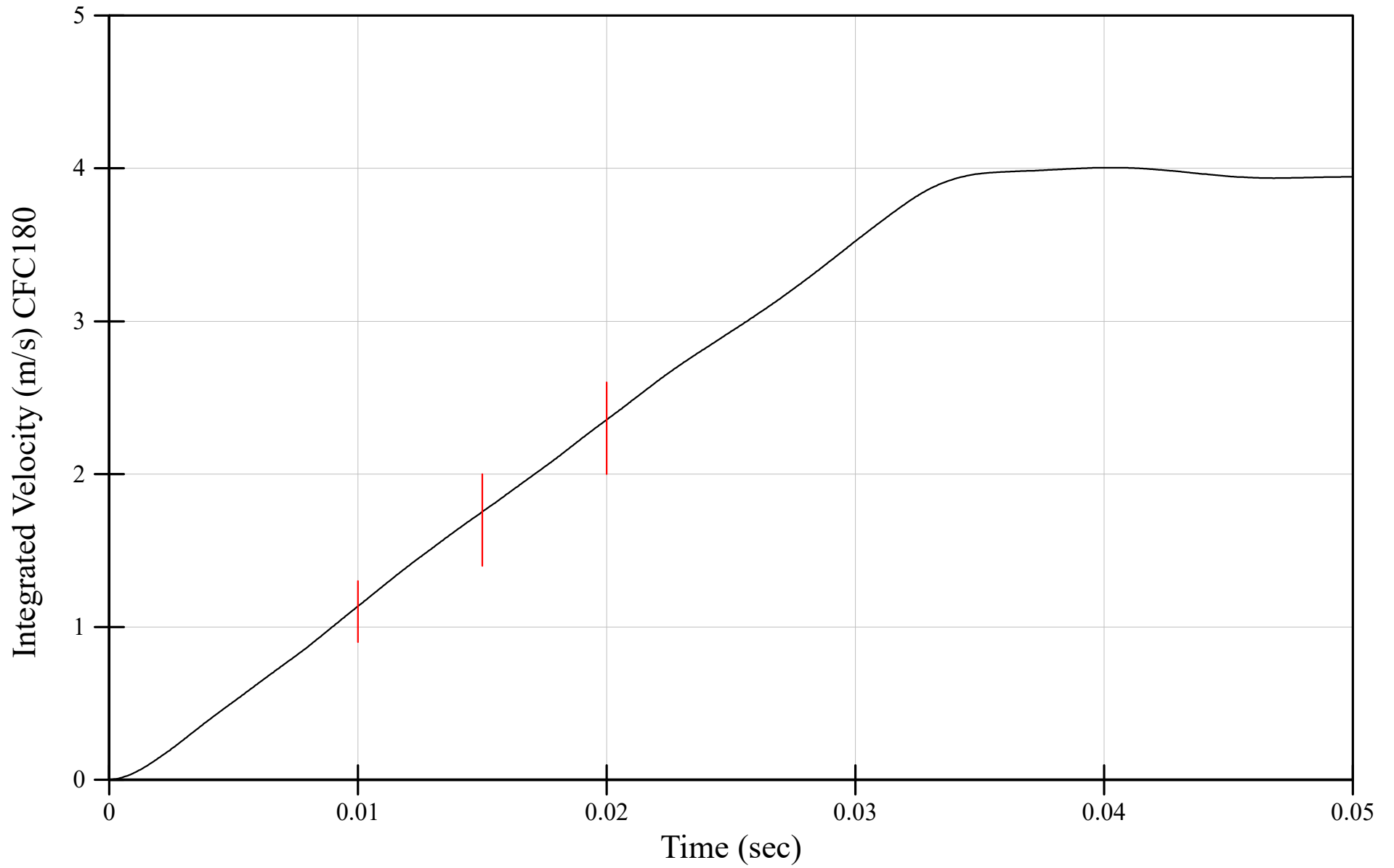
Test Results Summary

Dummy Serial Number: 004

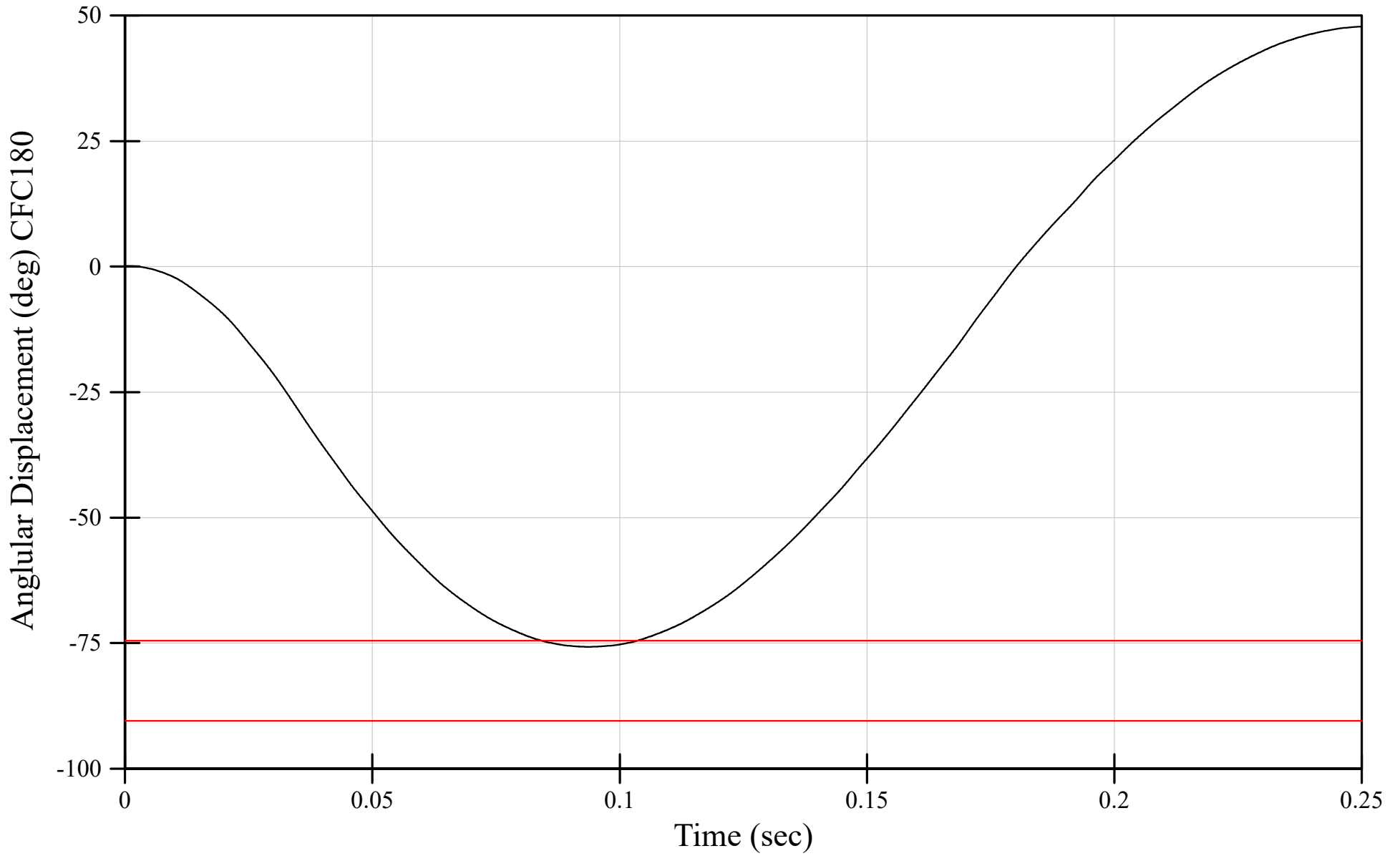
<p><u>Tested Components</u></p> <p>Neck: EA2520</p>	<p>Test ID: 211007-2</p> <p>Test Date: 10/7/2021</p> <p>Test Time: 10:53 AM</p>
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Test Results			
<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.6	Pass
Test Humidity (%)	10 - 70	70	Pass
Test Velocity (m/s)	3.50 - 3.70	3.63	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	0.9 - 1.3	1.1	Pass
Pendulum Velocity at 15 ms after T0 (m/s)	1.4 - 2.0	1.8	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	2.0 - 2.6	2.4	Pass
Peak Fixture Rotation (deg)	-90.5 - (-74.5)	-75.7	Pass
Peak Fixture Rotation Decay			
Time to 0 degrees (ms)	85 - 100	86.6	Pass
Peak Upper Neck Z-Axis Moment (Nm)	-10.0 - (-8.0)	-9.1	Pass

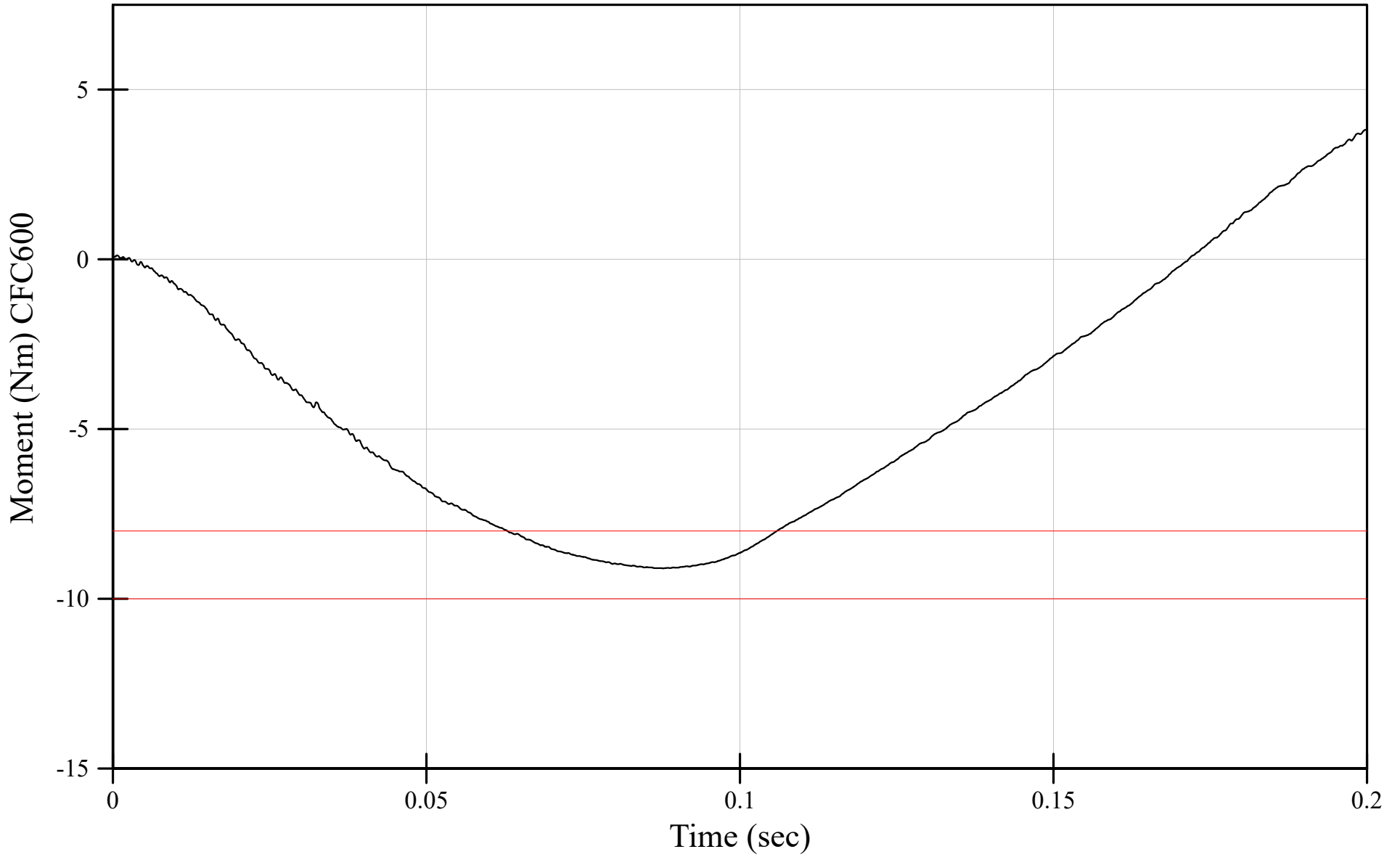
Q3s Neck Right Torsion Qualification
Pendulum Velocity
Neck Serial Number: EA2520



Q3s Neck Right Torsion Qualification
Peak Fixture Rotation Angle
Neck Serial Number: EA2520



Q3s Neck Right Torsion Qualification
Peak Upper Neck Z Moment
Neck Serial Number: EA2520



Q3s Lumbar Spine Flexion Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

Lumbar Spine: DR3755

Test ID: 211012-9

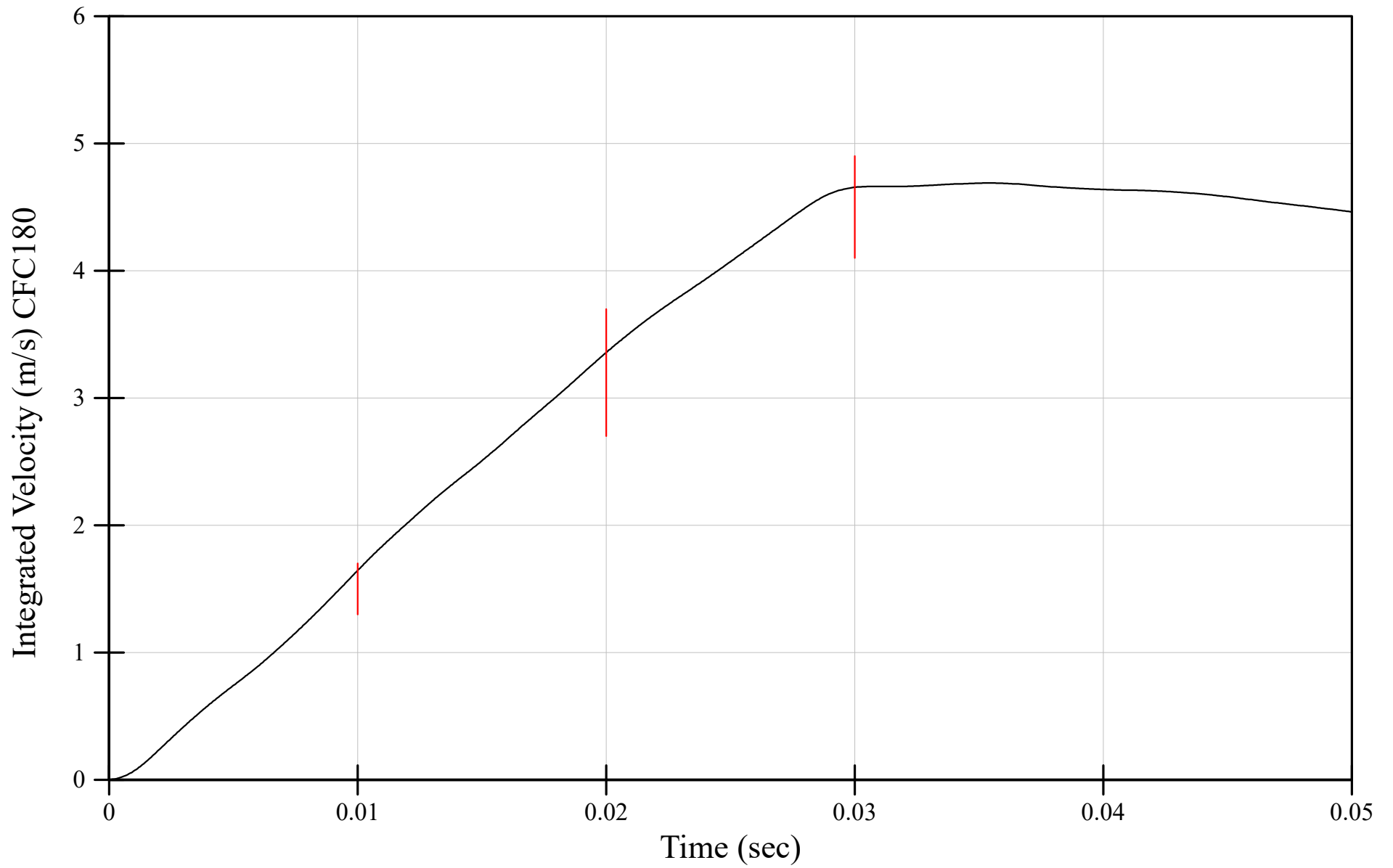
Test Date: 10/12/2021

Test Time: 12:09 PM

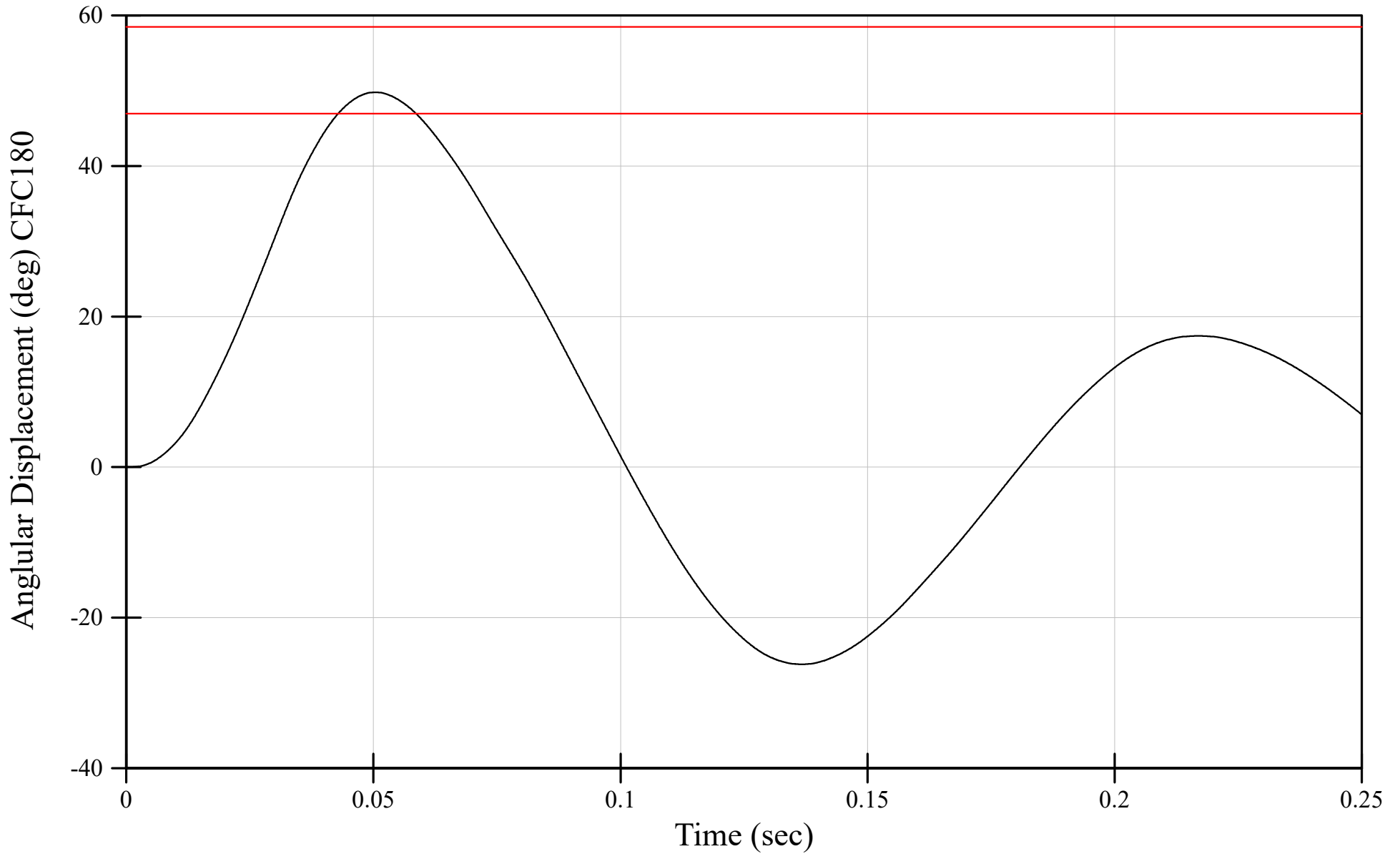
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	22.0	Pass
Test Humidity (%)	10 - 70	61	Pass
Test Velocity (m/s)	4.30 - 4.50	4.37	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	1.3 - 1.7	1.6	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	2.7 - 3.7	3.4	Pass
Pendulum Velocity at 30 ms after T0 (m/s)	4.1 - 4.9	4.7	Pass
Peak Headform Flexion Angle (deg)	47.0 - 58.5	49.8	Pass
Peak Headform Flexion Angle Decay			
Time to 0 degrees (ms)	49.0 - 59.0	50.9	Pass
Peak Lumbar Spine My (Nm)	78.2 - 96.2	94.5	Pass

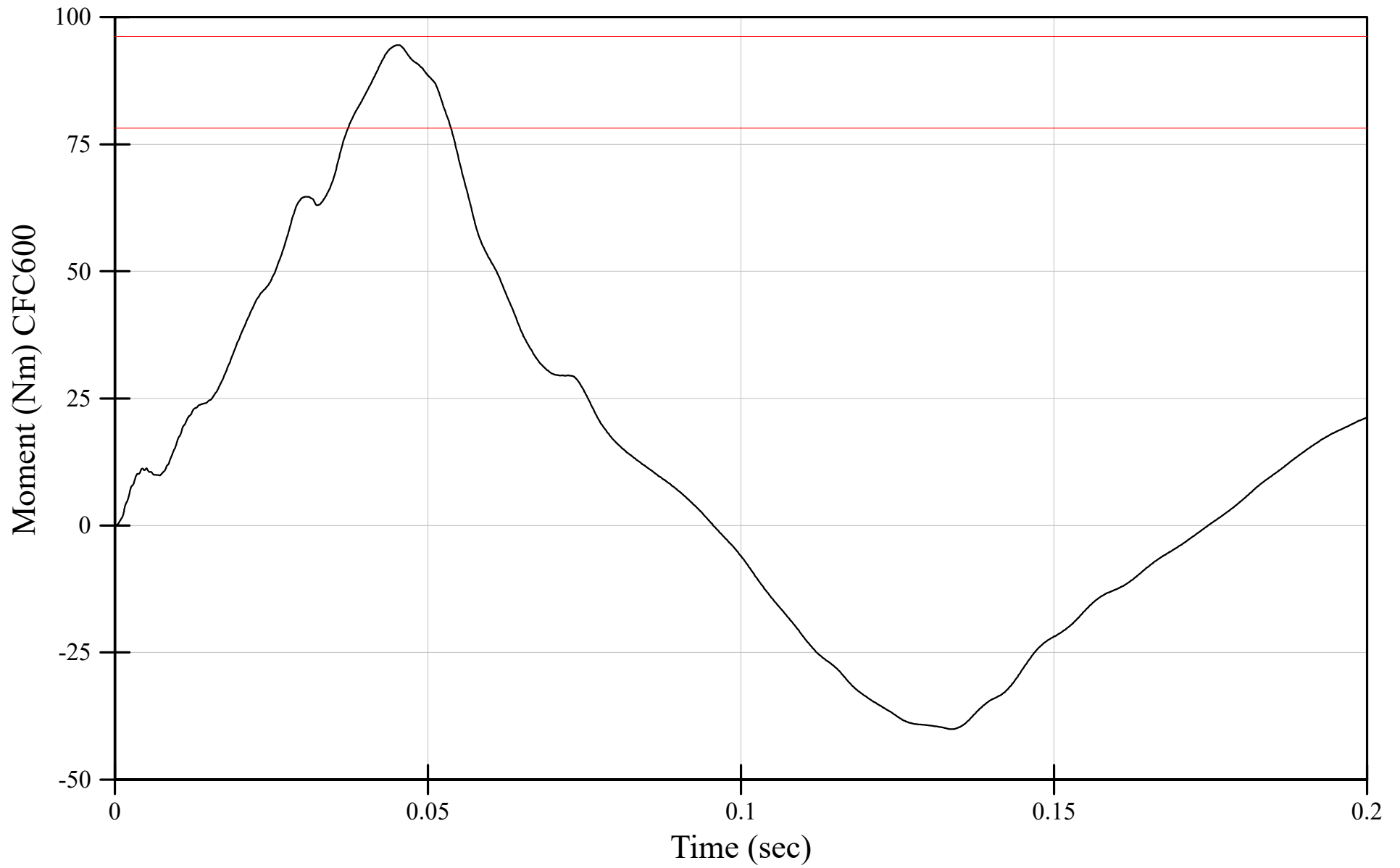
Q3s Lumbar Spine Flexion Qualification
Probe Acceleration
Lumbar Spine Serial Number: DR3755



Q3s Lumbar Spine Flexion Qualification
Peak Headform Flexion Angle
Lumbar Spine Serial Number: DR3755



Q3s Lumbar Spine Flexion Qualification
Peak Lumbar Y Moment
Lumbar Spine Serial Number: DR3755



Q3s Lumbar Spine Left Lateral Qualification Test Results Summary

Dummy Serial Number: 004

Tested Components

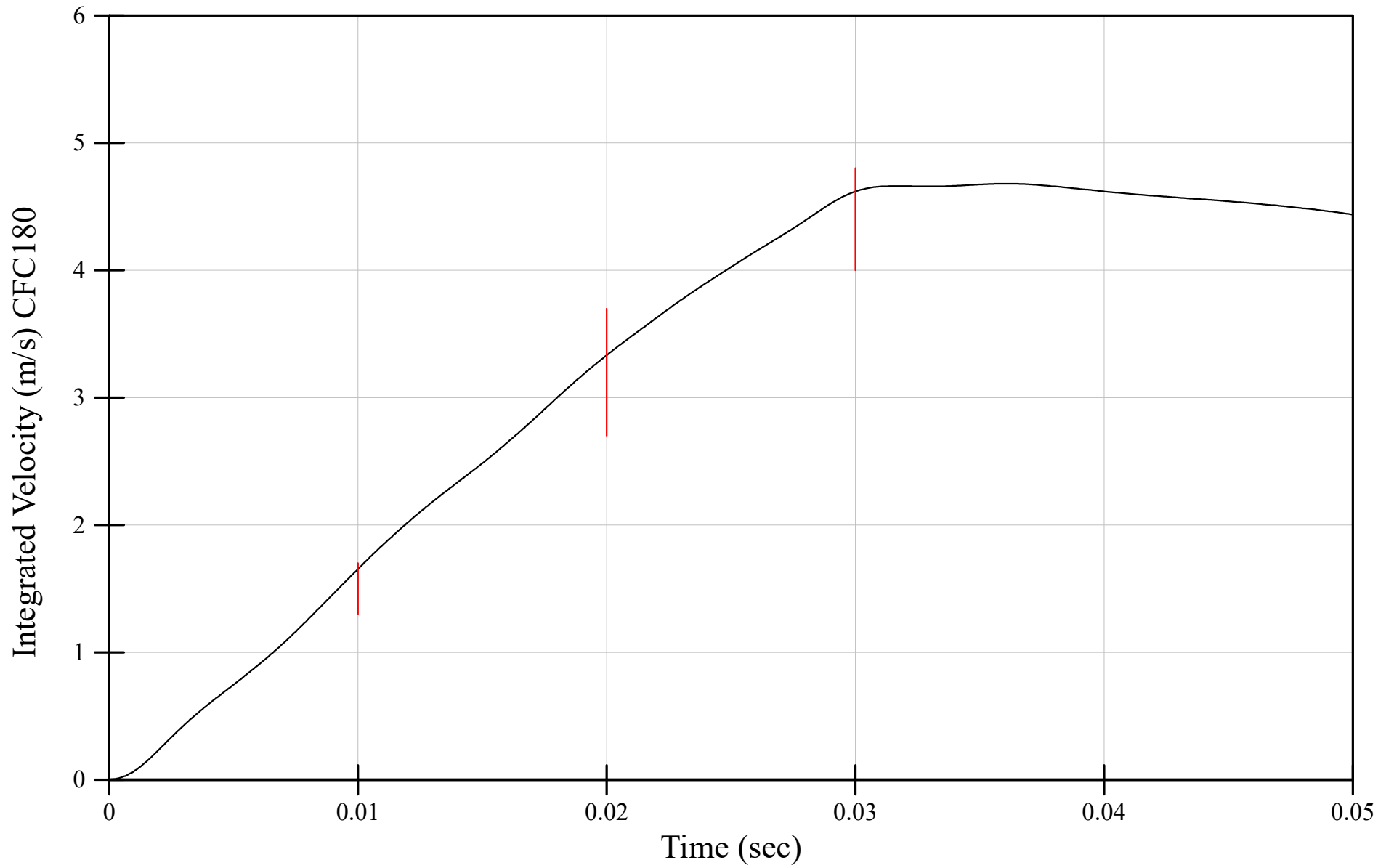
Lumbar Spine: DR3755

Test ID: 211012-10
Test Date: 10/12/2021
Test Time: 1:05 PM

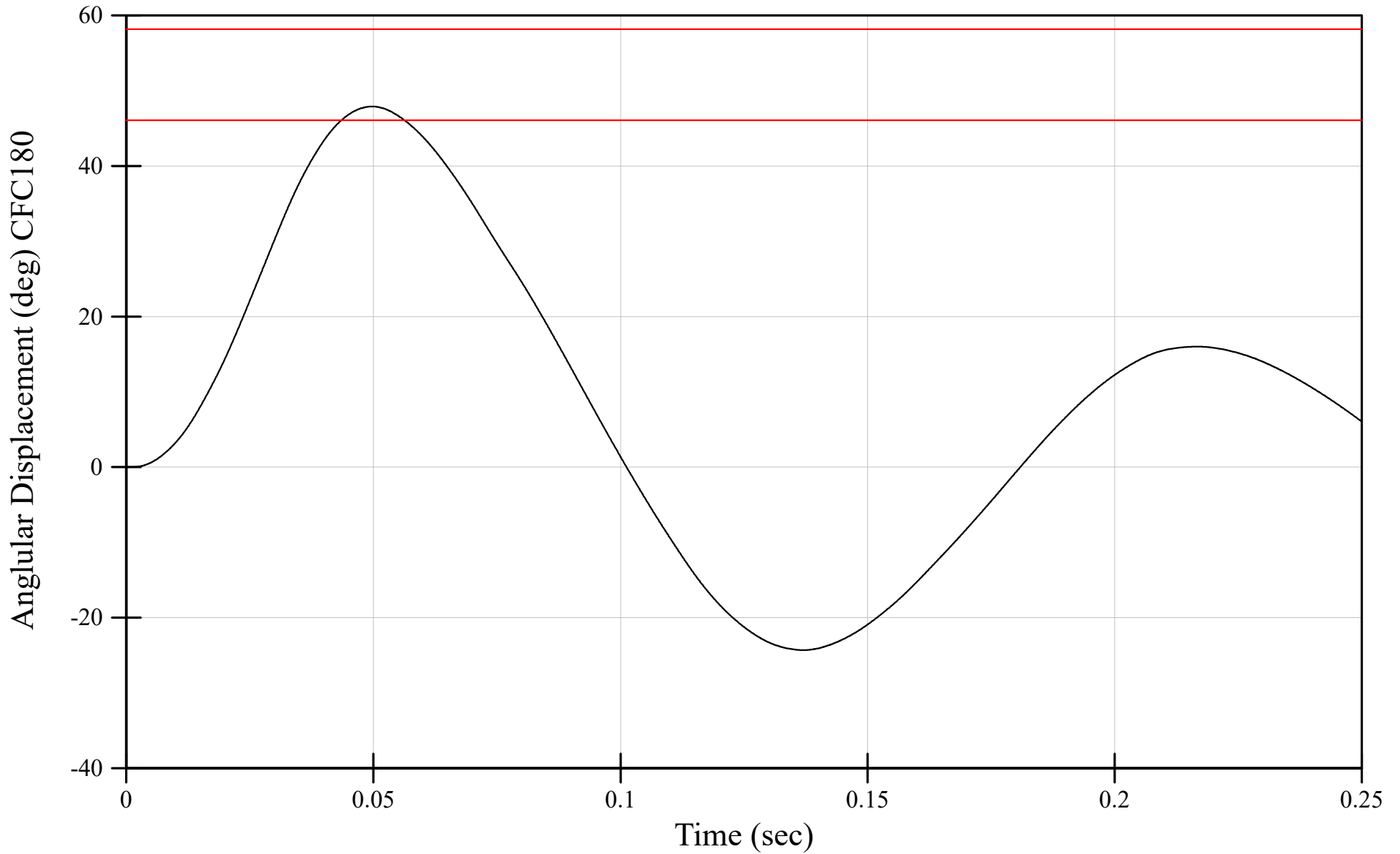
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	20.9	Pass
Test Humidity (%)	10 - 70	61	Pass
Test Velocity (m/s)	4.30 - 4.50	4.37	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	1.30 - 1.70	1.65	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	2.70 - 3.70	3.33	Pass
Pendulum Velocity at 30 ms after T0 (m/s)	4.00 - 4.80	4.62	Pass
Peak Headform Flexion Angle (deg)	46.1 - 58.2	47.9	Pass
Peak Headform Flexion Angle Decay Time to 0 degrees (ms)	48.0 - 59.0	51.5	Pass
Peak Lumbar Spine Mx (Nm)	-98.1 - (-79.4)	-90.5	Pass

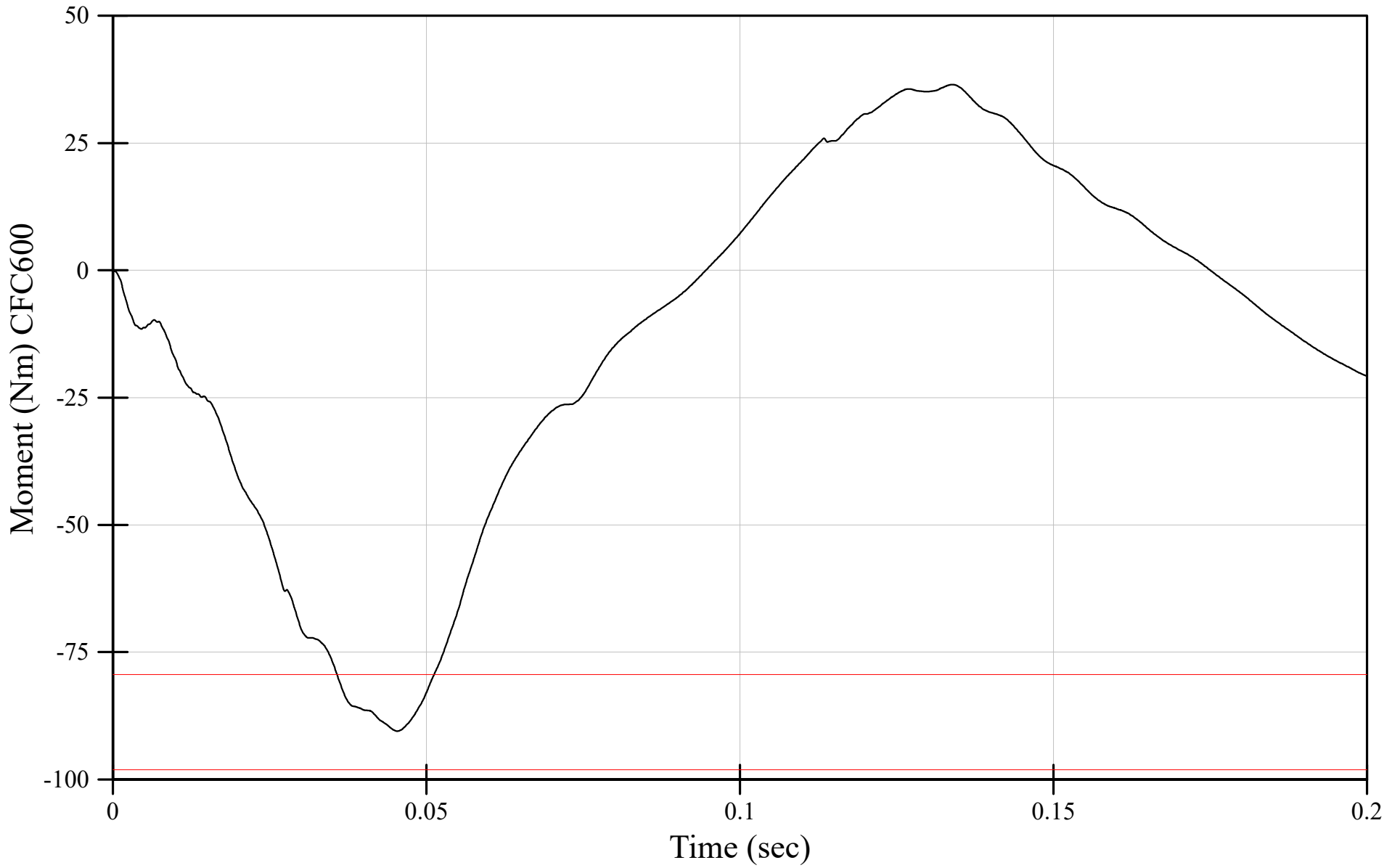
Q3s Lumbar Spine Left Lateral Qualification
Probe Acceleration
Lumbar Spine Serial Number: DR3755



Q3s Lumbar Spine Left Lateral Qualification
Peak Headform Flexion Angle
Lumbar Spine Serial Number: DR3755



Q3s Lumbar Spine Left Lateral Qualification
Peak Lumbar X Moment
Lumbar Spine Serial Number: DR3755



Q3s Lumbar Spine Right Lateral Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

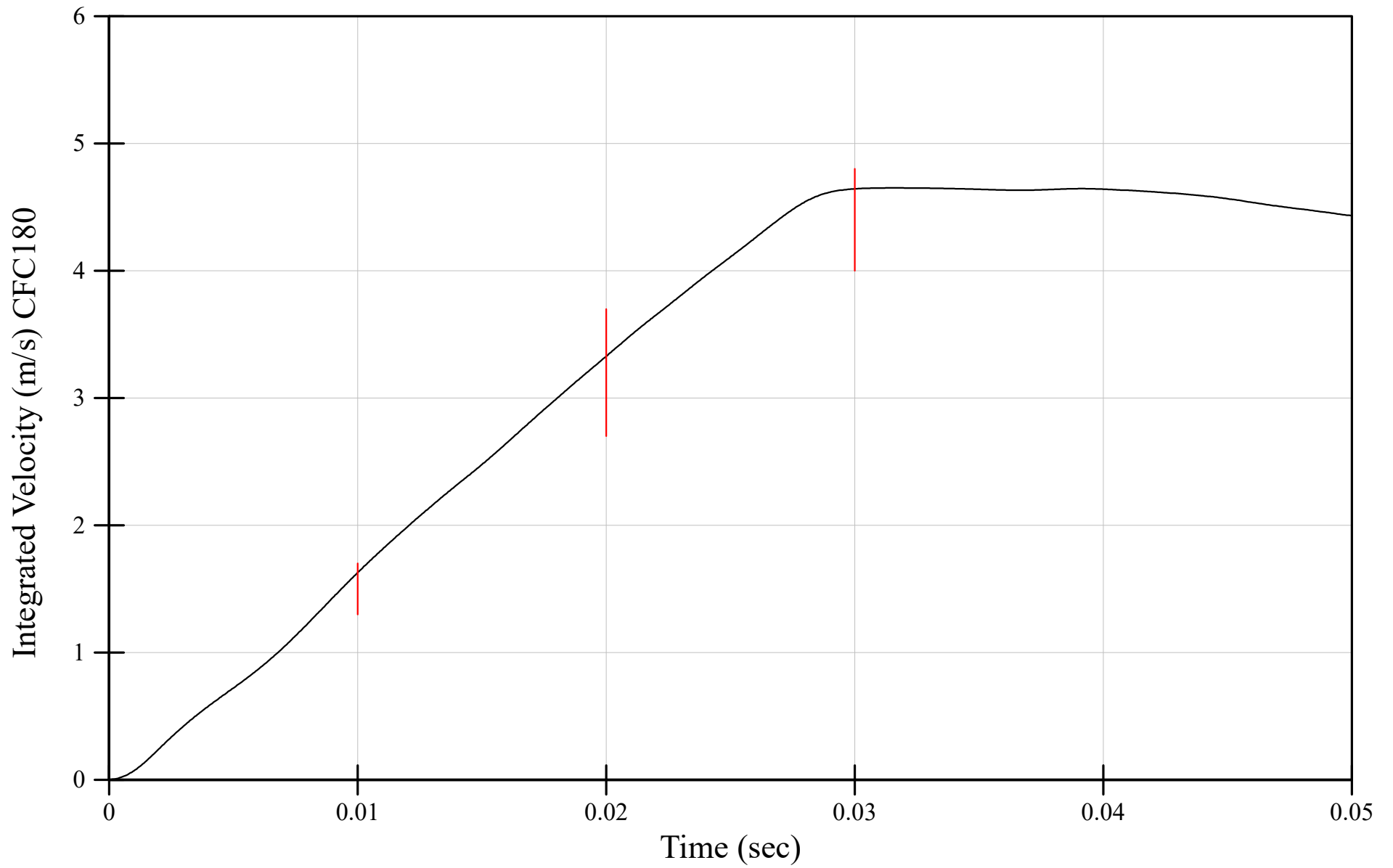
Lumbar Spine:

Test ID: 211012-14
 Test Date: 10/12/2021
 Test Time: 1:34 PM

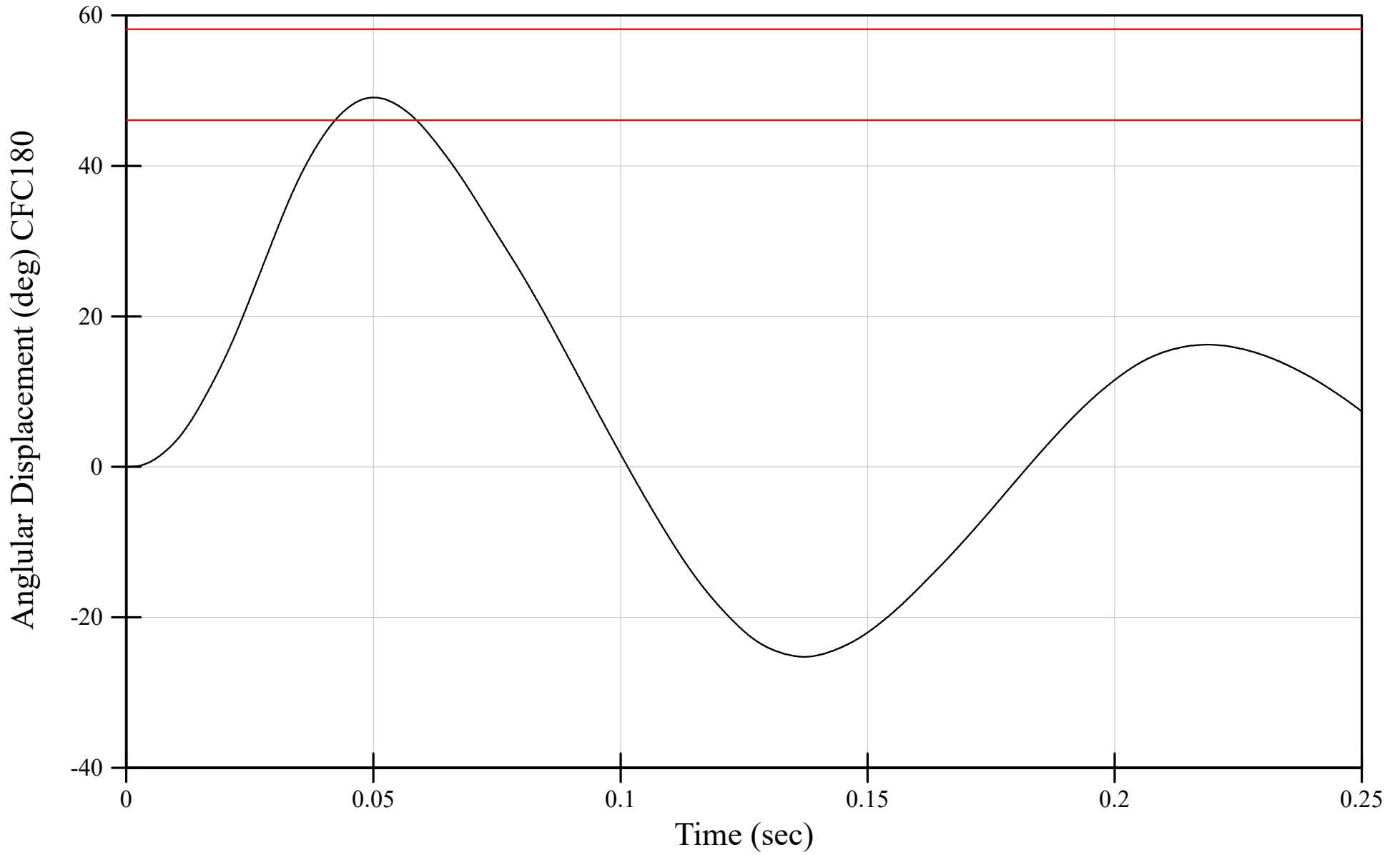
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.4	Pass
Test Humidity (%)	10 - 70	60	Pass
Test Velocity (m/s)	4.30 - 4.50	4.37	Pass
Pendulum Velocity at 10 ms after T0 (m/s)	1.30 - 1.70	1.63	Pass
Pendulum Velocity at 20 ms after T0 (m/s)	2.70 - 3.70	3.33	Pass
Pendulum Velocity at 30 ms after T0 (m/s)	4.00 - 4.80	4.64	Pass
Peak Headform Flexion Angle (deg)	46.1 - 58.2	49.1	Pass
Peak Headform Flexion Angle Decay			
Time to 0 degrees (ms)	48.0 - 59.0	51.5	Pass
Peak Lumbar Spine Mx (Nm)	79.4 - 98.1	90.3	Pass

Q3s Lumbar Spine Right Lateral Qualification
Probe Acceleration
Lumbar Spine Serial Number: DR3755



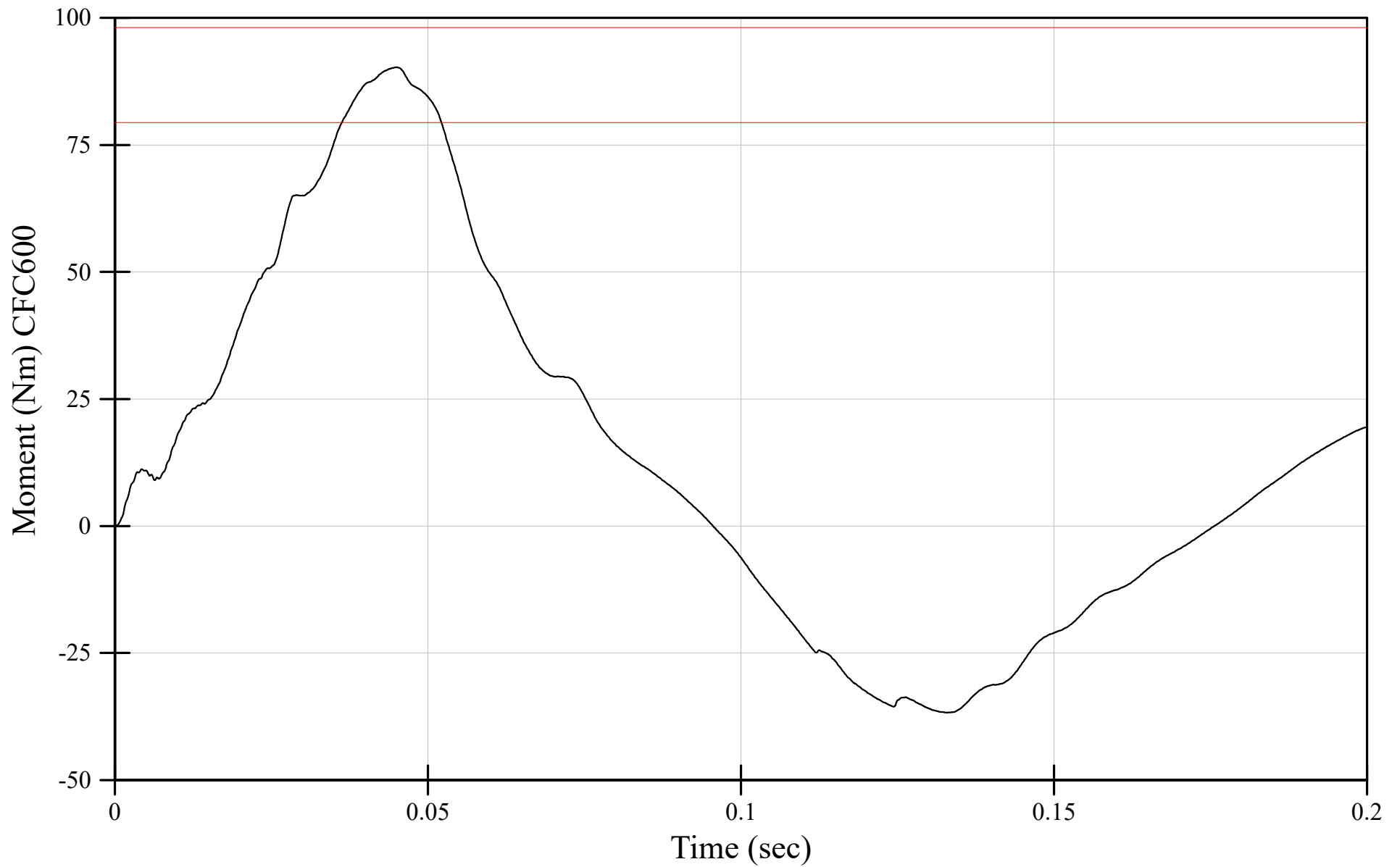
Q3s Lumbar Spine Right Lateral Qualification
Peak Headform Flexion Angle
Lumbar Serial Number:



Q3s Lumbar Spine Right Lateral Qualification

Peak Lumbar X Moment

Lumbar Serial Number:



Q3s Left Shoulder Qualification

Test Results Summary

Dummy Serial Number: 004

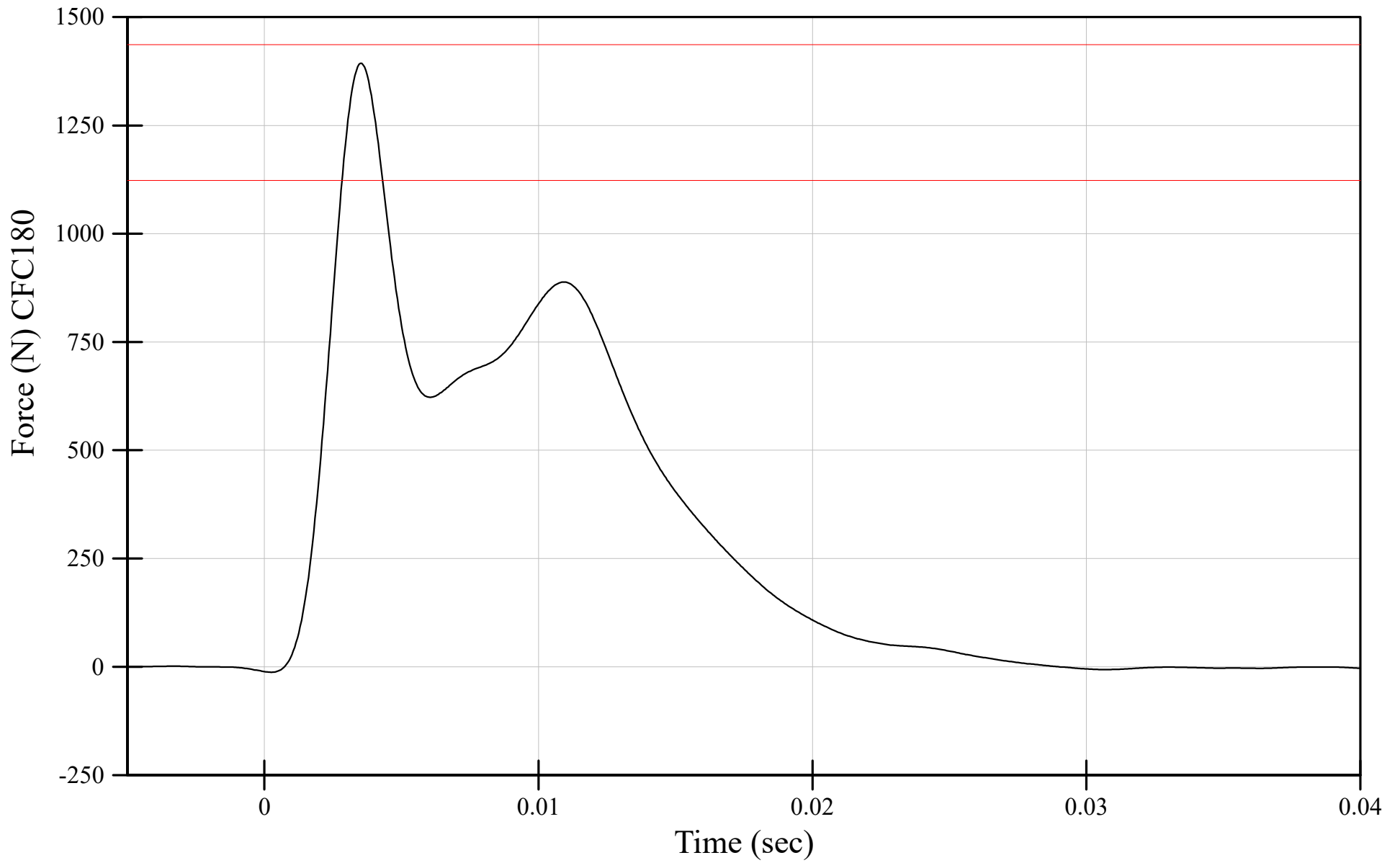
Tested Components

Test ID: 211013-1
Test Date: 10/13/2021
Test Time: 9:00 AM

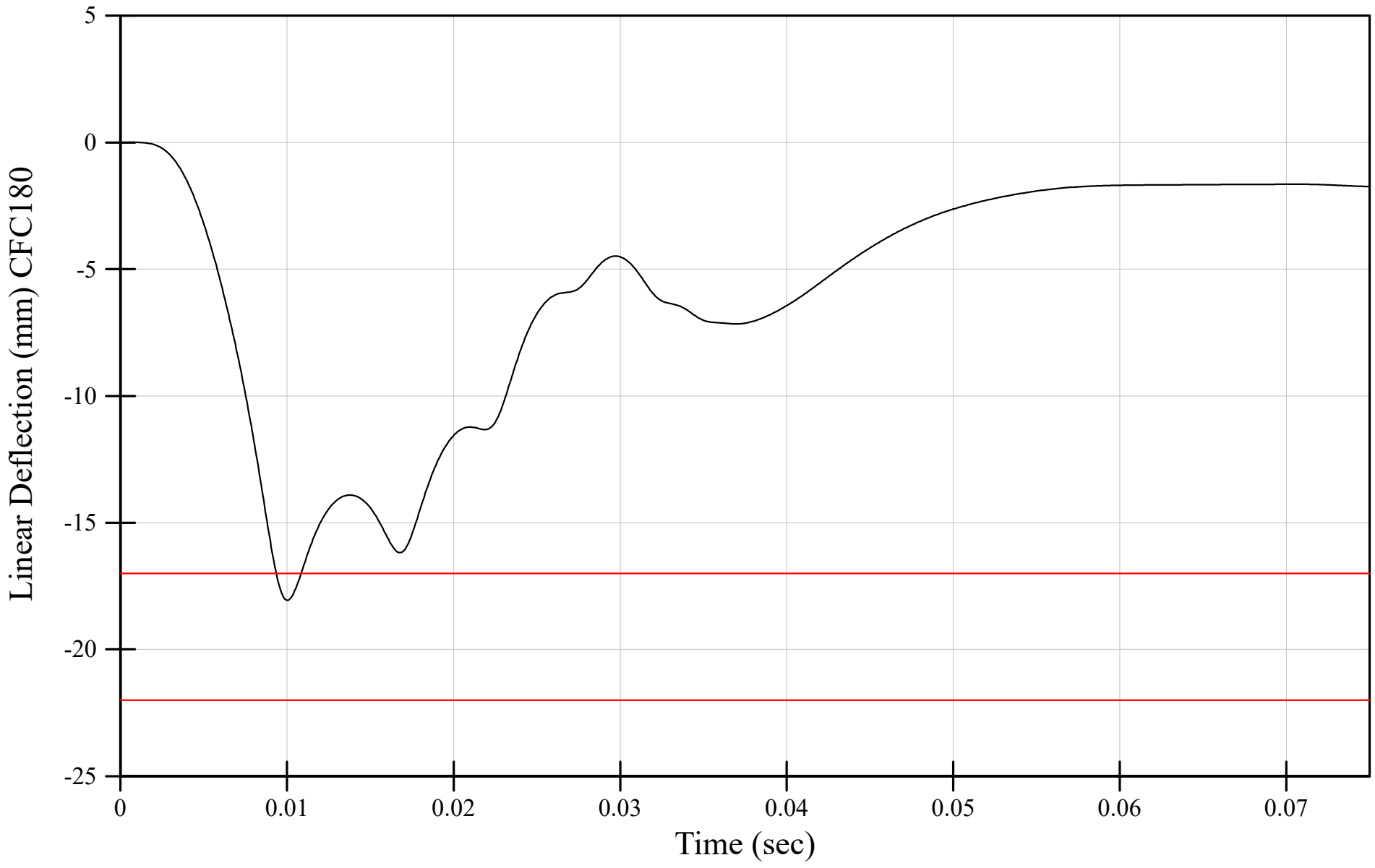
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.0	Pass
Test Humidity (%)	10 - 70	63	Pass
Test Velocity (m/s)	3.50 - 3.70	3.58	Pass
Peak Probe Force (N)	1123 - 1437	1393.7	Pass
Peak Lateral Shoulder Deflection (mm)	-22.0 - (-17.0)	-18.1	Pass

Q3s Left Shoulder Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Left Shoulder Qualification
Peak Shoulder Deflection
Dummy Serial Number: 004



Q3s Left Thorax with Arm Qualification

Test Results Summary

Dummy Serial Number: 004

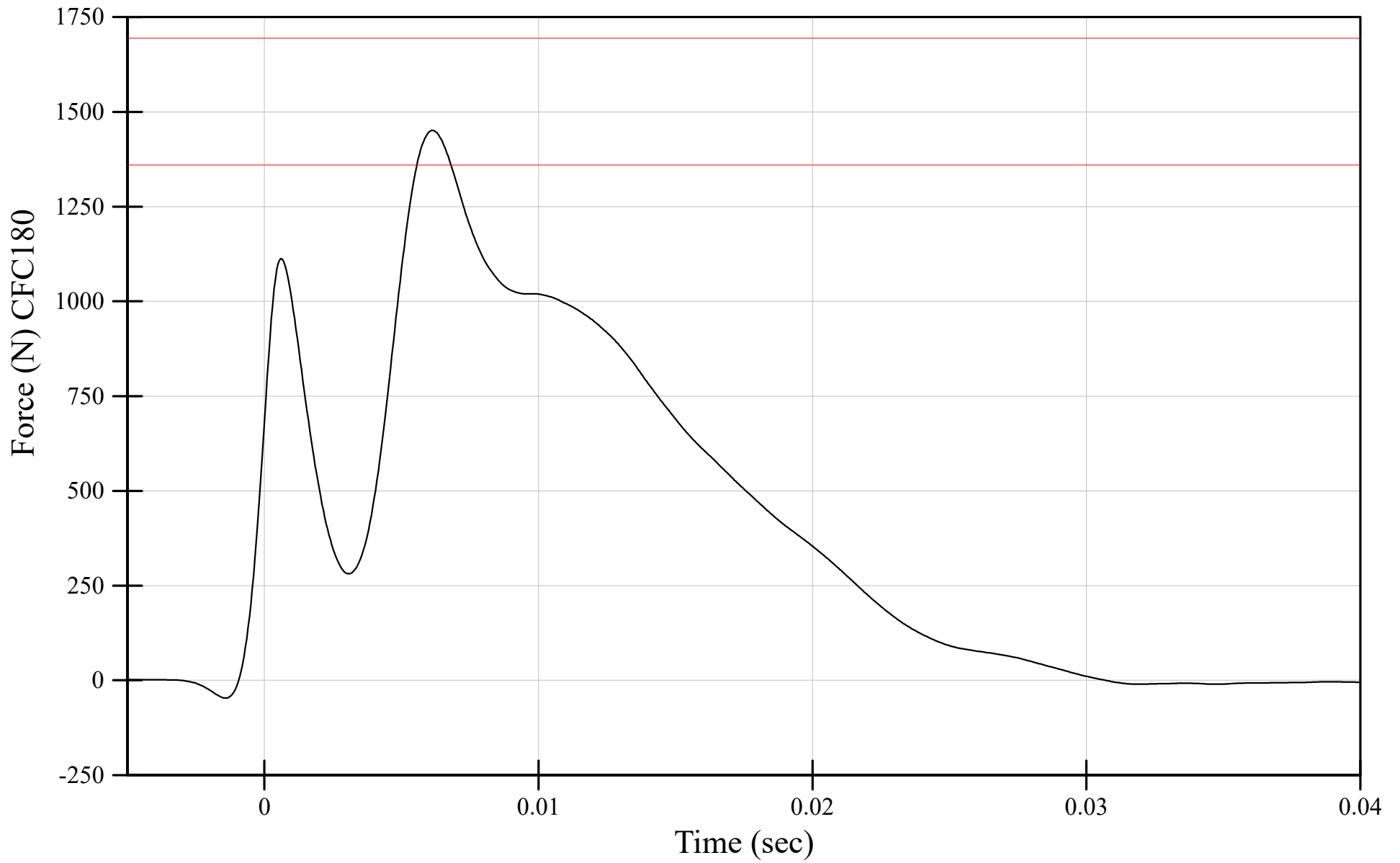
Tested Components
Rib Assembly: DQ6898

Test ID: 211013-16
Test Date: 10/13/2021
Test Time: 3:53 PM

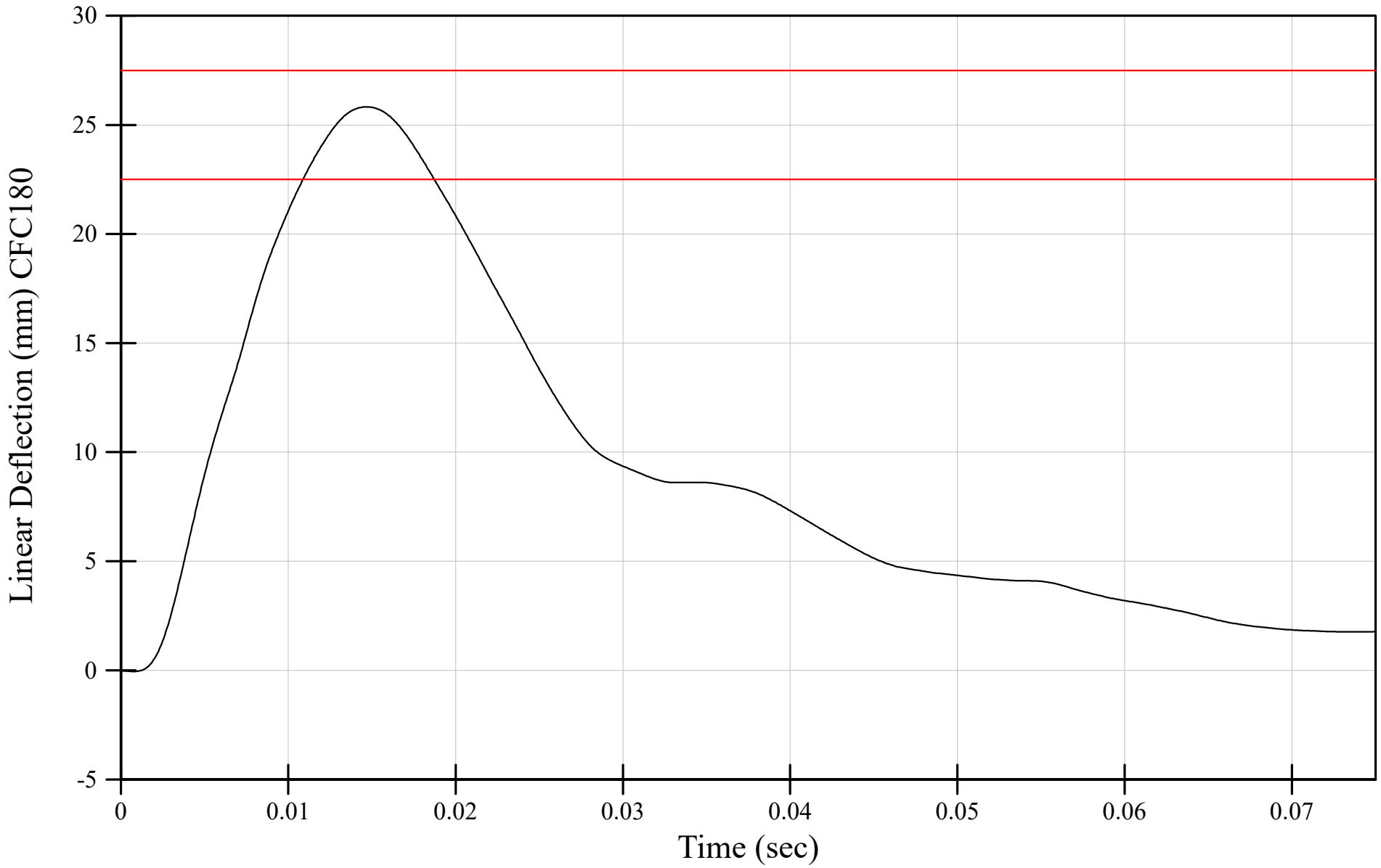
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.0	Pass
Test Humidity (%)	10 - 70	61	Pass
Test Velocity (m/s)	4.90 - 5.10	4.97	Pass
Peak Probe Force (N)	1360 - 1695	1451.2	Pass
Peak Lateral Thorax Displacement (mm)	22.5 - 27.5	25.8	Pass

Q3s Left Thorax with Arm Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Left Thorax with Arm Qualification
Peak Lateral Thorax Displacement
Dummy Serial Number: 004



Q3s Left Thorax without Arm Qualification

Test Results Summary

Dummy Serial Number: 004

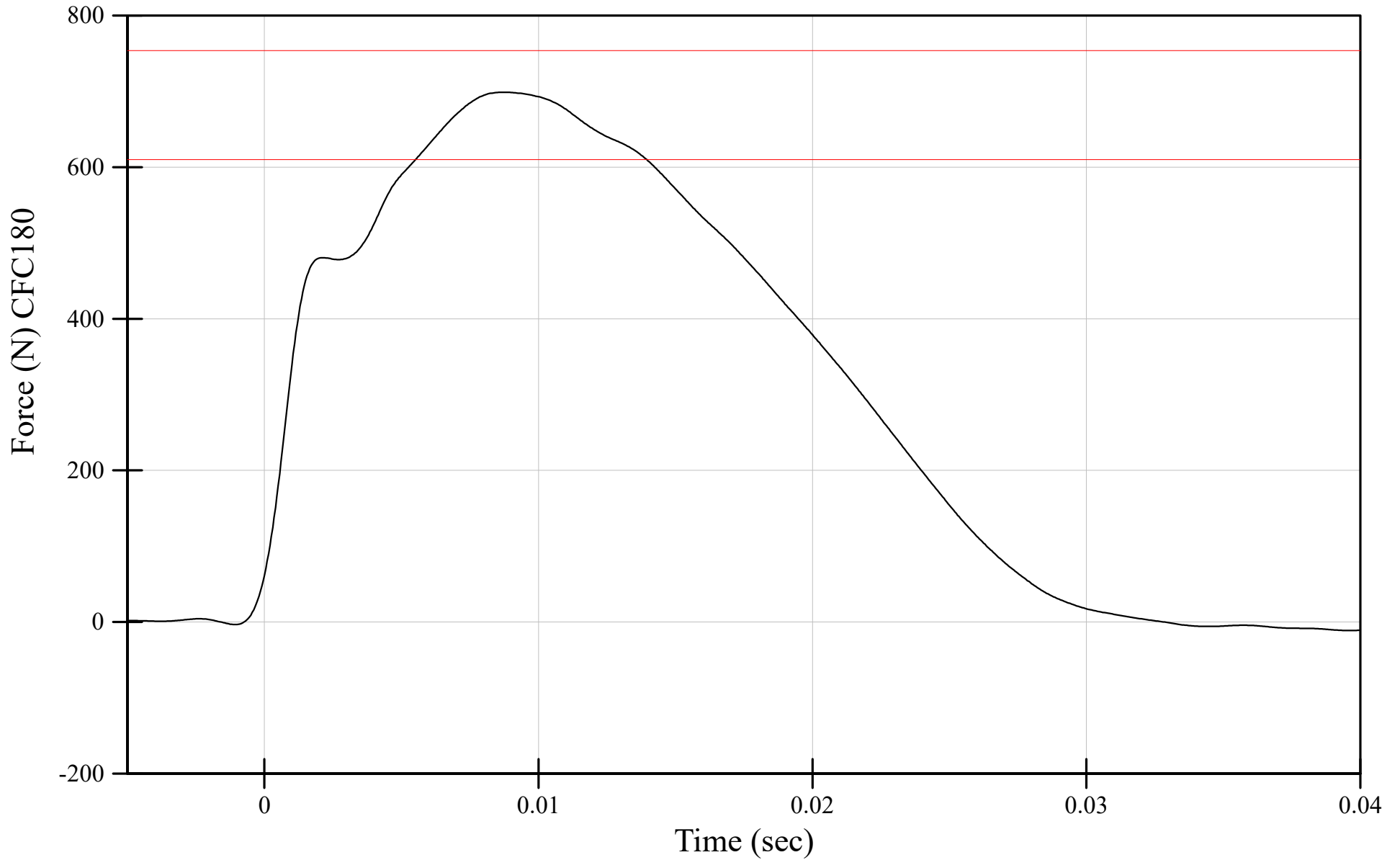
Tested Components
Rib Assembly: DQ6898

Test ID: 211014-2
Test Date: 10/14/2021
Test Time: 7:33 AM

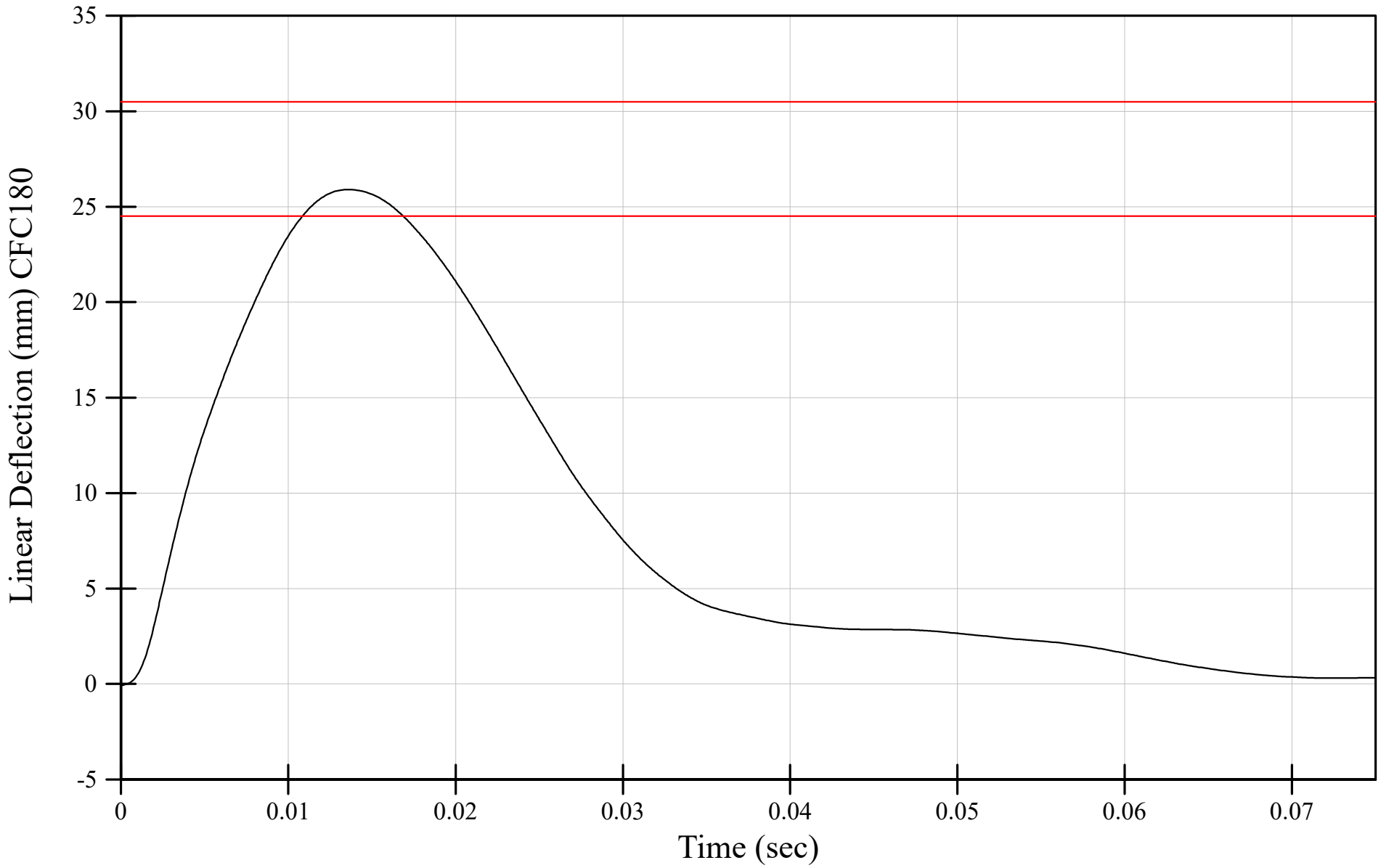
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	20.7	Pass
Test Humidity (%)	10 - 70	56	Pass
Test Velocity (m/s)	3.20 - 3.40	3.29	Pass
Peak Probe Force (N)	610 - 754	699.1	Pass
Peak Lateral Thorax Displacement (mm)	24.5 - 30.5	25.9	Pass

Q3s Left Thorax without Arm Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Left Thorax without Arm Qualification
Peak Lateral Thorax Displacement
Dummy Serial Number: 004



Q3s Left Pelvis Qualification

Test Results Summary

Dummy Serial Number: 004

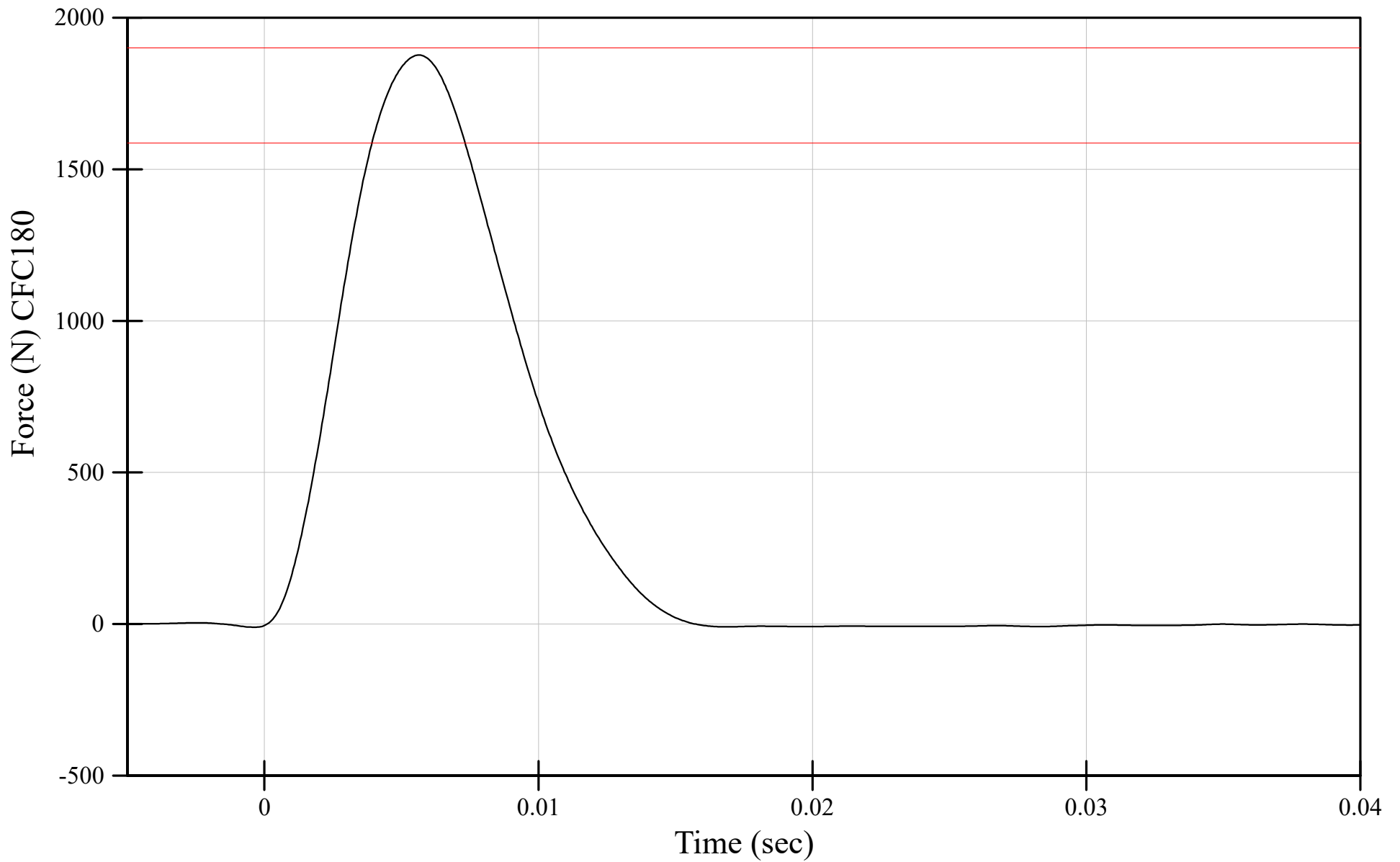
Tested Components

Test ID: 211014-5
Test Date: 10/14/2021
Test Time: 8:49 AM

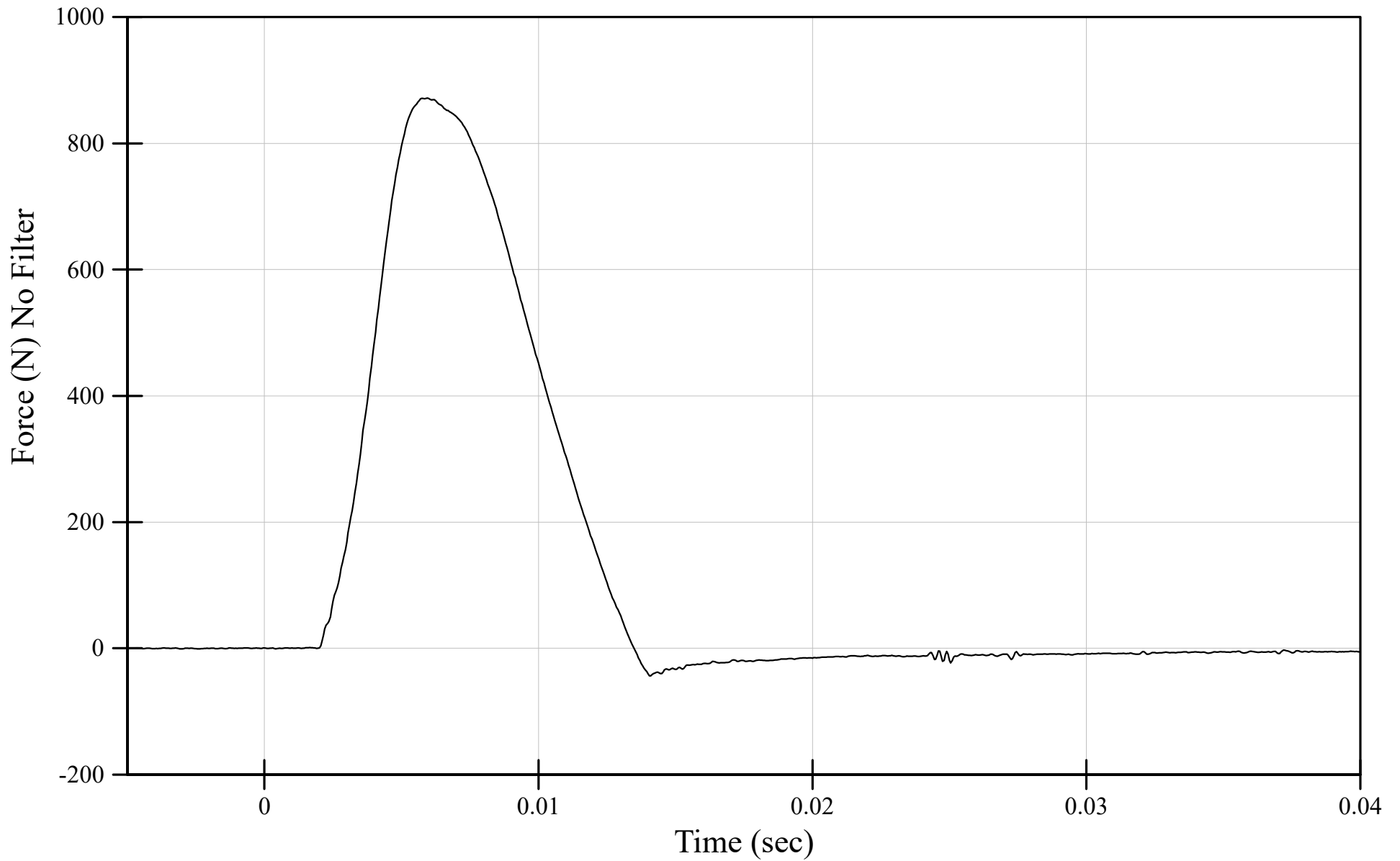
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.8	Pass
Test Humidity (%)	10 - 70	57	Pass
Test Velocity (m/s)	3.90 - 4.10	3.98	Pass
Peak Probe Force (N)	1587 - 1901	1877.2	Pass

Q3s Left Pelvis Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Left Pelvis Qualification
Pubic Force
Dummy Serial Number: 004



Q3s Right Shoulder Qualification

Test Results Summary

Dummy Serial Number: 004

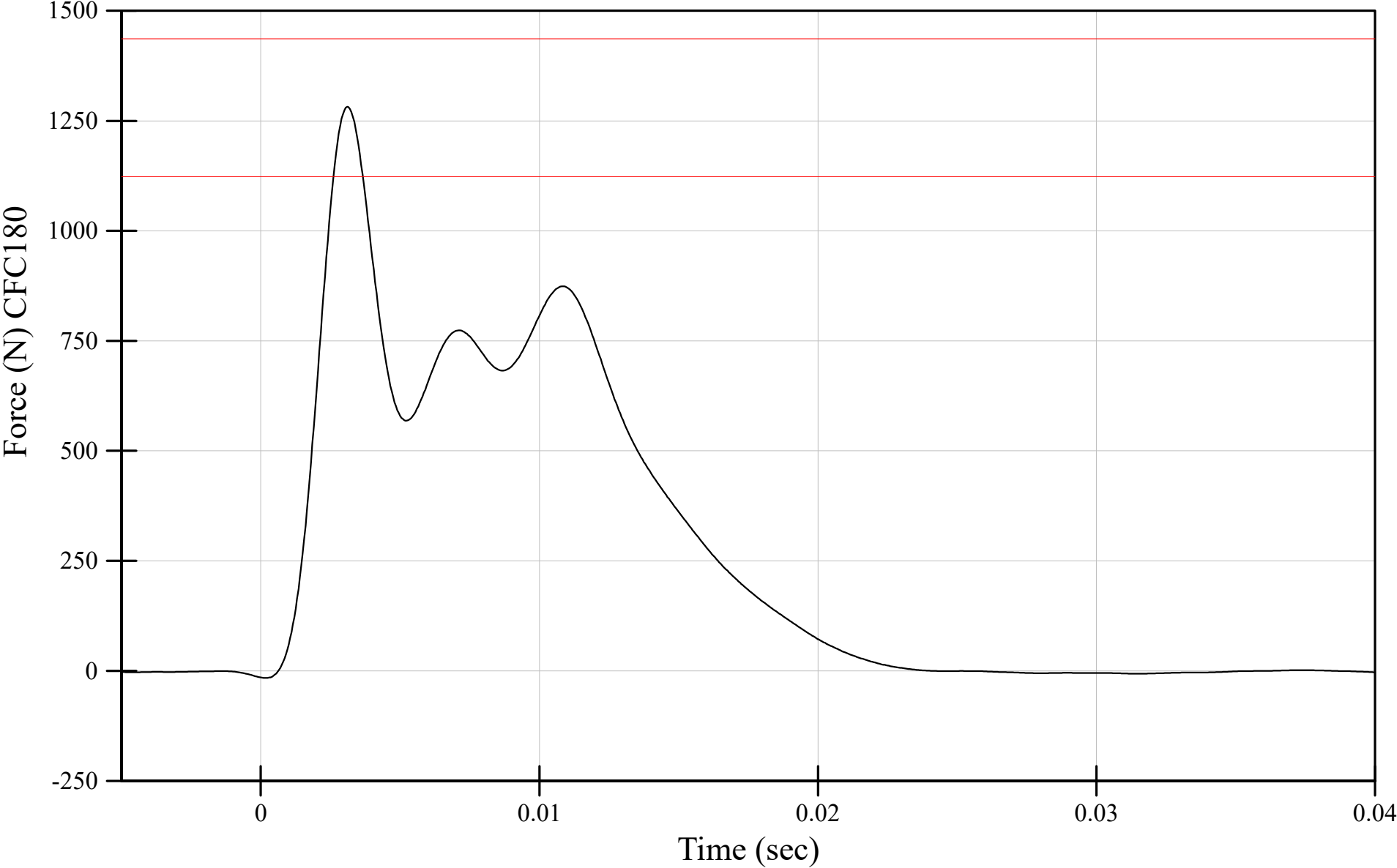
Tested Components

Test ID: 211101-8
Test Date: 11/1/2021
Test Time: 2:01 PM

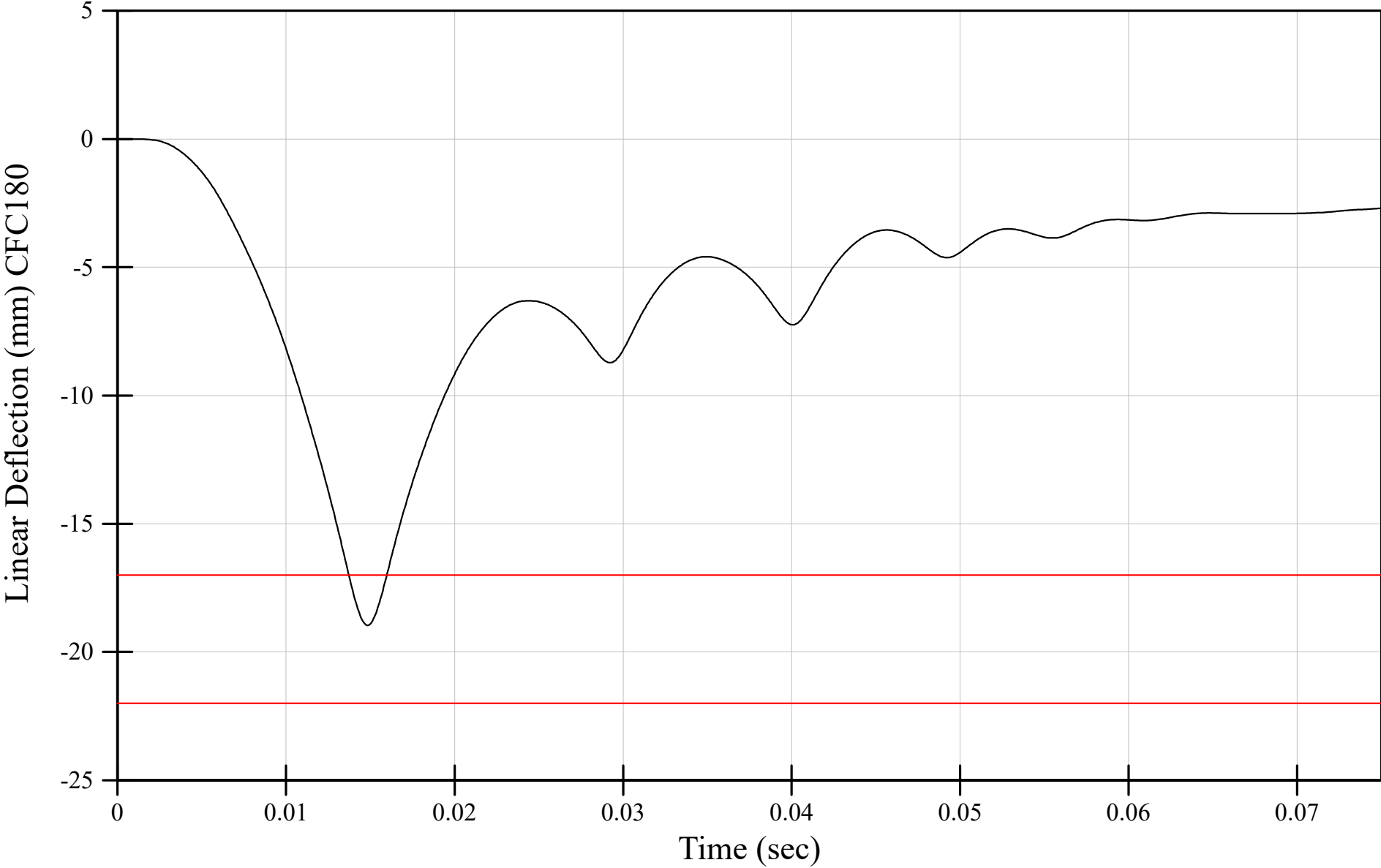
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.8	Pass
Test Humidity (%)	10 - 70	45	Pass
Test Velocity (m/s)	3.50 - 3.70	3.59	Pass
Peak Probe Force (N)	1123 - 1437	1282.1	Pass
Peak Lateral Shoulder Deflection (mm)	-22.0 - (-17.0)	-19.0	Pass

Q3s Right Shoulder Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Right Shoulder Qualification
Peak Shoulder Deflection
Dummy Serial Number: 004



Q3s Right Thorax with Arm Qualification

Test Results Summary

Dummy Serial Number: 004

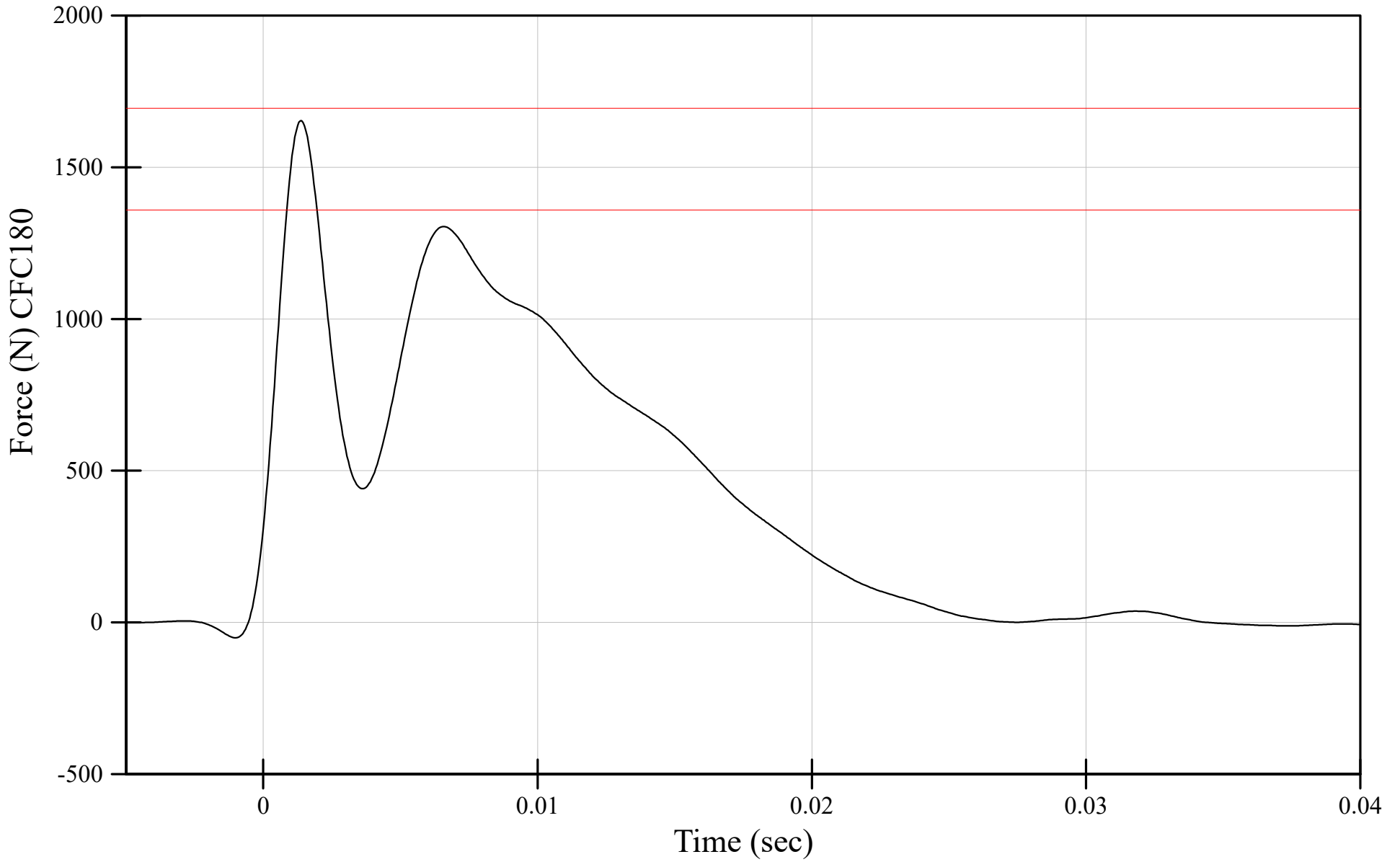
Tested Components
Rib Assembly: DR0603

Test ID: 211101-7
Test Date: 11/1/2021
Test Time: 1:31 PM

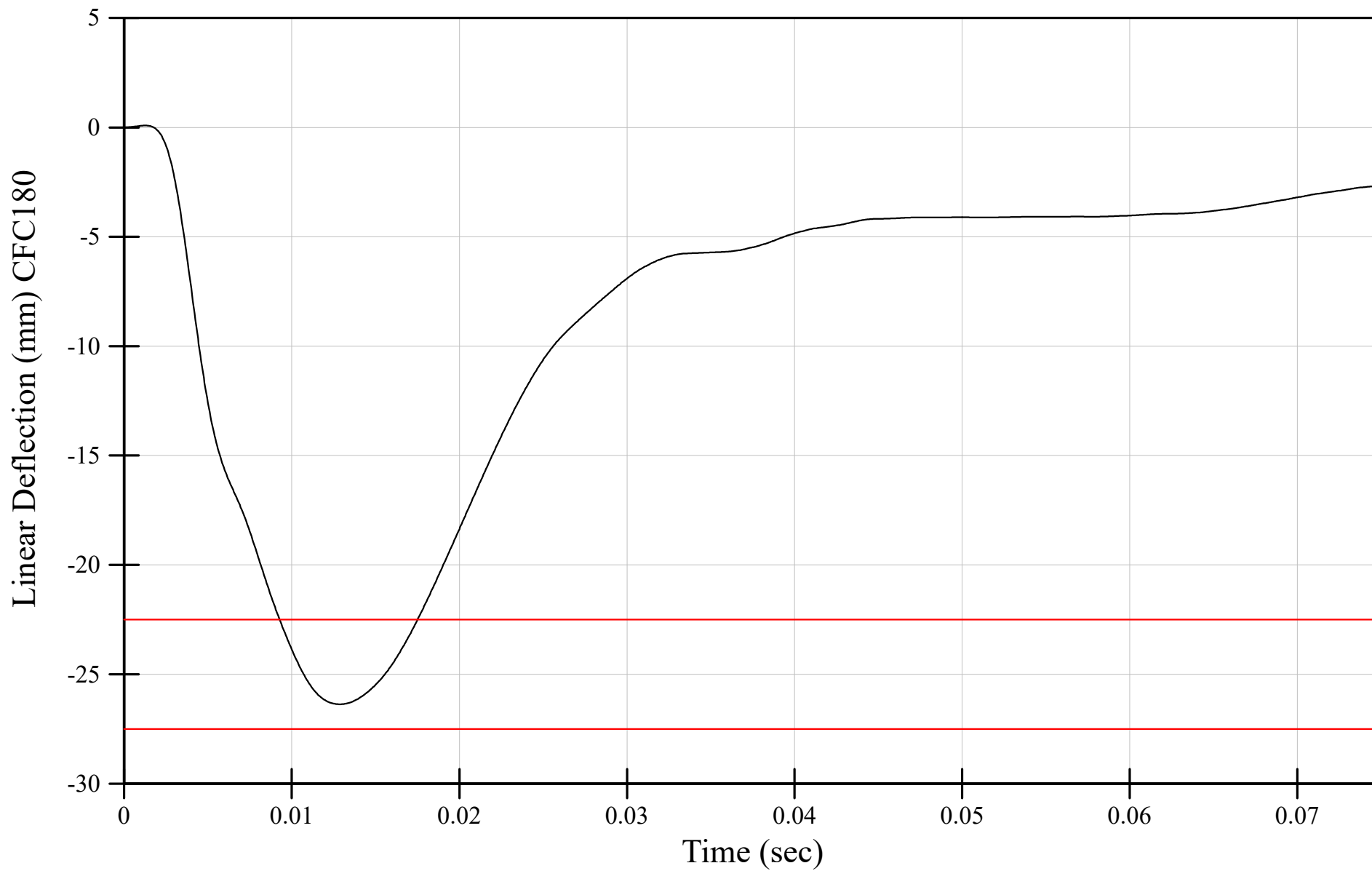
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.0	Pass
Test Humidity (%)	10 - 70	48	Pass
Test Velocity (m/s)	4.90 - 5.10	4.97	Pass
Peak Probe Force (N)	1360 - 1695	1654.4	Pass
Peak Lateral Thorax Displacement (mm)	-27.5 - (-22.5)	-26.4	Pass

Q3s Right Thorax with Arm Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Right Thorax with Arm Qualification
Peak Lateral Thorax Displacement
Dummy Serial Number: 004



Q3s Right Thorax without Arm Qualification

Test Results Summary

Dummy Serial Number: 004

Tested Components

Rib Assembly: DR0603

Test ID: 211101-6

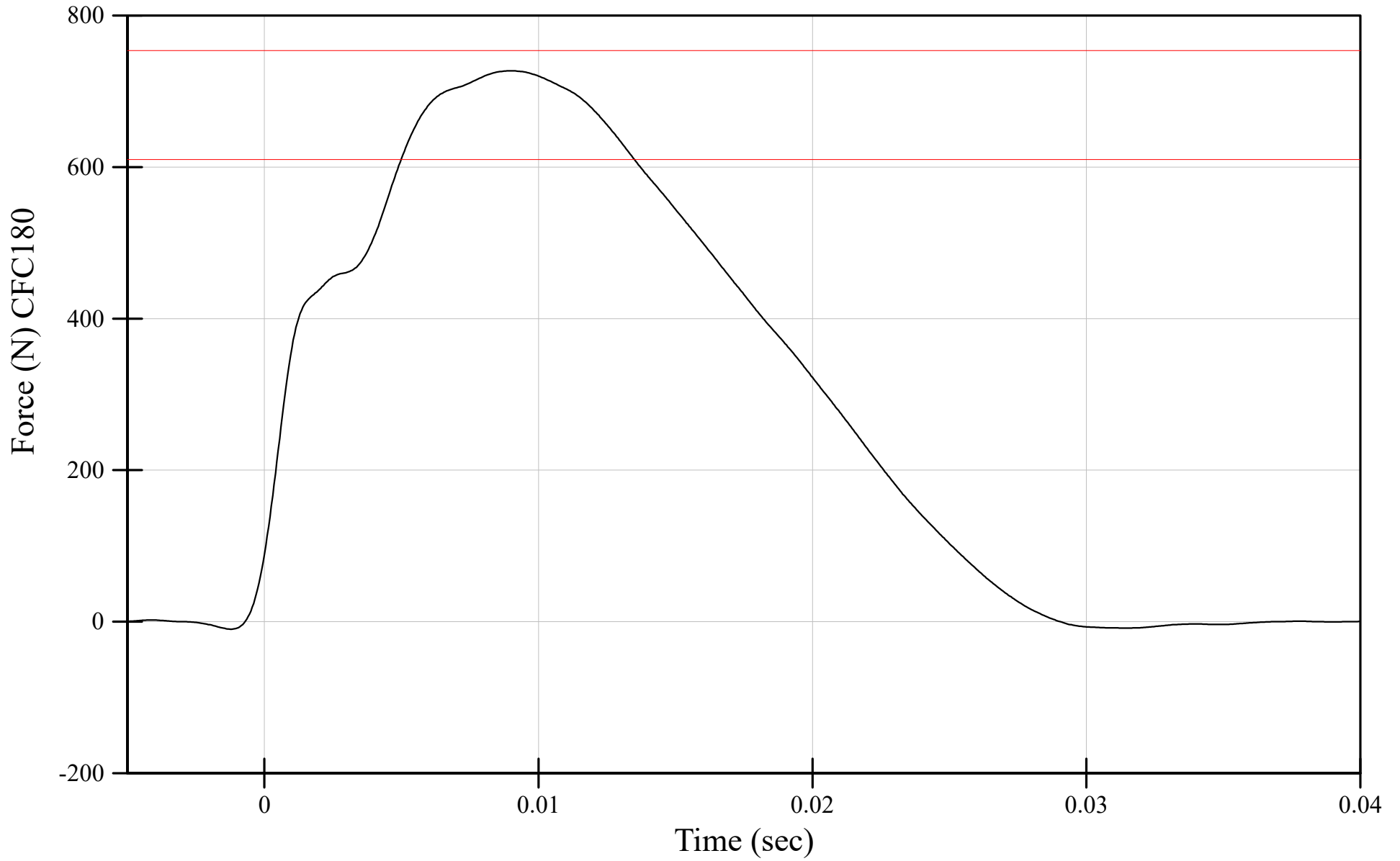
Test Date: 11/1/2021

Test Time: 12:29 PM

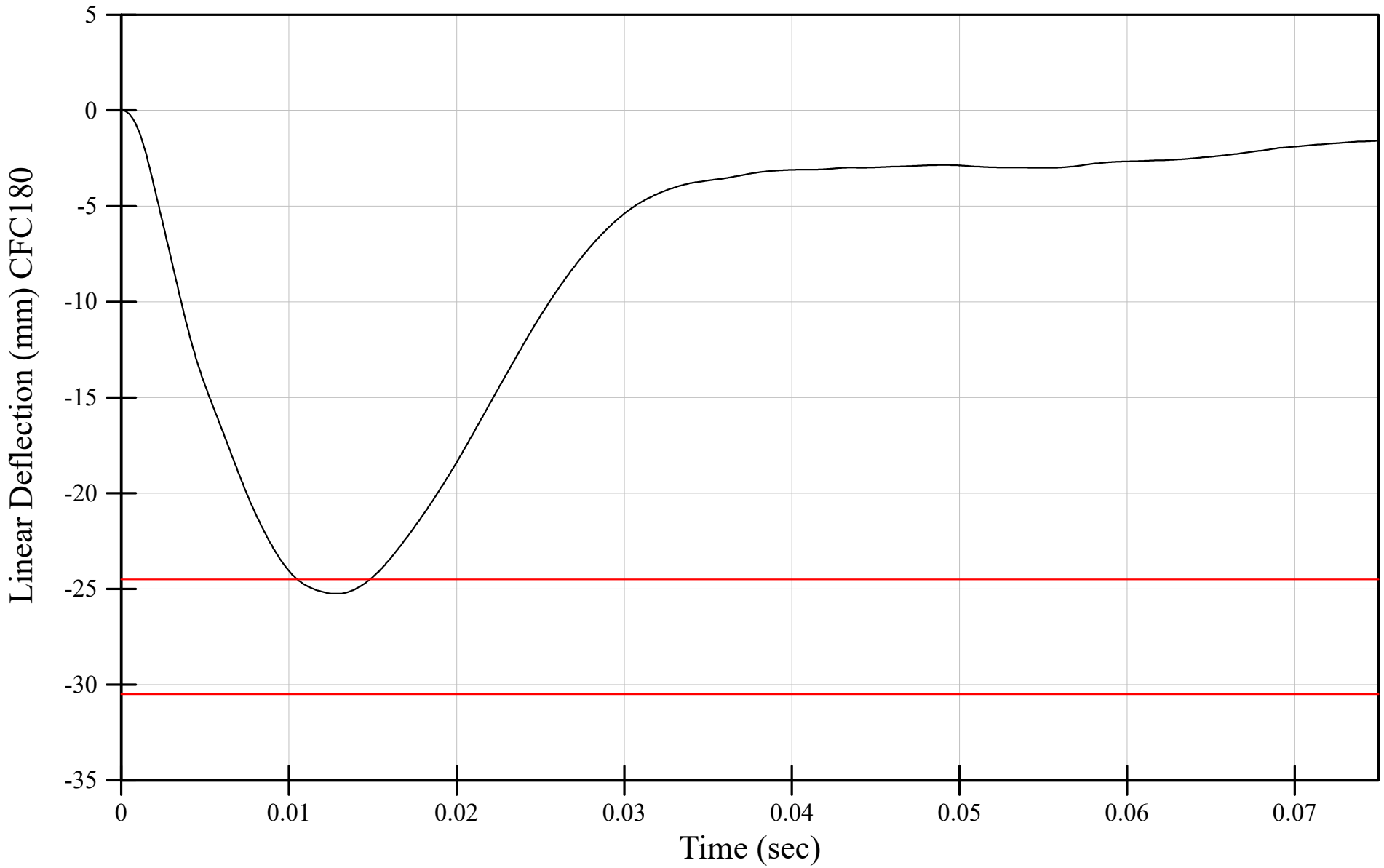
Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.7	Pass
Test Humidity (%)	10 - 70	43	Pass
Test Velocity (m/s)	3.20 - 3.40	3.21	Pass
Peak Probe Force (N)	610 - 754	727.5	Pass
Peak Lateral Thorax Displacement (mm)	-30.5 - (-24.5)	-25.3	Pass

Q3s Right Thorax without Arm Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Right Thorax without Arm Qualification
Peak Lateral Thorax Displacement
Dummy Serial Number: 004



Q3s Right Pelvis Qualification

Test Results Summary

Dummy Serial Number: 004

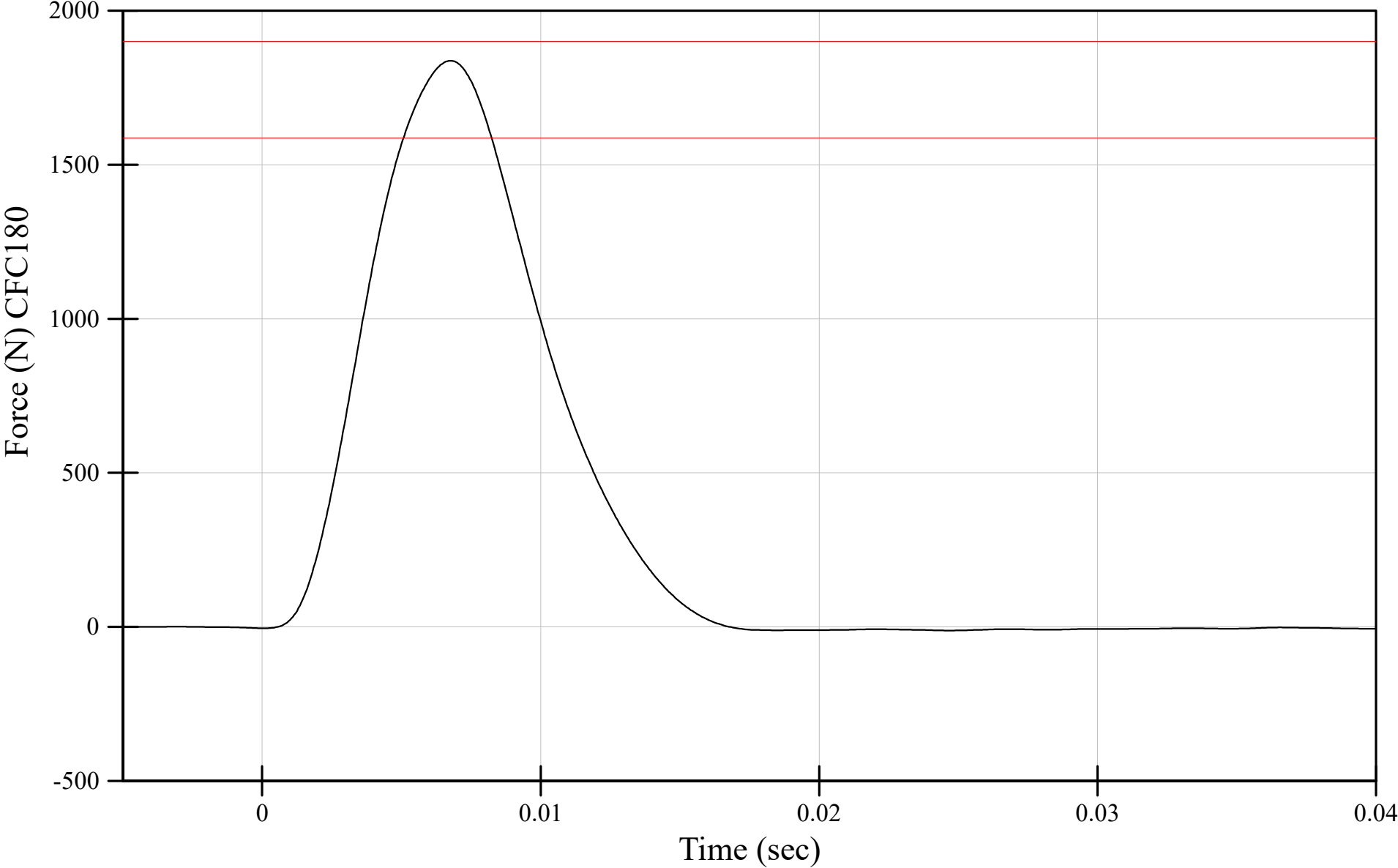
Tested Components

Test ID: 211101-10
Test Date: 11/1/2021
Test Time: 2:37 PM

Test Results

<u>Test Parameter</u>	<u>Specification Range*</u>	<u>Result</u>	<u>Pass/Fail</u>
Test Temperature (°C)	20.6 - 22.2	21.2	Pass
Test Humidity (%)	10 - 70	45	Pass
Test Velocity (m/s)	3.90 - 4.10	3.98	Pass
Peak Probe Force (N)	1587 - 1901	1838.4	Pass

Q3s Right Pelvis Qualification
Peak Pendulum Force
Dummy Serial Number: 004



Q3s Right Pelvis Qualification
Pubic Force
Dummy Serial Number: 004

