Content

01_ Test matrix

02_ Test results
**Test matrix**

<table>
<thead>
<tr>
<th>Dummy</th>
<th>Item</th>
<th>2 pts &amp; CRS</th>
<th>2 pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1,5</td>
<td>Infant carrier 129 belted</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Q3</td>
<td>Toddler R44</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Q6</td>
<td>Booster cushion R44</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Q10</td>
<td>Booster cushion R44</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

- CRSs: Infant carrier, toddler, booster cushion
- Dummies: Q1.5, Q3, Q6 and Q10
- Test configuration: 2pts vs. 2pts + CRS
- Seat distance: R80
- R80 test pulse
Dummy Q 1,5; Without CRS; R80 test pulse
Dummy Q 1,5; Without CRS; R80 test pulse

**HEAD**
- Head Resultant Acc:
  - 29.99 g at 107.8 ms
- HPC: 73.47
  - between 102.3 and 107.9 ms
  - 11.75% of limit value 600
- Head Acc: 3ms: 29.79 g
  - between 107.3 and 108.4 ms
  - 39.72% of limit value 75

**CHEST**
- Chest Resultant Acc:
  - 27.24 g at 168.7 ms
- Chest Acc: 3ms: 17.46 g
  - between 107.5 and 179 ms
  - 31.79% of limit value 55

**UPPER NECK**
- Neck tension force (Fz):
  - 653.33 N at 113.2 ms
- Neck bending moment (My):
  - 17.69 Nm at 179.1 ms

**CHEST, ABDOMINAL**
- Chest Deflection:
  - 1.55 mm at 174.5 ms
- Abdomen Pressure Right:
  - 0.07 bar at 173.1 ms
  - 5.6% of limit value 1.2
- Abdominal Pressure Left:
  - 0.11 bar at 173.1 ms
  - 8.14% of limit value 1.2
Dummy Q3; Without CRS; R80 test pulse
 Dummy Q3; Without CRS; R80 test pulse
Dummies Q 1,5 and Q3; Without CRS; R80 test pulse
Dummy Q 1.5; With CRS; R80 test pulse
Dummy Q 1.5; With CRS; R80 test pulse

**HEAD**
- Head Resultant Acc: 49.8 g at 67.9 ms
- HFC: 145.31
- Between 59.5 and 74.5 ms
- 24.22% of limit value 660
- Head Acc 3ms: 46.33 g
- Between 65.2 and 90.2 ms
- 61.78% of limit value 72

**UPPER NECK**
- Neck tension force (Fz): 110.75 N at 102 ms
- Neck bending moment (M): 10.47 Nm at 110.5 ms

**CHEST**
- Chest Resultant Acc: 31.71 g at 74.7 ms
- Chest Acc 3ms: 34.42 g
- Between 72.5 and 75.5 ms
- 57.13% of limit value 65

**CHEST, ABDOMINAL**
- Chest Deflection: -4.59 mm at 85.9 ms
- Abdominal Pressure Right: 0.99 bar at 106.6 ms
- 4% of limit value 1.2
- Abdominal Pressure Left: 0.94 bar at 101.9 ms
- 58% of limit value 1.2
Dummy Q3; With CRS; R80 test pulse
Dummy Q3; With CRS; R80 test pulse

**HEAD**
- Head Resultant Acc: 66.17 g at 119.7 ms
- hPC: 357.66
- between 110.7 and 125.3 ms
- 44.71 % of limit value 300
- Head Acc 3ms: 63.87 g
- between 110.2 and 125.2 ms
- 75.94 % of limit value 90

**UPPER NECK**
- Neck tension force (F2z): 954.11 N at 81.6 ms
- Neck bending moment (My): 6.01 Nm at 111.9 ms

**CHEST**
- Chest Resultant Acc: 42.61 g at 83.5 ms
- Chest Acc 3ms: 41.20 g
- between 82 and 85 ms
- 70 % of limit value 55

**CHEST, ABDOMINAL**
- Chest Deflection: -23.76 mm at 125.9 ms
- Abdominal Pressure Right: 0.18 bar at 131.1 ms
- 18.25 % of limit value 1
- Abdominal Pressure Left: 0.33 bar at 130.1 ms
- 33.21 % of limit value 1
Dummies Q1.5 and Q 3; With CRS; R80 test pulse
Dummy Q6; Without CRS; R80 test pulse
Dummy Q6; Without CRS; R80 test pulse

**HEAD**

Head Resultant Acc:
- 49.56 g at 124 ms
- HPC: 125.15 g
- between 113.7 and 128.7 ms
- 15.64 % of limit value 800
- Head Acc: 3ms: 40.05 g
- between 121.0 and 124.0 ms
- 50.05 % of limit value 80

**CHEST**

Chest Resultant Acc:
- 16.86 g at 131.4 ms
- Chest Acc: 3ms: 16.84 g
- between 130.3 and 135.5 ms
- 20.86 % of limit value 50

**UPPER NECK**

Upper Neck Force
- Neck tension force (Fz): 111.05 N at 122.7 ms
- Neck bending moment (My): 21.69 Nm at 202.1 ms

**CHEST, ABDOMINAL**

Chest Deflection:
- 4.40 mm at 128.1 ms
- Abdomen Pressure Right:
  - 0.10 bar at 175.7 ms
  - 34.8 % of limit value 1
- Abdominal Pressure Left:
  - 0.34 bar at 179.3 ms
  - 31.68 % of limit value 1
Dummy Q10; Without CRS; R80 test pulse
Dummy Q10; Without CRS; R80 test pulse

**HEAD**

Head Resultant Acc:
97.95 g at 109.4 ms

HPC: 483.73
between 104.9 and 113.9 ms
90.47 % of limit value 800

Head Acc: 3ms 87.75 g
between 100.1 and 111.1 ms
100.18 % of limit value 80

**CHEST**

Chest Resultant Acc:
21.29 g at 96.9 ms

Chest Acc: 3ms 29.62 g
between 90.3 and 101.3 ms
97.49 % of limit value 55

**UPPER NECK**

Upper Neck Force

Neck tension force (Fz):
615.41 N at 67.6 ms

Neck bending moment (My):
17.63 Nm at 264.5 ms

**CHEST, ABDOMINAL**

Chest Deflection:
- 1.5 mm at 174.9 ms

Abdominal Pressure Right:
0.3 bar at 97.4 ms
24.93 % of limit value 1.2

Abdominal Pressure Left:
0.32 bar at 155.8 ms
20.59 % of limit value 1.2
Dummies Q6 and Q 10; Without CRS; R80 test pulse
Dummy Q6; With CRS; R80 test pulse
Dummy Q6; With CRS; R80 test pulse

**HEAD**
- Head Resultant Acc: 104.93 g at 112.7 ms
- HPC: 575.9 between 107.8 and 117.2 ms (71.34% of limit value 800)
- Head Acc. Trim: 04.16 g between 311.4 and 114.4 ms (117.7% of limit value 90)

**UPPER NECK**
- Neck tension force (Fz): 813.47 N at 109.2 ms
- Neck bending moment (My): 25.19 Nms at 204.4 ms

**CHEST**
- Chest Resultant Acc: 25.98 g at 126.1 ms
- Chest Acc. Trim: 25.59 g between 124.7 and 127.7 ms (45.6% of limit value 55)

**CHEST, ABDOMINAL**
- Chest Deflection: 1.35 mm at 124.6 ms
- Abdominal Pressure Right: 0.00 bar at 126.4 ms (1% of limit value 1)
- Abdominal Pressure Left: 0.00 bar at 126.5 ms (0.57% of limit value 1)

**Graphs**
- Head Resultant Force (CFC_1000)
- Chest Resultant Force (CFC_180)
- Upper Neck Force (CFC_1000)
- Chest Deflection (CFC_180)
Dummy Q10; With CRS; R80 test pulse
Dummy Q10; With CRS; R80 test pulse

**HEAD**

- Head Resultant Acc:
  - 104.04 g at 115.3 ms
- HPC: 427.83
- between 109.9 and 121.1 ms
- 53.48 % of limit value 800
- Head Acc 3ms: 04.5 g
- between 112.0 and 116.1 ms
- 105.02 % of limit value 80

**UPPER NECK**

- Neck tension force (Fz):
  - 1102.47 N at 125.2 ms
- Neck bending moment (My):
  - 16.19 Nm at 235.7 ms

**CHEST**

- Chest Resultant Acc:
  - 26.73 g at 124.7 ms
- Chest Acc 3ms: 26.74 g
- between 122.2 and 125.5 ms
- 52.30 % of limit value 10

**CHEST, ABDOMINAL**

- Chest Deflection:
  - 0.36 mm at 255.2 ms
- Abdomen Pressure Right:
  - 0.19 bar at 170.2 ms
  - 15.89 % of limit value 1.2
- Abdominal Pressure Left:
  - 0.23 bar at 169.9 ms
  - 10.07 % of limit value 1.2
Dummies Q6 and Q10; With CRS; R80 test pulse
Thank you for your kind attention