

Technical Report No.: CW159 – 23 – TAC
 Regulation: UN Reg. No. 129.03
 Manufacturer: Ningbo Cappi Tiger Children Products Co., Ltd., China
 Type: KBH605

1/41

UN/ECE Technical Service No. E8/C and E27/J
**TECHNICAL REPORT
No. CW159 – 23 – TAC**

Test according to UN Regulation No. 129.03

**Uniform provisions concerning the approval of enhanced child restraint system
use on board of motor vehicles
(ECRS)**

UN Regulation No. 129.00 – date of entry into force: 2013-07-09

including all amendments up to and including

UN Regulation No. 129.03, supplement 7 – date of entry into force: 2023-01-04

Objectives: Document for issue of approval certificate

I. Technical data

0.1. Make (trade name of manufacturer):

Bbqool, Mega baby, Kingbaby, Bene baby, Martin nor, Moni, Lorelli, Minebaby, Cangaroo, Kiddo, Lionelo, Kindersafety, KENGA, BELLABABY, bebeglo, bebesit, BIUCO, Chipolino, Felcraft, kiddo, whoop, love, kidgo, prinsel, kiddy, bebglo, kenga, bellababy, bebeglo, SAFETY 1ST, INFANTI, Forsage kids, Beianbao, Kabihu, BBPRO, BBGO, baby kit's allobebe, TWIGY, Anakku, Action Baby, Kids Joy, Bambi. Mothercare, PRENATAL, Giordani, BABY MICHEL, Camera, BRITTON, GEESLEIN, LEAMAN, KRAFT, Baby & Plus, MamaLoes, SAFEWAY, MS, Infantia, LIKOBABY, CHELINO, HAPPY BABY, Lenox, BEBESIT, CUTEBABIES, BABY KIT'S, Infanti, Galzerano, CotoBaby, LOOPING, KinderKraft, IO BIMBO, AVANTI, COALA, BABY DESIGN, ESPIRO, BOMIKO, PRENATAL, COCCOLLE, TWINGO, BORSINO BABY, Lorelli, MS, Babyauto, More, Play, Kikkaboo, Cabino, Xadventure, Huggy, Prego, Sunnybaby, bebestars, Asalvo, Apollo, Speli, 4Baby, infababy, Titaniumbaby, Nuovita, OTOMO, baby tilly, Kari kids, Kari, CozyNsafe, Infababy, My Child, farfello, bebe 2 luxe, Babyton, Olsson, Ninia, Migo, Disney, Bonbijou, Koopers, Beblum, Crolla, Quinton, Royal Kiddy, Cocolatte, Babydoes, Soon Sung, MC, Mumzworld, Bebesit, Carestino, Kinderkraft, Kiddy, 4Kraft

0.2. Type: KBH605

0.2.1. Commercial name: n.a.

0.2.2. Variants: n.a.

0.3. Means of identification of type: Letters and digits

0.4. Category of vehicle: n.a.



Technical Report No.:

CW159 – 23 – TAC

Regulation:

UN Reg. No. 129.03

Manufacturer:

Ningbo Cappi Tiger Children Products Co., Ltd., China

Type:

KBH605

2/41

0.5.	Name and address of manufacturer:	Ningbo Cappi Tiger Children Products Co., Ltd. No.17, Zhennan Road, Ditang Street, Yuyao City, Zhejiang Province, China
0.8.	Address of assembly plant:	See 0.5.
0.9.	Location of the approval mark:	Sticker pasted on the back of product
0.10.	ECRS	
0.10.1.	ECRS category:	i-Size (40-105cm); i-Size booster seat (100-150cm)
0.10.2.	ECRS class:	Integral (40-105cm); Non-integral (100-150cm)
0.10.3.	Size Range:	40-150cm
0.10.4.	Maximum occupant mass for Integral ECRS:	18 kg
0.10.5.	ECRS orientation:	Rearward-facing (40-105cm); Forward-facing (76-150cm)
0.10.6.	Anti-rotation device:	Support leg
0.10.7.	Child Restraint Mode:	Harness belt (40-105cm); Adult safety belt (100-150cm)
0.10.8.	Locking-off device type:	n.a.
0.10.9.	Type of retractor:	n.a.
0.10.10.	Belt type:	Adult safety belt
0.10.11.	Other features:	Chair assembly
0.10.12.	Installation Methods:	Rearward facing, ISOFIX attachments + Support leg (40-105cm); Forward facing, ISOFIX attachments + Support leg (76-105cm); ISOFIX attachments + adult safety-belt (100-150cm); adult safety-belt (100-150cm)
0.10.13.	Backrest positions:	Rearward facing, 40-105cm: Upright, Inclined (position "R1"- "R5"); Forward facing, 76-150cm: Upright, Inclined (position "F1"- "F5").



- 0.10.14. Declaration on toxicity in accordance with par.6.3.1.1. of this regulation: See Appendix 3 of information document
- 0.10.15. Declaration on flammability in accordance with par.6.3.1.2. of this regulation: See Appendix 3 of information document
- 0.10.16. Instruction for use of ECRS in the vehicle: See Appendix 2, Appendix 4 and Appendix 5 of information document

II. Test report**1. Test conditions**

- 1.1. Test sample: ECRS of size range 40-150cm, type KBH605. For type approval tests: Samples No. 1 to 42, and relative components; for production qualification tests: PQT-1 to 5
- 1.1.1 Technical data from the manufacturer: n.a.
- 1.2. Test procedures used: According to UN Regulation No. 129.03
- 1.3. Measuring and test equipment: Used equipment fulfill all requirements of the UN Regulation No. 129.03
- 1.4. Worst case evaluation: N/A, single case - no variant.
This paragraph is required by the Type Approval Authority.
- 1.5. Testing conditions: n.a.
- 1.6. Test track or site: Jiangsu EQO Testing Services Co., Ltd.
No. 28, Lufeng East Road, Lujia, Kunshan, Jiangsu, China

2. Test results

Following numbering is according to UN Regulation No. 129.03

4. Markings

- 4.1. ECRS is marked of manufacturer's name, initials or trade mark: fulfilled
- 4.2. ECRS is clear and indelible marked with year of production: fulfilled
- 4.3. Orientation, size range, maximum occupant mass, webbing path, and visibility of these marking: fulfilled





- 4.4. ECRS is permanently attached the warning label of "Airbag": fulfilled
- 4.5. ECRS is permanently attached the warning label of no forward-facing for child less than 15 months: fulfilled
- 4.6. The webbing path markings shall be permanently and durably attached and visible: fulfilled
- 4.7. Marking for integral ECRS including ISOFIX connections attachments
- 4.7.1. for i-Size ECRS, the i-Size Logo shall permanently visible: fulfilled
- 4.7.2. for Specific Vehicle ISOFIX ECRS, the ISO ISOFIX logo and user instruction label shall permanently visible: n.a.
- 4.7.3. If ECRS containing modules, approval mark shall be permanently attached on ISOFIX base: n.a.
- 4.7.4. If ECRS containing modules, module mark shall be permanently attached on the module: n.a.
- 4.8. Marking for non-integral ECRS
- 4.8.1. for i-Size booster seat ECRS, the i-Size booster seat user instruction label shall permanently visible: fulfilled
- 4.8.2. for Specific vehicle booster seat ECRS, the Specific vehicle booster seat user instruction label shall permanently visible: n.a.
- 4.8.3. for Universal booster cushion ECRS, the Universal booster cushion ECRS user instruction label shall permanently visible: n.a.
- 4.8.4. for Specific vehicle booster cushion ECRS, the Specific vehicle booster cushion ECRS user instruction label shall permanently visible: n.a.
- 4.8.5. Marking for Booster cushion: n.a.
- 4.9. Marking for ECRS with an impact shield: n.a.



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- 4.10. Any removable insert, shall have a permanently attached label to indicate the brand, model and size range of the ECRS to which it belongs: fulfilled
- 4.11. A Booster seat that converts to a Booster cushion by a removable backrest, shall have a permanently attached label on the backrest, to indicate the brand and model of the Enhanced Child Restraint System to which it belongs and the size range: n.a.
- 4.12. ECRS shall have a permanently attached label to inform the user of the appropriate method of restraint of the child over the entire stature range declared by the manufacturer: fulfilled
- 4.13. Marking for Integral Belted Enhanced Child Restraint System
- 4.13.1. for Universal Belted ECRS, the Universal Belted ECRS user instruction label shall permanently visible: n.a.
- 4.13.2. for Specific vehicle Belted ECRS, the Specific vehicle Belted user instruction label shall permanently visible: n.a.
- 4.14. Additional markings: fulfilled

6. General specifications

6.1. Positioning and securing on the vehicle

- 6.1.2.5.& 6.1.3.4. Measurement from Cr to load bearing point (Left & Right)

Item	Measured		Limit
Measurement from Cr to load bearing point	Left	230mm	≥150mm
	Right	235mm	≥150mm

Sample No. 1: meet the requirements



6.1.2.6.& Belt remaining on spool
 6.1.3.5.

Item	Measured	Limit
Belt remaining on spool	Integral	-
	Non-integral	≥150mm
	Booster cushion	-

Sample No. 1: meet the requirements

6.2. Configuration of the ECRS

6.2.1.4. Buckle position when smallest & largest dummies are installed: fulfilled

6.2.1.5. Angle α and β measured with smallest & largest dummies

Items	Measured	Limit
Angle α and β measured with smallest & largest dummies	α1	35.7°
	β1	36.5°
	α2	35.5°
	β2	34.5°

Sample No. 1: meet the requirements

6.3. ECRS specification

6.3.1. Material

Items	Signed Declaration Received?	Test Report Reference (If applicable)
6.3.1.1. Flammability	See Appendix 3 of information document	EQO22080310T
6.3.1.2. Toxicity	See Appendix 3 of information document	EQO22080310T



Technical Report No.:

CW159 – 23 – TAC

Regulation:

UN Reg. No. 129.03

Manufacturer:

Ningbo Cappi Tiger Children Products Co., Ltd., China

Type:

KBH605

7/41

6.3.2. General characteristics

6.3.2.1 Internal geometric characteristics

		Unit	Measured	Limit
Declared stature range	40-150cm			
For Integral ECRS	40-105cm			
The minimum occupant size	Minimum Shoulder Height (E1)	cm	25.3	<27.4
	Sitting Height (B)	cm	66.7	≥61.8
The maximum occupant size	Shoulder Breadth (C)	cm	38.8	≥30.1
	Hip Breadth (D)	cm	32.3	≥24.9
	Maximum Shoulder Height (E2)	cm	39.1	≥39.1
For Non-integral ECRS	100-150cm			
The minimum occupant size	Minimum Shoulder Height (E1)	cm	28.0	≤32.4
The maximum occupant size fit within the ISO/B2 size envelope(135cm)	Sitting Height (B)	cm	77.0	≥74.4
	Shoulder Breadth (C)	cm	38.8	≥33.3
	Hip Breadth (D)	cm	32.3	≥29.1
	Maximum Shoulder Height (E2)	cm	48.3	≥47.9
The maximum occupant size	Sitting Height (B)	cm	82.6	≥81.1
	Shoulder Breadth (C)	cm	38.8	≥36.4
	Hip Breadth (D)	cm	32.3	≥32.0
	Maximum Shoulder Height (E2)	cm	53.4	≥53.3

Sample No. 1: meet the requirements



Technical Report No.: CW159 – 23 – TAC
 Regulation: UN Reg. No. 129.03
 Manufacturer: Ningbo Cappi Tiger Children Products Co., Ltd., China
 Type: KBH605

8/41

6.3.2.2. External dimensions

Configuration Measured	Rearward facing, Integral, 40-105cm
ISO volume	R2
ECRS adjustments that fit within volume	
Headrest position	Position 1-5
Reclined position	Position "R1"- "R5"
Side wing position	n.a.
Verification photos of physical check	fulfilled
Verification image if checked using CAD drawing	n.a.
Configuration Measured	Forward facing, Integral, 76-105cm
ISO volume	F2x
ECRS adjustments that fit within volume	
Headrest position	Position 1-5
Reclined position	Position "F1"- "F5"
Side wing position	n.a.
Verification photos of physical check	fulfilled
Verification image if checked using CAD drawing	n.a.
Configuration Measured	Forward facing, Booster Seat, 100-135cm
ISO volume	B2
ECRS adjustments that fit within volume	
Headrest position	Position 1-10
Reclined position	Position "F1"- "F5"
Side wing position	n.a.
Verification photos of physical check	fulfilled
Verification image if checked using CAD drawing	n.a.

Sample No. 1: meet the requirements

6.3.2.3. Mass

	Item	Measured	Limit
Mass	Mass of CRS [kg]	14.5 ± 0.5 kg	-
	Max. Mass of Occupant [kg]	18 kg	-
	Mass of System [kg]	32.5 ± 0.5 kg	≤33 kg

Sample No. 1: meet the requirements

6.3.3. ISOFIX attachments: fulfilled

6.3.4. ISOFIX ECRS top tether strap specifications: n.a.



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Technical Report No.: CW159 – 23 – TAC
 Regulation: UN Reg. No. 129.03
 Manufacturer: Ningbo Cappi Tiger Children Products Co., Ltd., China
 Type: KBH605

9/41

6.3.5. i-Size ECRS support-leg and support-leg foot requirements

6.3.5.1. Support-leg and support-leg foot geometrical requirements

Item	Unit	Result	Limit
Width in Y	mm	88	≤ 200
Min Distances in X	mm	619	≥ 585
Max Distances in X	mm	691	≤ 695
Min Height in Z	mm	42	≤ 70
Max Height in Z	mm	264	≤ 285

Sample No. 1: meet the requirements

6.3.5.2. Support-leg Foot Adjustability Requirements

Item	Unit	Result	Limit
Adjustment increments	mm	13	≤ 20
Width in Y	mm	91	≤ 200
Min Distances in X	mm	602	≥ 585
Max Distances in X	mm	658	≤ 695
Min Height in Z	mm	285	≤ 285
Max Height in Z	mm	540	≥ 540

Sample No. 1: meet the requirements

6.3.5.3. Support-leg Foot Dimensions

Item	Unit	Result	Limit
Contact Surface	mm ²	2886	≥ 2500
Min X'	mm	32	≥ 30
Min Y'	mm	91	≥ 30
Min Radius	mm	3.2	≥ 3.2

Sample No. 1: meet the requirements

6.4. Control of marking: fulfilled

6.5. Control of instructions on installation and the instructions for use: fulfilled

6.6. Provisions applicable to the assembled restraint

6.6.1. Resistance to corrosion
 (only the corrosible parts were tested): fulfilled



Technical Report No.:

CW159 – 23 – TAC

Regulation:

UN Reg. No. 129.03

Manufacturer:

Ningbo Cappi Tiger Children Products Co., Ltd., China

Type:

KBH605

10/41

6.6.2. Energy absorption

	Area of headform impact		Headform deceleration
Deceleration of headform [g] (limit 60g)	The middle of head backrest		10.3
	The sides of head backrest	left side wing right side wing	4.1 6.3
Depth of the side wings* ≥90 mm	fulfilled		

*only apply for rearward-facing device

Sample No. 2: meet the requirements

6.6.3. Overturning

	ECRS orientation	Installation Methods	Direction of rotation				Mass of the dummy [kg]
			Clock wise	Anti-clock wise	Roll ahead	Roll back	
Dummy's head vertical movement [mm] (limit 300 mm)	Rearward-facing (40-105cm)	ISOFIX + Support leg	99	84	80	80	3.5
			50	48	52	35	15.1
	Forward-facing (76-105cm)	ISOFIX + Support leg	19	12	56	48	11.3
			63	30	106	95	15.1
	Forward-facing (100-150cm)	adult safety-belt + ISOFIX	94	30	121	123	15.1
			59	49	78	68	36.1
	Forward-facing (100-150cm)	adult safety-belt	135	90	143	138	15.1
			76	64	101	82	36.1

Sample No. 3: meet the requirements

6.6.4. Dynamic test

Type of dynamic test device:

Deceleration

Deceleration curves:

meet the requirements

Position of buckle during the test:

40-105cm: on the dummy abdomen

100-150cm: buckle for adult seat

Configuration of Test samples:

i-Size ECRS, integral, rearward-facing (40-105cm).

(Sample No. 4 to No. 20)

Configuration of Test samples:

i-Size ECRS, integral forward-facing (76-105cm).

(Sample No. 21 to No. 28)

Configuration of Test samples:

i-Size booster seat ECRS, non-integral forward-facing (100-150cm)

(Sample No. 29 to No. 42)



Technical Report No.:

CW159 – 23 – TAC

Regulation:

UN Reg. No. 129.03

Manufacturer:

Ningbo Cappi Tiger Children Products Co., Ltd., China

Type: KBH605

11/41

Remarks:

Detail results of dynamic test see below
Table 1 to Table 8

Table 1

Testing parameter		Limit	Result		
ECRS Class		-	integral		
ECRS orientation		-	rearward-facing		
Impact direction		-	frontal		
Backrest position		-	upright		
Support leg		-	long		
Sample No.		-	4	5	6
Used dummy		-	Q0	Q1.5	Q3
Mass of dummy [kg]		-	3.5	11.3	15.1
Trolley impact speed [km/h]		48-50	49.0	49.0	48.9
Trolley Stopping distance [mm]		600-700	667	670	670
Trolley max. deceleration [g]		20-28	24.8	24.9	26.0
Head performance criterion		-	147	260	253
Head acceleration 3ms [g]		≤75/80	56.7	52.6	49.4
Chest acceleration 3ms [g]		≤55	39.8	41.1	38.2
Chest deflection [mm]		-	-	2.8	9.2
Upper neck tension force [N]		-	89	649	752
Upper neck flexion moment [Nm]		-	17.3	16.9	21.5
Abdominal pressure [bar]	L	≤1.2/1.0	-	0.10	0.12
	R	≤1.2/1.0	-	0.09	0.07
Maximum of head displacement	x [mm] (horizontal)	≤ 700	368	542	642
	at time [ms]	-	62	73	80
	Contact Ø100mm bar	-	no	no	no
	z [mm] (vertical)	≤ 800/840	590	749	760
	at time [ms]	-	236	237	267
	no pass DE plane	no	no	no	no
Buckle open force after [N]		≤ 80	52	60	61
Failure or breakage		no	no	no	no

Samples No. 4 to No. 6 fulfilled the dynamic test requirements.



Technical Report No.:

CW159 – 23 – TAC

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UN Reg. No. 129.03

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Ningbo Cappi Tiger Children Products Co., Ltd., China

Type:

KBH605

12/41

Table 2

Testing parameter	Limit	Result				
ECRS Class	-	integral				
ECRS orientation	-	rearward-facing				
Impact direction	-	frontal				
Backrest position	-	inclined				
Support leg	-	long				-
Sample No.	-	7	8	9	10*	11**
Used dummy	-	Q0	Q1.5	Q3	Q3	Q3
Mass of dummy [kg]	-	3.5	11.3	15.1	15.1	15.1
Trolley impact speed [km/h]	48-50	49.0	48.9	48.8	48.9	49.2
Trolley Stopping distance [mm]	600-700	671	665	666	664	672
Trolley max. deceleration [g]	20-28	24.9	25.8	25.6	24.6	24.6
Head performance criterion	-	146	214	254	244	280
Head acceleration 3ms [g]	≤75/80	42.2	47.6	50.6	50.8	53.7
Chest acceleration 3ms [g]	≤55	40.1	41.1	35.5	33.4	37.0
Chest deflection [mm]	-	-	2.8	9.7	9.6	9.8
Upper neck tension force [N]	-	113	457	1049	949	1232
Upper neck flexion moment [Nm]	-	15.0	23.0	16.7	19.3	13.0
Abdominal pressure [bar]	L	≤1.2/1.0	-	0.06	0.12	0.09
	R	≤1.2/1.0	-	0.07	0.10	0.08
Maximum of head displacement	x [mm] (horizontal)	≤ 700	381	576	650	622
	at time [ms]	-	66	75	80	77
	Contact Ø100mm bar	-	no	no	no	no
	z [mm] (vertical)	≤ 800/840	580	717	750	739
	at time [ms]	-	148	236	262	266
	no pass DE plane	no	no	no	no	no
Buckle open force after [N]	≤ 80	62	63	64	78	66
Failure or breakage	no	no	no	no	no	no

*Sample No. 10, verification test with optional buckle 3#.

**Sample No. 11, verification test without support leg used.

Samples No. 7 to No. 11 fulfilled the dynamic test requirements.



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Technical Report No.:

CW159 – 23 – TAC

Regulation:

UN Reg. No. 129.03

Manufacturer:

Ningbo Cappi Tiger Children Products Co., Ltd., China

Type:

KBH605

13/41

Table 3

Testing parameter		Limit	Result					
ECRS Class		-	integral					
ECRS orientation		-	rearward-facing					
Impact direction		-	rear					
Backrest position		-	upright			inclined		
Support leg		-	long					
Sample No.		-	12	13	14	15	16	17
Used dummy		-	Q0	Q1.5	Q3	Q0	Q1.5	Q3
Mass of dummy [kg]		-	3.5	11.3	15.1	3.5	11.3	15.1
Trolley impact speed [km/h]		30-32	30.6	30.3	30.7	30.6	30.3	30.5
Trolley Stopping distance [mm]		250-300	272	270	274	273	267	272
Trolley max. deceleration [g]		14-21	19.6	18.3	19.2	19.4	18.5	18.7
Head performance criterion		-	233	214	149	197	134	143
Head acceleration 3ms [g]		≤75/80	63.1	65.5	45.1	52.0	40.8	52.1
Chest acceleration 3ms [g]		≤55	47.9	39.6	41.7	43.6	44.5	40.4
Chest deflection [mm]		-	-	3.8	22.7	-	3.6	17.0
Upper neck tension force [N]		-	545	888	1129	606	867	875
Upper neck flexion moment [Nm]		-	7.6	14.0	20.1	7.2	14.4	18.2
Abdominal pressure [bar]	L	≤1.2/1.0	-	0.33	0.20	-	0.29	0.27
	R	≤1.2/1.0	-	0.44	0.23	-	0.36	0.24
Maximum of head displacement	x [mm] (horizontal)	≤ 700	254	399	452	286	439	509
	at time [ms]	-	169	195	204	177	190	201
	z [mm] (vertical)	≤ 800/840	542	664	712	541	647	696
	at time [ms]	-	195	198	206	65	71	73
	no pass DE plane	no	no	no	no	no	no	no
Buckle open force after [N]		≤ 80	65	66	67	68	58	54
Failure or breakage		no	no	no	no	no	no	no

Samples No. 12 to No. 17 fulfilled the dynamic test requirements.



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Table 4

Testing parameter	Limit	Result					
ECRS Class	-	integral					
ECRS orientation	-	forward-facing					
Impact direction	-	frontal					
Backrest position	-	inclined		upright			-
Support leg	-	long					
Sample No.	-	21	22	23	24	25*	26**
Used dummy	-	Q1.5	Q3	Q1.5	Q3	Q3	Q3
Mass of dummy [kg]	-	11.3	15.1	11.3	15.1	15.1	15.1
Trolley impact speed [km/h]	48-50	49.1	49.0	49.0	49.1	49.1	48.9
Trolley Stopping distance [mm]	600-700	667	668	669	671	670	669
Trolley max. deceleration [g]	20-28	24.7	24.2	24.6	24.1	23.4	23.8
Head performance criterion	-	290	388	357	438	463	534
Head acceleration 3ms [g]	≤75/80	53.8	61.6	59.8	61.6	67.5	69.1
Chest acceleration 3ms [g]	≤55	36.8	32.6	37.1	34.5	37.7	37.2
Chest deflection [mm]	-	9.3	30.4	9.0	29.7	29.6	30.2
Upper neck tension force [N]	-	1430	2112	1515	1709	1885	1965
Upper neck flexion moment [Nm]	-	19.8	25.6	22.7	18.5	28.0	19.3
Abdominal pressure [bar]	L	≤1.2/1.0	0.65	0.44	0.54	0.35	0.36
	R	≤1.2/1.0	0.63	0.34	0.67	0.37	0.26
Maximum of head displacement	x [mm] (horizontal)	≤ 500**	364	457	382	459	438
	at time [ms]	-	90	100	90	98	96
	z [mm] (vertical)	≤ 800	643	673	663	718	713
	at time [ms]	-	150	169	231	253	236
	no pass DE plane	no	no	no	no	no	no
Buckle open force after [N]	≤ 80	64	61	65	65	77	66
Failure or breakage	no	no	no	no	no	no	no

*Sample No. 25, verification test with optional buckle 3#.

**Sample No. 26, test without support-leg used, the forward displacement limit is 550.

Samples No. 21 to No. 26 fulfilled the dynamic test requirements.



Table 5

Testing parameter		Limit	Result			
ECRS Class		-	non-integral			
ECRS orientation		-	forward-facing			
Impact direction		-	frontal			
Backrest position		-	upright			
ISOFIX attachments		-	with attachments		without attachments	
Sample No.		-	29	30	31	32
Used dummy		-	Q3	Q10	Q3	Q10
Mass of dummy [kg]		-	15.1	36.1	15.1	36.1
Trolley impact speed [km/h]		48-50	49.1	48.9	48.9	48.9
Trolley Stopping distance [mm]		600-700	670	671	665	668
Trolley max. deceleration [g]		20-28	23.7	23.7	23.3	23.5
Head performance criterion		-	642	421	456	414
Head acceleration 3ms [g]		≤80	72.5	65.1	64.7	64.8
Chest acceleration 3ms [g]		≤55	50.8	28.7	34.9	27.2
Chest deflection [mm]		-	39.0	34.2	37.7	35.3
Upper neck tension force [N]		-	2679	3634	2470	3321
Upper neck flexion moment [Nm]		-	23.2	18.6	21.2	24.9
Abdominal pressure [bar]	L	≤1.0/1.2	0.46	0.47	0.66	0.50
	R	≤1.0/1.2	0.29	0.26	0.34	0.30
Maximum of head displacement	x [mm] (horizontal)	≤ 500/550	373	379	360	403
	at time [ms]	-	87	96	90	98
	z [mm] (vertical)	≤ 800/840	709	838	710	838
	at time [ms]	-	278	3	176	6
	no pass DE plane	no	no	no	no	no
Buckle open force after [N]		≤ 80	-	-	-	-
Failure or breakage		no	no	no	no	no
Belt Force [N]	Shoulder	45-55	51	51	51	49
	Lap	45-55	54	52	51	48

Samples No. 29 to No. 32 fulfilled the dynamic test requirements.



Table 6

Testing parameter		Limit	Result			
ECRS Class		-	non-integral			
ECRS orientation		-	forward-facing			
Impact direction		-	frontal			
Backrest position		-	inclined			
ISOFIX attachments		-	with attachments		without attachments	
Sample No.		-	33	34	35	36
Used dummy		-	Q3	Q10	Q3	Q10
Mass of dummy [kg]		-	15.1	36.1	15.1	36.1
Trolley impact speed [km/h]		48-50	49.0	49.2	48.8	49.0
Trolley Stopping distance [mm]		600-700	671	672	663	670
Trolley max. deceleration [g]		20-28	23.7	24.2	23.6	23.4
Head performance criterion		-	593	485	501	597
Head acceleration 3ms [g]		≤80	72.8	68.8	68.4	76.1
Chest acceleration 3ms [g]		≤55	42.9	32.3	40.6	29.6
Chest deflection [mm]		-	36.3	31.8	29.9	37.6
Upper neck tension force [N]		-	2697	3682	2412	3934
Upper neck flexion moment [Nm]		-	26.5	36.3	26.4	42.9
Abdominal pressure [bar]	L	≤1.0/1.2	0.34	0.48	0.39	0.47
	R	≤1.0/1.2	0.18	0.30	0.24	0.37
Maximum of head displacement	x [mm] (horizontal)	≤ 500/550	366	371	361	384
	at time [ms]	-	89	96	89	98
	z [mm] (vertical)	≤ 800/840	683	795	660	787
	at time [ms]	-	269	11	255	8
	no pass DE plane	no	no	no	no	no
Buckle open force after [N]		≤ 80	-	-	-	-
Failure or breakage		no	no	no	no	no
Belt Force [N]	Shoulder	45-55	49	49	53	50
	Lap	45-55	50	49	49	49

Samples No. 33 to No. 36 fulfilled the dynamic test requirements.



Table 7

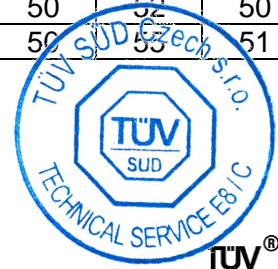
Testing parameter	Limit	Result				
ECRS Class	-	integral				
ECRS orientation	-	rearward			forward	
Impact direction	-	lateral				
Backrest position	-	upright				
Support leg	-	long				
Sample No.	-	18	19	20	27	28
Used dummy	-	Q0	Q1.5	Q3	Q1.5	Q3
Mass of dummy [kg]	-	3.5	11.3	15.1	11.3	15.1
Door bench relative velocity [m/s]	6.375-7.25	6.81	6.70	6.68	6.80	6.78
Head performance criterion	≤600/800	349	268	341	314	343
Head acceleration 3ms [g]	≤75/80	65.2	60.7	68.6	67.2	69.2
Upper neck force [N]	-	127	475	1000	638	1067
Upper neck moment [Nm]	-	12.5	13.7	10.7	15.5	15.4
Head containment (No head contact and not exceed vertical plane)		no	no	no	no	no
Buckle open force after [N]	≤80	65	66	60	59	63
Failure or breakage	no	no	no	no	no	no

Samples No. 18 to No. 20, No. 27 and No. 28 fulfilled the dynamic test requirements.

Table 8

Testing parameter	Limit	Result				
ECRS Class	-	non-integral				
ECRS orientation	-	forward-facing				
Impact direction	-	lateral				
Backrest position	-	upright				
ISOFIX attachments	-	with attachments			without attachments	
Sample No.	-	37	38	39	40	41
Used dummy	-	Q3	Q6	Q10	Q3	Q6
Mass of dummy [kg]	-	15.1	23.5	36.1	15.1	23.5
Door bench relative velocity [m/s]	6.375-7.25	6.89	6.86	6.96	6.88	6.84
Head performance criterion	≤800	294	256	192	296	270
Head acceleration 3ms [g]	≤80	61.5	56.7	46.8	62.0	57.5
Upper neck tension force [N]	-	1147	1571	2147	1171	1614
Upper neck flexion moment [Nm]	-	15.0	25.6	25.8	23.3	25.9
Head containment (No head contact and not exceed vertical plane)		no	no	no	no	no
Buckle open force after [N]	≤80	-	-	-	-	-
Failure or breakage	no	no	no	no	no	no
Belt Force [N]	Shoulder	45-55	52	51	52	50
	Lap	45-55	53	53	51	50

Samples No. 37 to No. 42 fulfilled the dynamic test requirements.



6.6.5. Resistance to temperature

(only the relevant parts were tested): fulfilled

6.7. Provisions applicable to individual components of the restraint

6.7.1. Buckle

6.7.1.1. General requirements for buckles

~6.7.1.5. (including dimensional and geometrical): fulfilled

Buckle 2#	Result	Limit
Width for enclosed [mm]	-	≥15
Area for enclosed [cm ²]	-	≥4.5
Width for non-enclosed [mm]	15	≥10
Area for non-enclosed [cm ²]	5.2	≥2.5

Buckle 3#	Result	Limit
Width for enclosed [mm]	-	≥15
Area for enclosed [cm ²]	-	≥4.5
Width for non-enclosed [mm]	24	≥10
Area for non-enclosed [cm ²]	5.2	≥2.5

6.7.1.6. The buckle shall be test by heat and operate $5,000 \pm 5$ opening and closing cycles, before dynamic test: fulfilled

6.7.1.7. Buckle releasing force before and after dynamic test: fulfilled

Buckle 2#	Result	Limit
Unloaded buckle opening force [N]	59	40~80
Loaded buckle opening force [N]	68	80

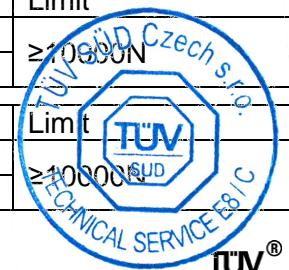
Buckle 3#	Result	Limit
Unloaded buckle opening force [N]	54	40~80
Loaded buckle opening force [N]	78	80

6.7.1.8. Strength of the buckle

Buckle shall withstand 10kN for mass limit greater than 13kg: fulfilled

Buckle 2#	Result	Limit
Sample 1	18590N	≥10000N
Sample 2	18832N	

Buckle 3#	Result	Limit
Sample 1	14349N	≥10000N
Sample 2	20492N	



6.7.2. Adjusting device

6.7.2.1. General requirements for adjusting

~6.7.2.4. device: fulfilled

6.7.2.5. Microslip testing, the amount of strap slip shall not exceed 25mm for one adjusting device or 40mm for all adjusting devices: fulfilled

6.7.2.6. The adjuster must not break or become detached when test for ease of adjustment: fulfilled

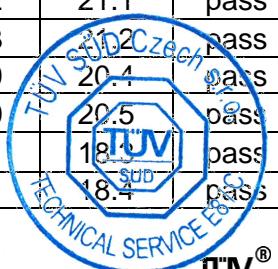
6.7.2.7. An adjuster shall be test by operate 5,000 ± 5 cycles, before dynamic test: fulfilled

Item	Measured	Limit
Manual adjusting force [N]	21	≤50
Repeated operation before dynamic test [cycles]	5000	5000 ± 5
Microslip [mm]	Sample 1	0
	Sample 2	0

6.7.3. Retractors: n.a.

6.7.4. Straps

	Requirements	Measured value	Result
Strap	-	25 mm	38 mm
Strap width [mm] strained by 75% of its breaking load	Sample 1	≥25	26.1
	Sample 2	≥25	26.1
Strength F [kN] after room conditioning	Sample 1 (F1)	13.3	20.5
	Sample 2 (F2)	13.4	21.0
Difference between F1 and F2 (< 10% of the bigger value of F1, F2)		0.7%	2.4% pass
Force [kN] of the strap destruction after its special conditioning	75% of the average of F1 and F2		10.0
	light conditioning	Sample 1	12.5
		Sample 2	12.6
	cold conditioning	Sample 1	13.1
		Sample 2	13.2
	heat conditioning	Sample 1	13.2
		Sample 2	13.3
	exposure to water	Sample 1	12.9
		Sample 2	13.0
	abrasion conditioning	Sample 1	-
		Sample 2	-



Technical Report No.:

CW159 – 23 – TAC

Regulation:

UN Reg. No. 129.03

Manufacturer:

Ningbo Cappi Tiger Children Products Co., Ltd., China

Type:

KBH605

20/41

6.7.5. ISOFIX attachment specifications: fulfilled

Item	Result	Limit
Repeated operations before dynamic test [cycles]	2000	2000 ± 5
Two consecutive actions	fulfilled	2 consecutive actions
opening force [N]	-	or opening force ≥50N

6.7.6. Lock-off devices: n.a.

6.8. Classification: fulfilled

9. Production qualification

9.2. Production qualification test

Configuration of test samples:
(Sample No. PQT-1 to 5)

i-Size ECRS, integral, forward-facing (76-105cm). Backrest position: upright.

Test with Q3 dummy (15.1kg), frontal impact, long leg.

Remarks: n.a.

PQT No.	Maximum horizontal head excursion [mm] (L: 500)	Head acc. 3ms [g] (≤80)	Chest acc. 3ms [g] (≤55)	Head criterion - HPC (≤800)	Abdominal pressure [bar] (≤1.0)		Upper neck tension force [N]	Upper neck flexion moment [Nm]	Chest def. [mm]
1	430	57.8	37.5	328	0.48	0.43	1618	21.5	26.6
2	434	60.8	38.1	403	0.48	0.44	1695	21.0	26.4
3	438	62.2	36.1	410	0.47	0.41	1699	20.1	25.3
4	438	60.7	35.5	416	0.50	0.47	1698	20.2	26.8
5	427	64.1	38.3	420	0.50	0.40	1812	21.8	27.5
Calculation X	433.4	61.1	37.1	-	-	-	-	-	-
Calculation S	4.4	2.1	1.1	-	-	-	-	-	-
X + S	437.8	63.2	38.2	-	-	-	-	-	-

No value shall exceed 1.05 L, and
X + S shall not exceed L:

Samples PQT-1 to 5 fulfilled the production qualification test requirements.

14. Information for users

14.1. ECRS is accompanied by instructions in the language of the country where the device is sold:

fulfilled



TÜV®

14.2. Instructions on installation: fulfilled

14.3. Instructions for use: fulfilled

3. Specimen submitted to test on: 2022-12-20

4. Date of test: 2022-12-20 to 2023-03-04

III. Manufacturer's information folder No. 129-KBH605-00
42 pages total of 2022-12-20

IV. Other documentation

Graphs

-Deceleration curves of sled test trolley: Pages 22 to 41

V. Attachments

No attachments

The results presented above relate to the tested items only and to the sample as provided by the customer.

Measuring and test equipment and test site meet the requirements of the applicable legislation.
This report shall never be reproduced incomplete and without a written permission of the testing laboratory. TÜV SÜD CZECH confidentiality degree: confidential

VI. Final assessment

The described sample in tested items

complies

with the requirements of UN Regulation No. 129.03
for issue of approval certificate

This technical report consists of pages No. 1 to 41.



Václav Baloun

Report author



Vit Bursik

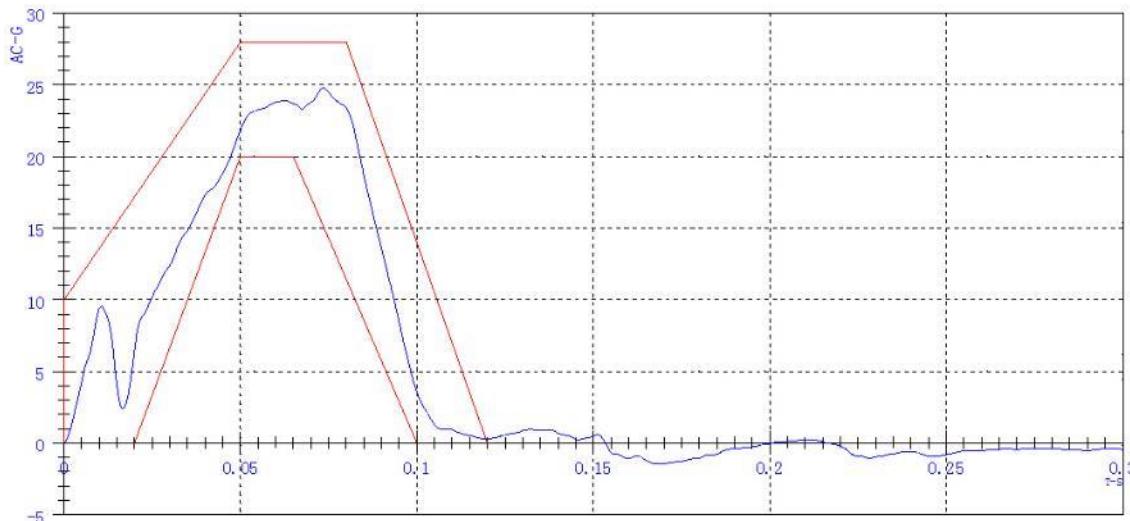
Officially recognized expert



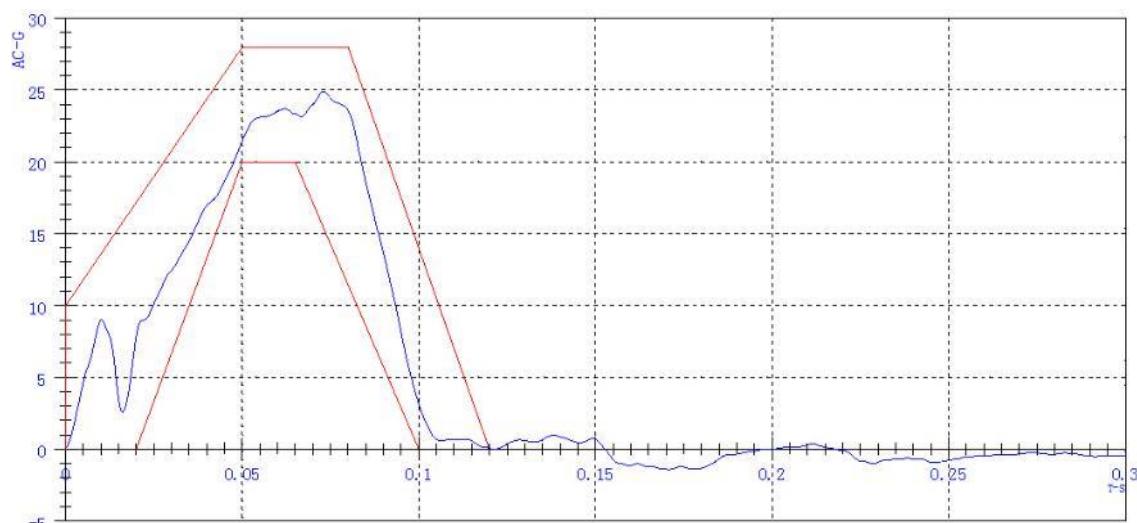
Prague, 2023-03-30

Graphs: Deceleration curves of sled test trolley

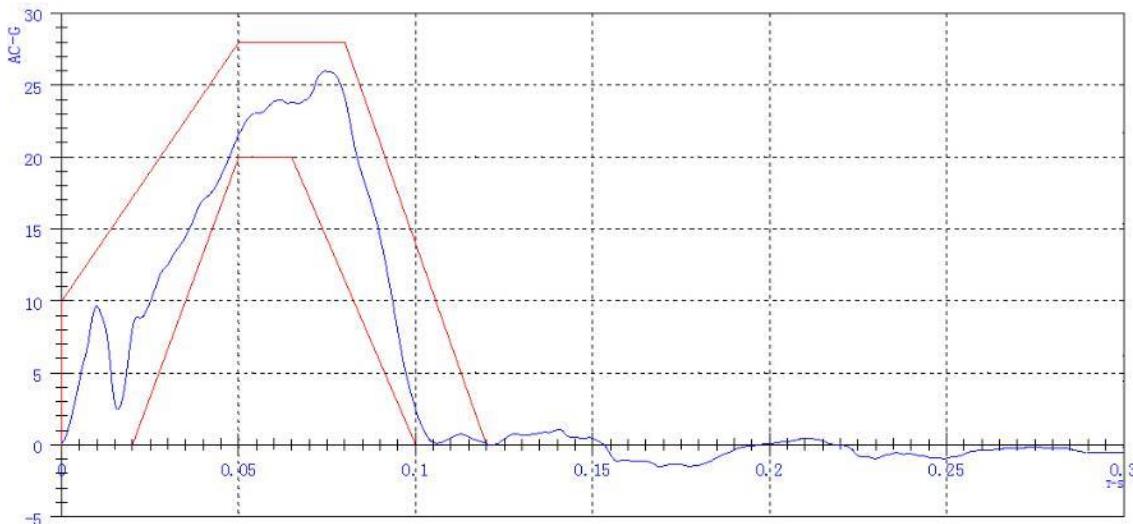
- a) Tested sample No. 4, dummy Q0, frontal impact; i-Size ECRS, integral, rearward facing, long leg, upright.



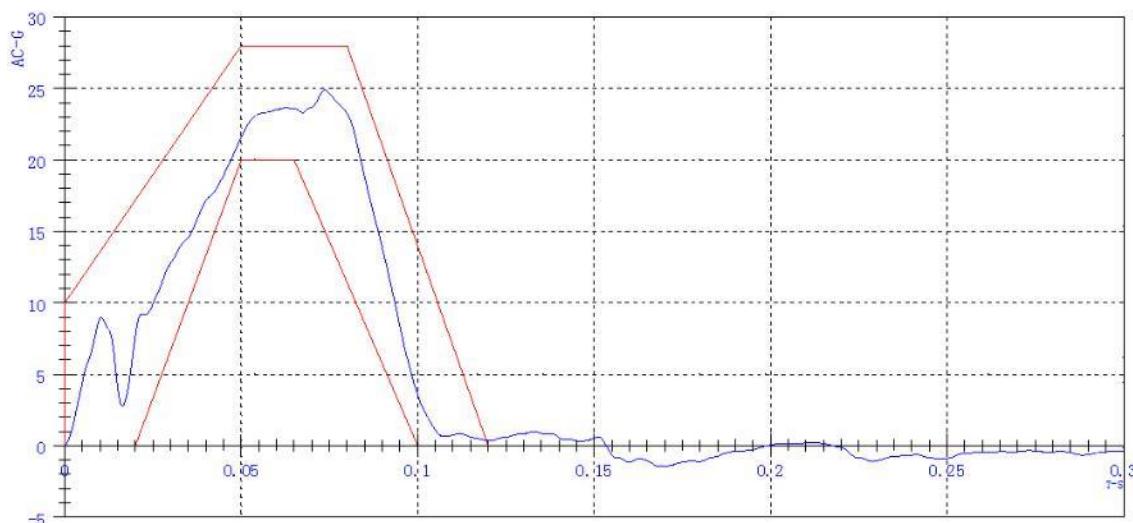
- b) Tested sample No. 5, dummy Q1.5, frontal impact; i-Size ECRS, integral, rearward facing, long leg, upright.



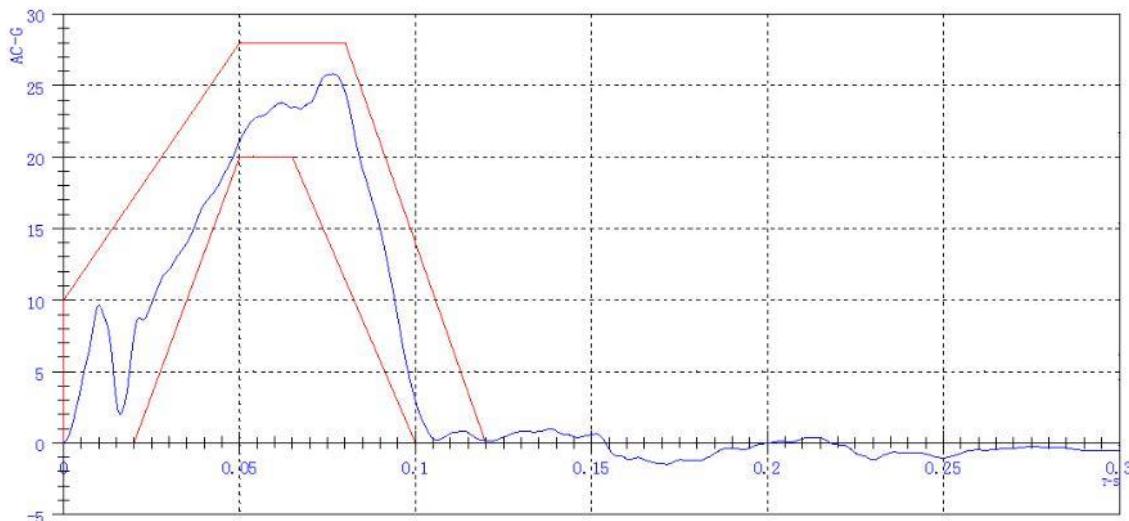
- c) Tested sample No. 6, dummy Q3, frontal impact; i-Size ECRS, integral, rearward facing, long leg, upright.



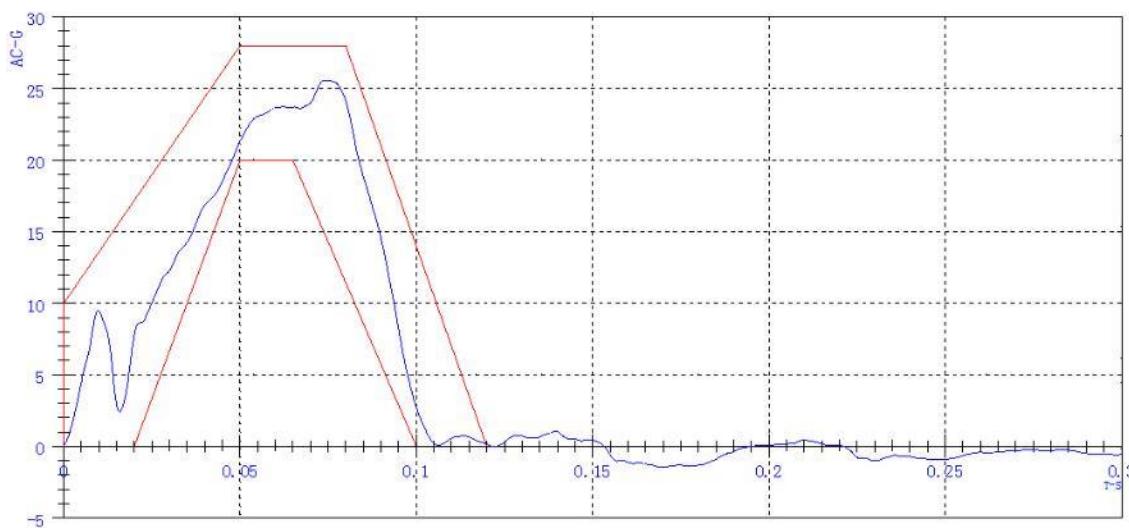
- d) Tested sample No. 7, dummy Q0, frontal impact; i-Size ECRS, integral, rearward facing, long leg, inclined.



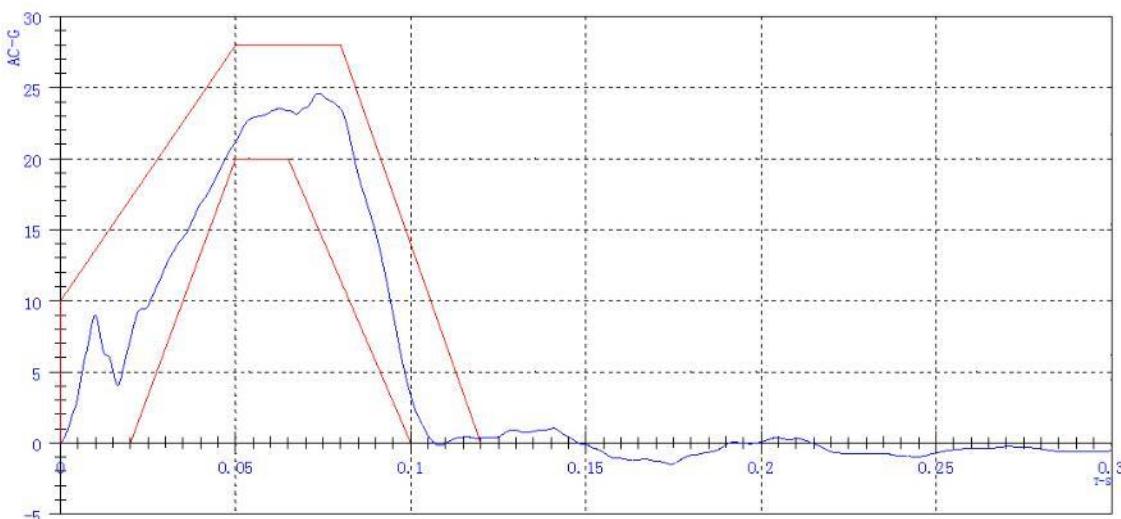
- e) Tested sample No. 8, dummy Q1.5, frontal impact; i-Size ECRS, integral, rearward facing, long leg, inclined.



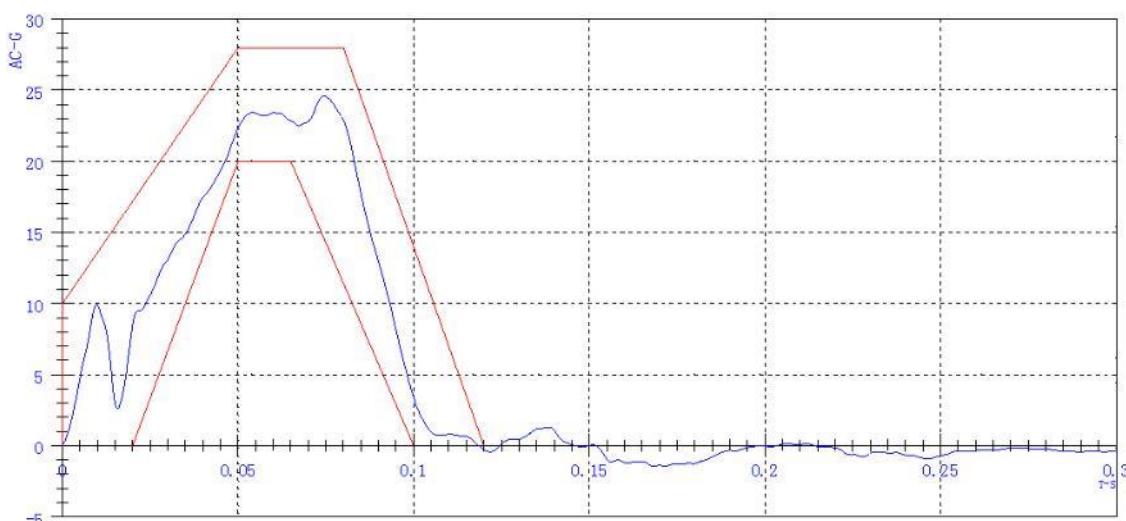
- f) Tested sample No. 9, dummy Q3, frontal impact; i-Size ECRS, integral, rearward facing, long leg, inclined.



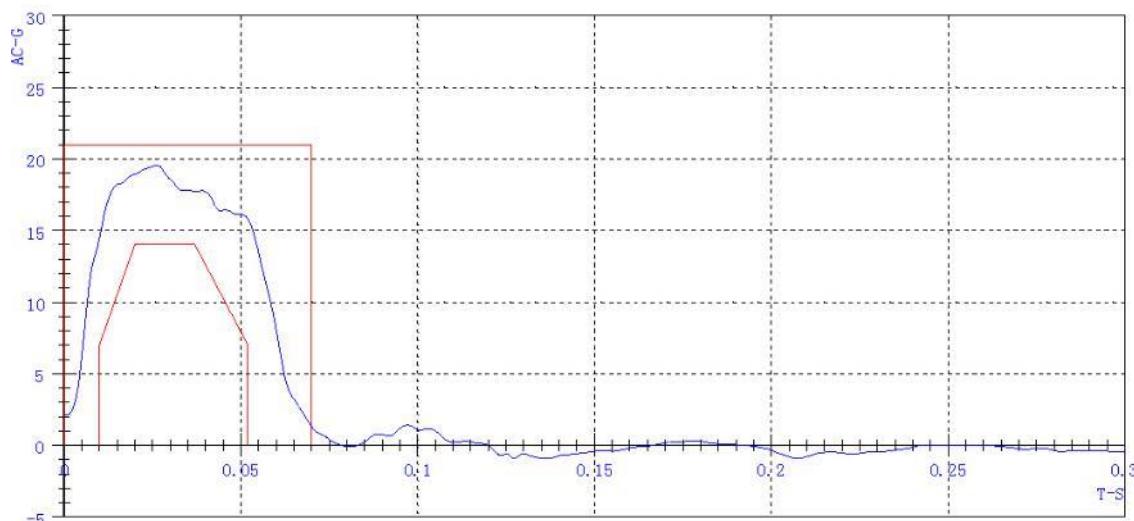
- g) Tested sample No. 10, dummy Q3, frontal impact; i-Size ECRS, integral, rearward facing, long leg, inclined, with optional buckle 3#.



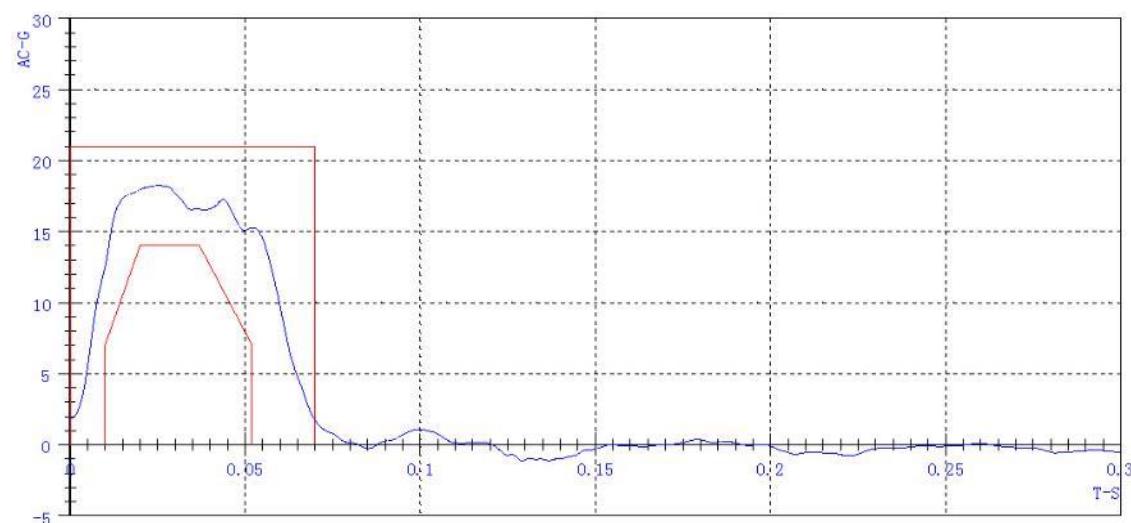
- h) Tested sample No. 11, dummy Q3, frontal impact; i-Size ECRS, integral, rearward facing, inclined, misuse, without support leg used.



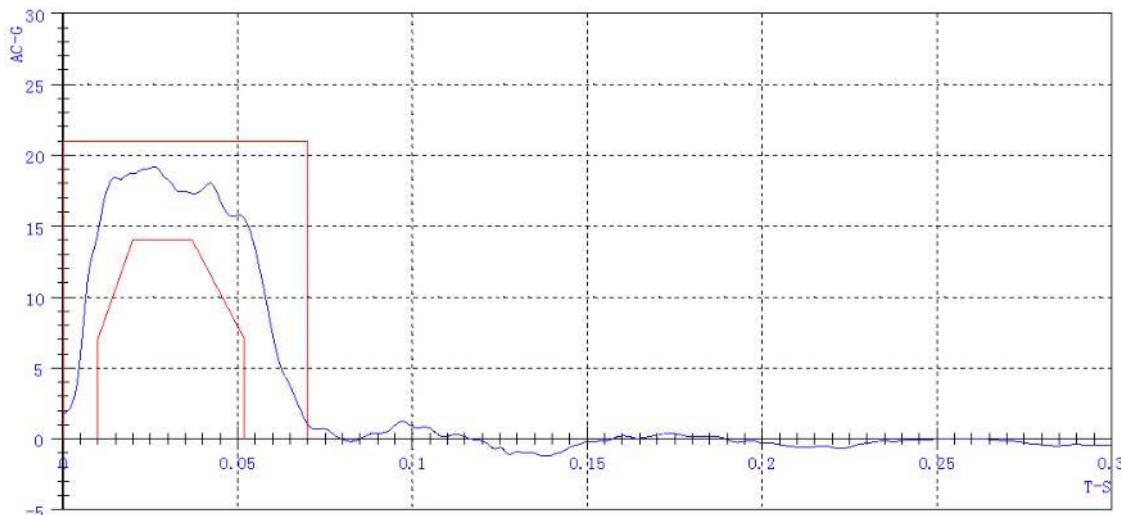
- i) Tested sample No. 12, dummy Q0, rear impact; i-Size ECRS, integral, rearward facing, long leg, upright.



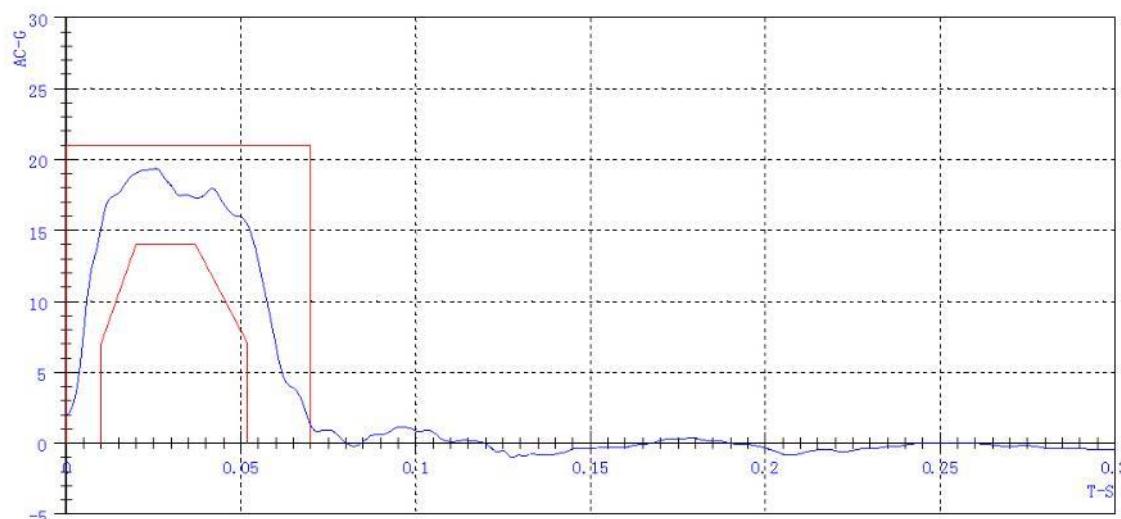
- j) Tested sample No. 13, dummy Q1.5, rear impact; i-Size ECRS, integral, rearward facing, long leg, upright.



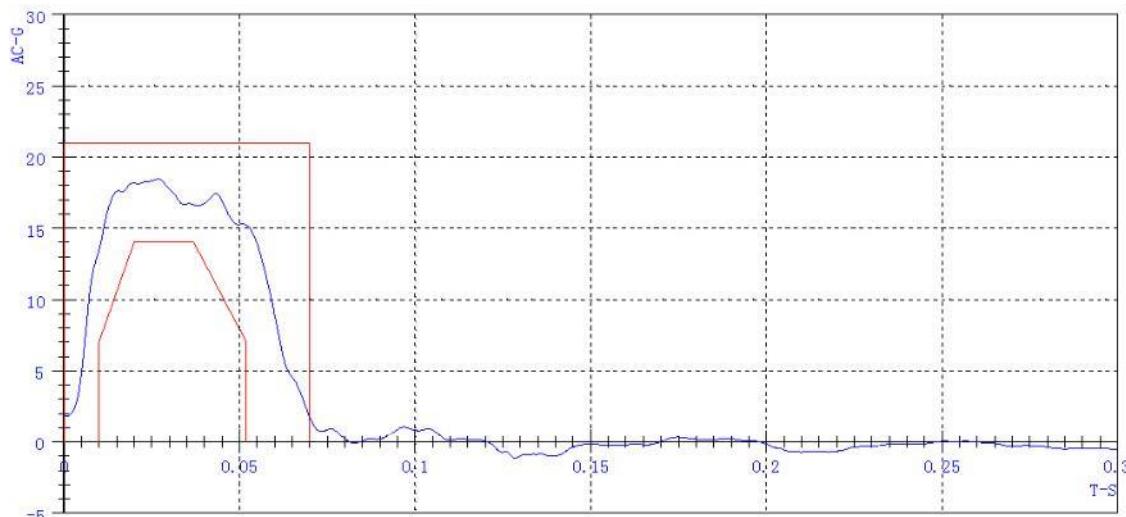
- k) Tested sample No. 14, dummy Q3, rear impact; i-Size ECRS, integral, rearward facing, long leg, upright.



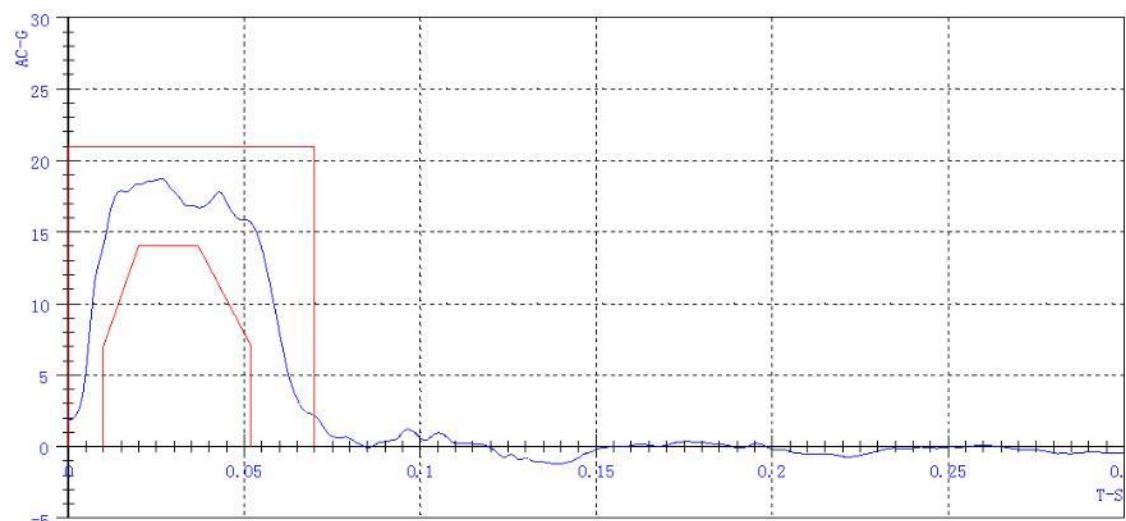
- l) Tested sample No. 15, dummy Q0, rear impact; i-Size ECRS, integral, rearward facing, long leg, inclined.



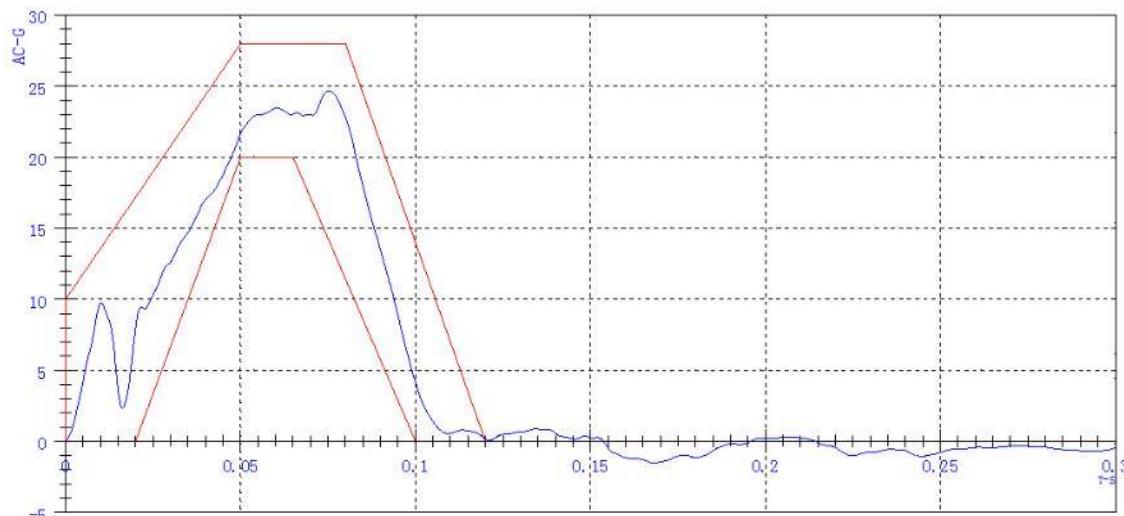
- m) Tested sample No. 16, dummy Q1.5, rear impact; i-Size ECRS, integral, rearward facing, long leg, inclined.



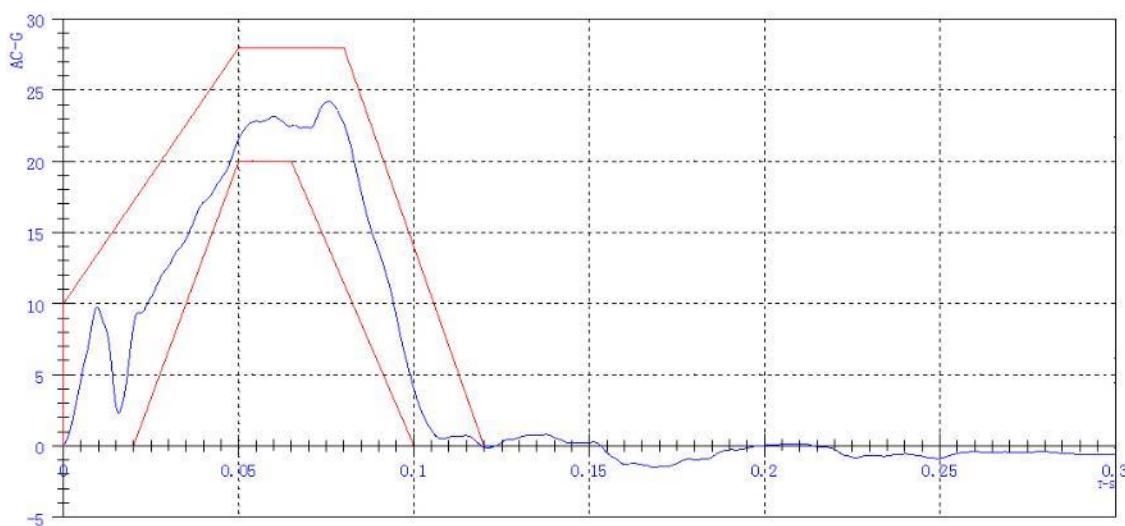
- n) Tested sample No. 17, dummy Q3, rear impact; i-Size ECRS, integral, rearward facing, long leg, inclined.



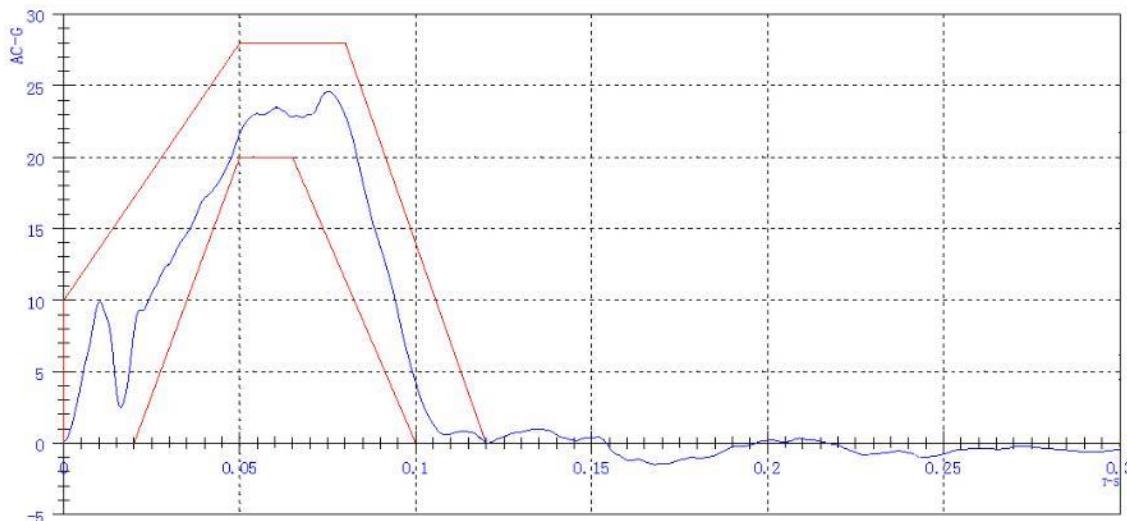
- o) Tested sample No. 21, dummy Q1.5, frontal impact; i-Size ECRS, integral, forward facing, long leg, inclined.



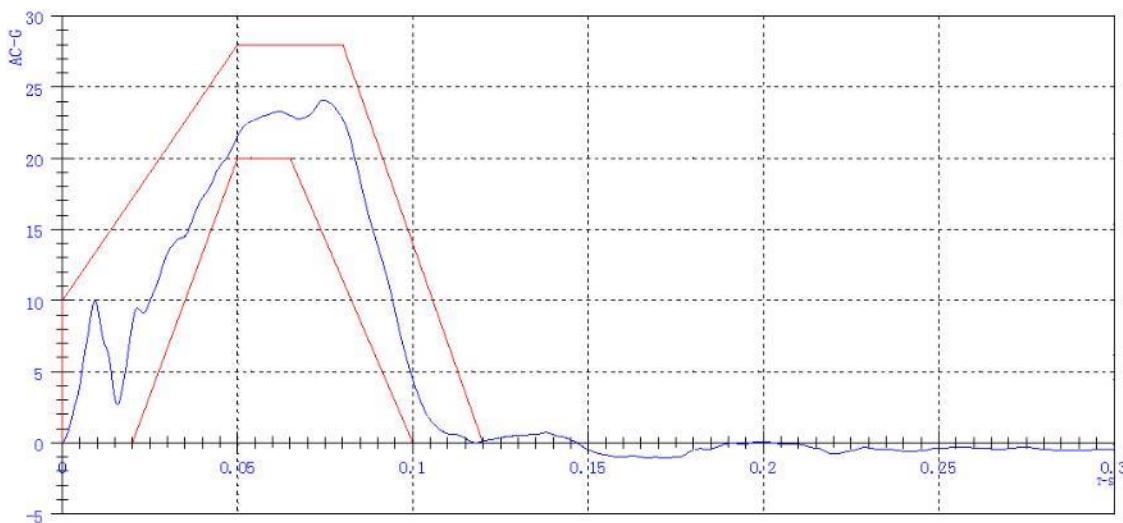
- p) Tested sample No. 22, dummy Q3, frontal impact; i-Size ECRS, integral, forward facing, long leg, inclined.



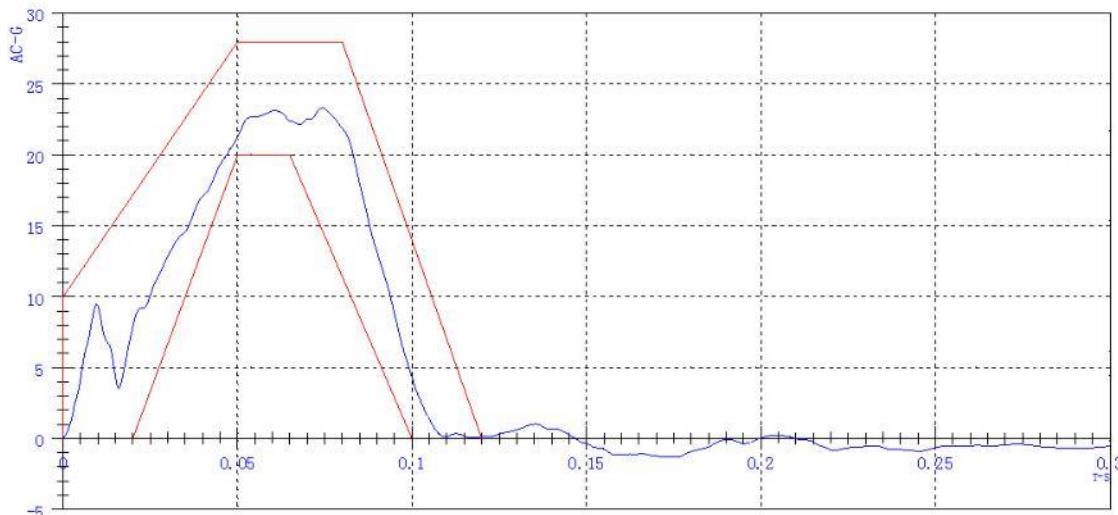
- q) Tested sample No. 23, dummy Q1.5, frontal impact; i-Size ECRS, integral, forward facing, long leg, upright.



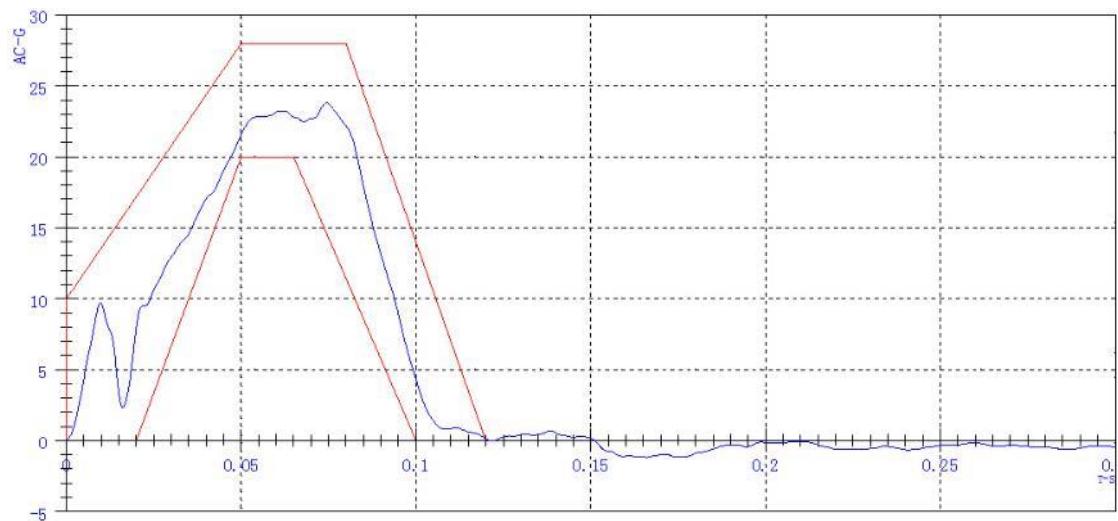
- r) Tested sample No. 24, dummy Q3, frontal impact; i-Size ECRS, integral, forward facing, long leg, upright.



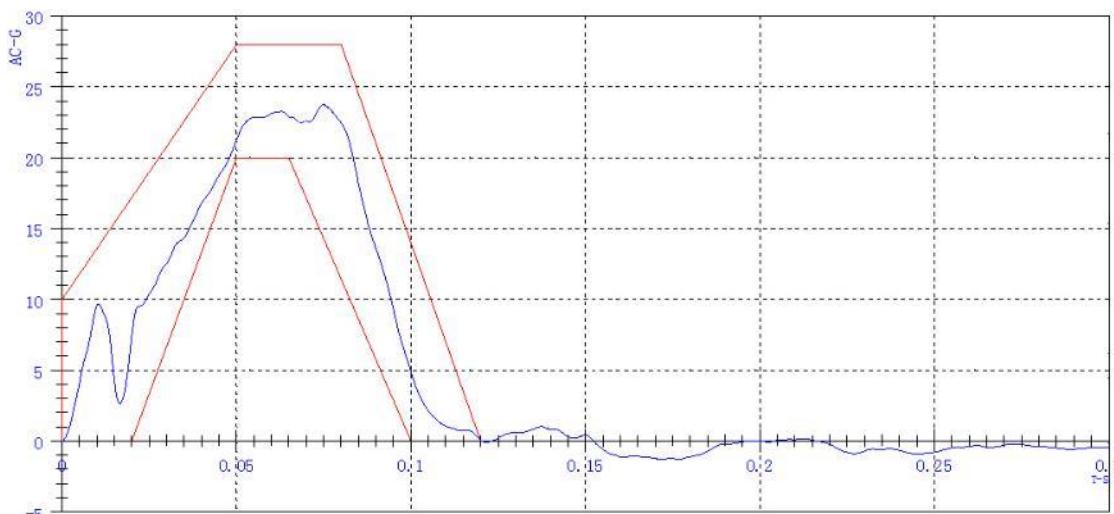
- s) Tested sample No. 25, dummy Q3, frontal impact; i-Size ECRS, integral, forward facing, long leg, upright, with optional buckle 3#.



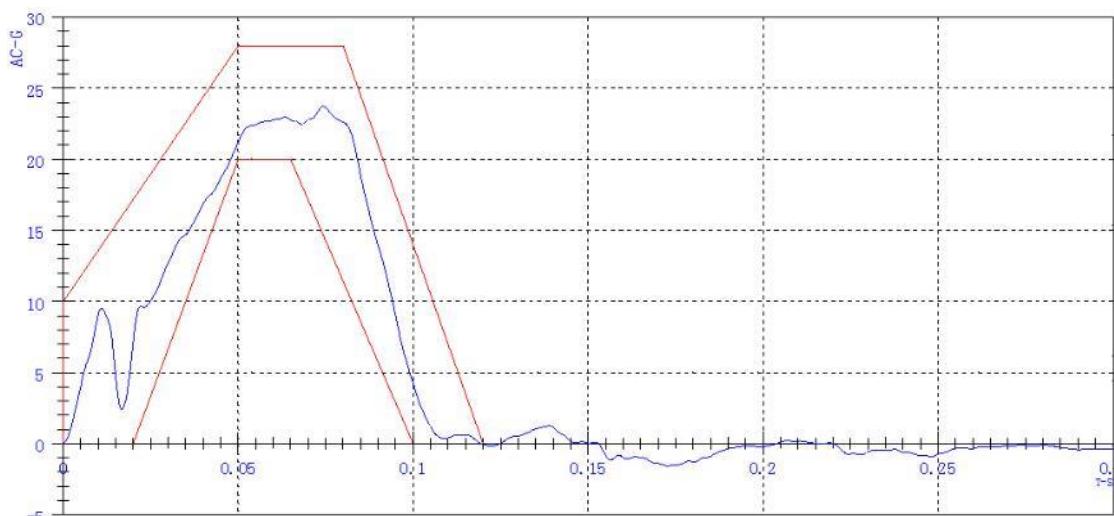
- t) Tested sample No. 26, dummy Q3, frontal impact; i-Size ECRS, integral, forward facing, misuse, without support leg used, upright.



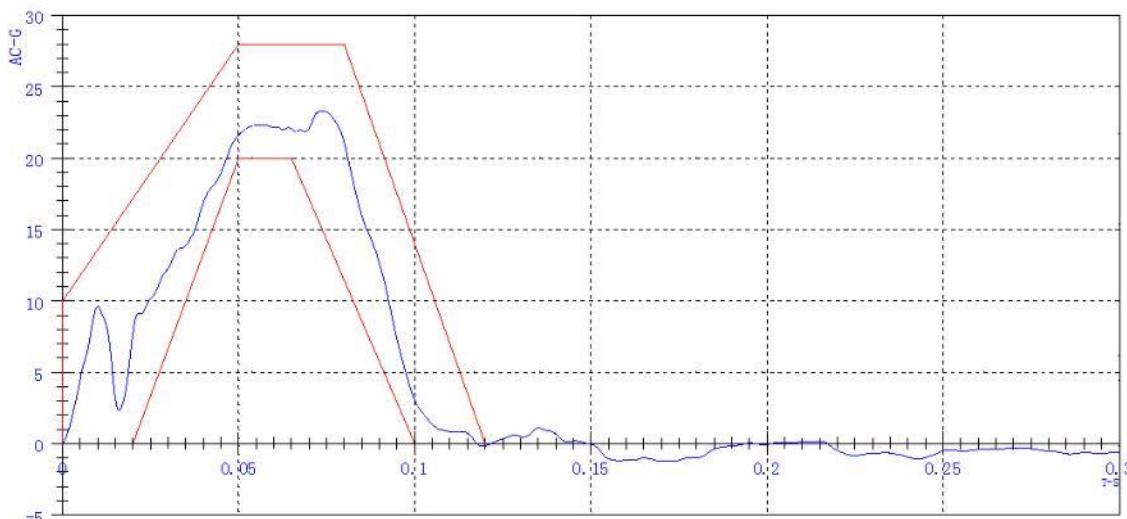
- u) Tested sample No. 29, dummy Q3, frontal impact; i-Size booster seat, non-integral, forward facing, upright.



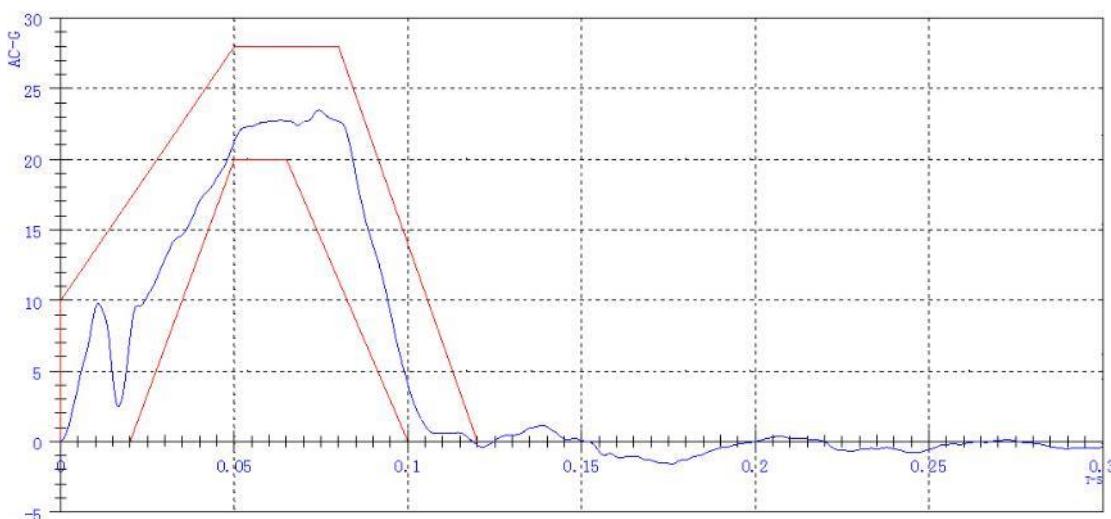
- v) Tested sample No. 30, dummy Q10, frontal impact; i-Size booster seat, non-integral, forward facing, upright.



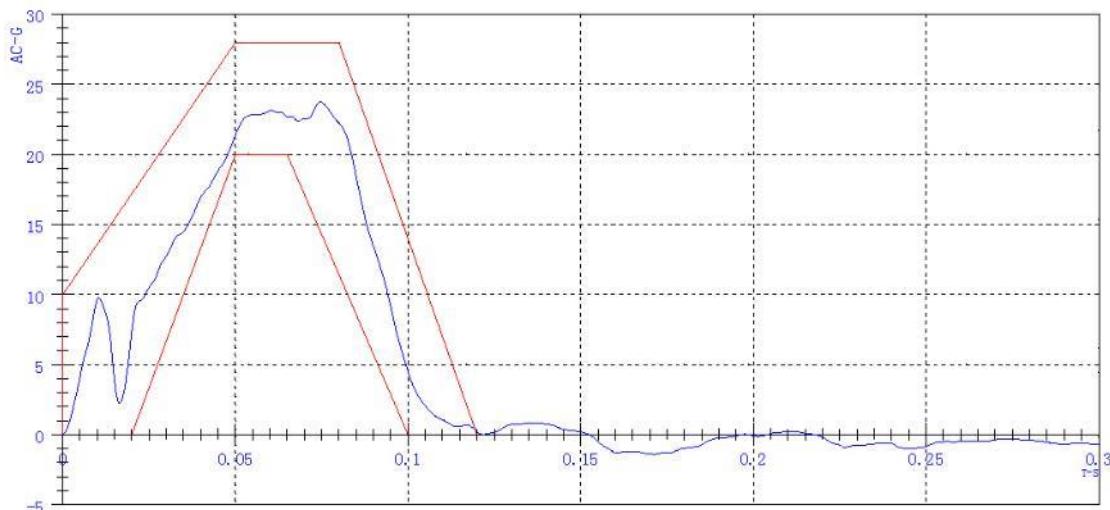
- w) Tested sample No. 31, dummy Q3, frontal impact; i-Size booster seat, non-integral, forward facing, upright, without ISOFIX attachments.



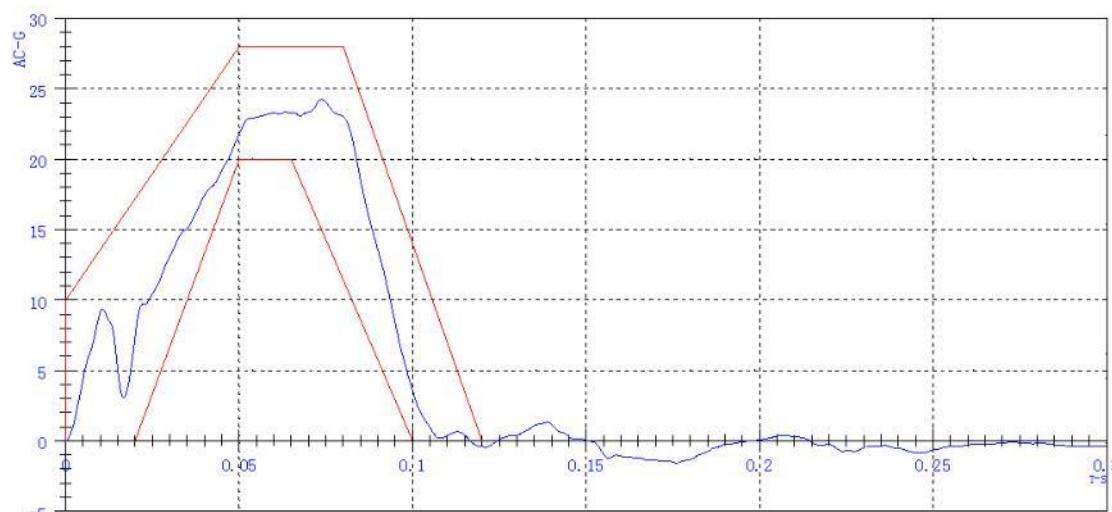
- x) Tested sample No. 32, dummy Q10, frontal impact; i-Size booster seat, non-integral, forward facing, upright, without ISOFIX attachments.



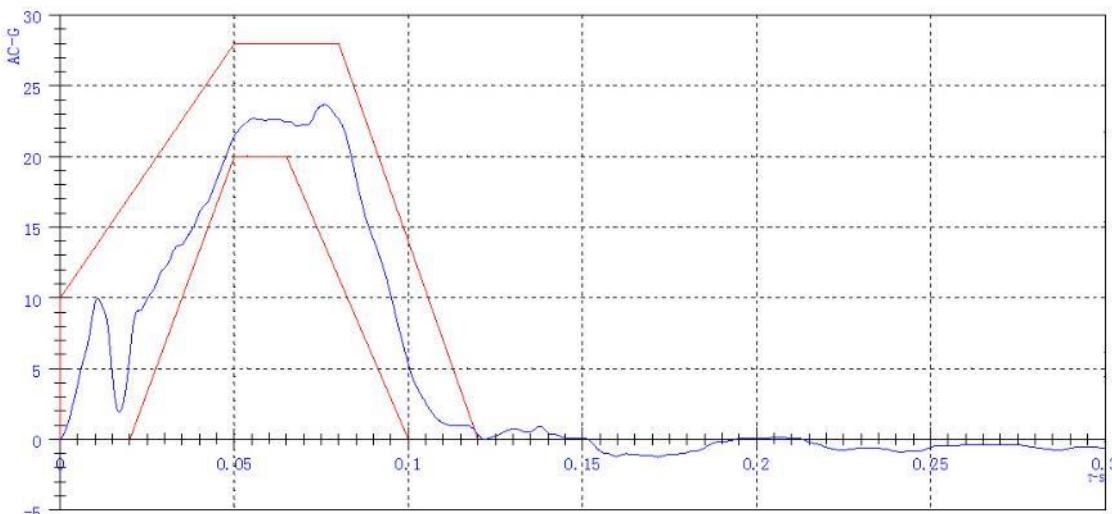
- y) Tested sample No. 33, dummy Q3, frontal impact; i-Size booster seat, non-integral, forward facing, inclined.



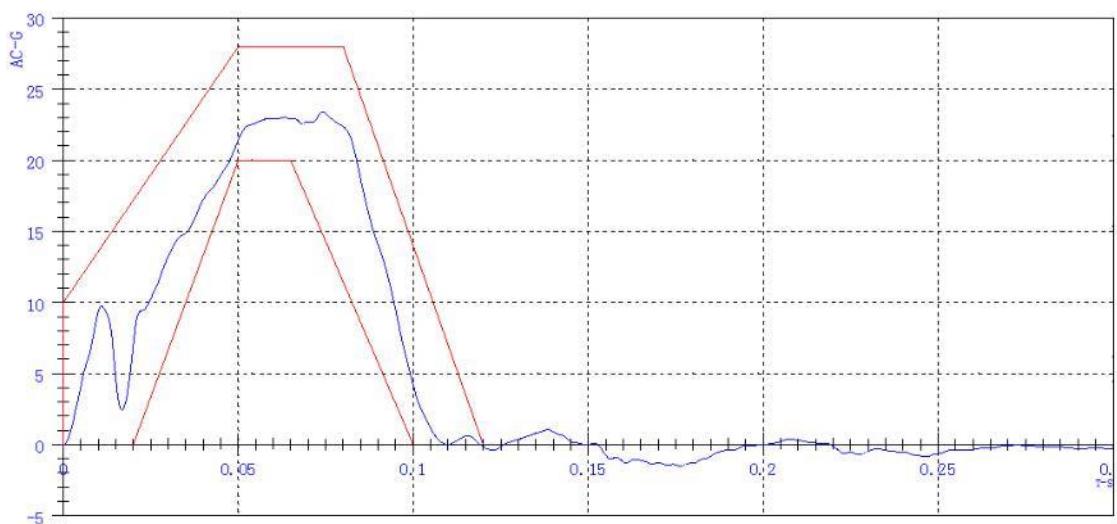
- z) Tested sample No. 34, dummy Q10, frontal impact; i-Size booster seat, non-integral, forward facing, inclined.



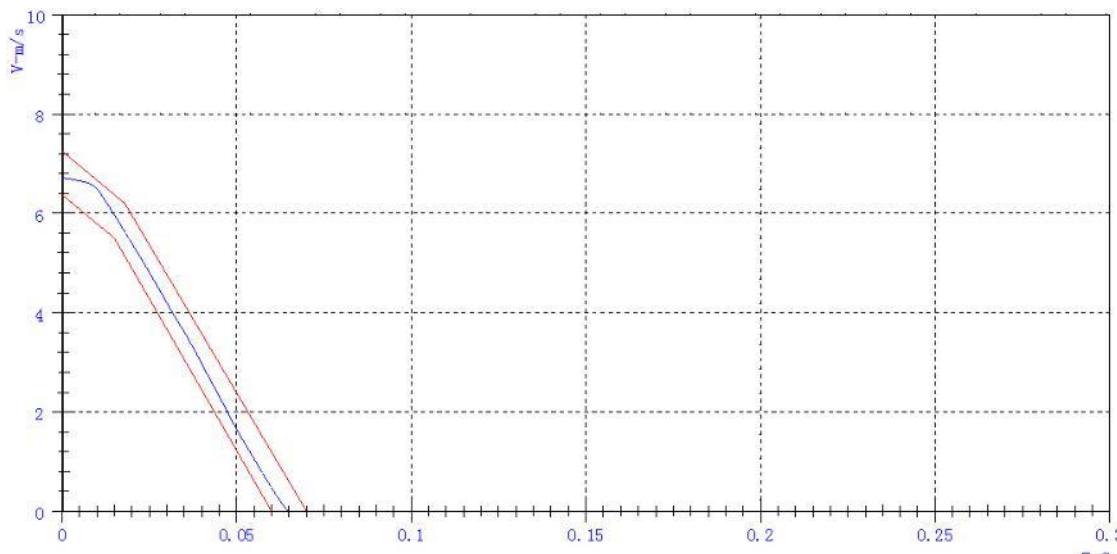
aa) Tested sample No. 35, dummy Q3, frontal impact; i-Size booster seat, non-integral, forward facing, inclined, without ISOFIX attachments.



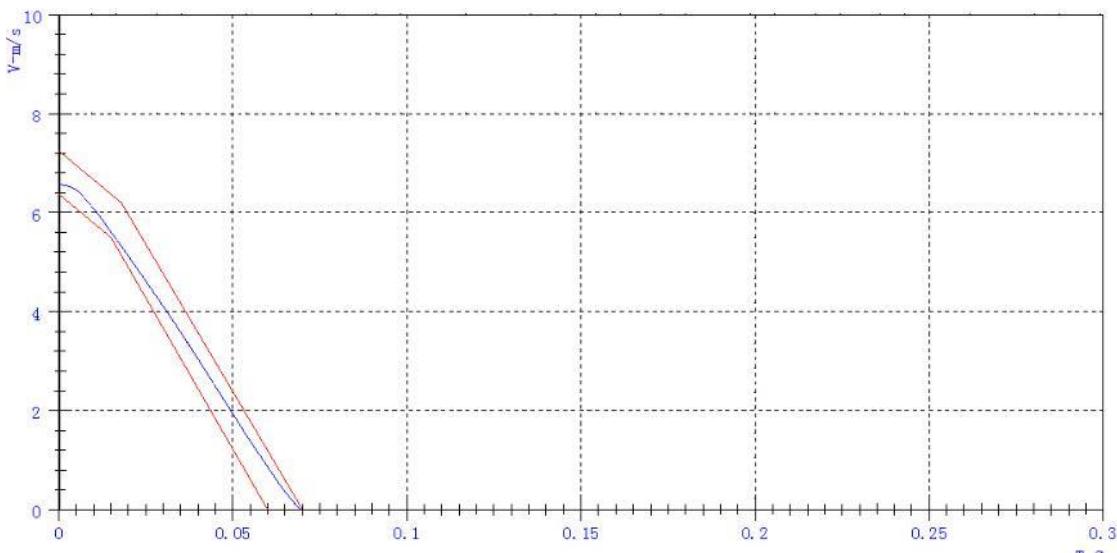
bb) Tested sample No. 36, dummy Q10, frontal impact; i-Size booster seat, non-integral, forward facing, inclined, without ISOFIX attachments.



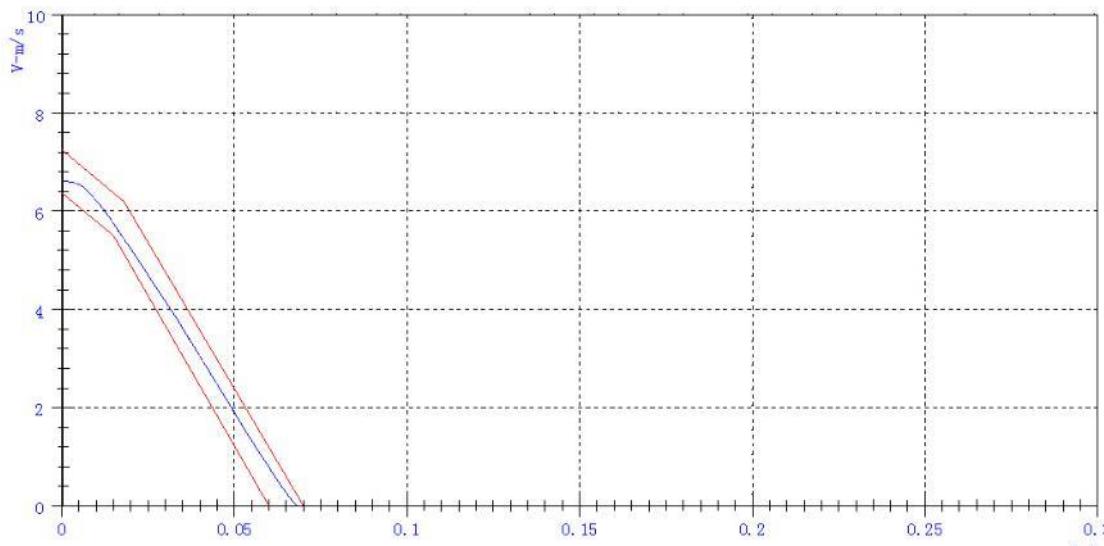
cc) Tested sample No. 18, dummy Q0, lateral impact; i-Size ECRS, integral, rearward facing, long leg, upright.



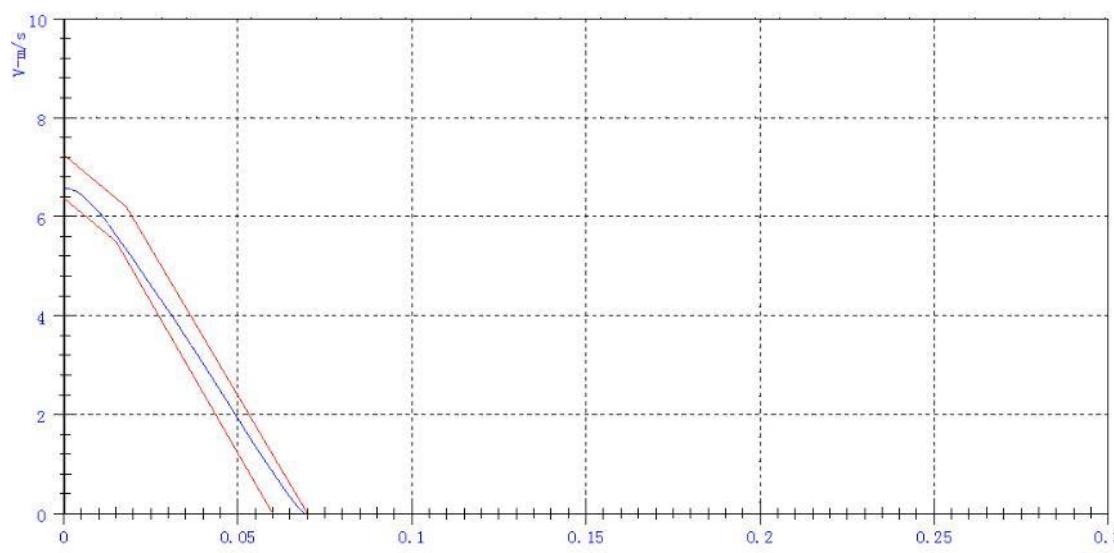
dd) Tested sample No.19, dummy Q1.5, lateral impact; i-Size ECRS, integral, rearward facing, long leg, upright.



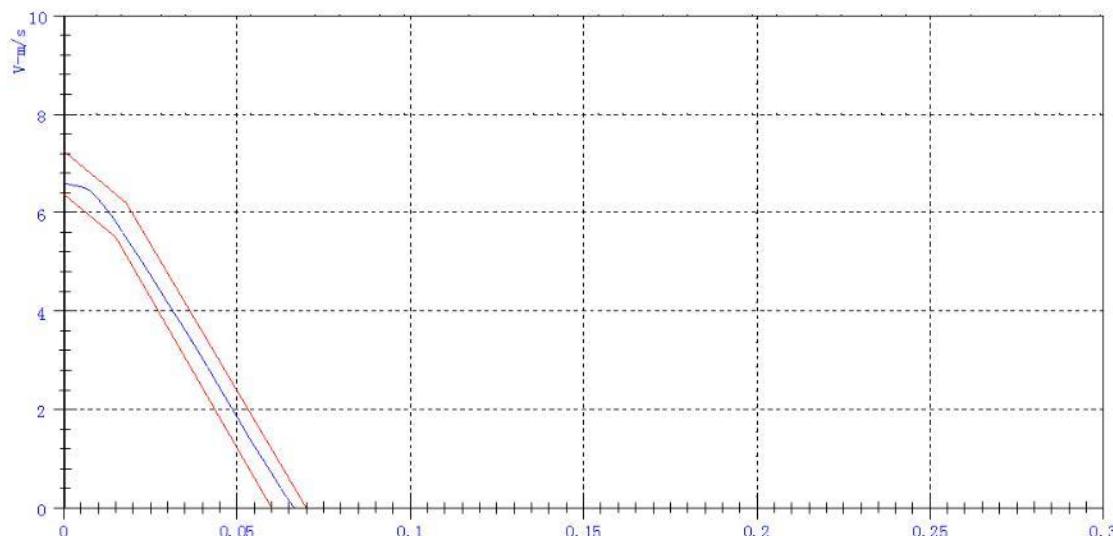
ee) Tested sample No. 20, dummy Q3, lateral impact; i-Size ECRS, integral, rearward facing, long leg, upright.



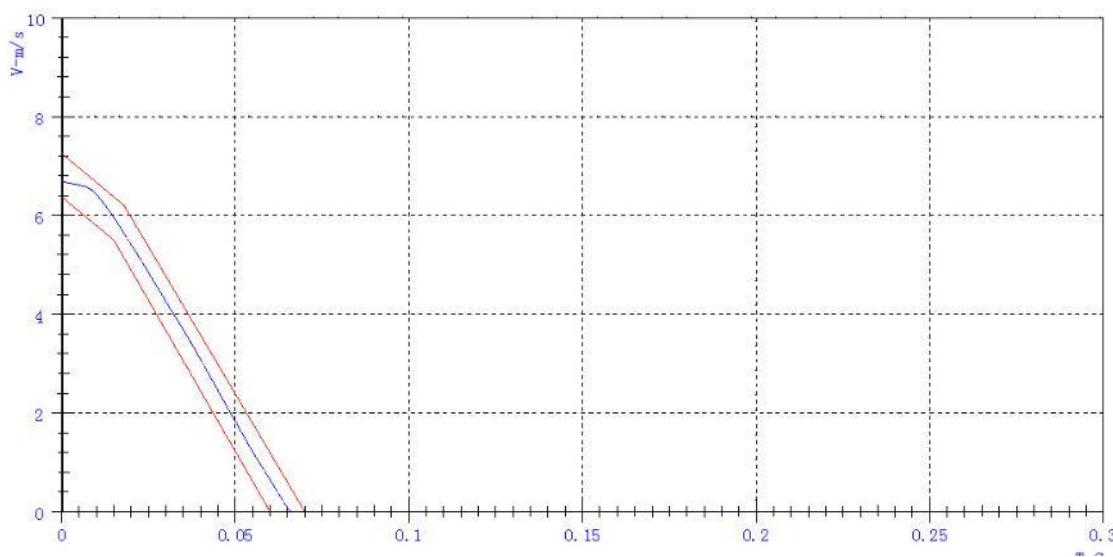
ff) Tested sample No. 27, dummy Q1.5, lateral impact; i-Size ECRS, integral, forward facing, long leg, upright.



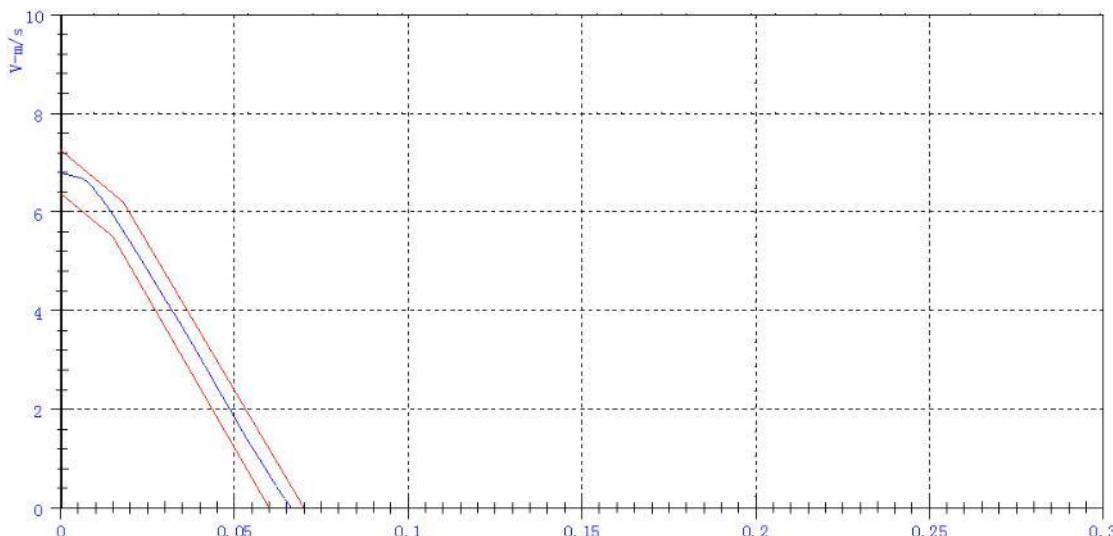
gg) Tested sample No. 28, dummy Q3, lateral impact; i-Size ECRS, integral, forward facing, long leg, upright.



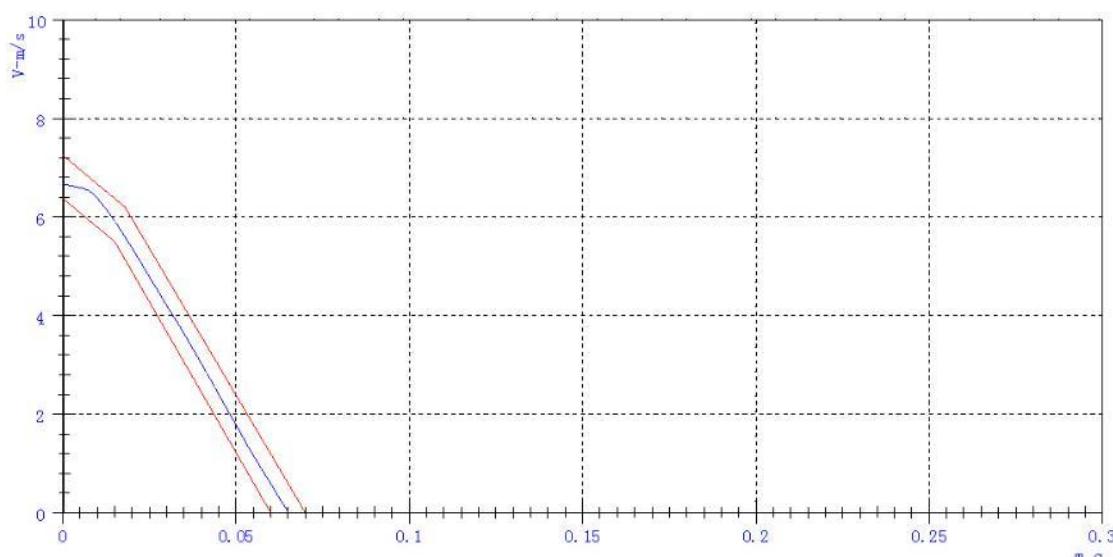
hh) Tested sample No. 37, dummy Q3, lateral impact; i-Size booster seat, non-integral, forward facing, upright.



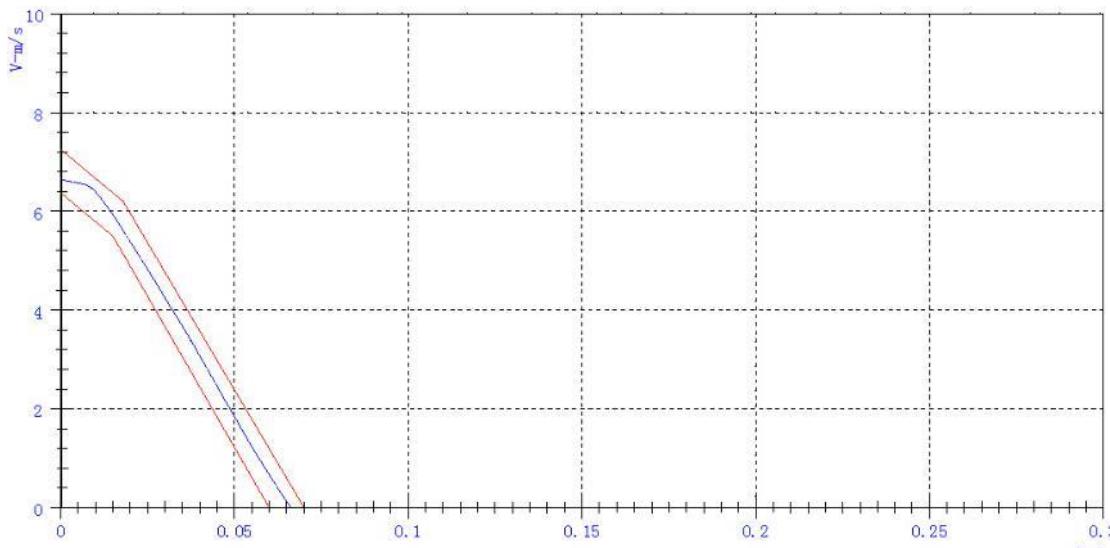
- ii) Tested sample No. 38, dummy Q6, lateral impact; i-Size booster seat, non-integral, forward facing, upright.



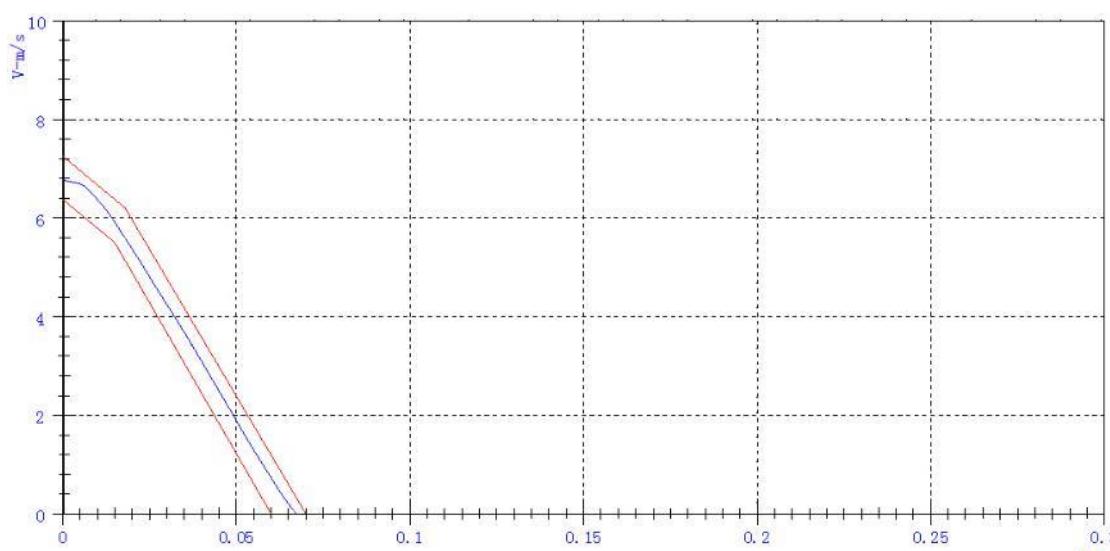
- jj) Tested sample No. 39, dummy Q10, lateral impact; i-Size booster seat, non-integral, forward facing, upright.



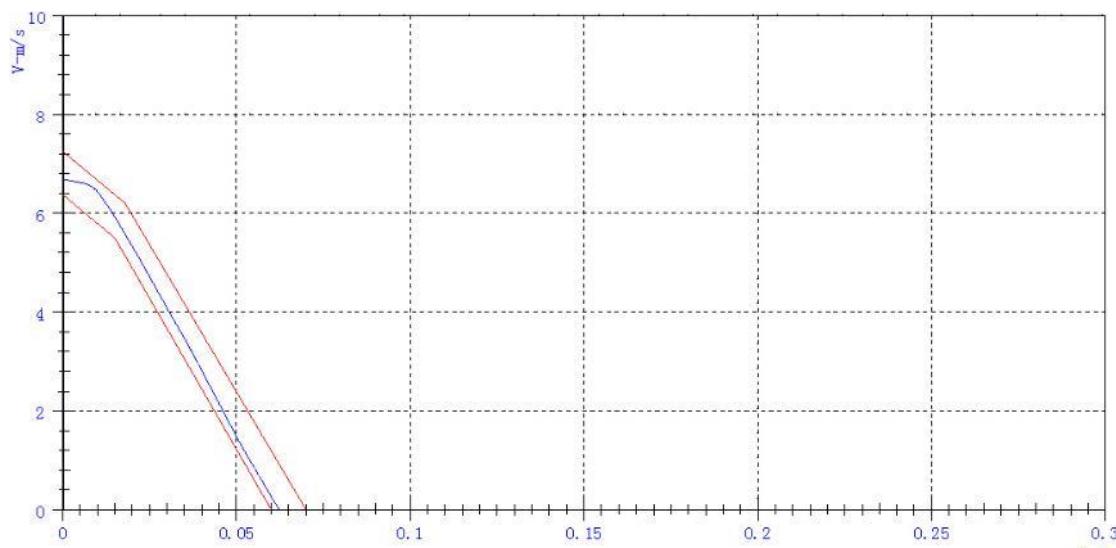
kk) Tested sample No. 40, dummy Q3, lateral impact; i-Size booster seat, non-integral, forward facing, upright, without ISOFIX attachments.



II) Tested sample No. 41, dummy Q6, lateral impact; i-Size booster seat, non-integral, forward facing, upright, without ISOFIX attachments.



mm) Tested sample No. 42, dummy Q10, lateral impact; i-Size booster seat, non-integral, forward facing, upright, without ISOFIX attachments.



End of the technical report