

VALIDATION TEST

Title	Normal climb all engines operating.		
Id	1 c i	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulation of engine thrust, aerodynamic drag and atmosphere in a steady state normal climb conditions conforms to the class of aeroplanes	Airspeed approx. 90 kts VS (Rate of Climb) approx. 1190 ft/min
Reference	Evaluation Criteria
Chapter 12 - Validation data - Performances - Test 1.c.i	+/- 3 Kts Airspeed +/- 5 % or +/- 100ft/mn Rate of Climb

Demonstration procedure	The aeroplane is established in steady climb phase over an interval of at least 1000 ft.
Manual test procedure	The pilot performs a standard climb profile, maintaining constant power setting for at least 90 seconds, using trim as required to maintain airspeed. See the initial parameters next page.
Automatic test procedure	1 c i

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

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Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CLIMB
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : 1200 (free) IAS (kt) : 90 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 12 Pedal Position (%) : 0 Column Position (%) : 44 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 92 Right Load (%) : 92 Left RPM : 2090 Right RPM : 2090

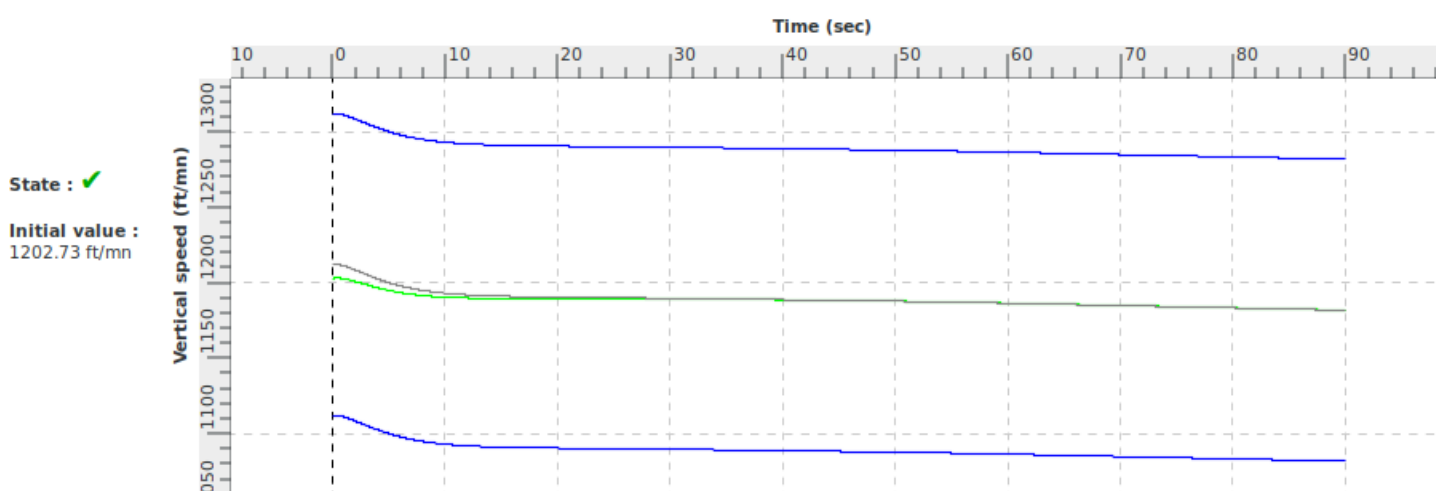
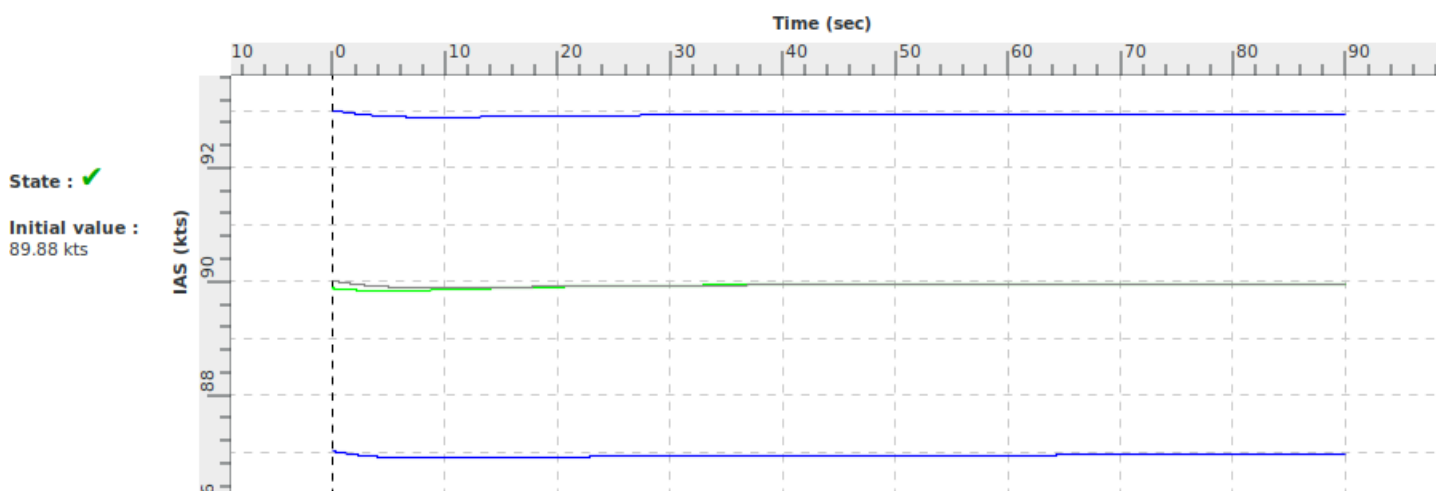
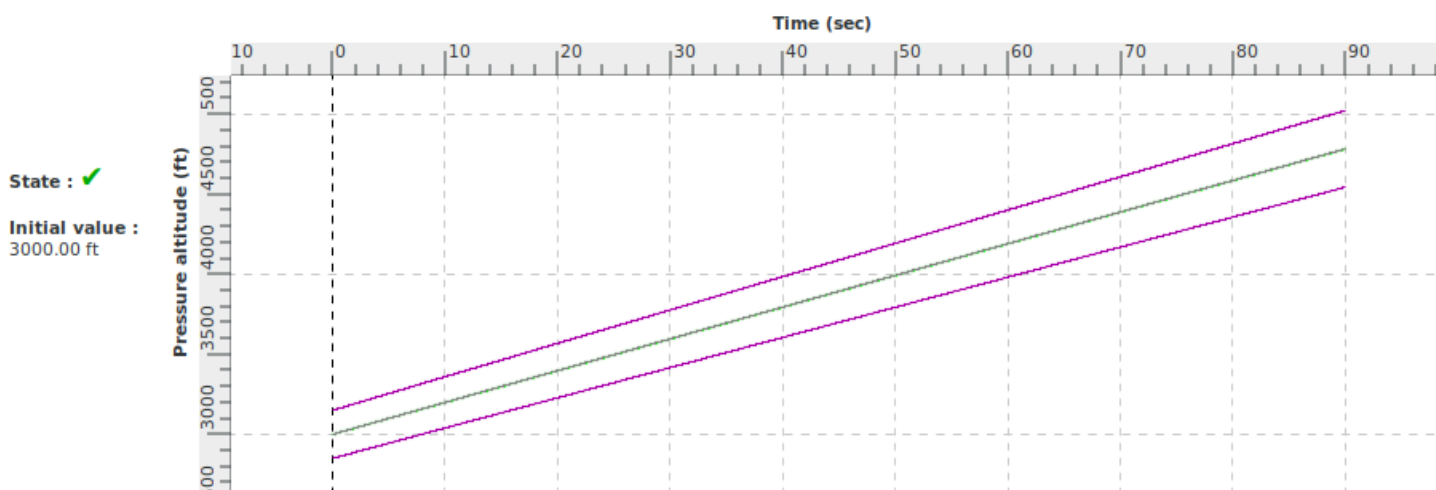
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
90.0	Stop_Test	0.0	Stop the test procedure

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Log of Revision		
Rev. Nbr	Date	Reason for revision

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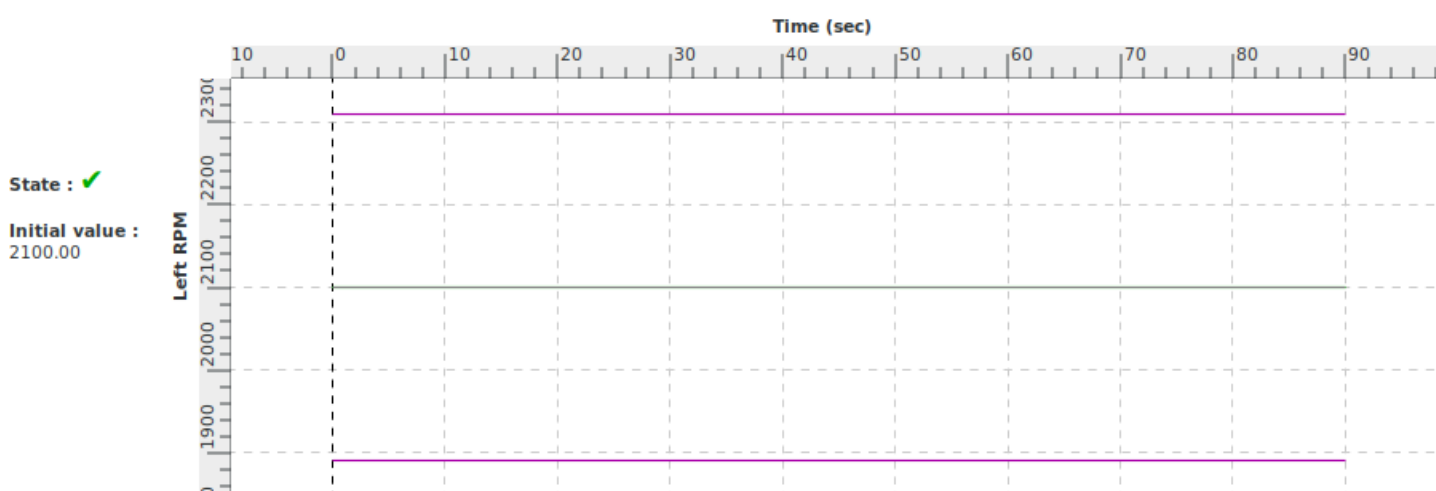
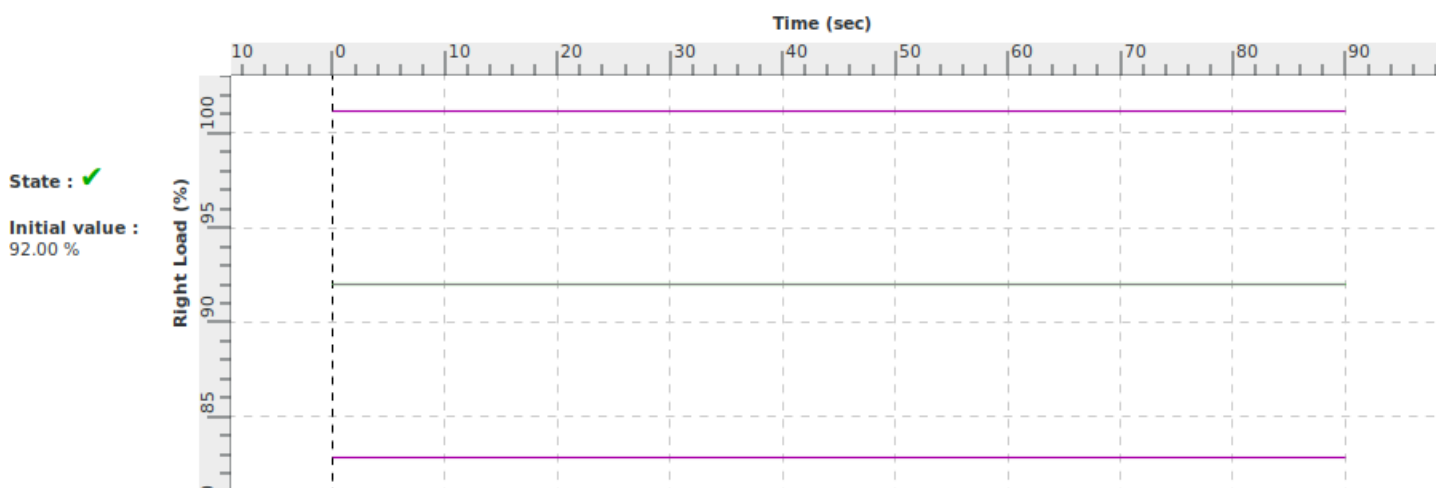
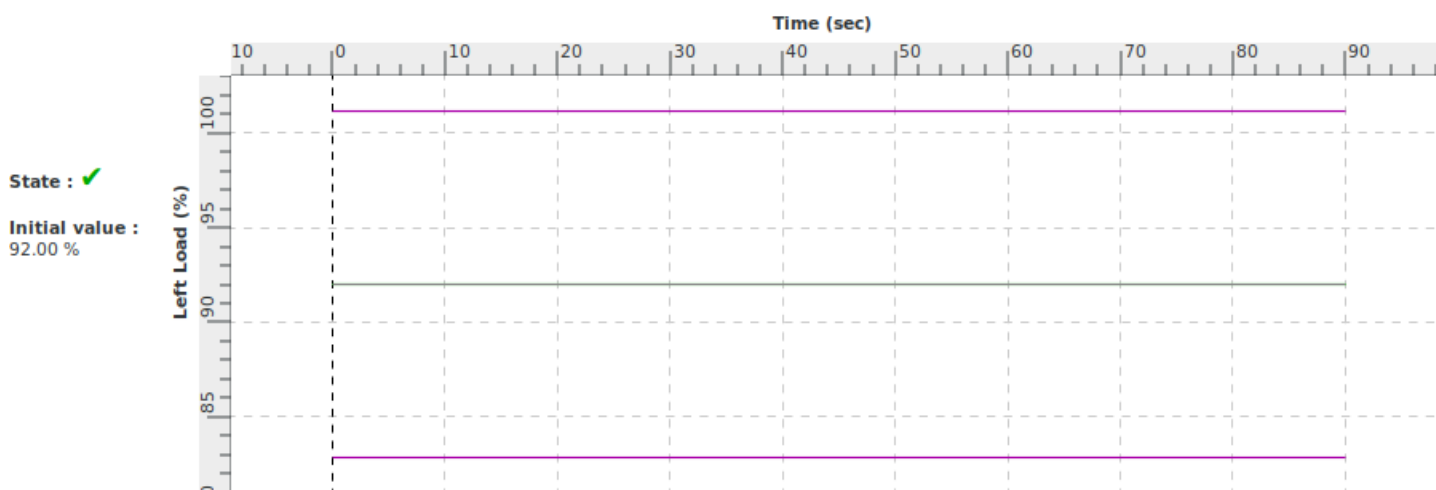
Legend :

green : results within tolerances
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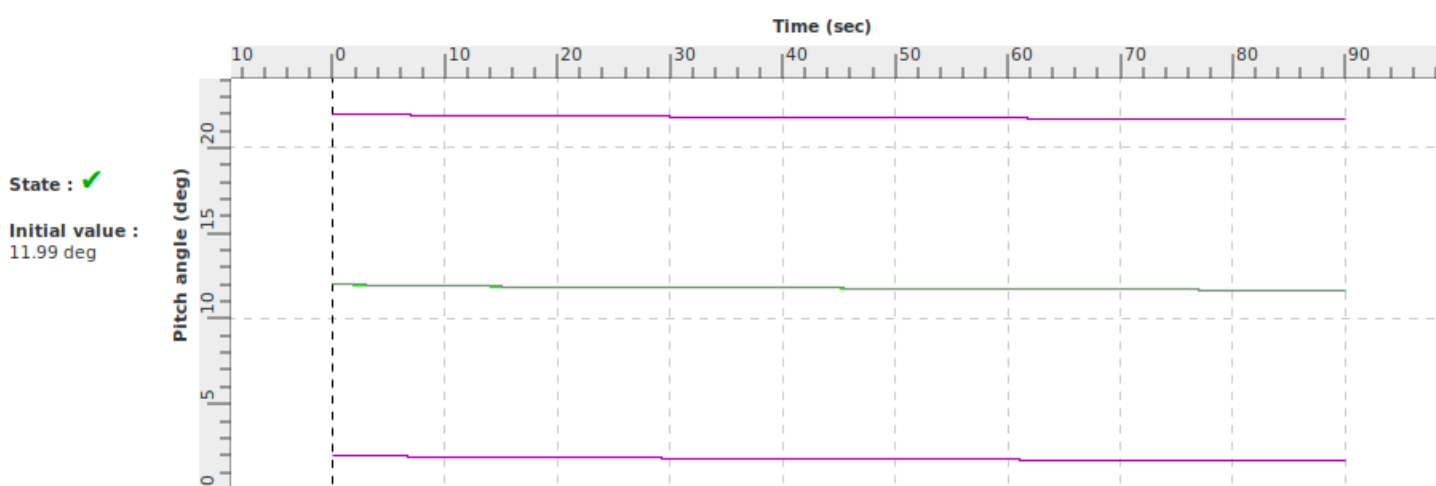
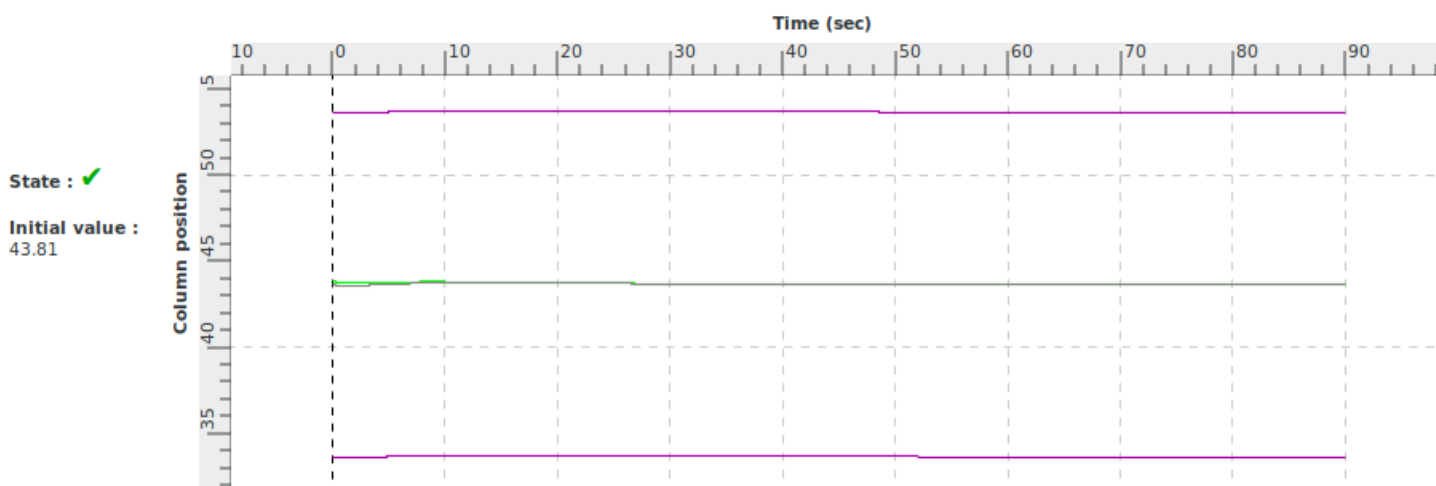
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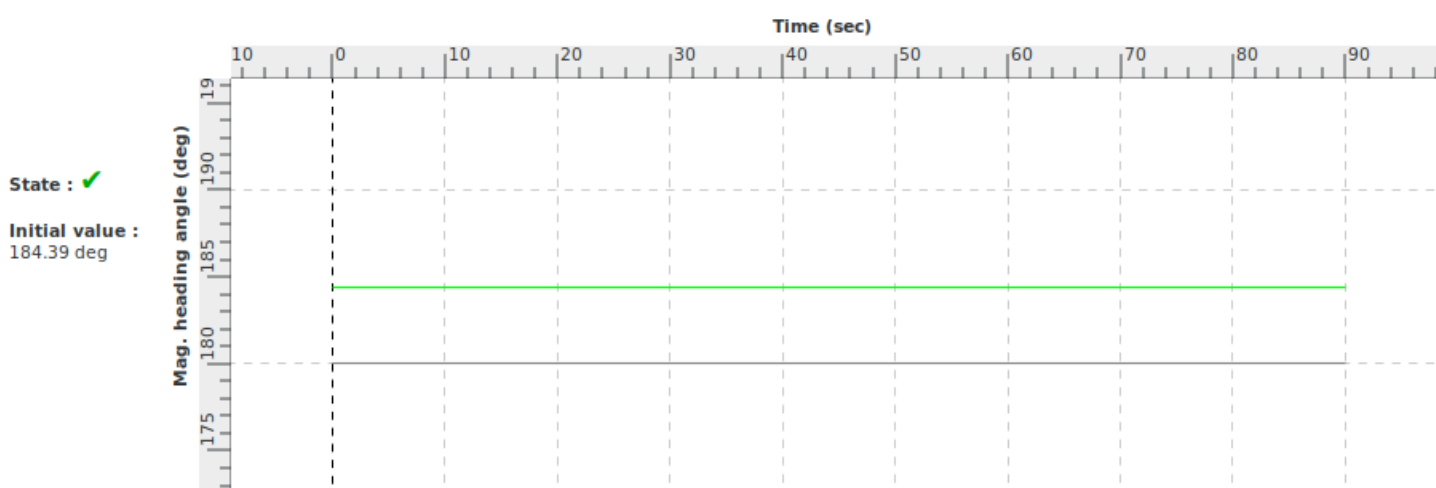
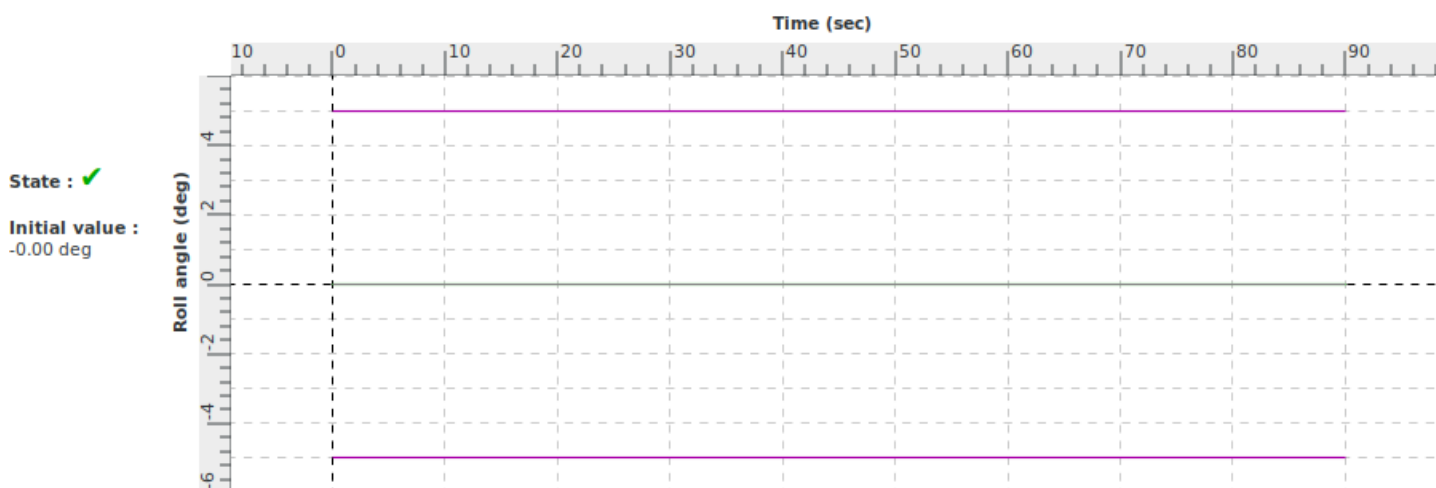
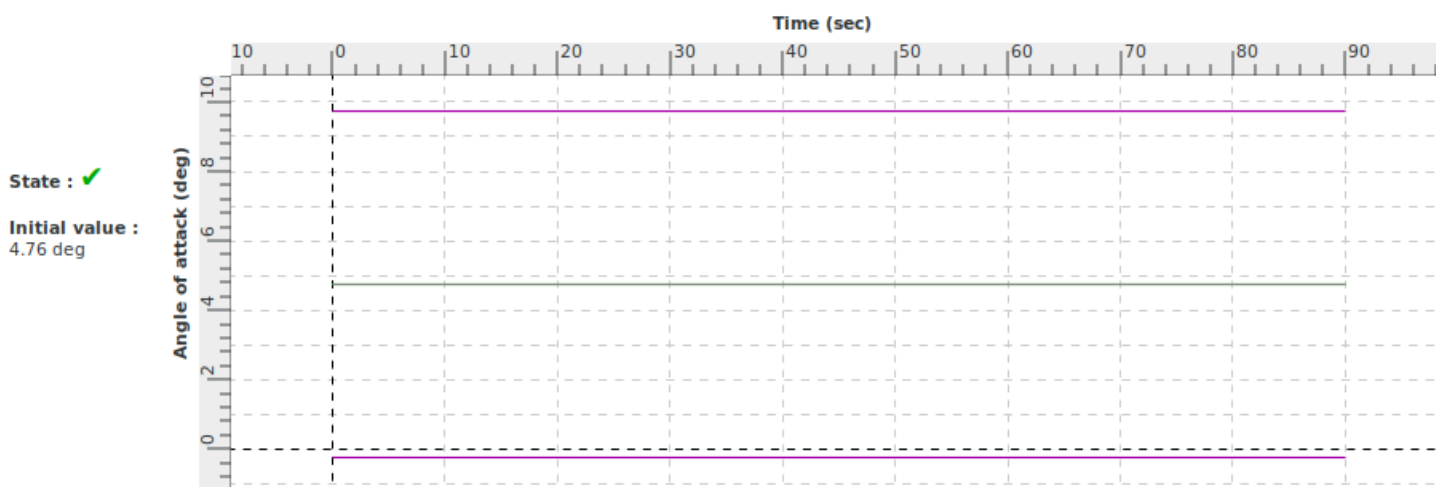
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VALIDATION TEST

Title	Column position vs force during cruise		
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Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulator column position vs. control column characteristics conform to the class of aeroplanes	Column Position / Force -100% / -78 N -50% / -46 N 0% / -7 N 50% / 38 N 100% / 75 N
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.a.i.2	+/- 2.2 daN (5 Lbs) or +/- 10 % Force

Demonstration procedure	At the given trimmed flight conditions, the control column is moved at slow rate over its full range. Control Force is plotted versus position and then compared to the aircraft reference data.
Manual test procedure	Airplane is trimmed at cruise conditions and put in freeze mode, then the pilot slowly moves column over its full travel in both directions, using a dynamometer (results to be determined using the Table Sheet AL42_DA42VI_Tables_QTG_VolIII.xls).
Automatic test procedure	2 a i 2

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Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 (free) IAS (kt) : 139 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

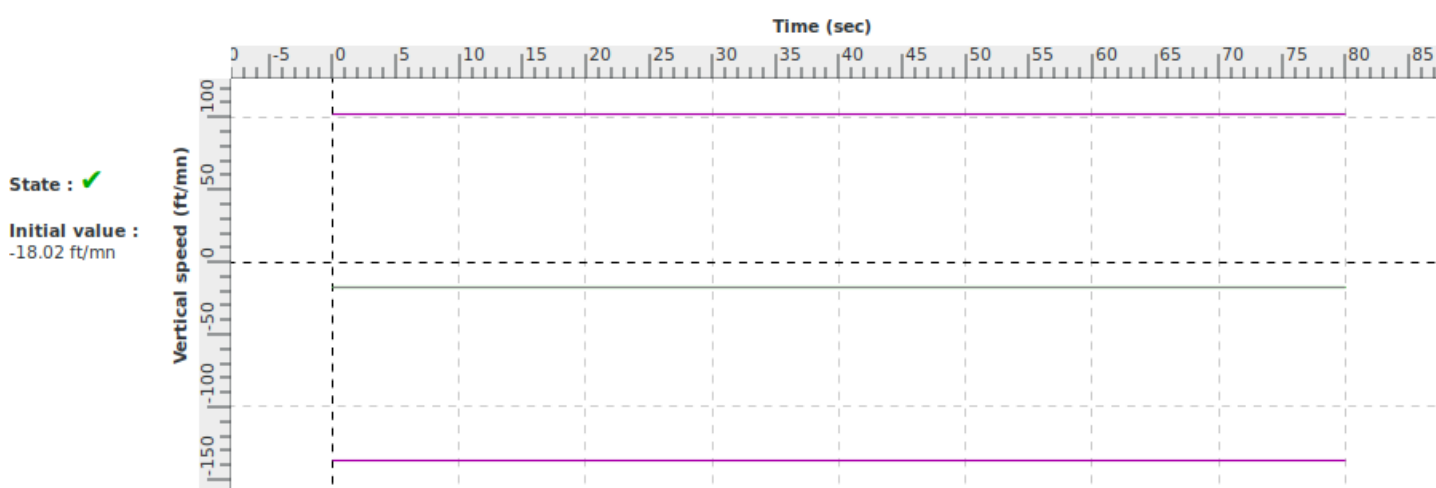
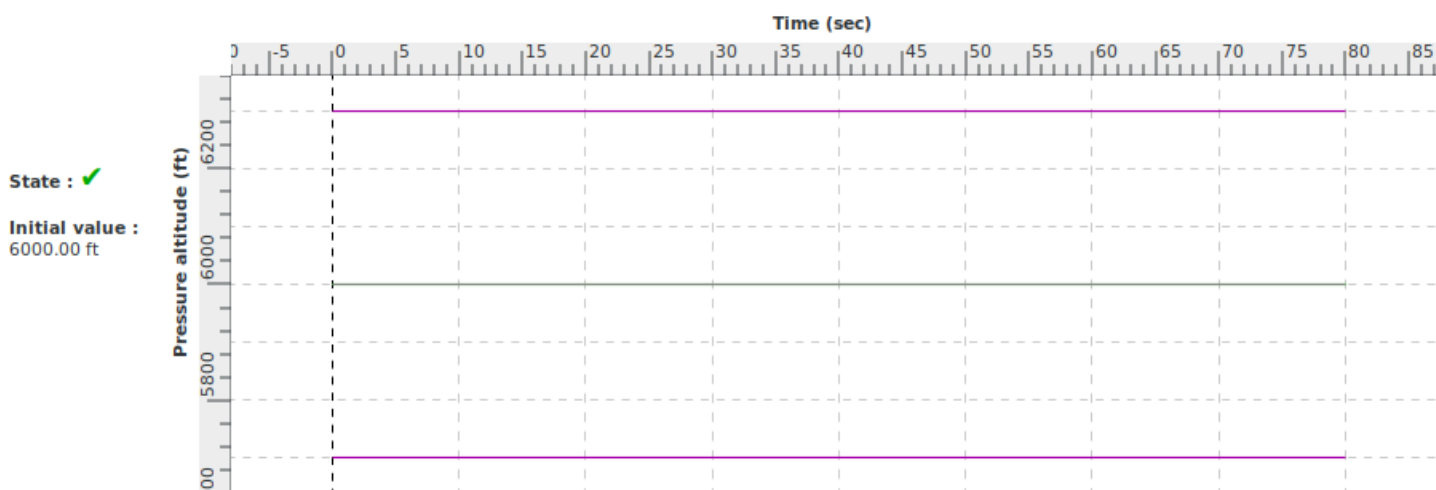
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	mode_stop	1.0	Set the aircraft to STOP or GO mode (0 means GO and 1 means STOP)
3.0	SetAttCmdPalier	107.0	Send a step in the attitude govern
25.0	SetAttCmdPalier	-100.0	Send a step in the attitude govern
65.0	SetAttCmdPalier	0.0	Send a step in the attitude govern
80.0	Stop_Test	0.0	Stop the test procedure

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Log of Revision		
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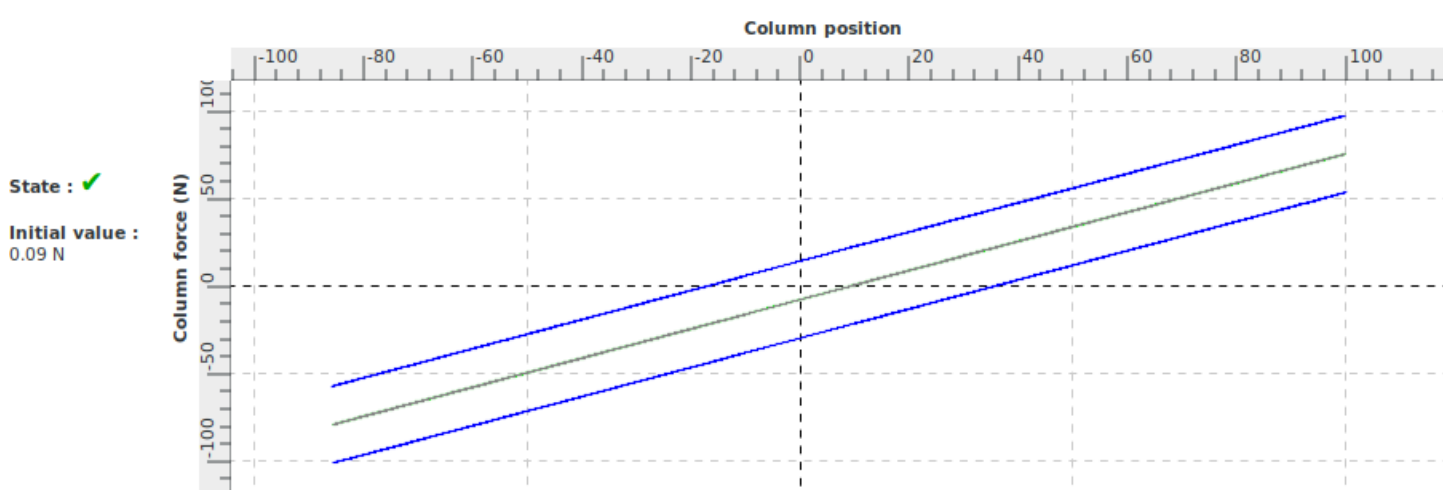
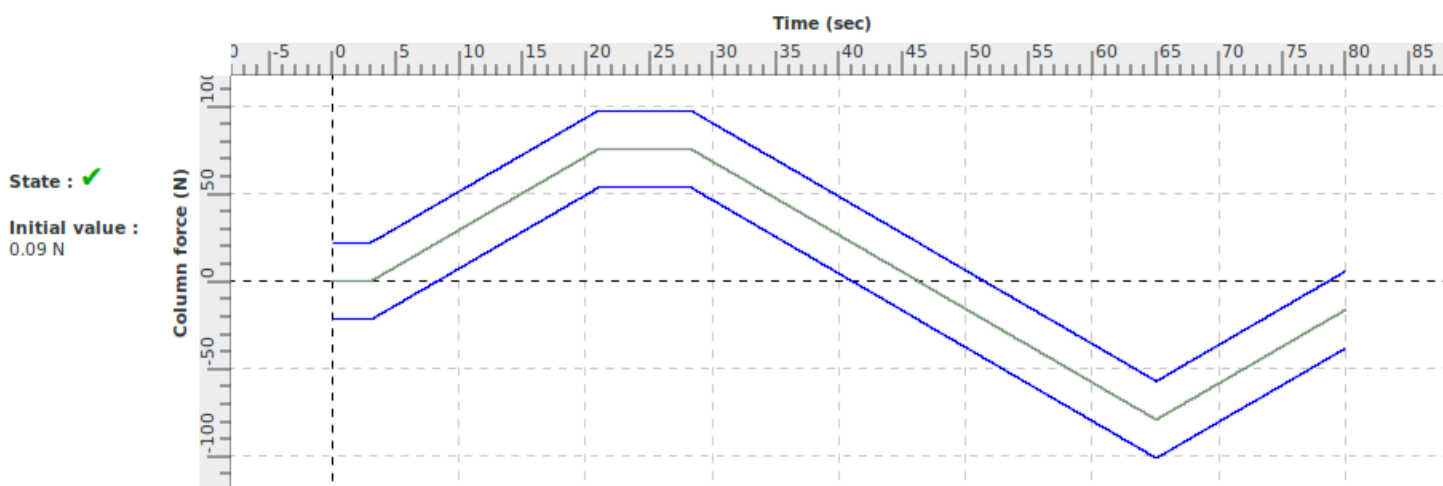
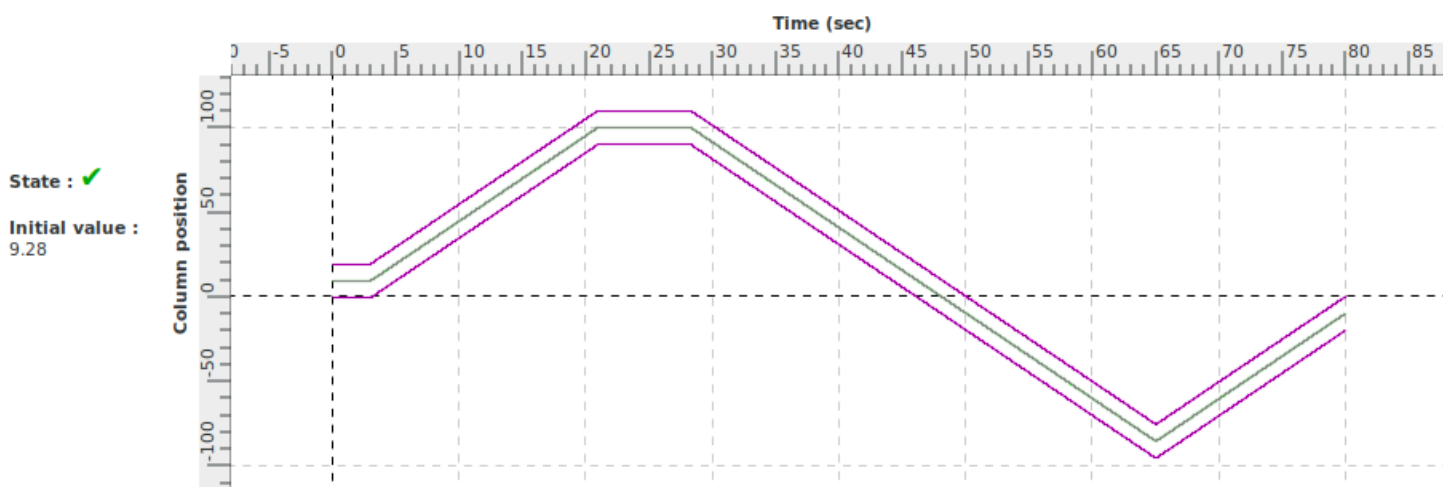
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VALIDATION TEST

Title	Power change force during approach		
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Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the power change induced pitch control force during approach conforms to the class of aeroplanes	Max. force variation : -30 N
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.i.2	+/- 2,2 daN (5Lbs) +/- or 10% Force

Demonstration procedure	From steady approach initial conditions, power lever is set to maximum go-around position.
Manual test procedure	Pilot trims the airplane in approach flight condition. Maintaining approach conditions, using control column, pilot increases the power. The results are recorded and compared to the airplane data
Automatic test procedure	2 c i 2

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Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
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Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	DESCENT_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : -450 IAS (kt) : 90 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : -2 Pedal Position (%) : 0 Column Position (%) : 44 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 30 Right Load (%) : 30 Left RPM : 1930 Right RPM : 1930

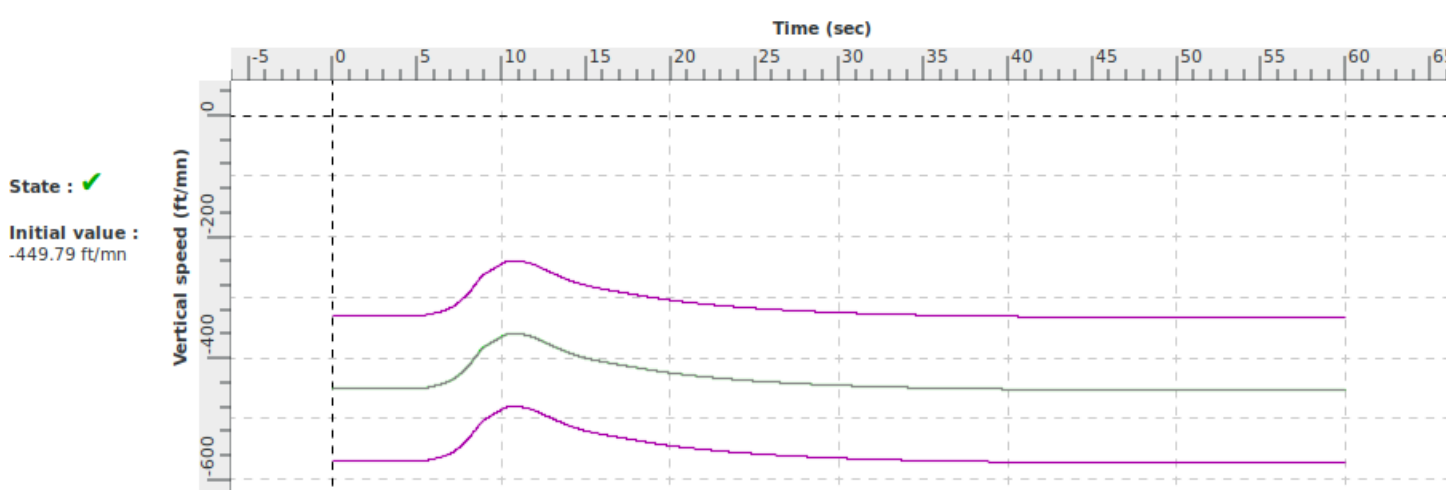
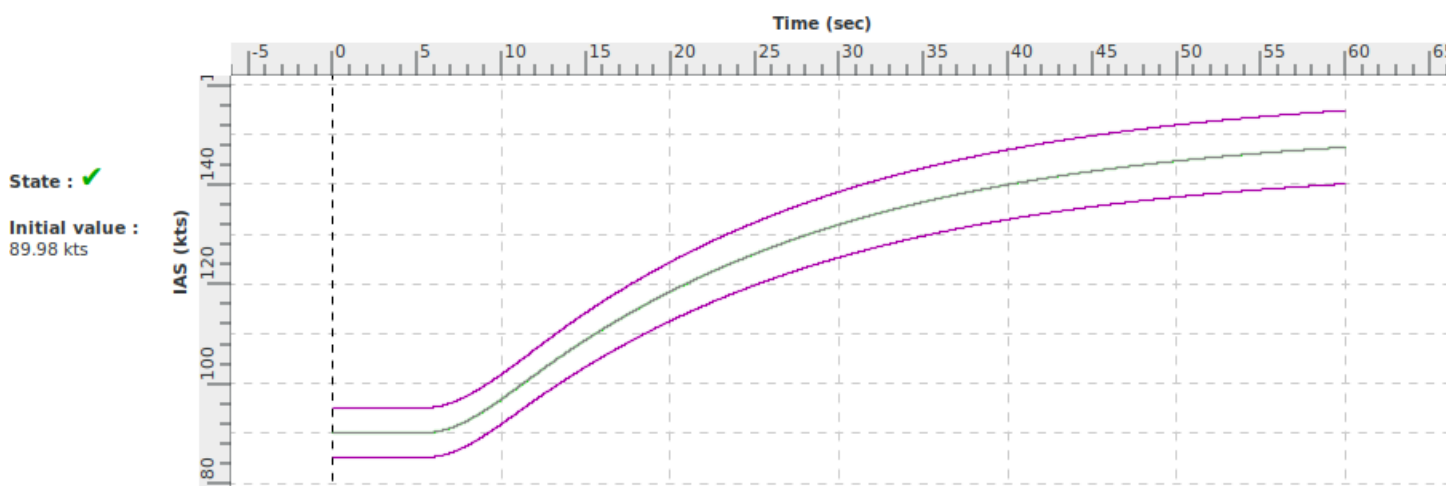
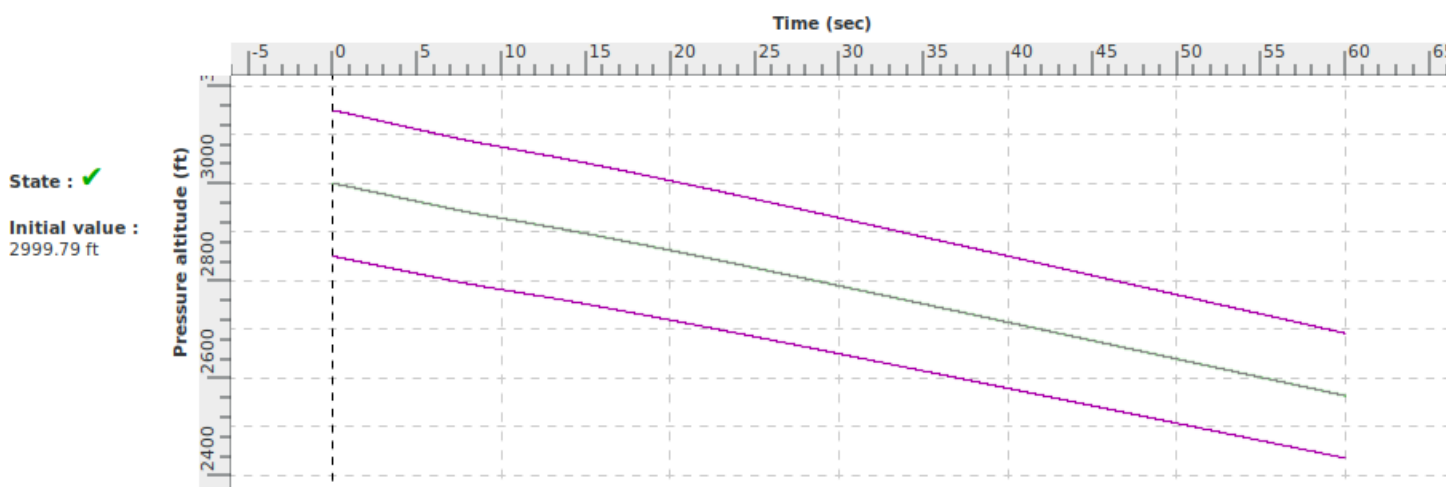
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
5.0	power_GOAROUND_MAX	29.0	Set engine parameters to go-around power
60.0	Stop_Test	0.0	Stop the test procedure

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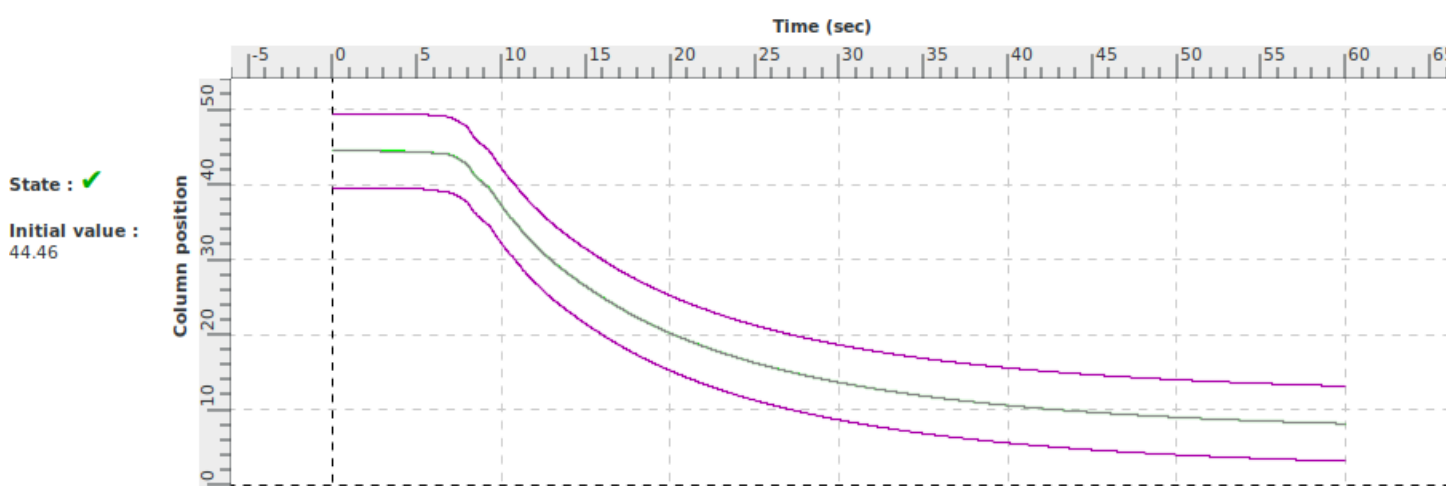
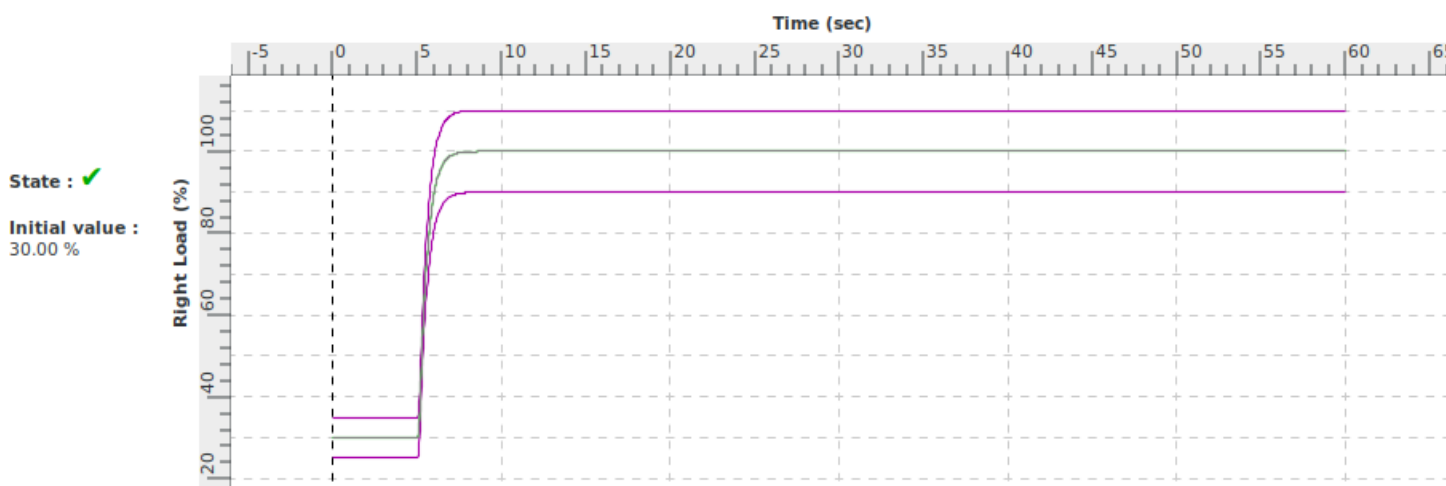
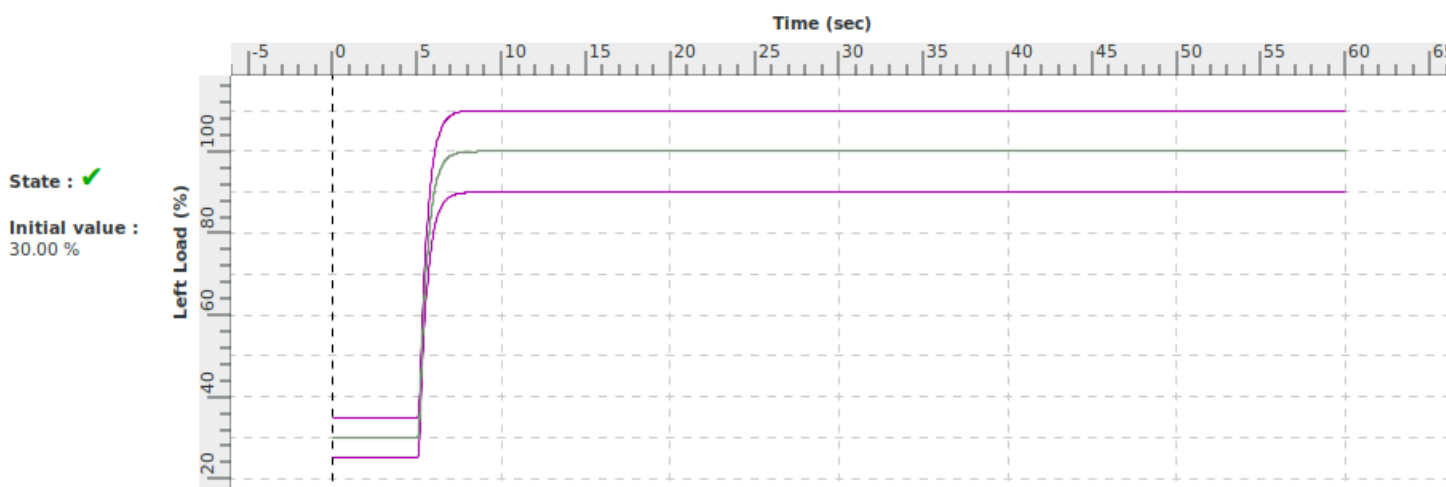
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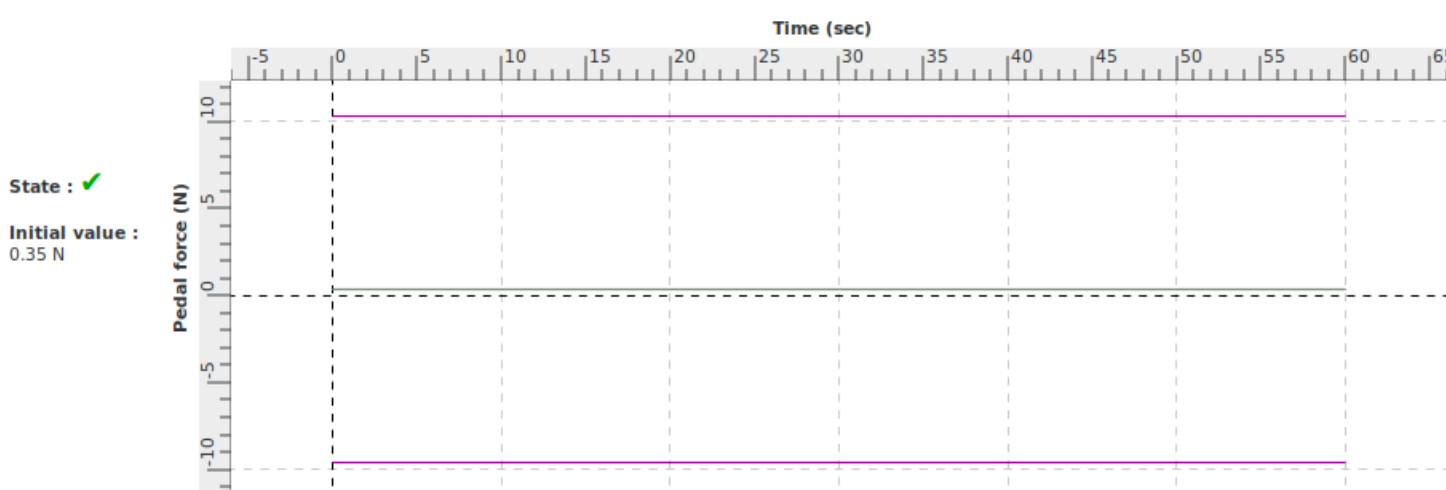
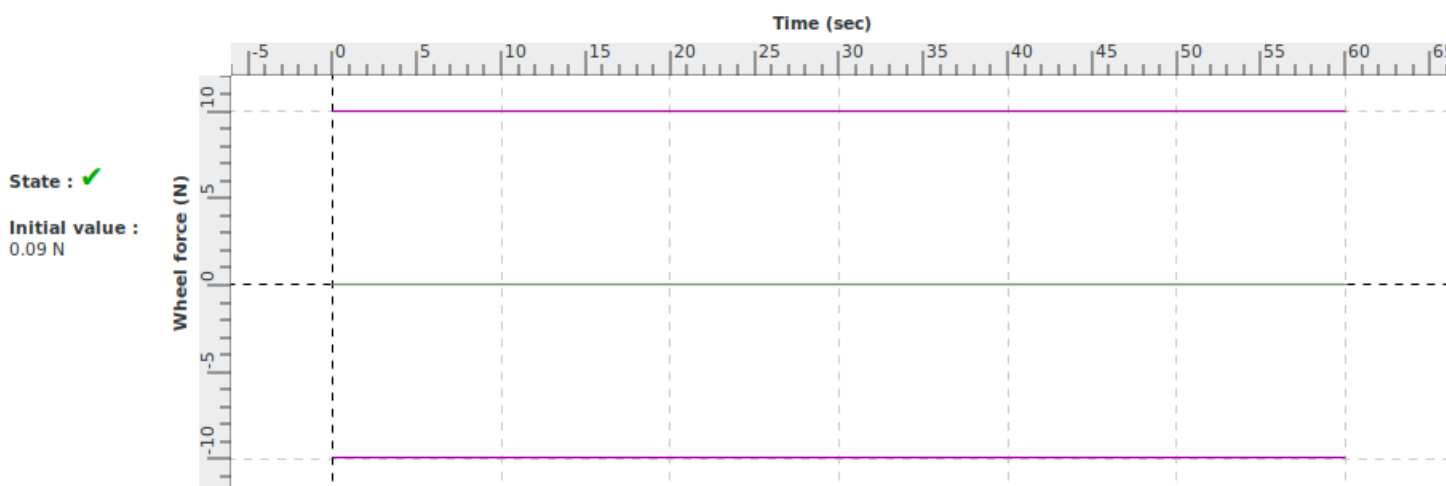
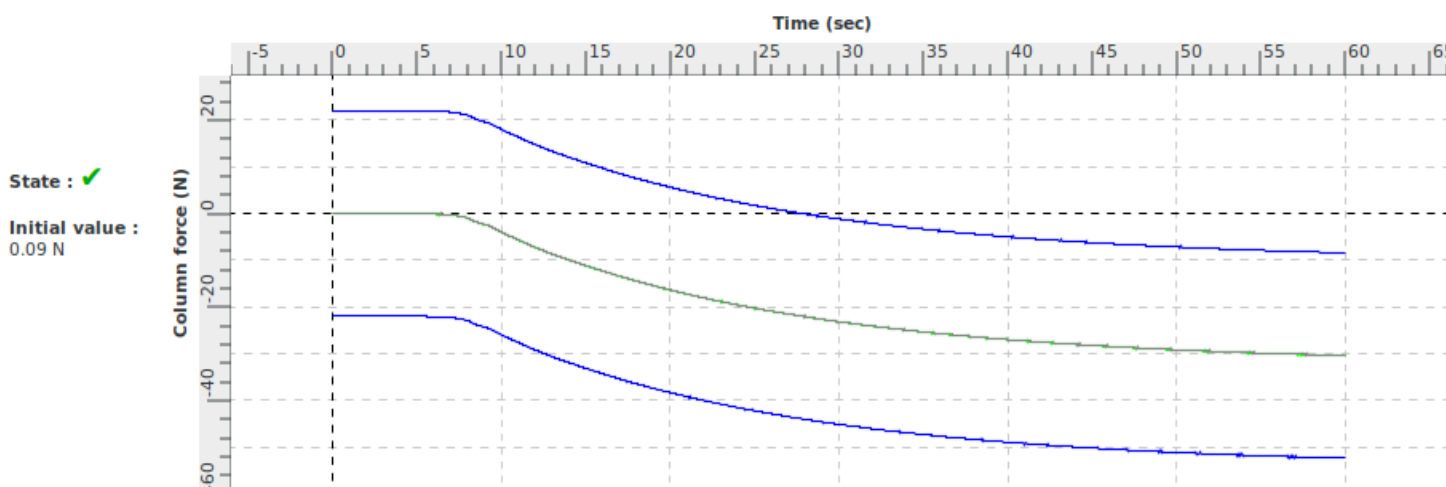
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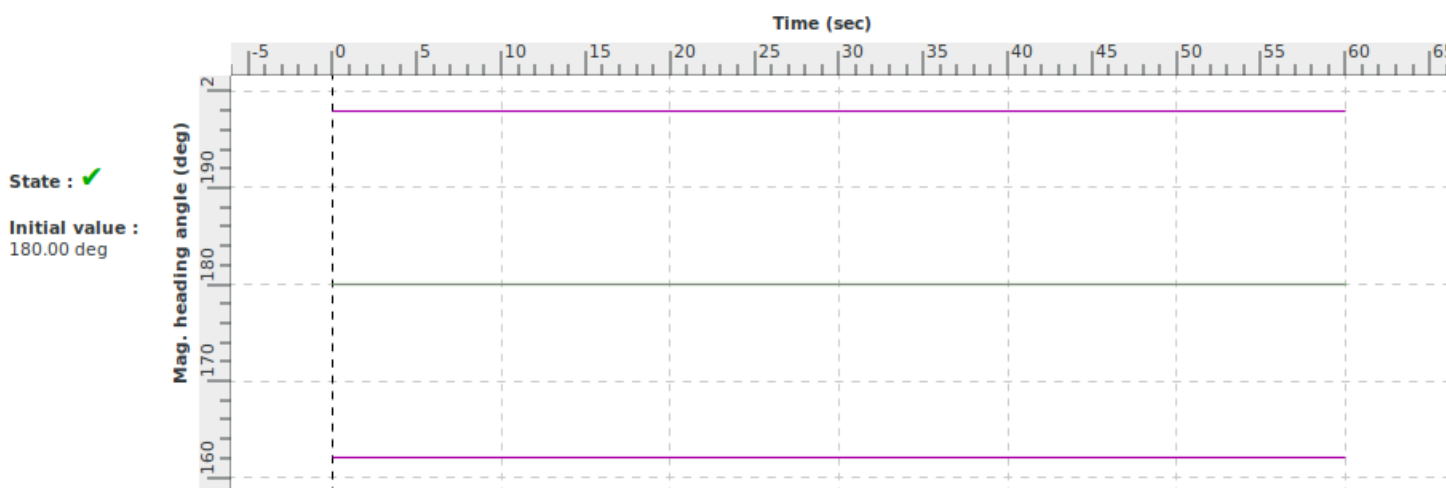
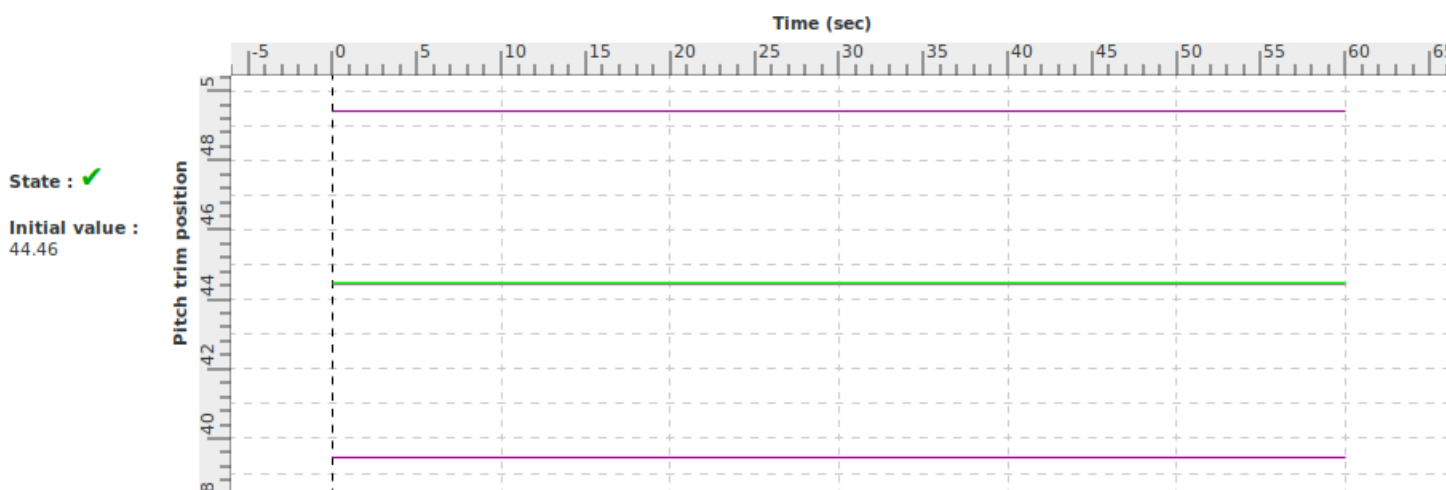
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VALIDATION TEST

Title	Flaps change force during approach (extension)		
Id	2 c ii 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the the force change due to flap extension during approach conforms to the class of aeroplanes	Maximum Increments : 1 N of Control force
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.ii.2.b	+/- 2,2 daN (5Lbs) or +/- 10% Force

Demonstration procedure	From steady approach initial conditions, flaps are extended.
Manual test procedure	Without trimming or power settings change, pilot maintains constant flight path angle. When the approach is stabilised, the pilot sets the flaps from position 1 to position 2, maintaining the same rate of descent using control column.
Automatic test procedure	2 c ii 2 b

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

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Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	DESCENT_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : -450 (free) IAS (kt) : 90 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : -2 Pedal Position (%) : 0 Column Position (%) : 44 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 30 Right Load (%) : 30 Left RPM : 1930 Right RPM : 1930

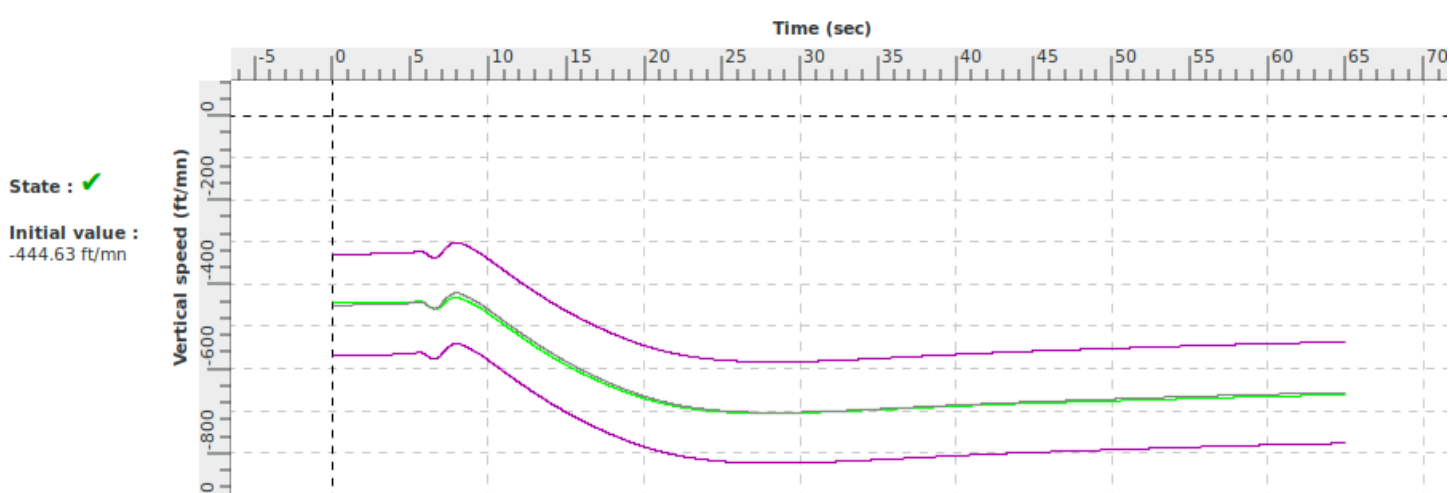
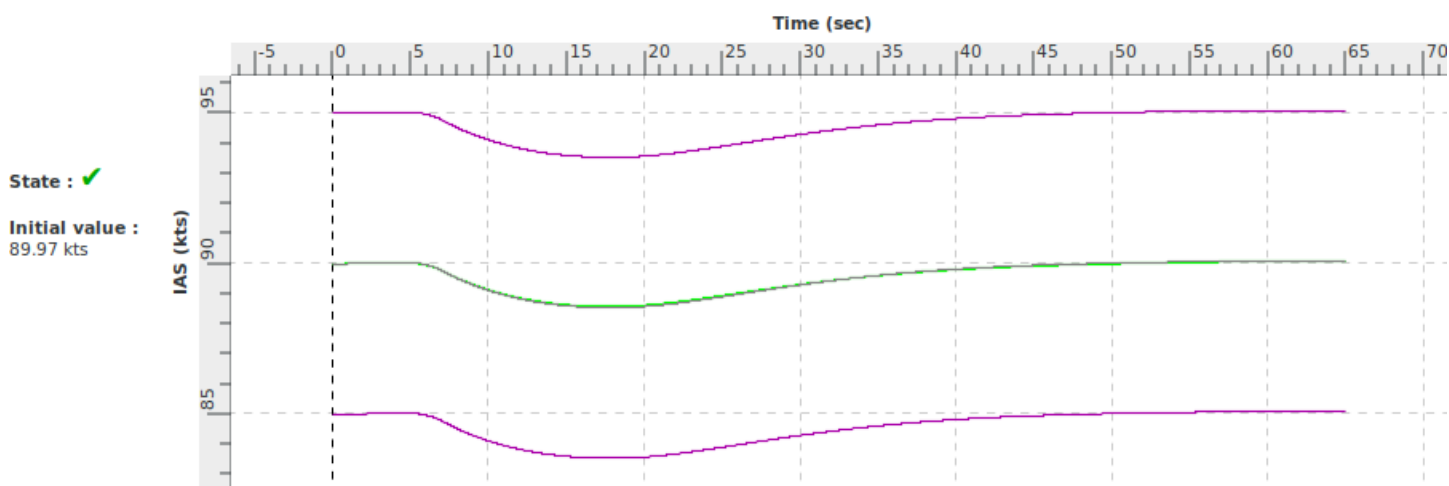
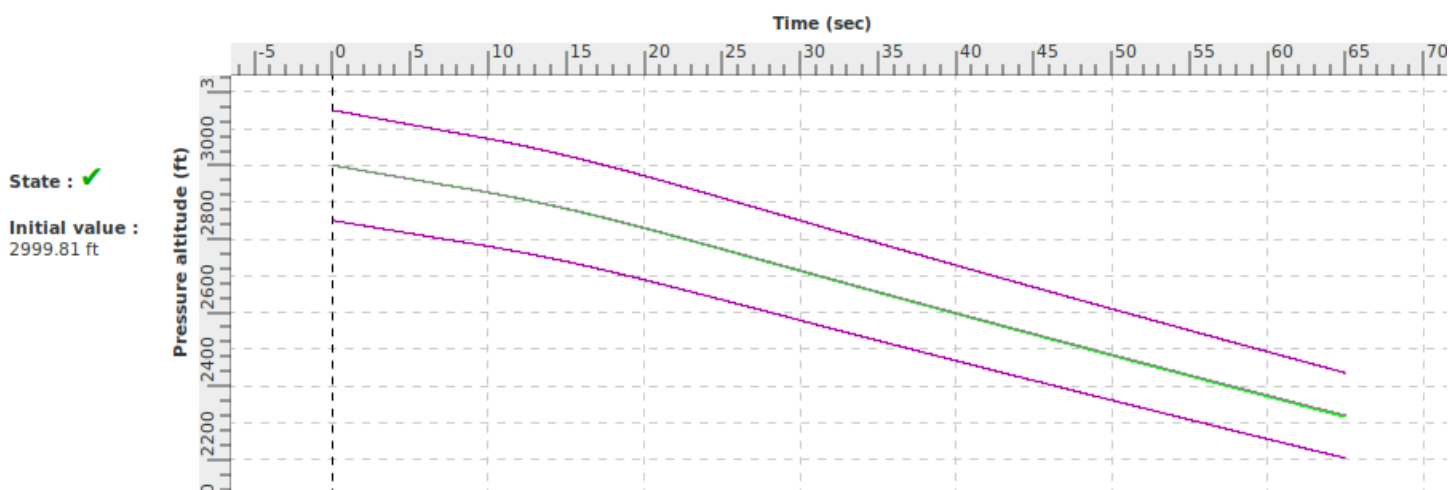
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
5.0	Flaps	2.0	Move the flaps lever to the desired position
65.0	Stop_Test	0.0	Stop the test procedure

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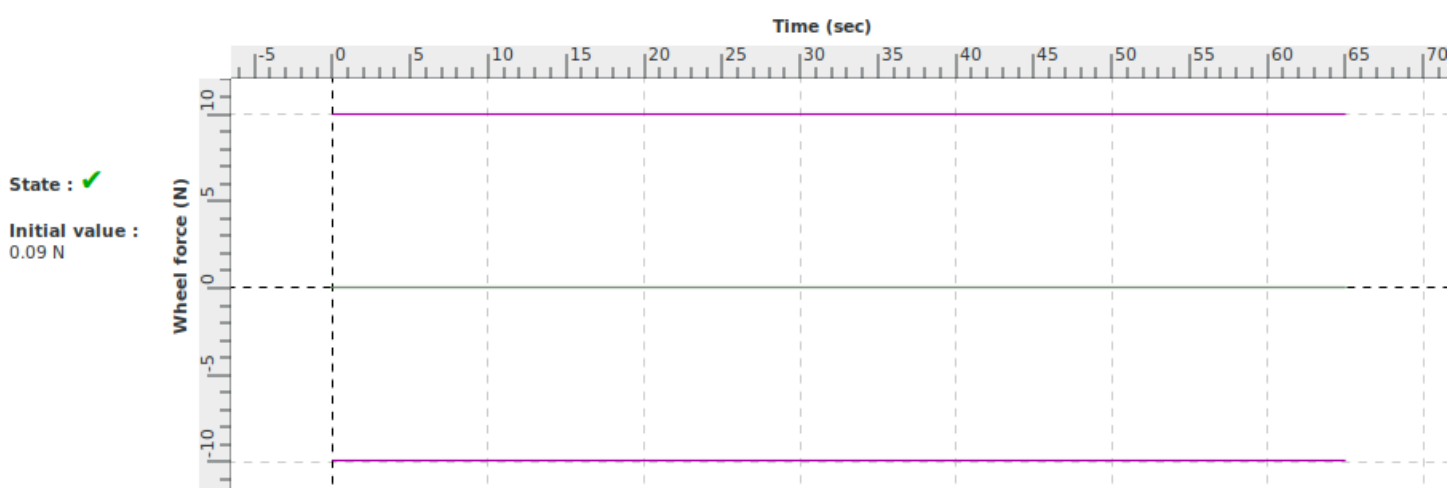
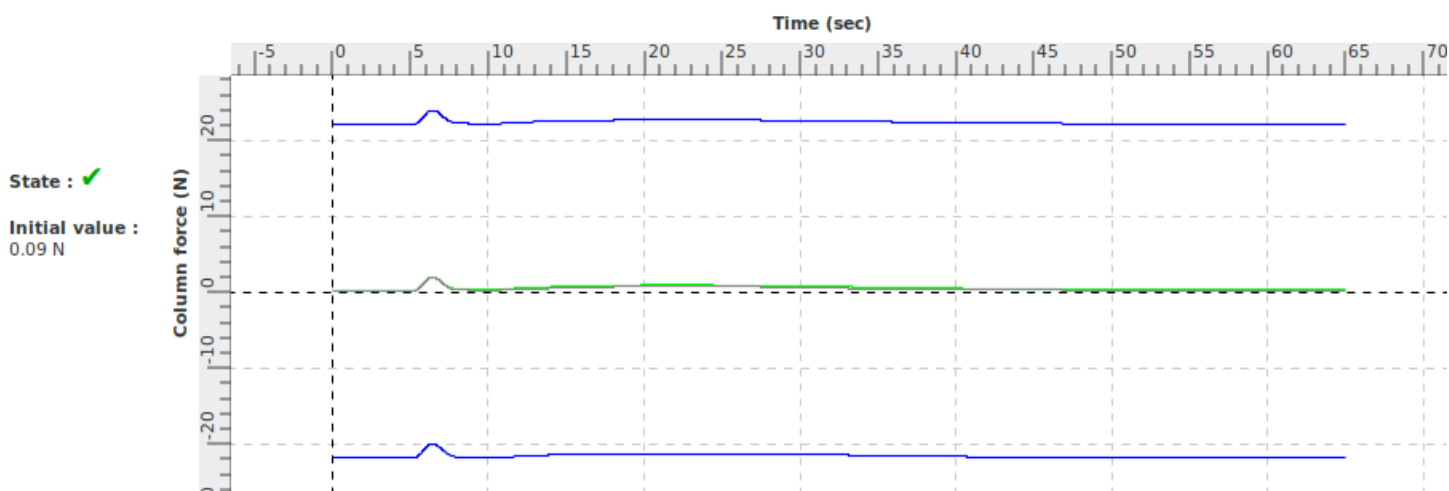
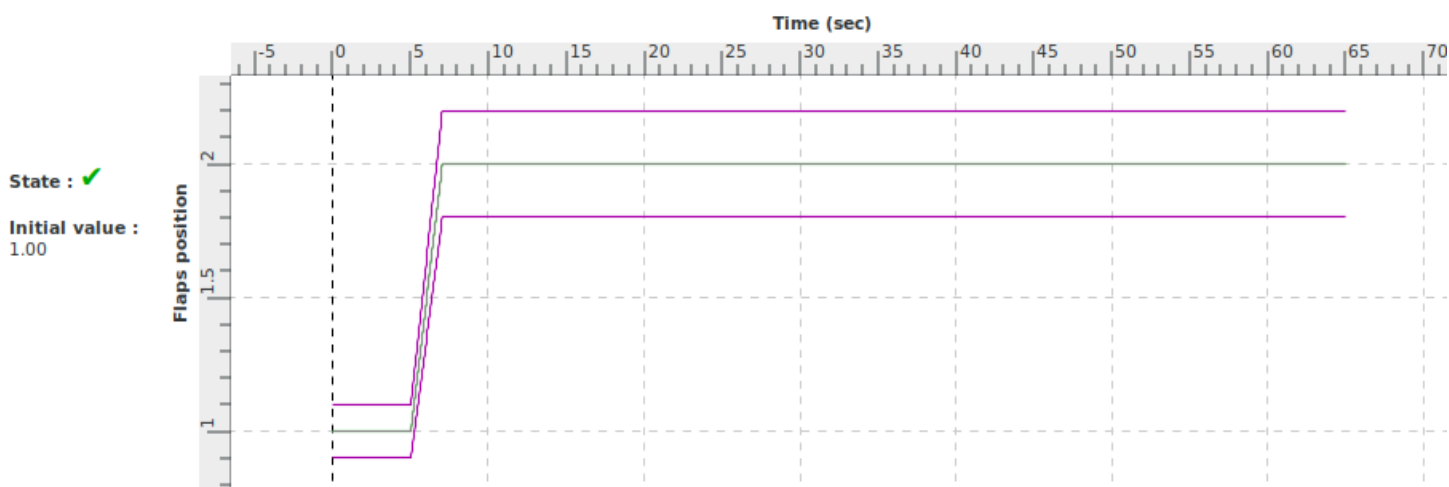
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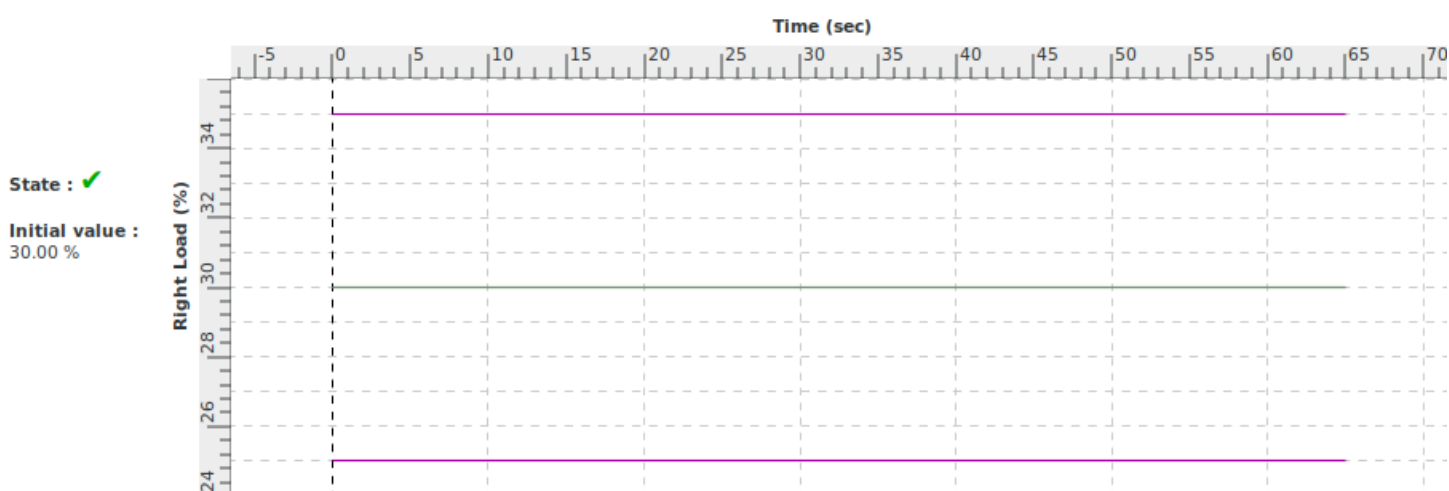
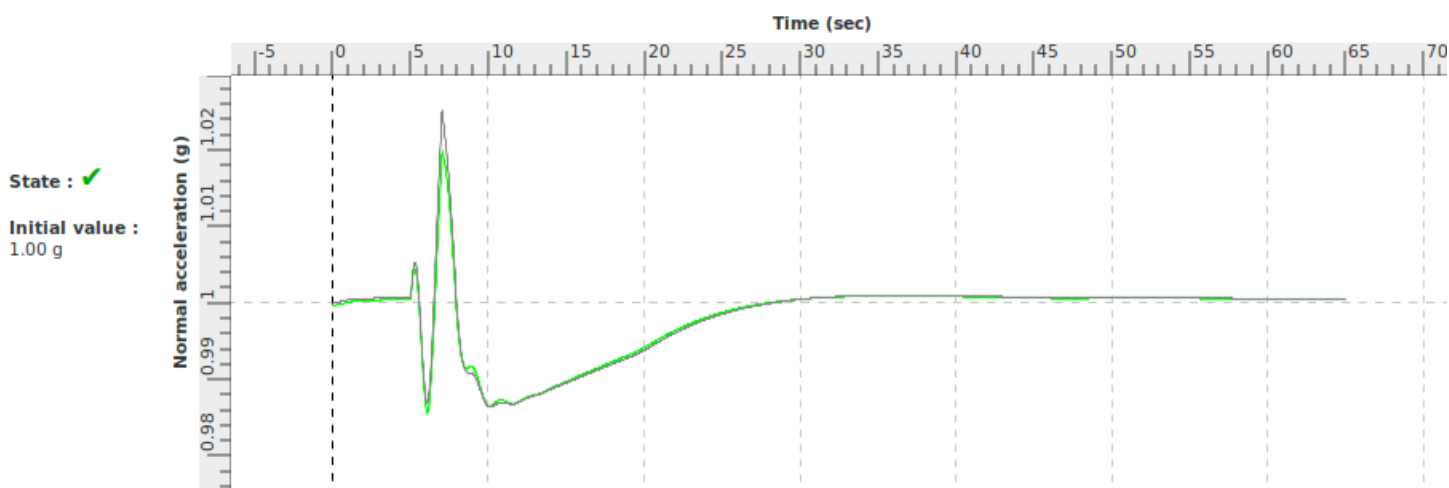
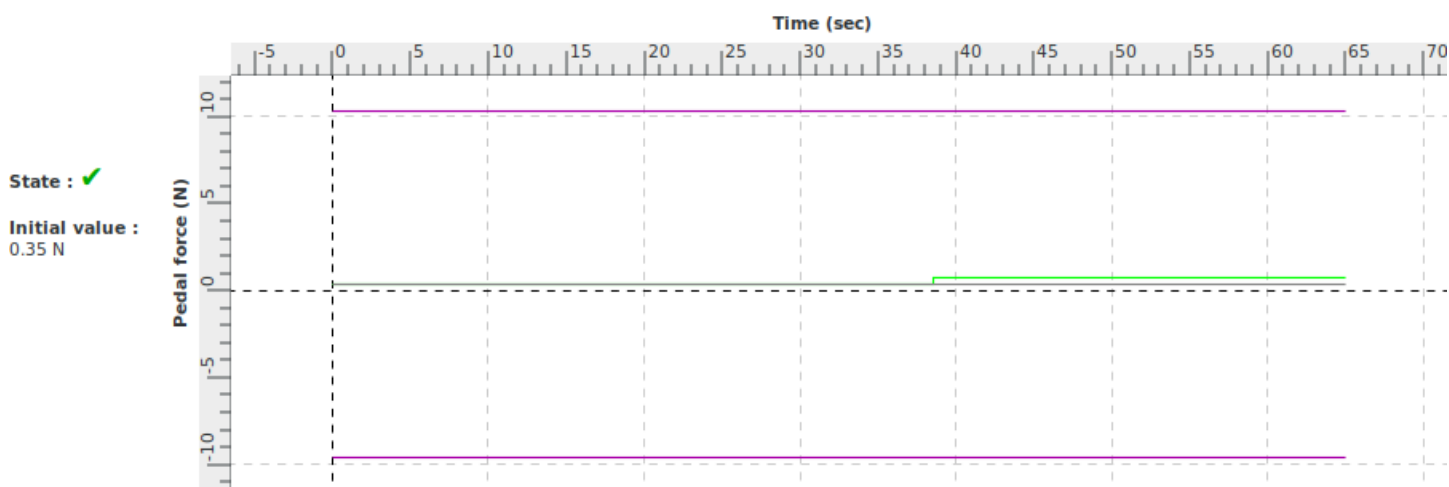
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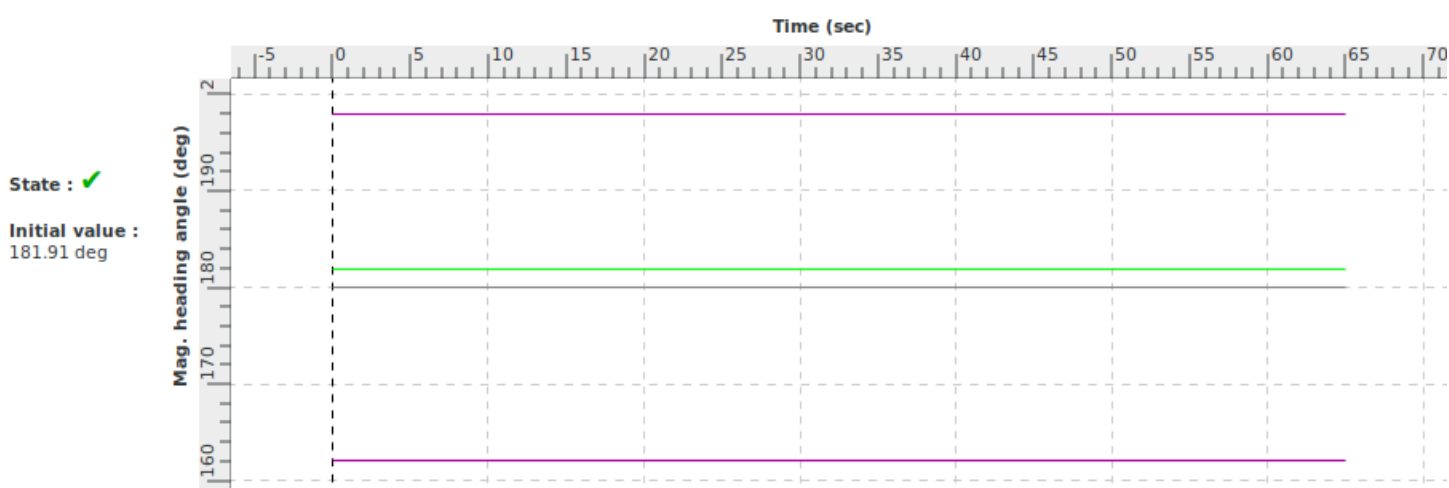
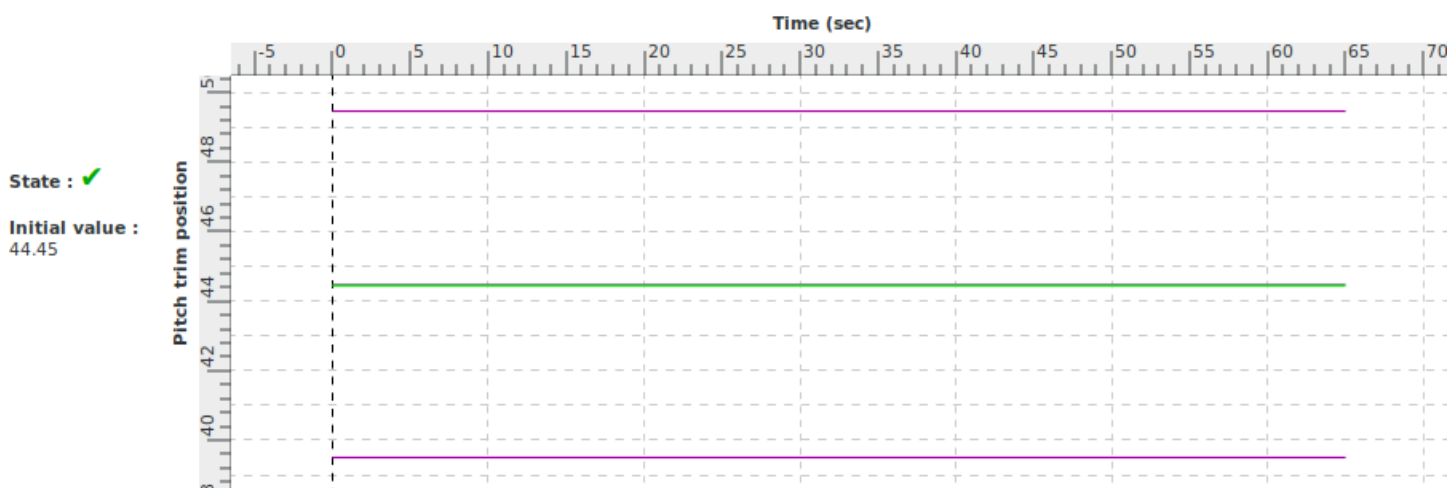
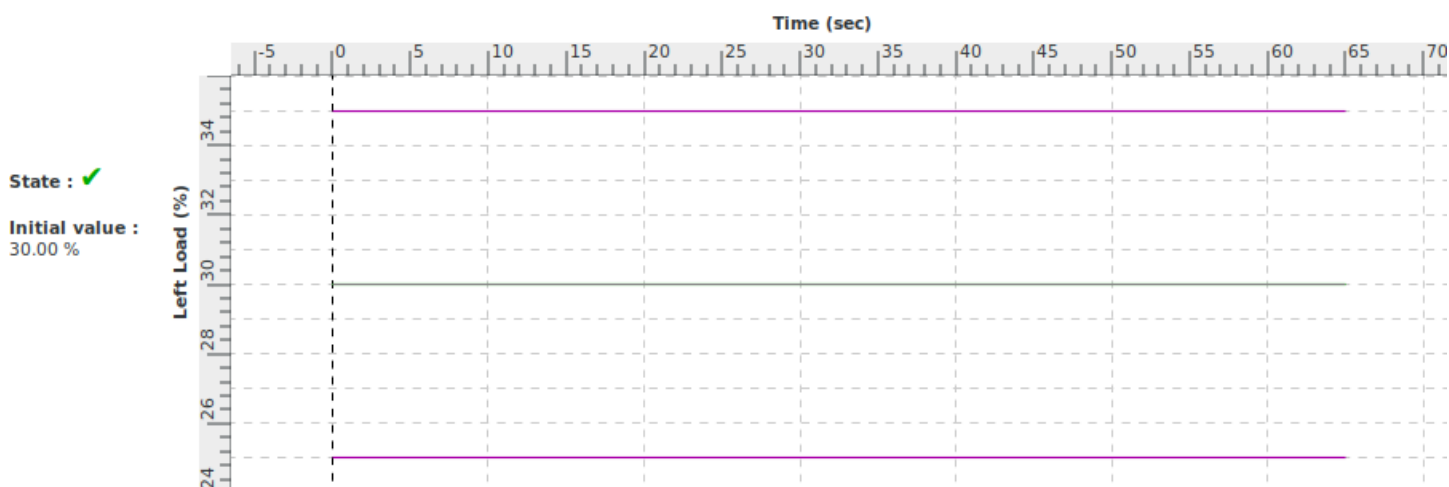
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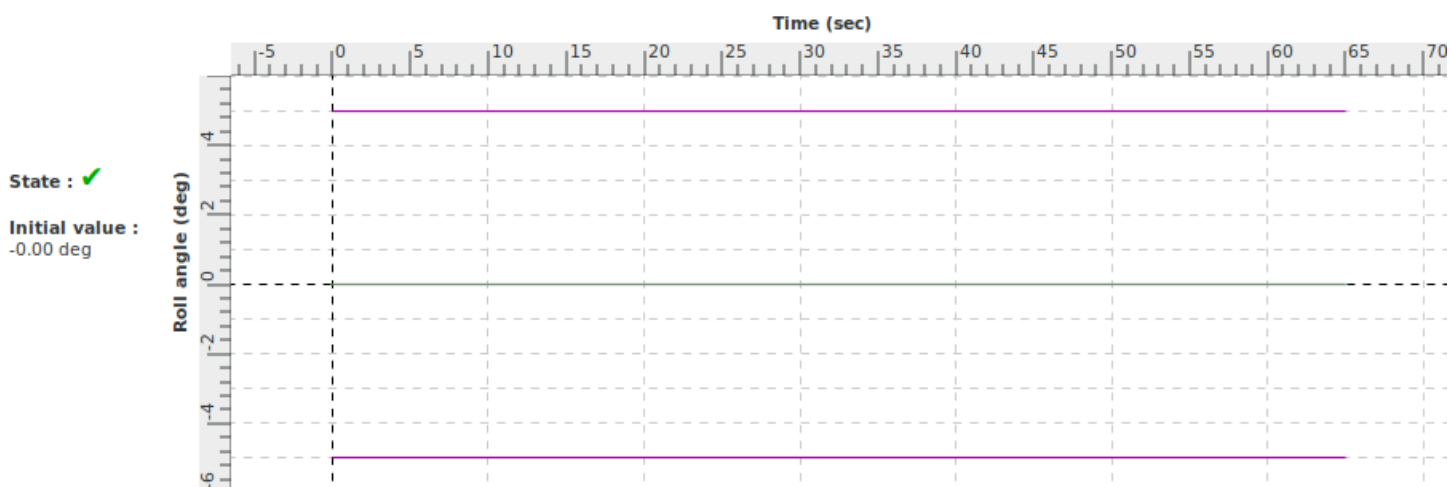
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violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the force response to a landing gear extension during approach conforms to the class of aeroplanes	Maximum Increments : 5 N of Control force
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.iv.2.b	+/- 2,2 daN (5Lbs) +/- or 20% Force

Demonstration procedure	From steady approach initial conditions, gear is extended.
Manual test procedure	The aircraft is trimmed at approach flight condition. Then, the pilot sets the gear from up (0) to down (1), maintaining the same rate of descent using control column.
Automatic test procedure	2 c iv 2 b

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	HOLD_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : 0 (free) IAS (kt) : 96 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 37 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 0 Left Load (%) : 55 Right Load (%) : 55 Left RPM : 2040 Right RPM : 2040

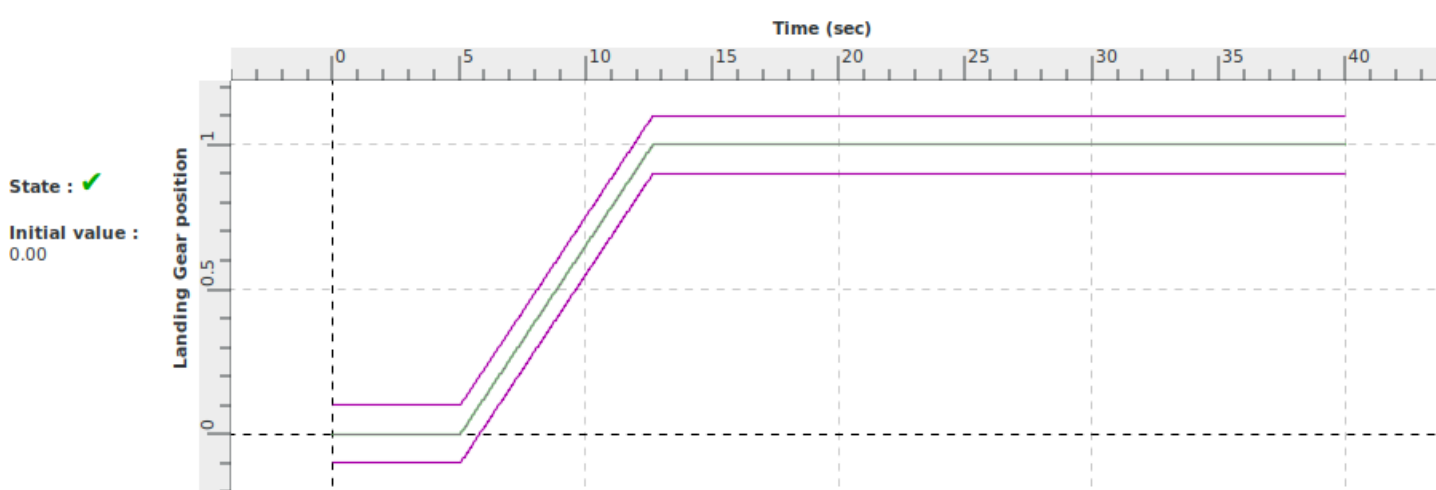
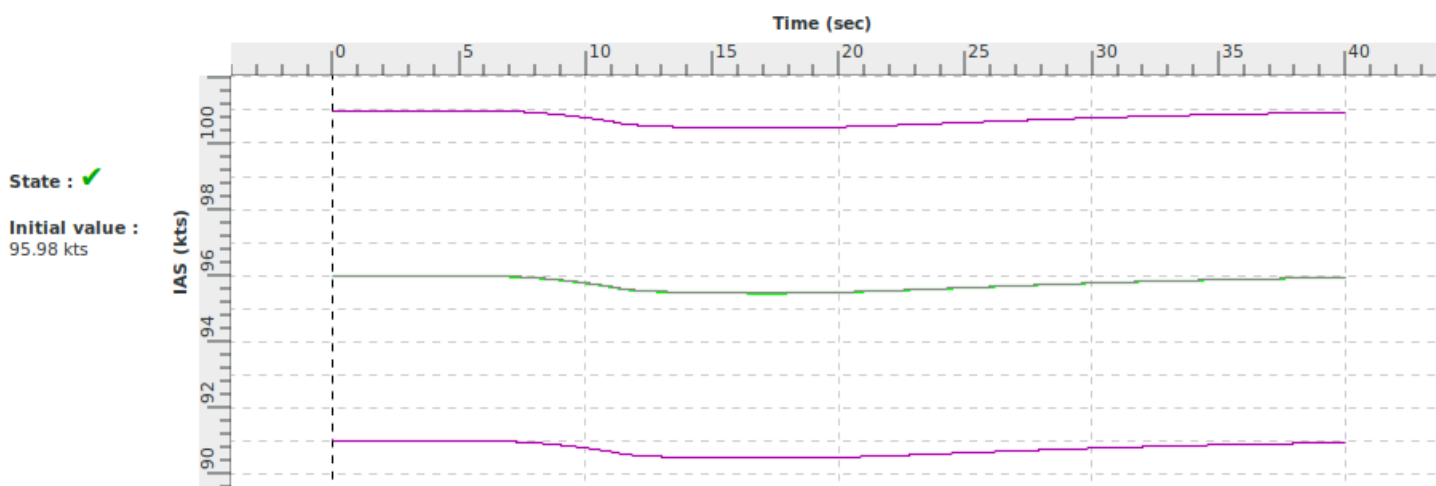
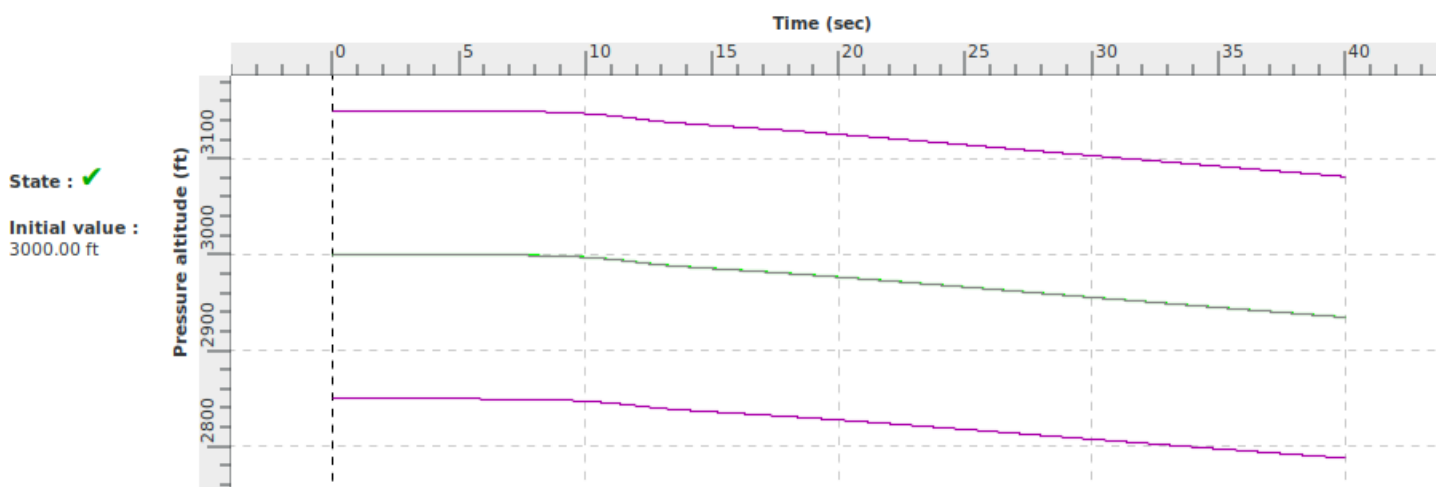
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
5.0	Gear	1.0	Move the gear lever to the desired position
40.0	Stop_Test	0.0	Stop the test procedure

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



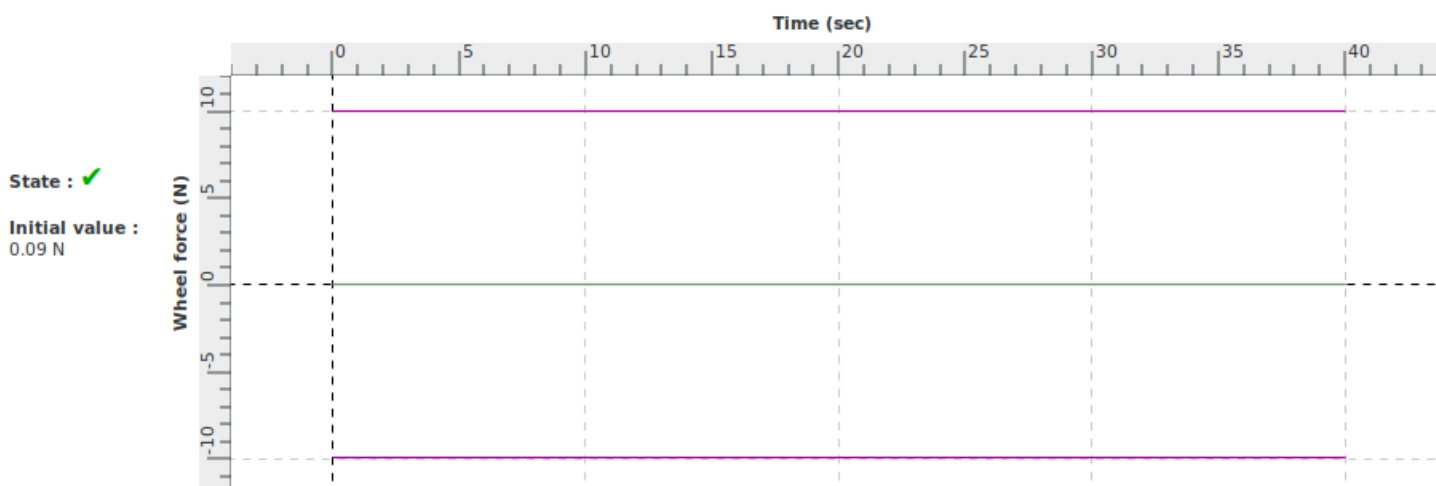
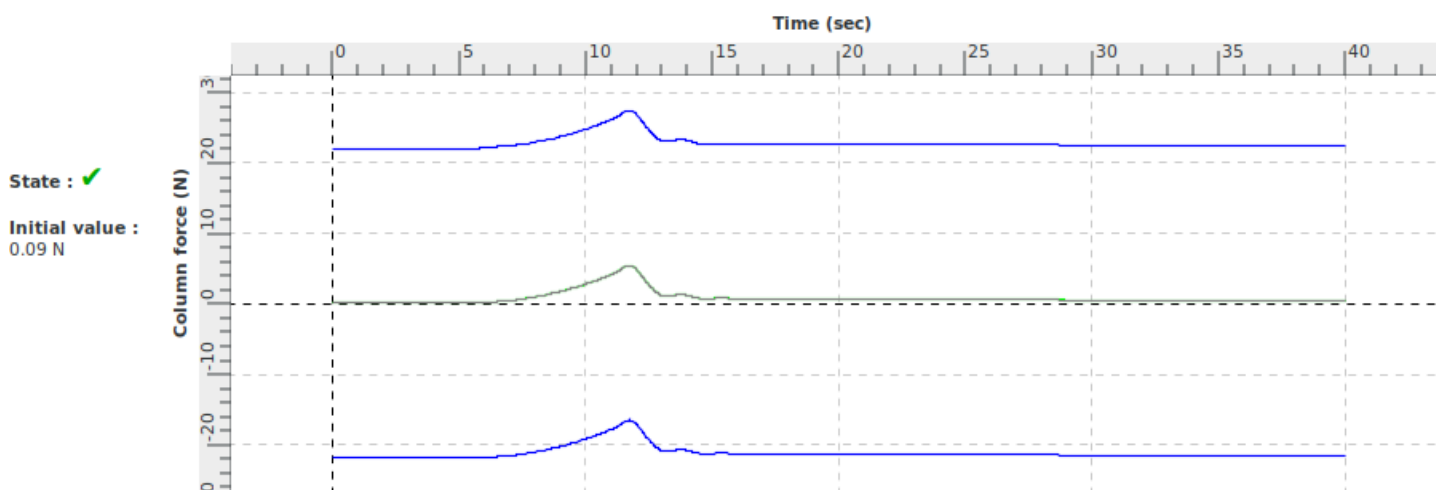
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



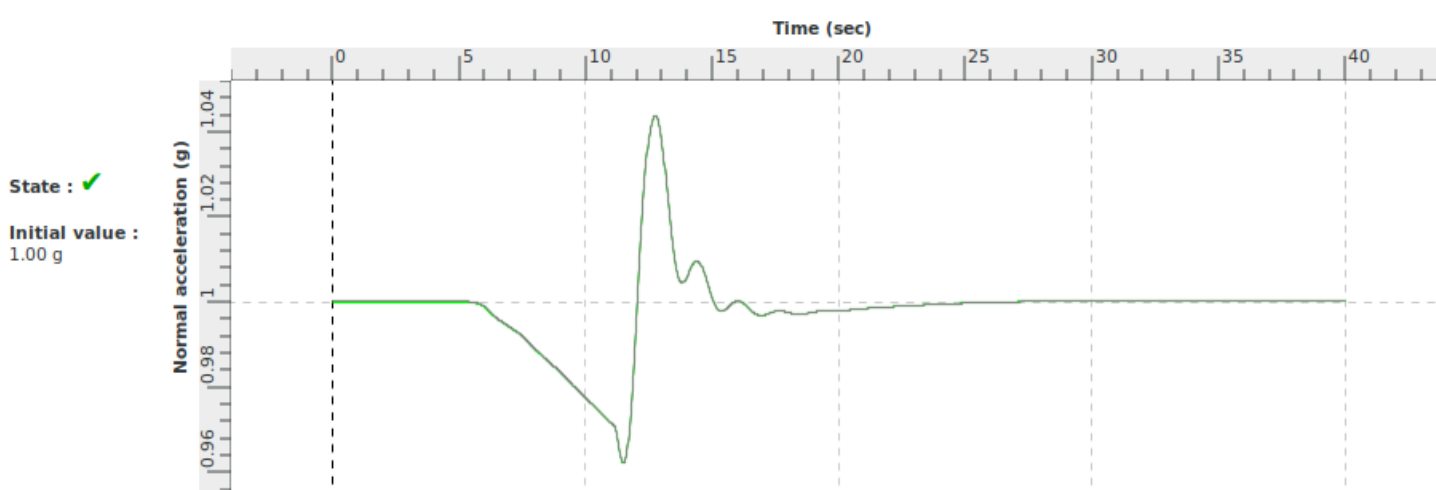
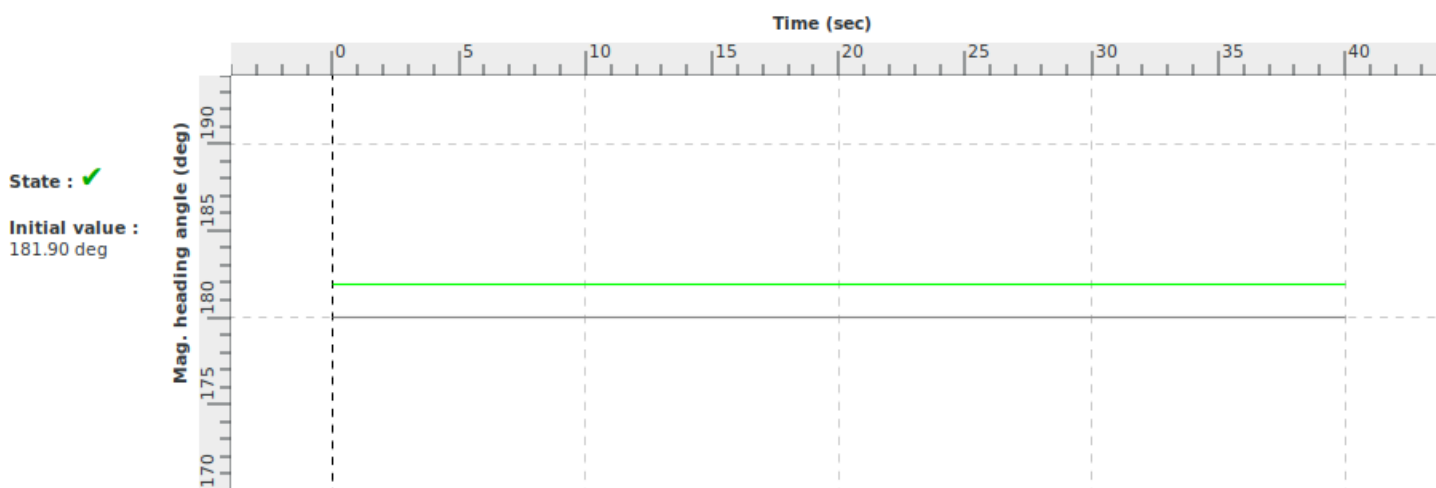
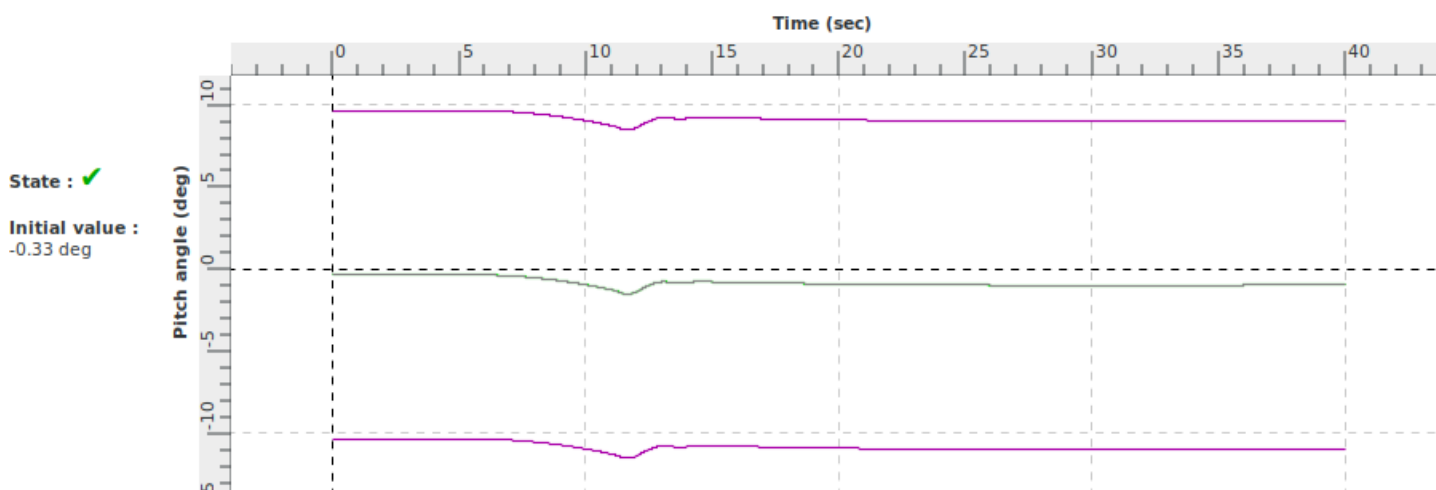
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



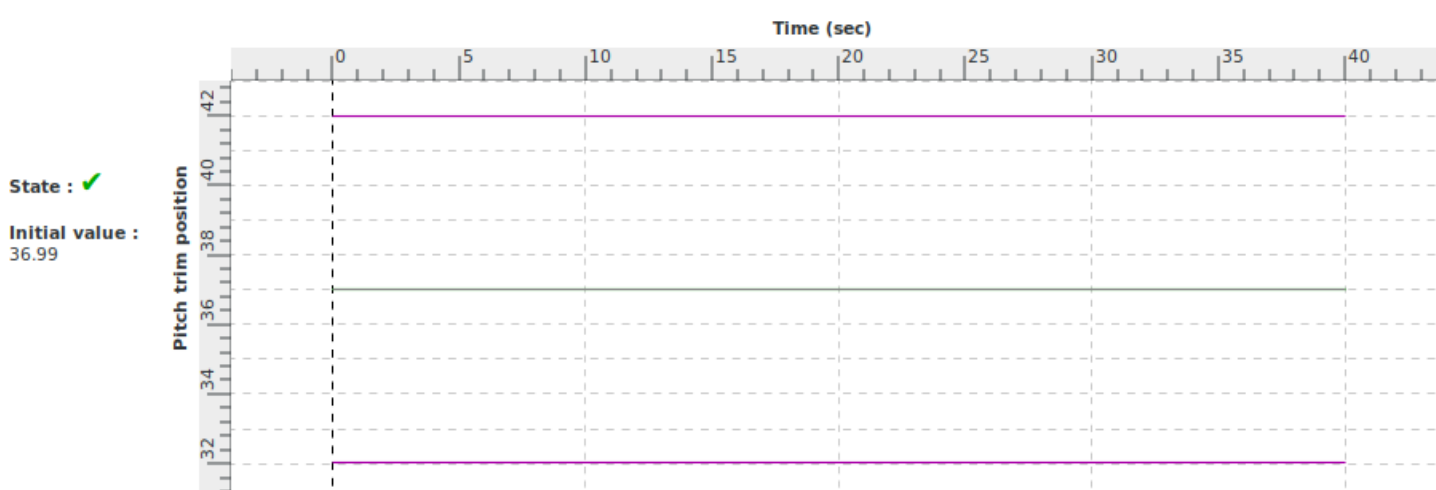
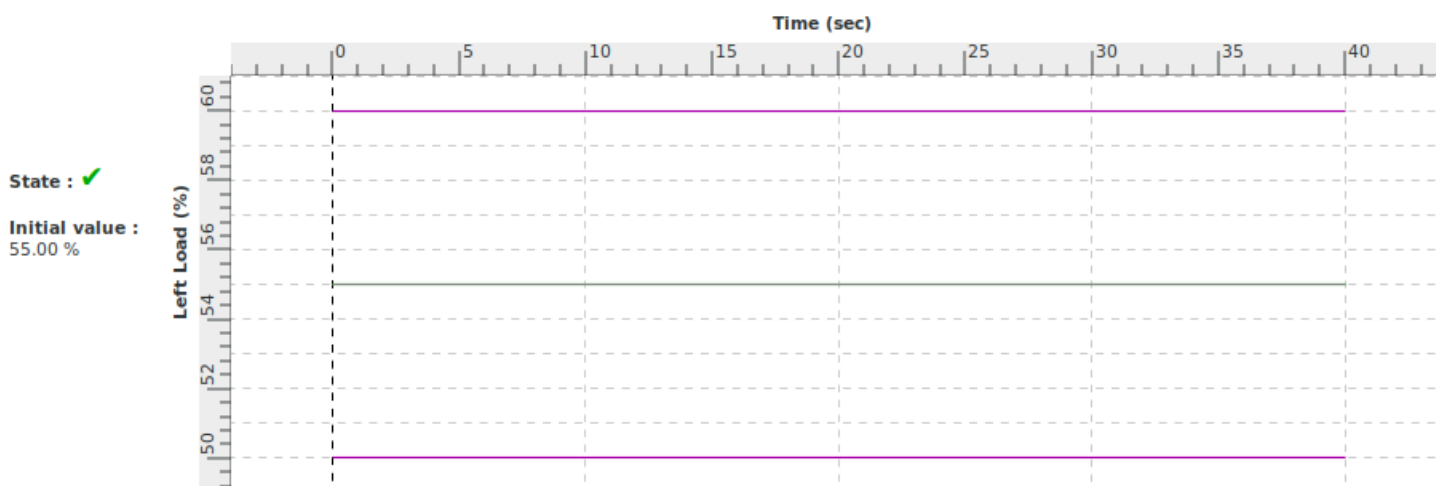
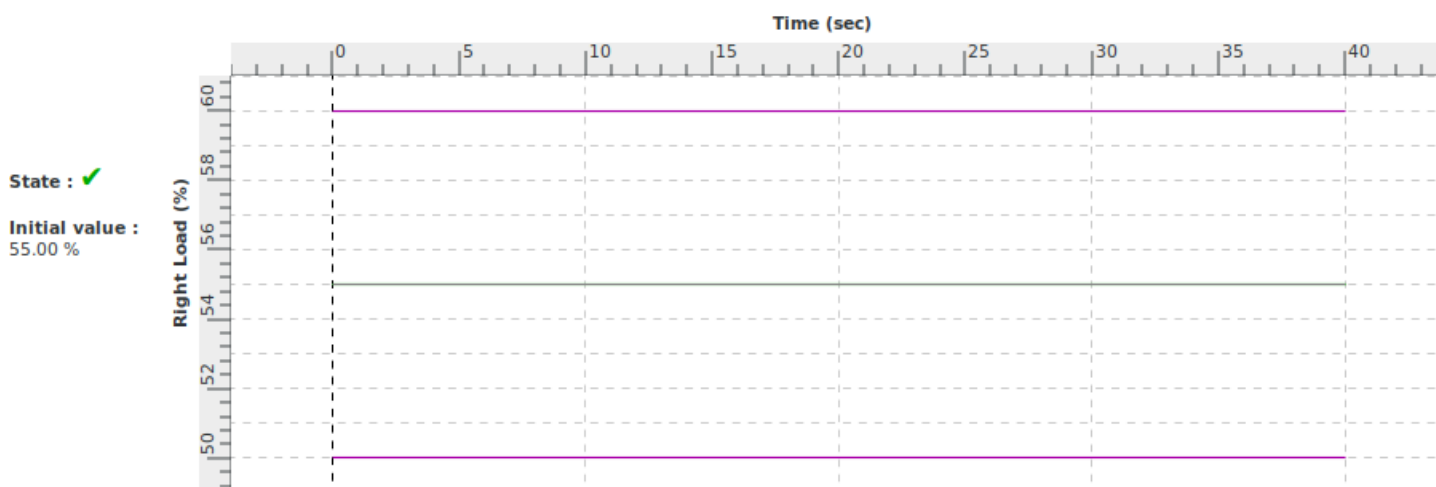
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Gear change force during approach (extension)		
Id	2 c iv 2 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsिम

grey : master

VALIDATION TEST

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the simulation of manoeuvring stability during approach, conforms to the class of aeroplanes	Column force +7 N approx. for 30° of bank angle
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.vi.b	+/- 2.2 daN (5lbs) or +/- 10% column force.

Demonstration procedure	From steady approach initial conditions, a right steady turn of 30° is performed.
Manual test procedure	Trim the aeroplane in approach condition (see initial parameters in the next page). Use the column and pedals to set the aircraft bank angle to 30° to the right while maintaining the initial airspeed using the engine power (load). At the end of the test, check the column force value and compare it to the master value.
Automatic test procedure	2 c vi b

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_PWR
Automatic AUTO_POWER mode : Vertical Speed and IAS (airspeed) are maintained through pitch trim and engine parameters changes.	

Initial parameters	HOLD_FLAPS_APP_GEAR
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : 0 IAS (kt) : 106 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : -1 Pedal Position (%) : 0 Column Position (%) : 32 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 70 (free) Right Load (%) : 70 (free) Left RPM : 2060 (free) Right RPM : 2060 (free)

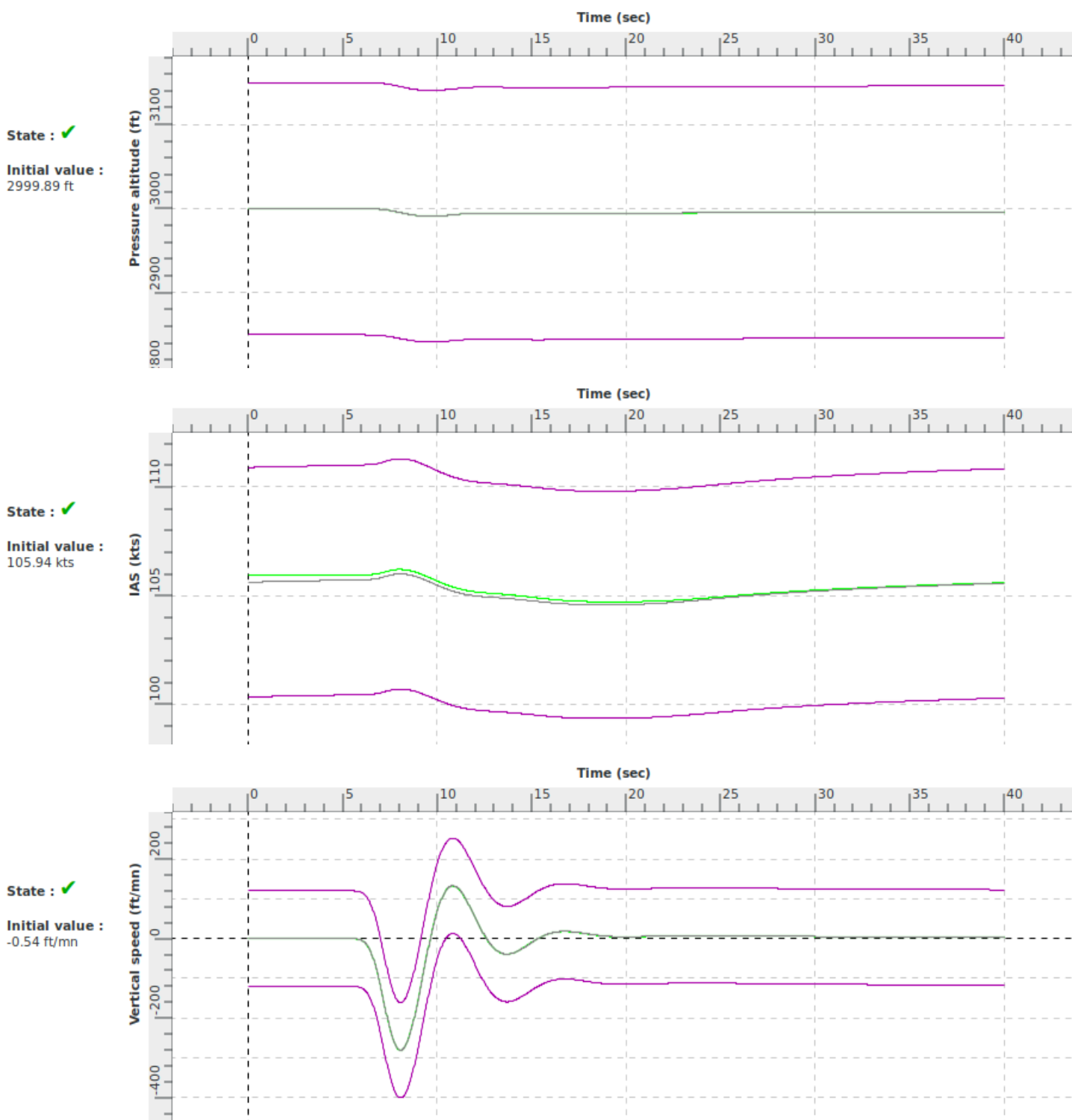
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
5.0	set_bank_angle	30.0	Ask the Qtg Autopilot to maintain the desired bank angle
40.0	Stop_Test	0.0	Stop the test procedure

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.01	29/03/21	1909 Master. Expected results unchanged.
1.02	27/07/21	2012-R1 Master. Expected results unchanged.

Notes

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



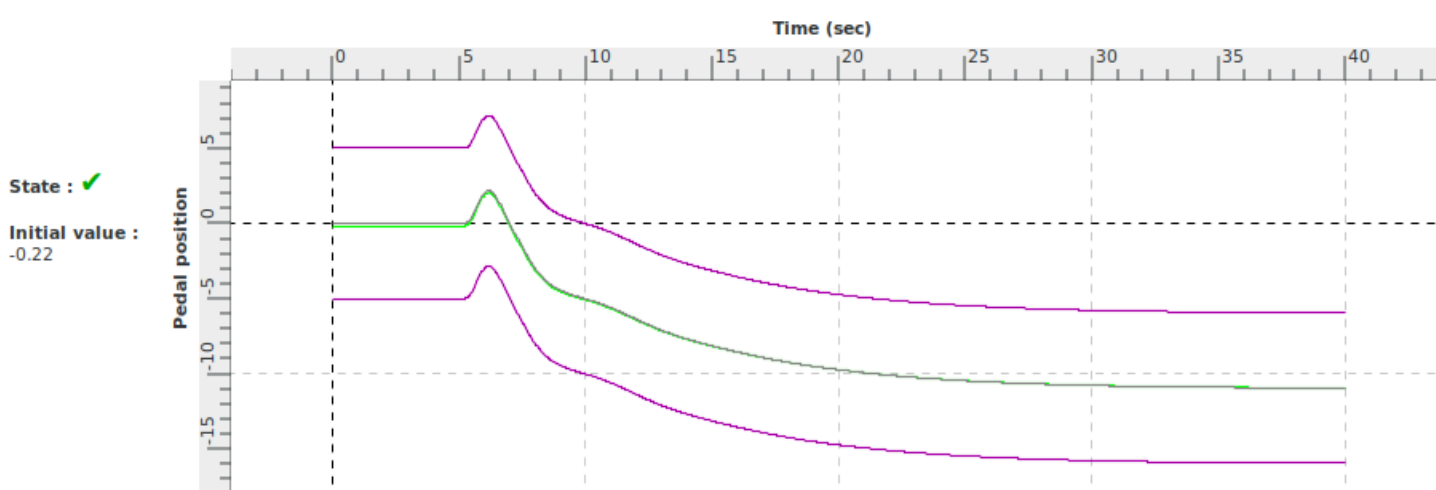
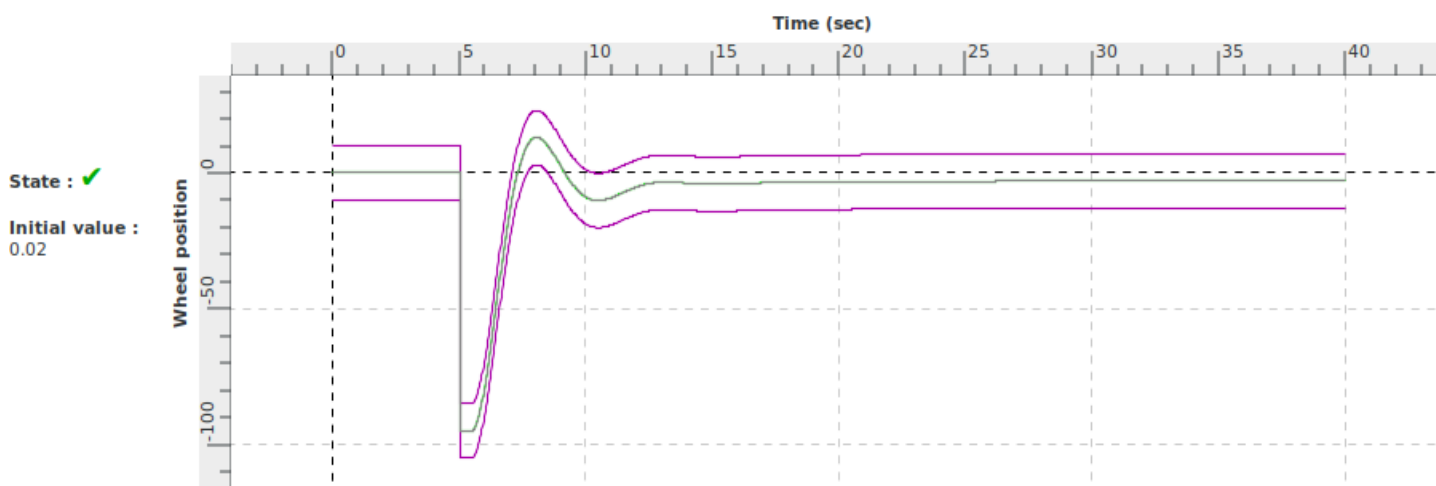
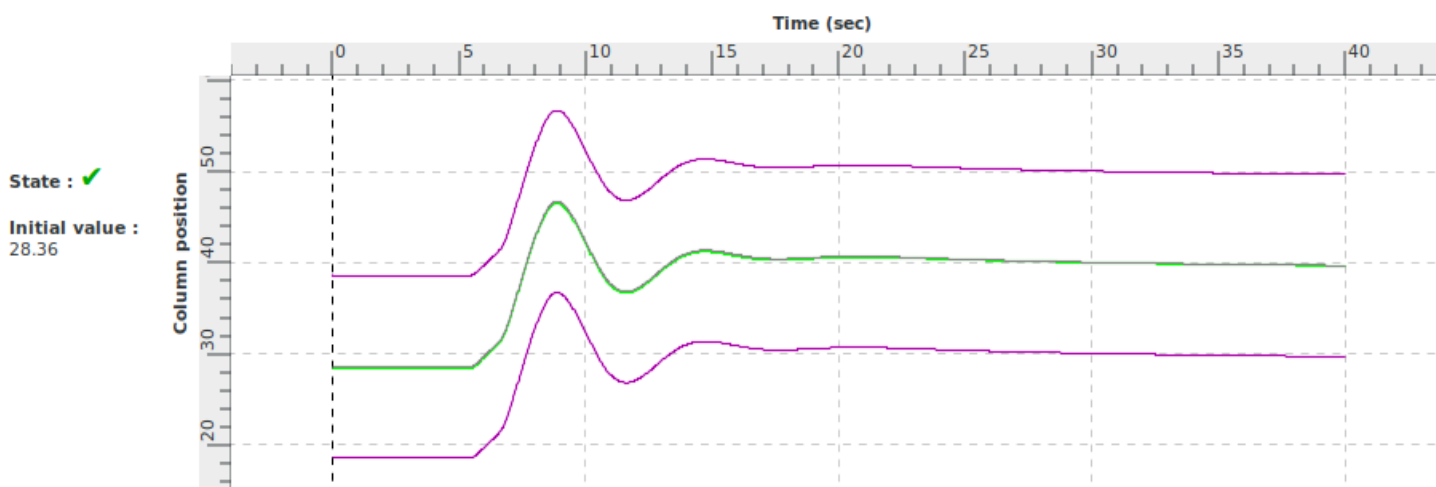
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsimg

grey : master

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



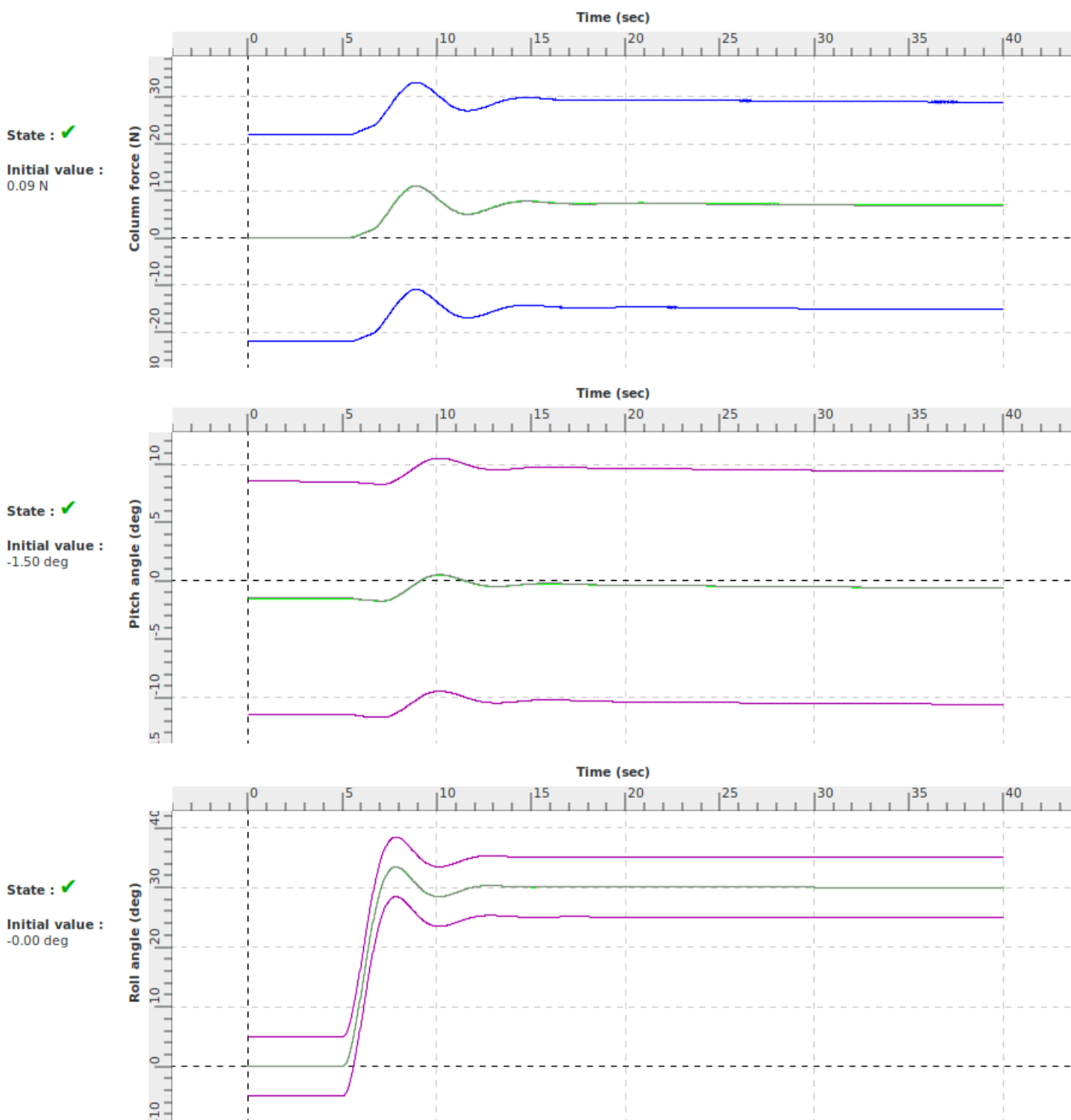
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



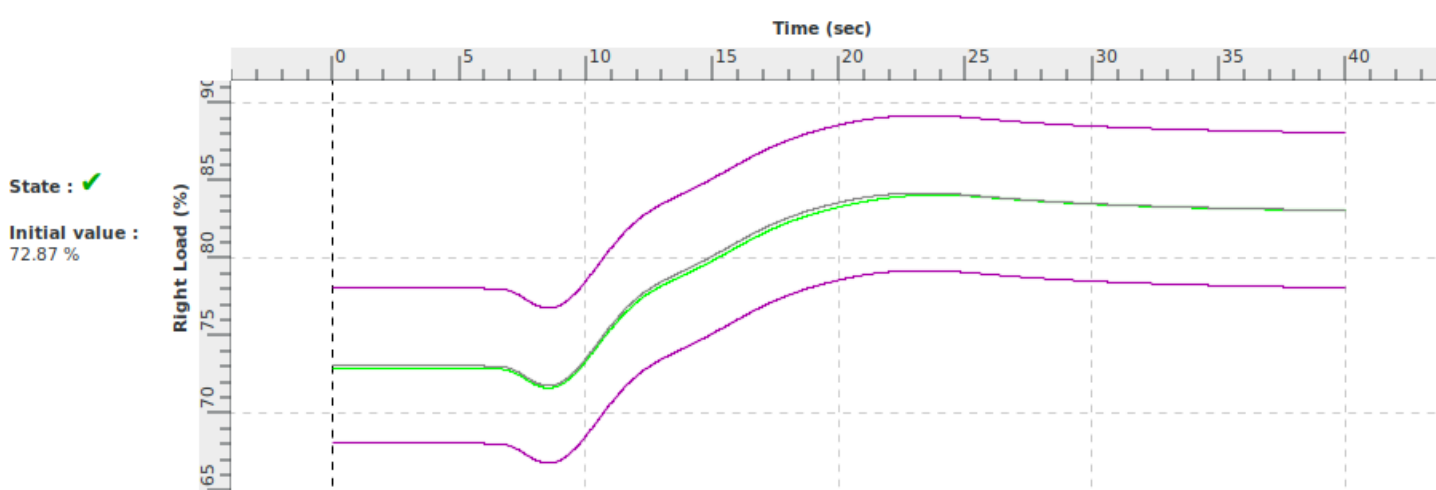
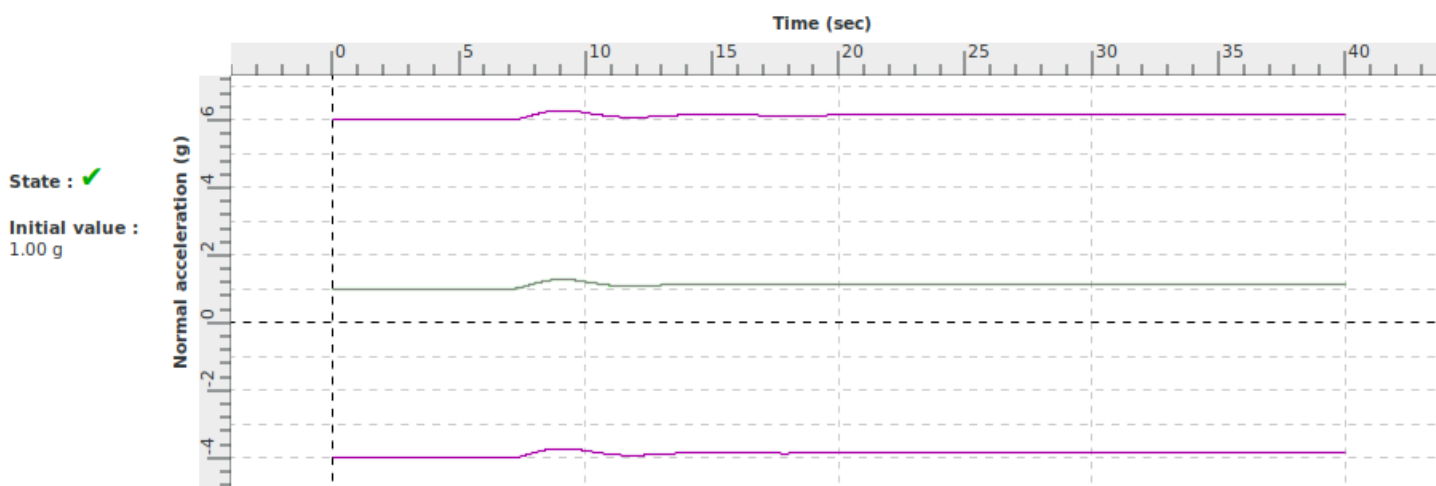
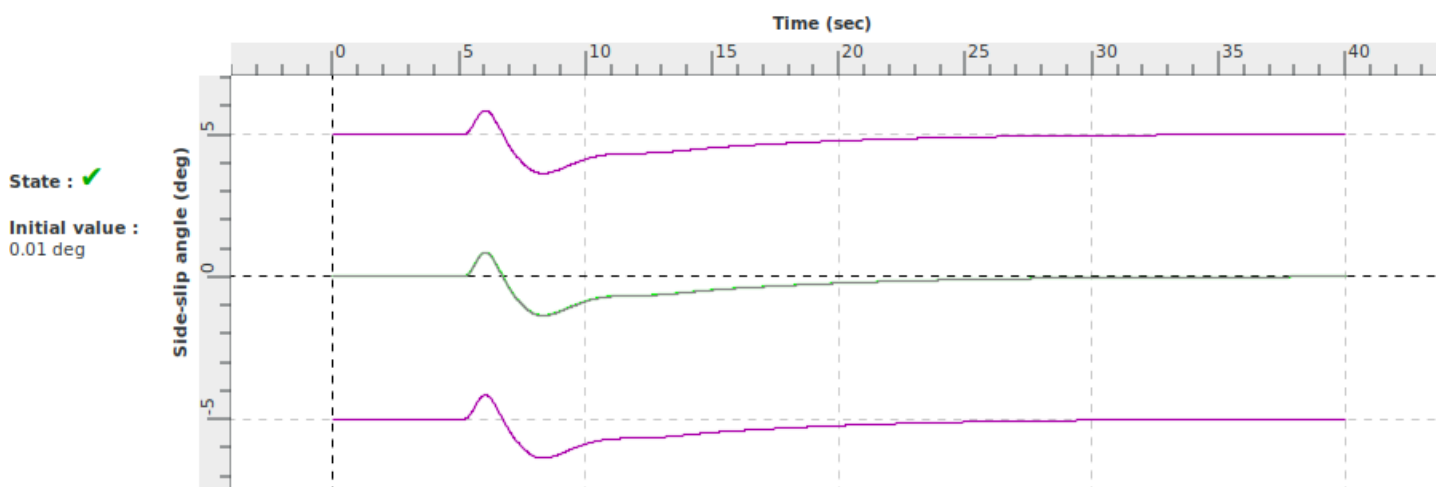
Legend :

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violet : tolerances Alsim

grey : master

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



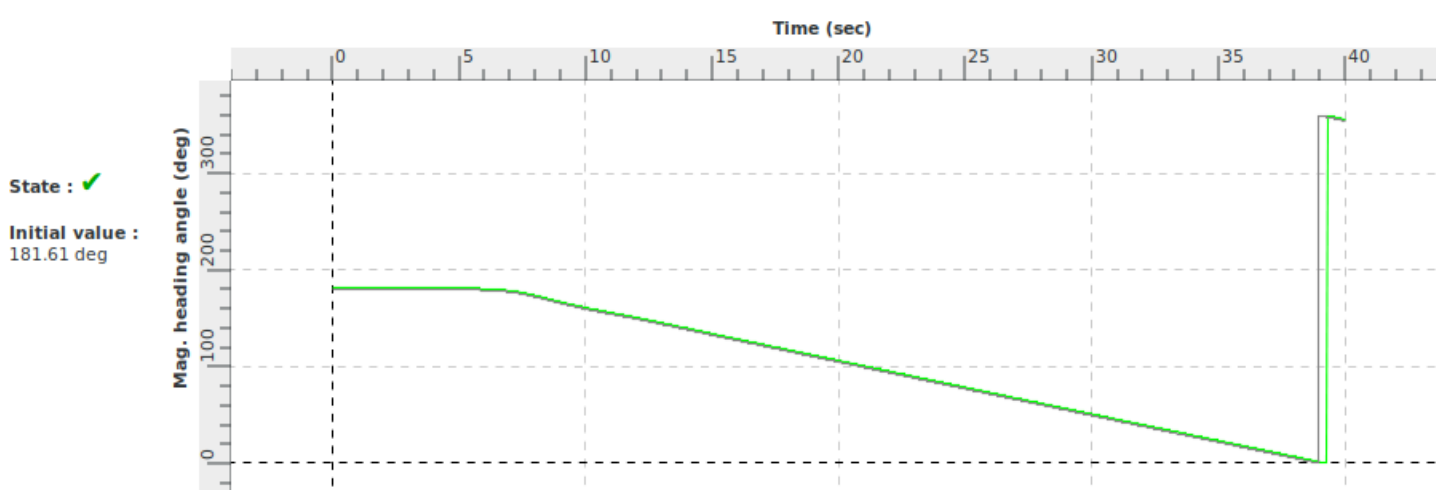
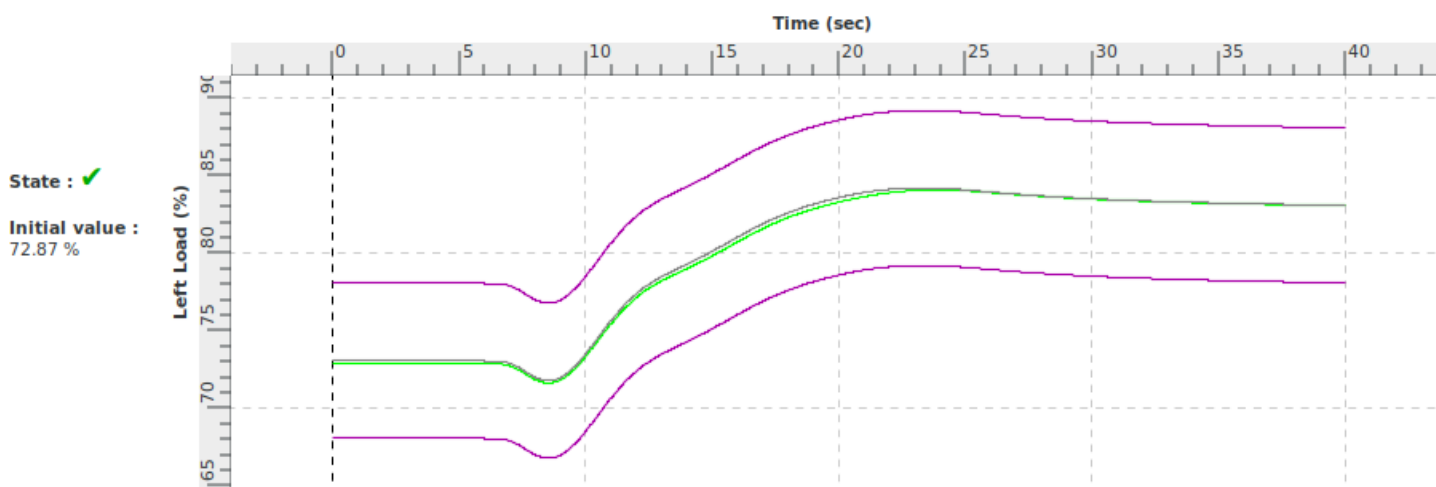
Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Longitudinal manoeuvring stability during approach		
Id	2 c vi b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the simulation of stall warning indication during approach conforms to the class of aeroplanes	Stall warning expected at 74 kts
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.c.viii.b	+/- 3 kts Airspeed

Demonstration procedure	From steady approach initial conditions power is set to idle.
Manual test procedure	Setting the aircraft initial parameters given next page, the pilot performs a standard descent profile maintaining vertical speed and constant power setting. When descent is stabilized, the pilot reduces the power to idle and maintains the vertical speed such as to increase the pitch attitude and one knot per second deceleration allowing the aeroplane to stall. (Do not trim below 1.4 vs).
Automatic test procedure	2 c viii b 3

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	STALL_FLAPS_APP
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 3000 Vertical speed (ft/min) : 0 IAS (kt) : 135 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 10 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 1 Gear lever position : 1 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 1950 Right RPM : 1950

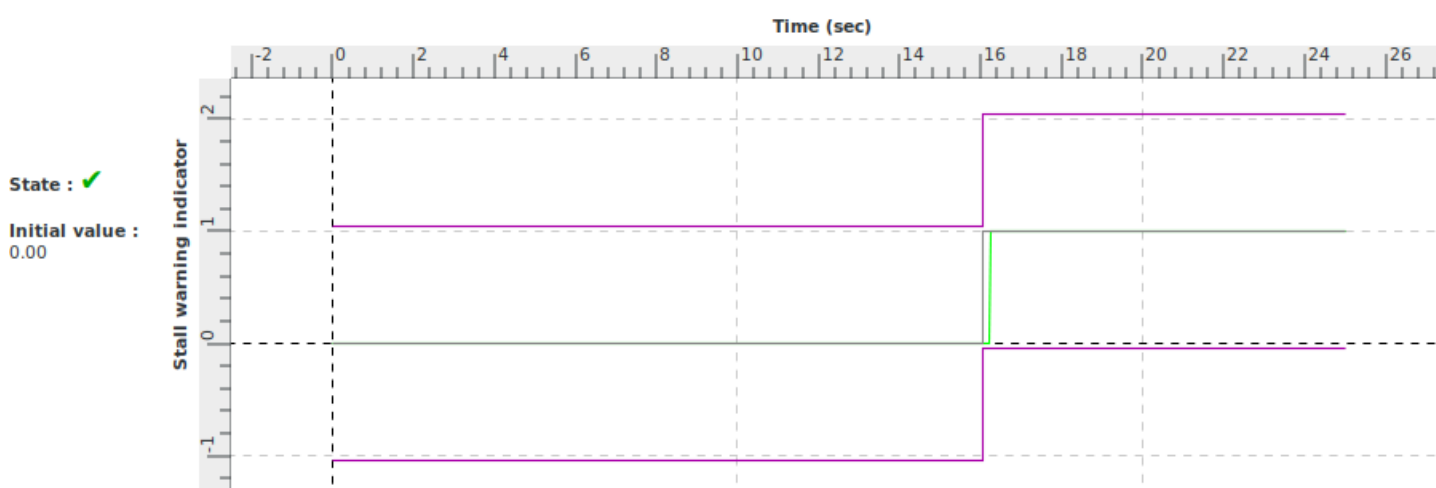
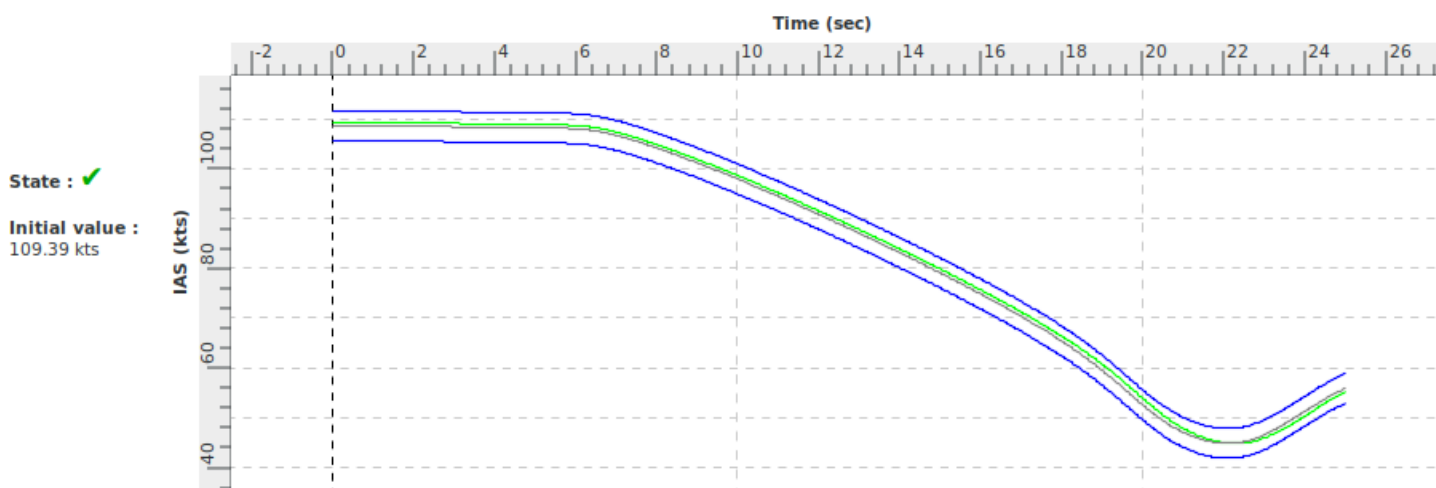
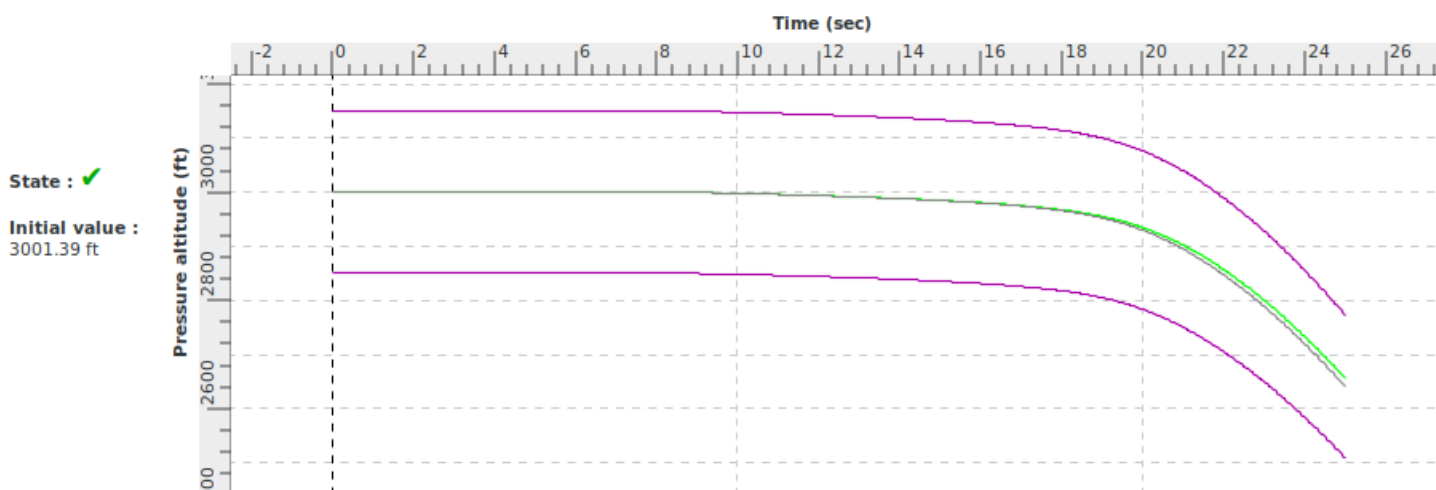
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
5.0	power_FLIGHT_IDLE	0.0	Set engine parameters to flight iddle power
25.0	Stop_Test	0.0	Stop the test procedure

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.01	29/03/21	1909 Master. Expected results unchanged. Time reduction to 25s
1.02	27/07/21	2012-R1 Master. Expected results unchanged.

Notes

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



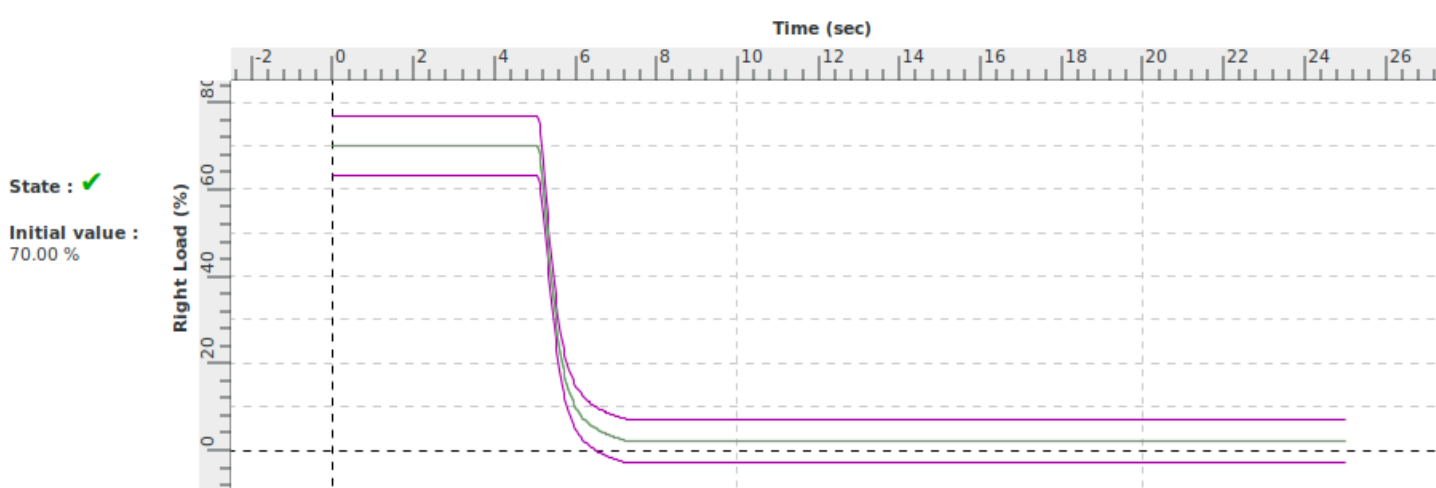
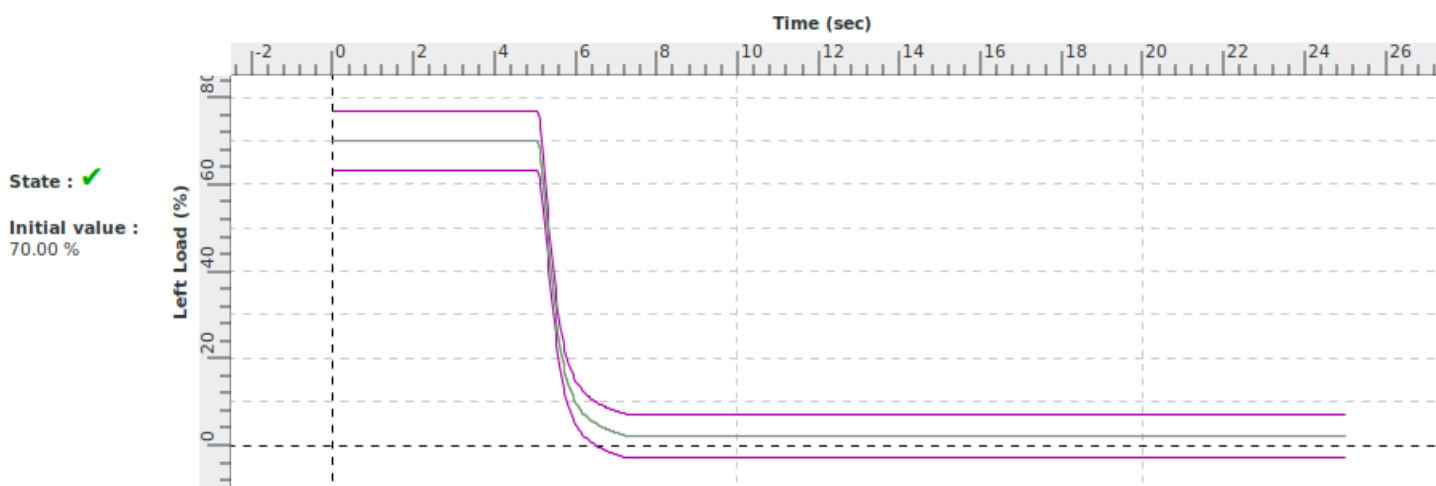
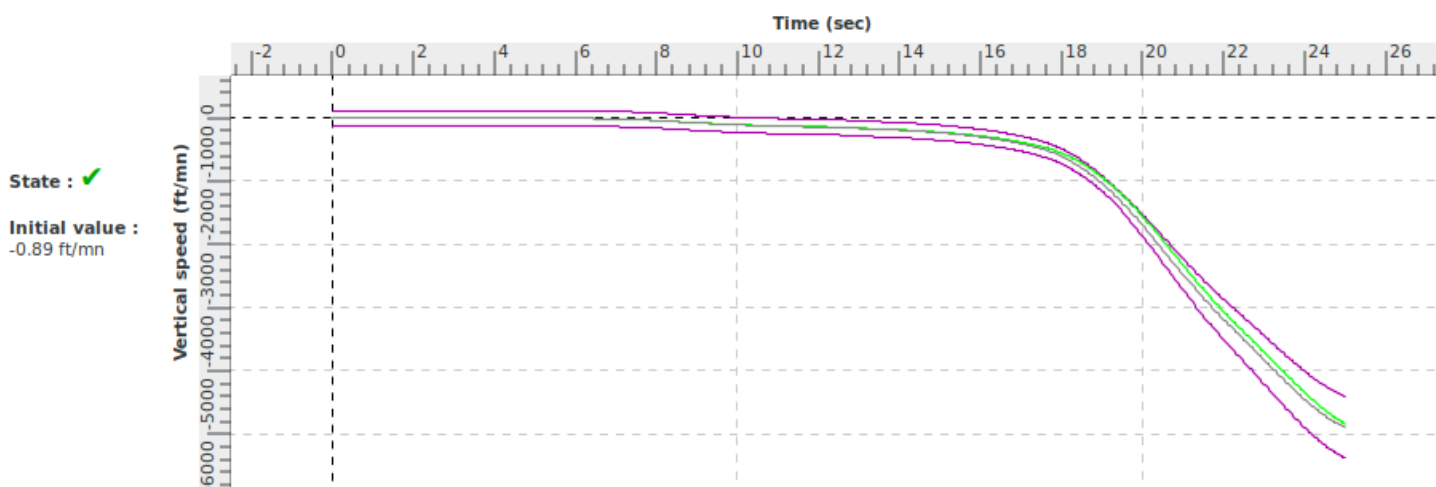
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsिम

grey : master

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



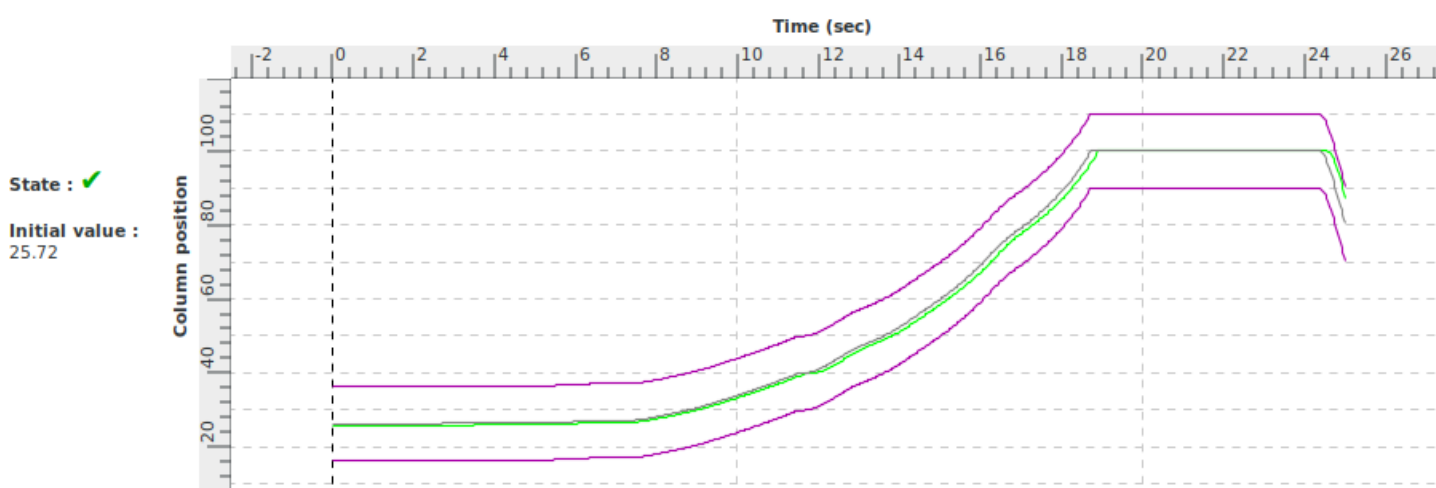
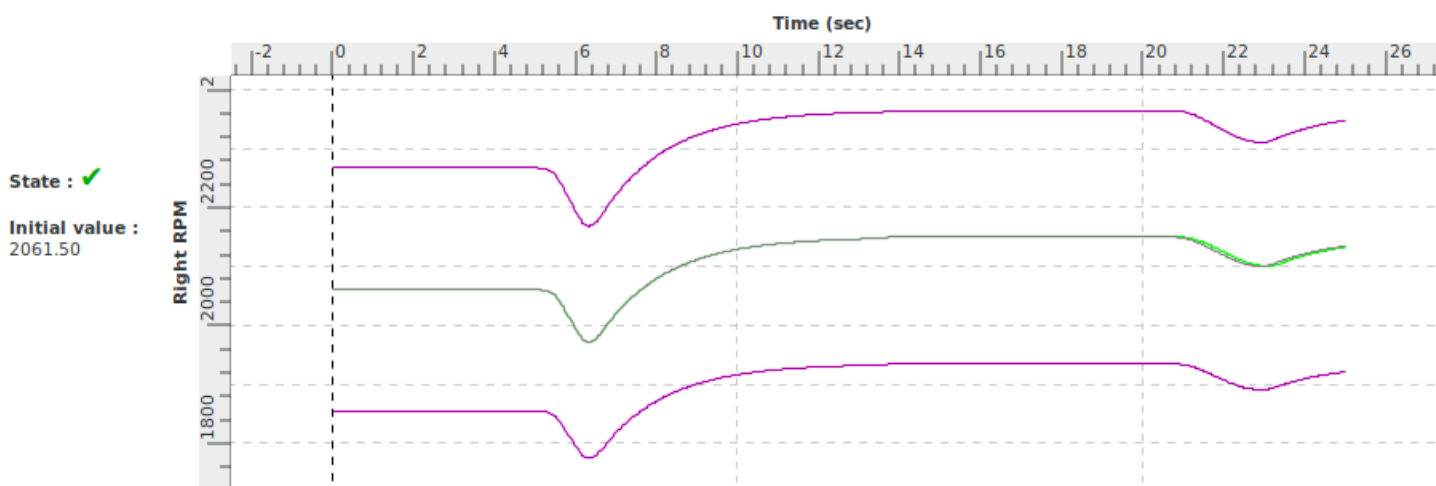
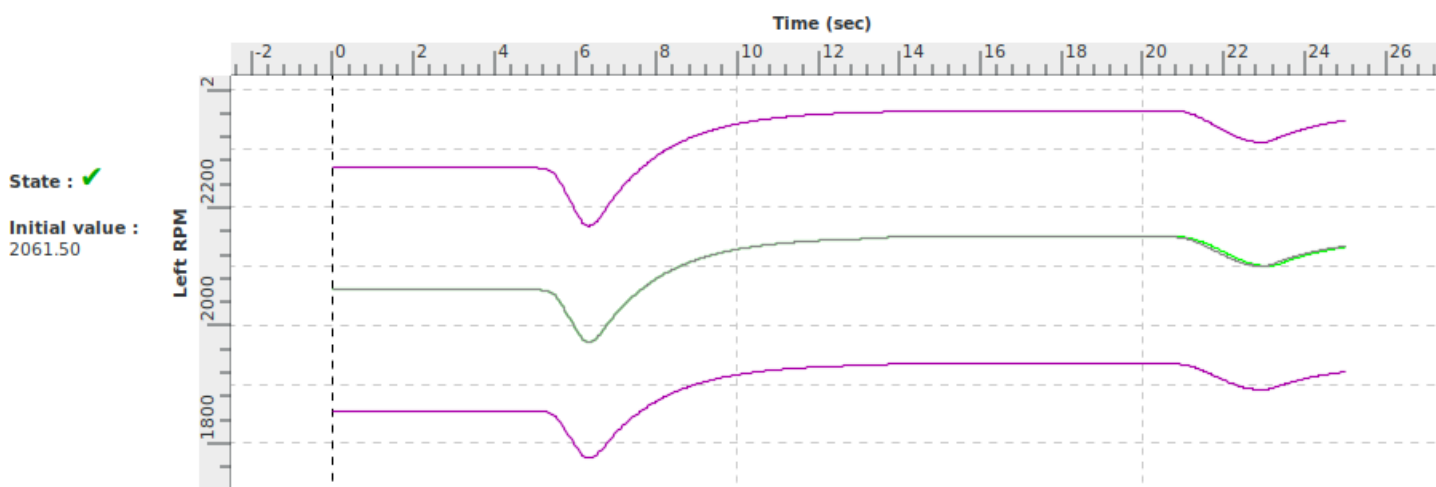
Legend :

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grey : master

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



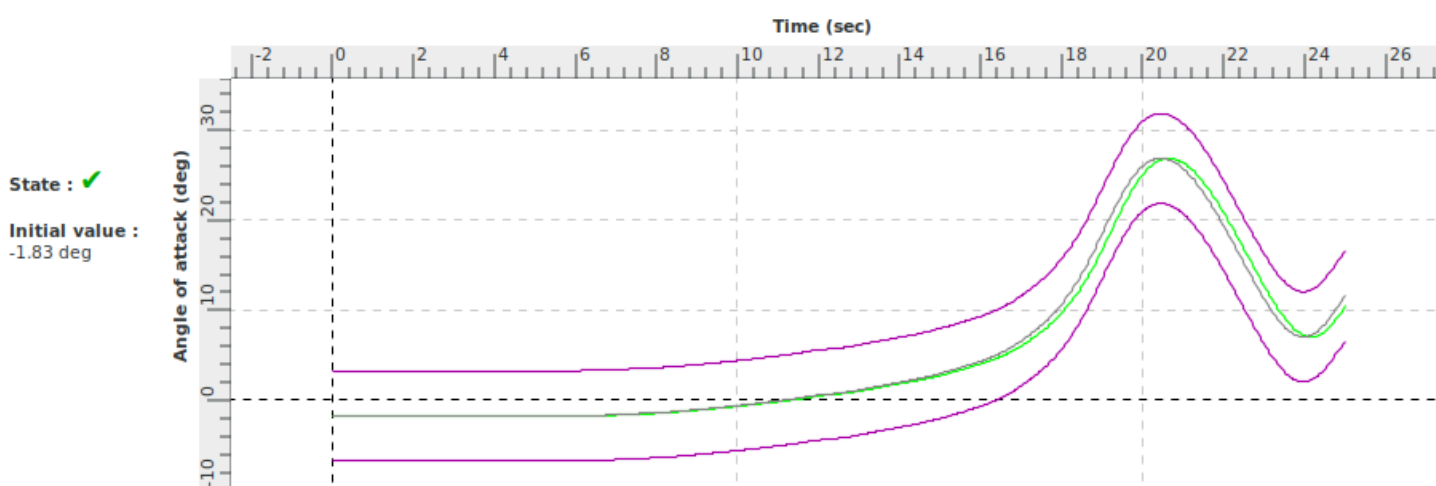
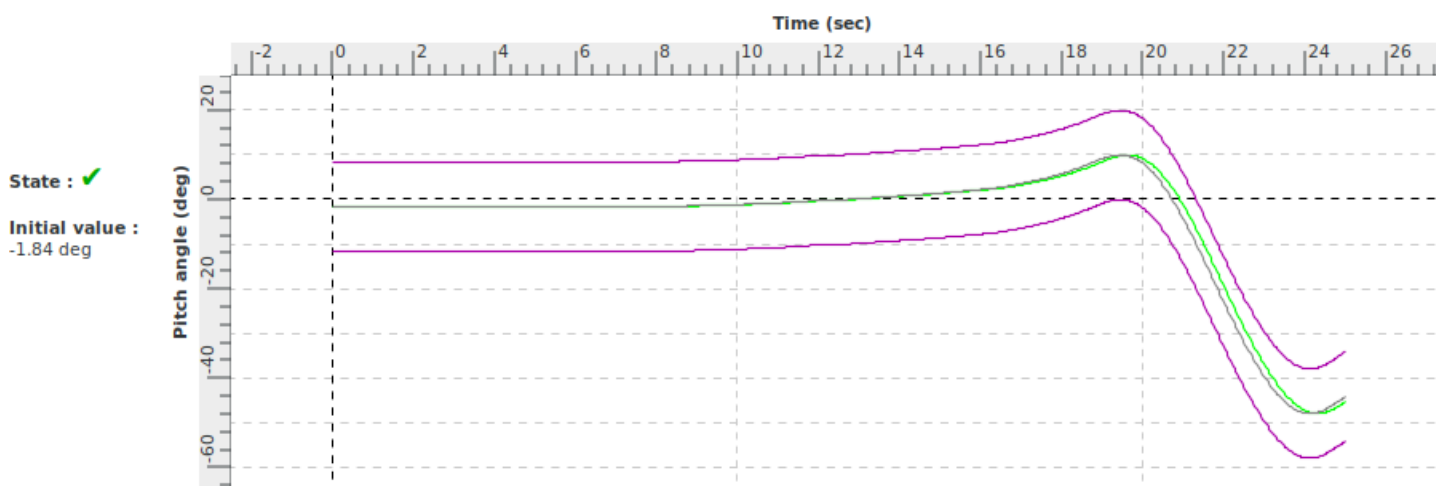
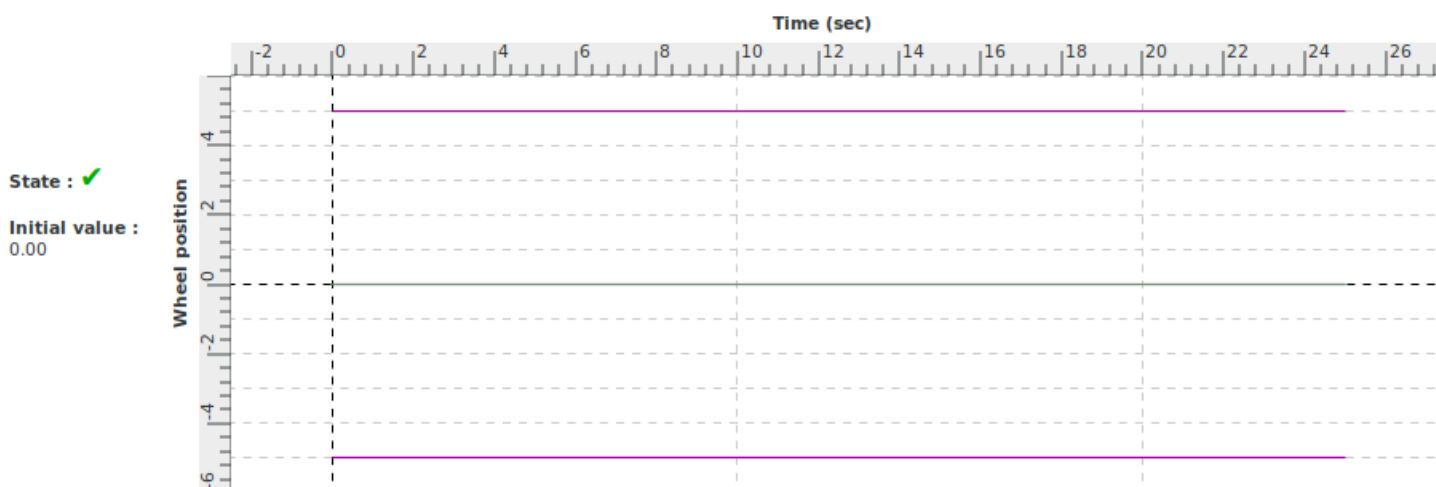
Legend :

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violet : tolerances Alsिम

grey : master

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



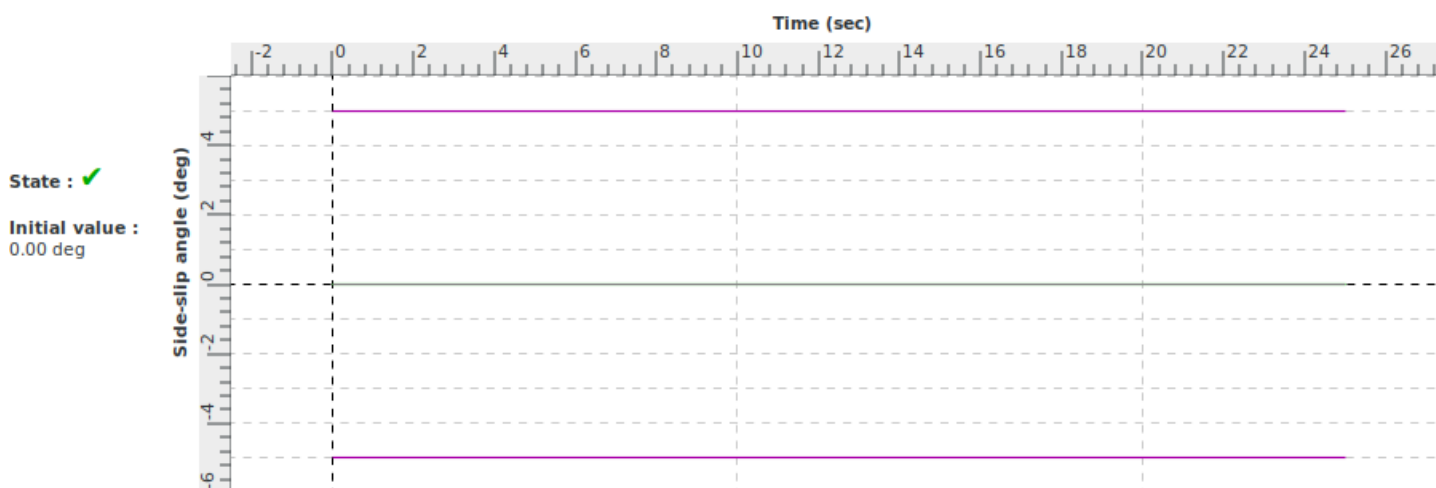
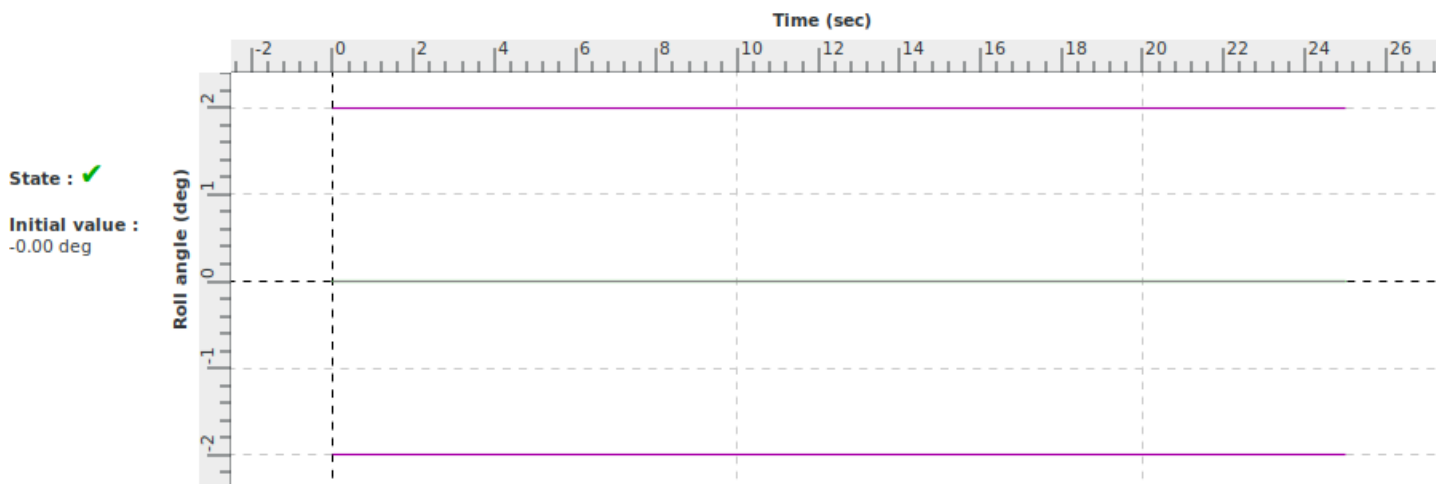
Legend :

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red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



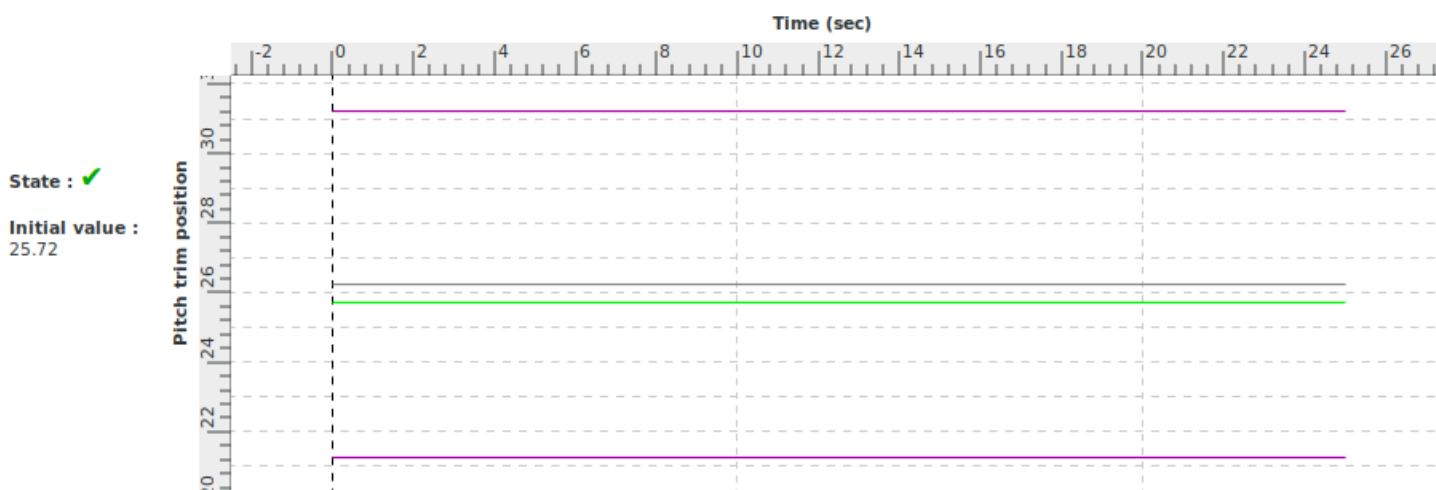
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsिम

grey : master

Title	Stall characteristics during approach		
Id	2 c viii b 3	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the simulator roll rate response to roll control input conforms to the class of aeroplanes	+/-15 deg/sec Roll rate 45 % Wheel deflection
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.d.ii.a	+/- 2°/s or +/-10% Roll Rate

Demonstration procedure	From steady cruise initial conditions, a wheel deflection step input of about 45% of maximum is applied for the two directions left then right.
Manual test procedure	In ISA conditions and cruise condition, the pilot trims the airplane to level flight. When cruise is stabilised, the pilot moves the wheel 45% of total travel keeping constant control deflection until about 30° of bank angle and the pilot slightly returns to null deflection. Then the pilot performs the same manoeuvre in the opposite direction using wheel deflection as required.
Automatic test procedure	2 d ii a

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 IAS (kt) : 139 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

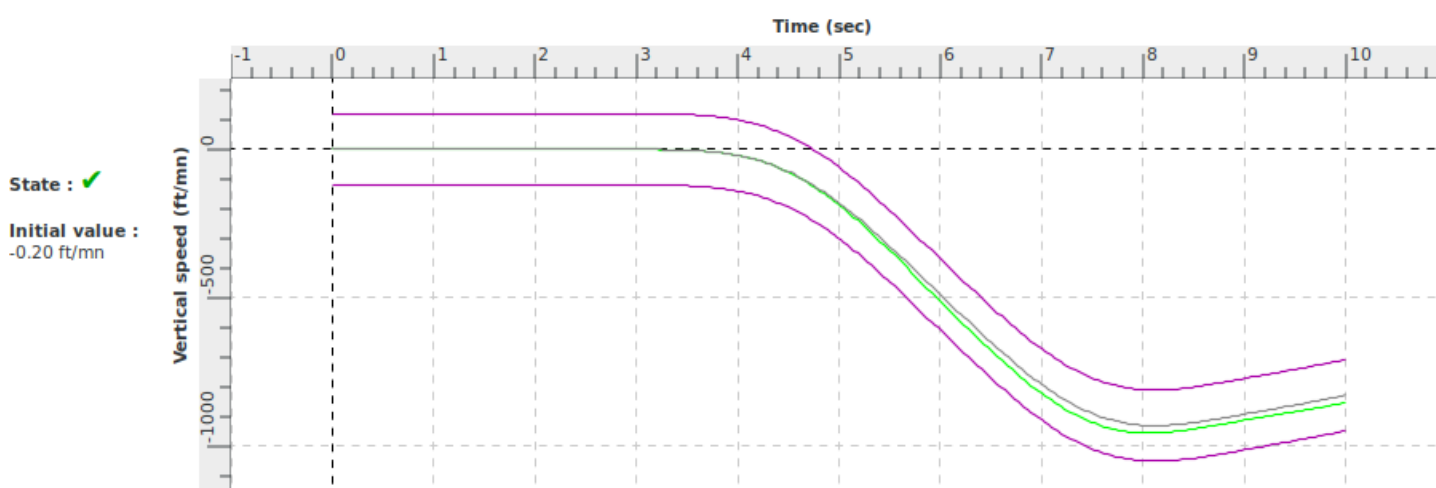
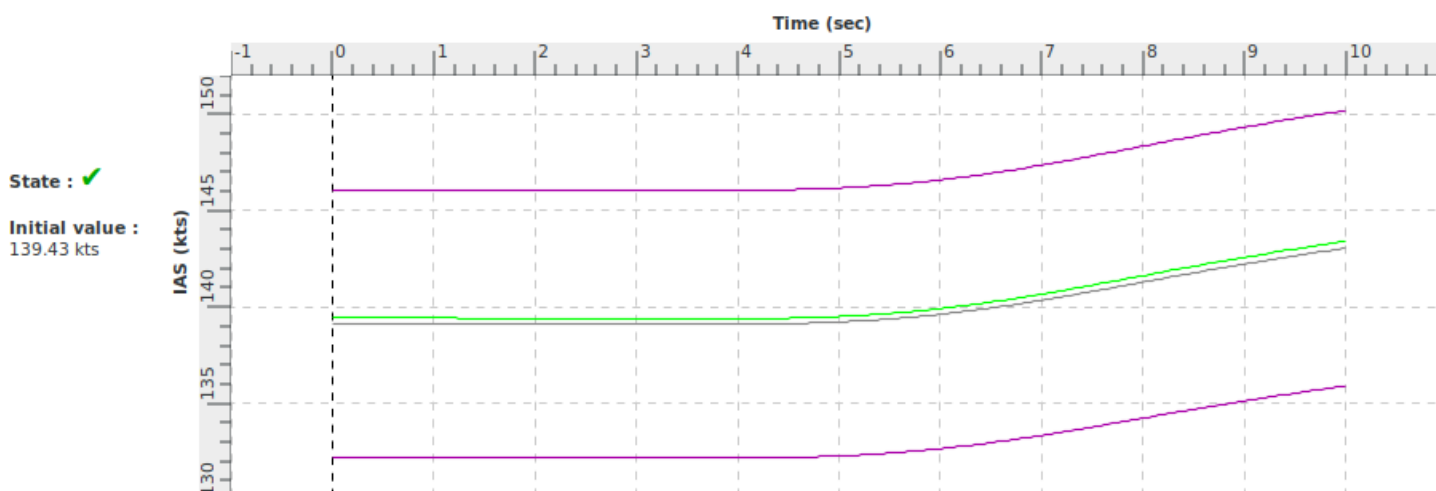
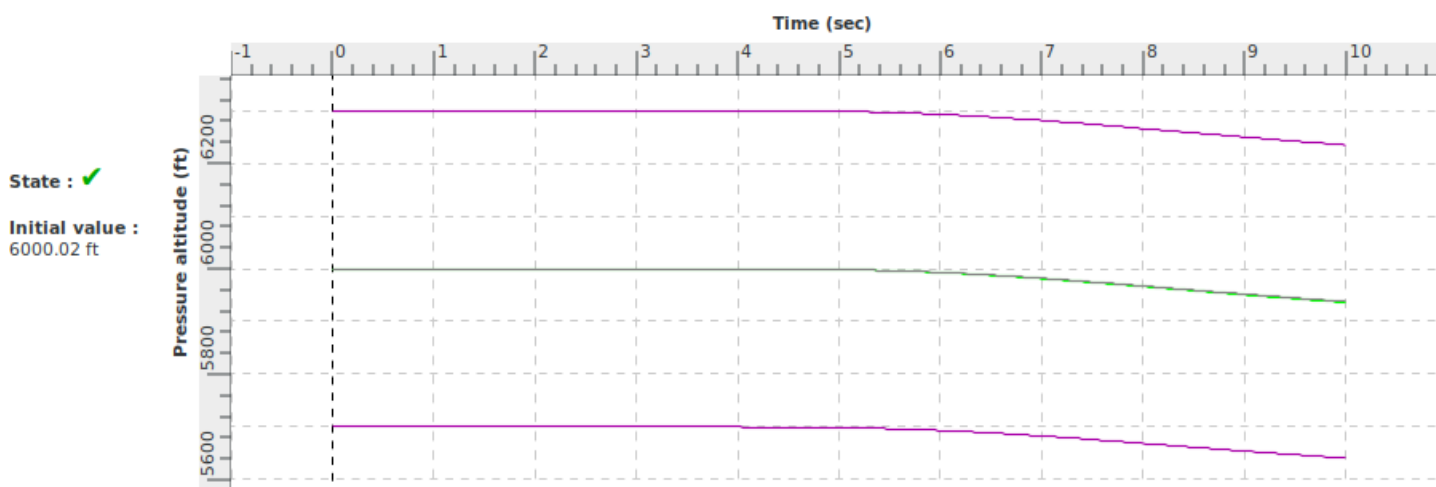
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	deconnectionPA_att	0.0	disable QTG Autopilot in attitude axis
0.0	deconnectionPA_rudder	0.0	disable QTG Autopilot in yaw axis
1.0	SetRollCmdPalier	0.0	Send a step in the roll govern
2.0	SetRollCmdPalier	45.0	Send a step in the roll govern
4.0	SetRollCmdPalier	0.0	Send a step in the roll govern
6.0	SetRollCmdPalier	-45.0	Send a step in the roll govern
8.0	SetRollCmdPalier	0.0	Send a step in the roll govern

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



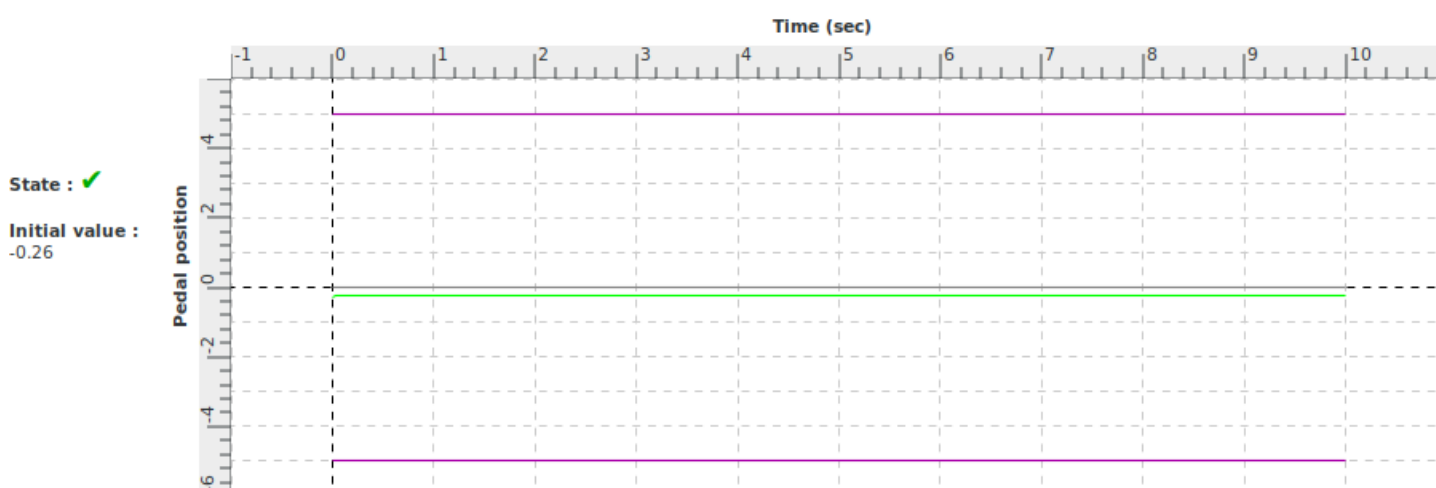
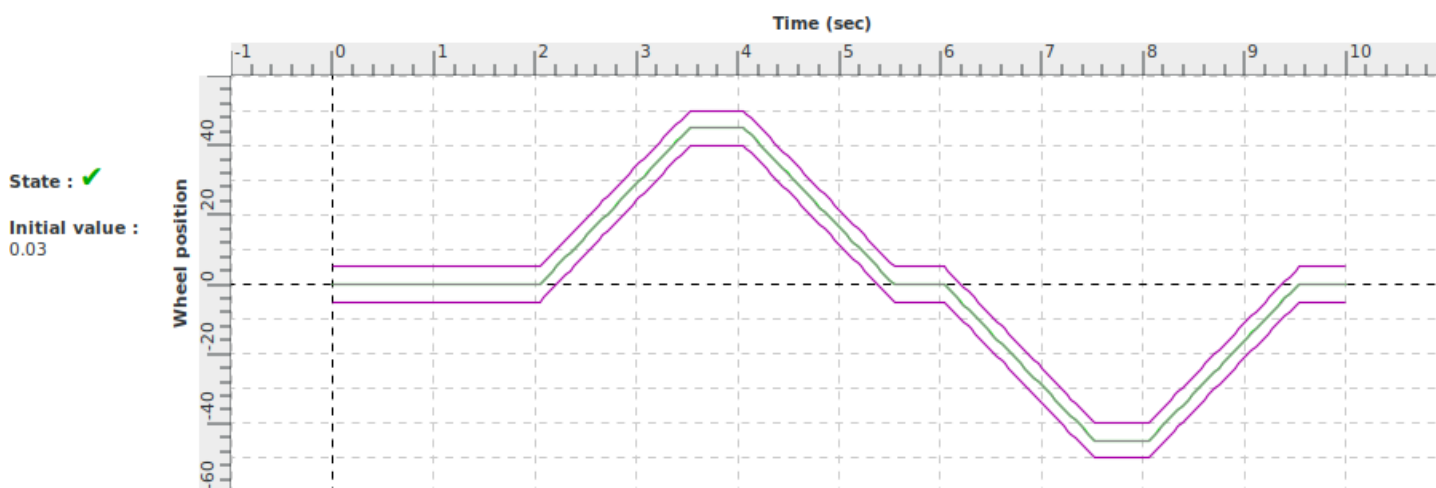
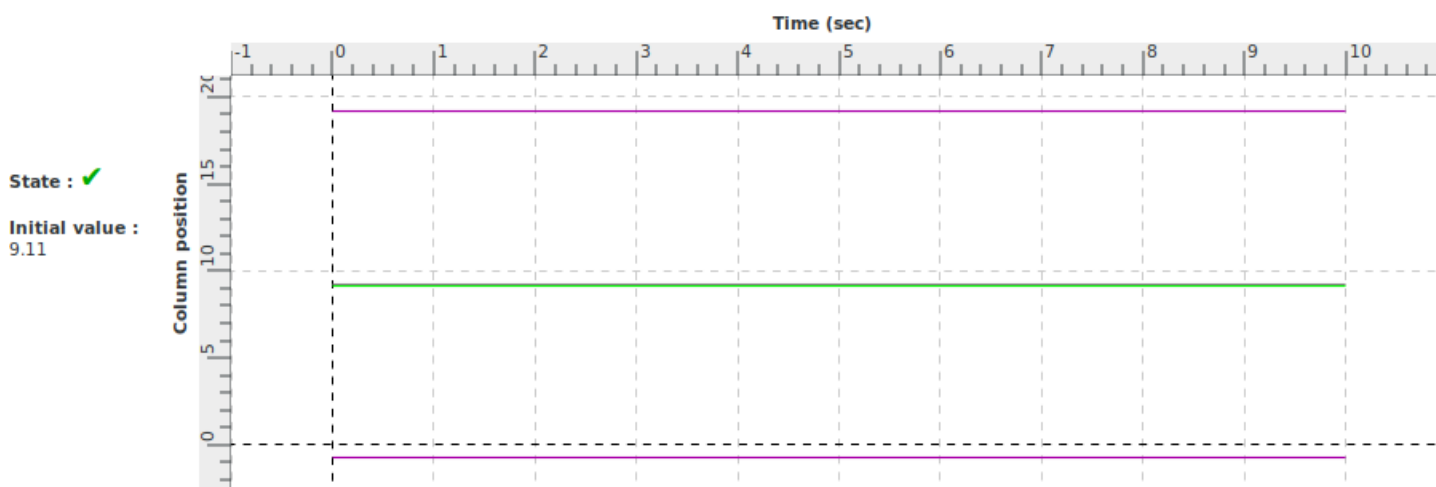
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsिम

grey : master

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



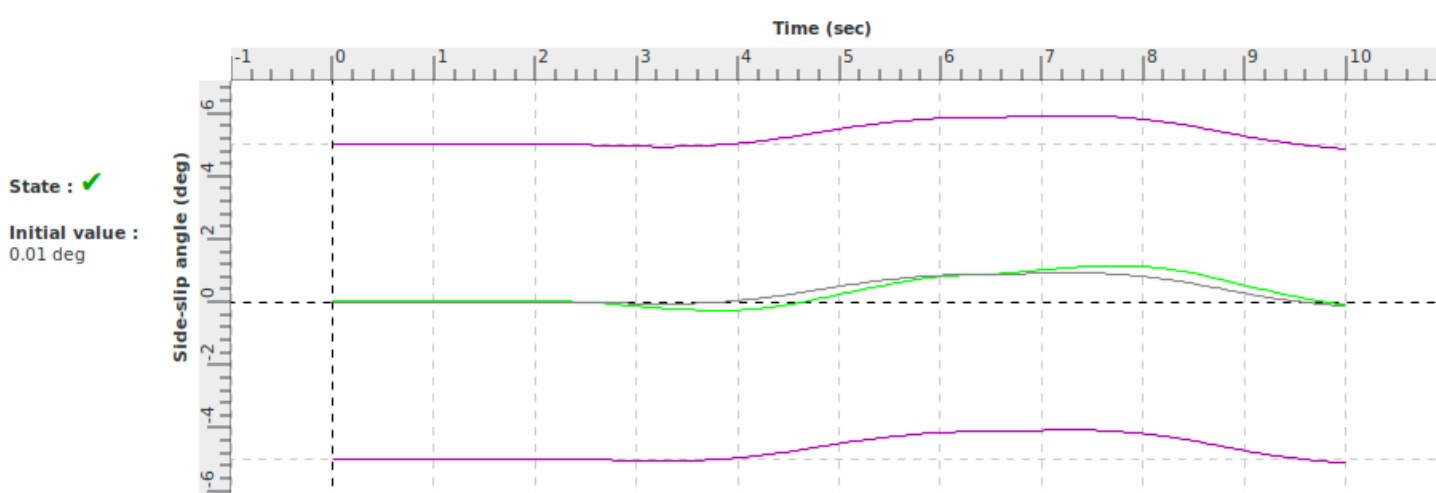
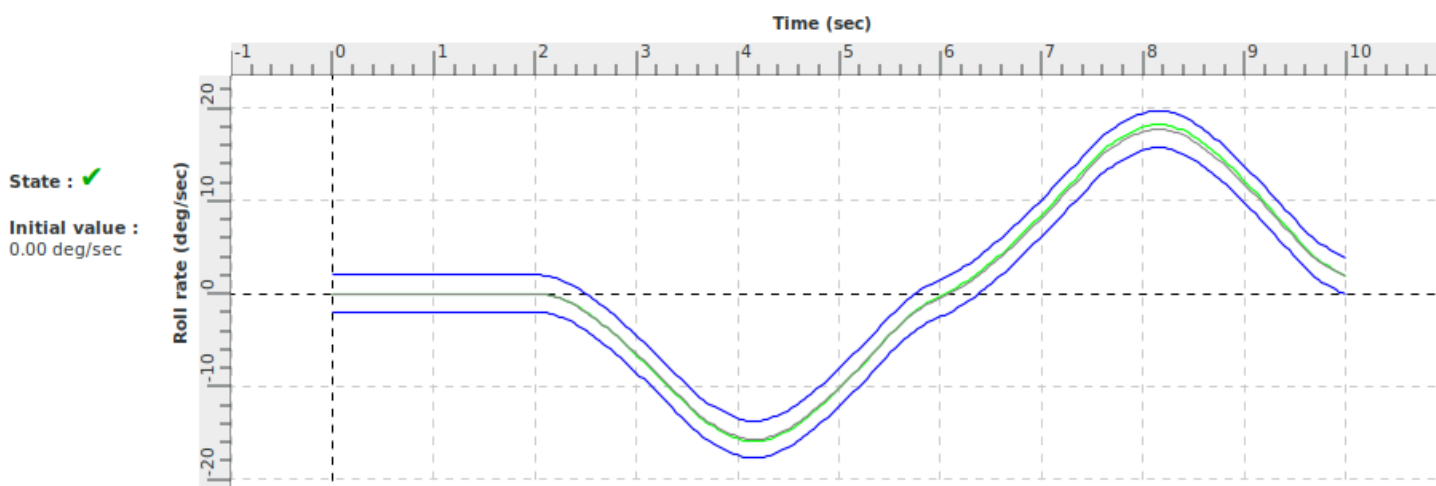
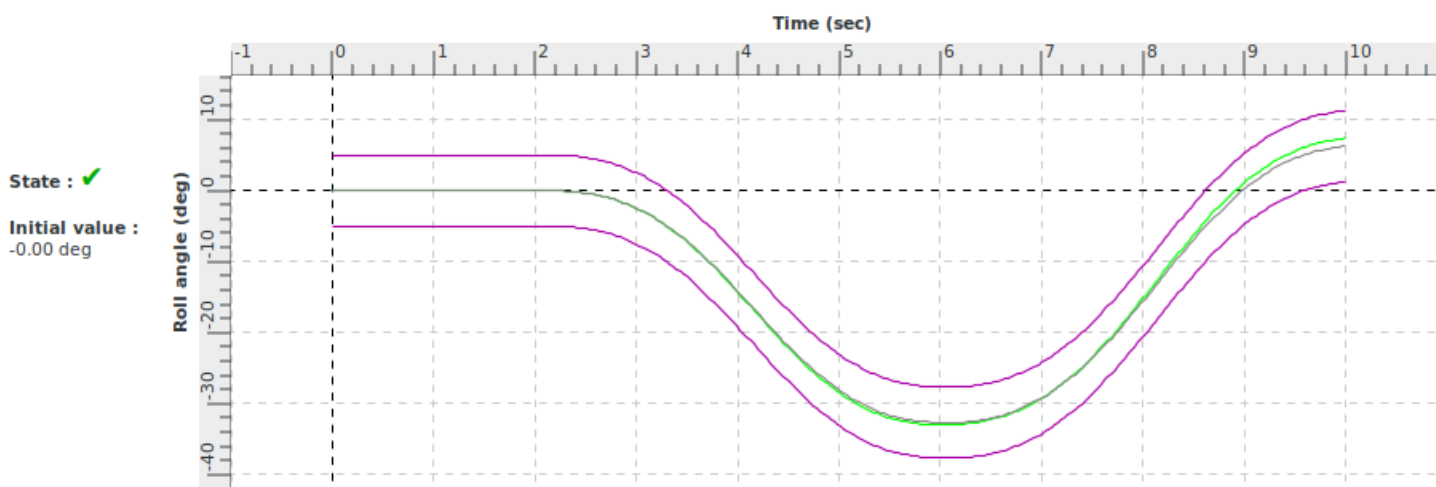
Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsimg

grey : master

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



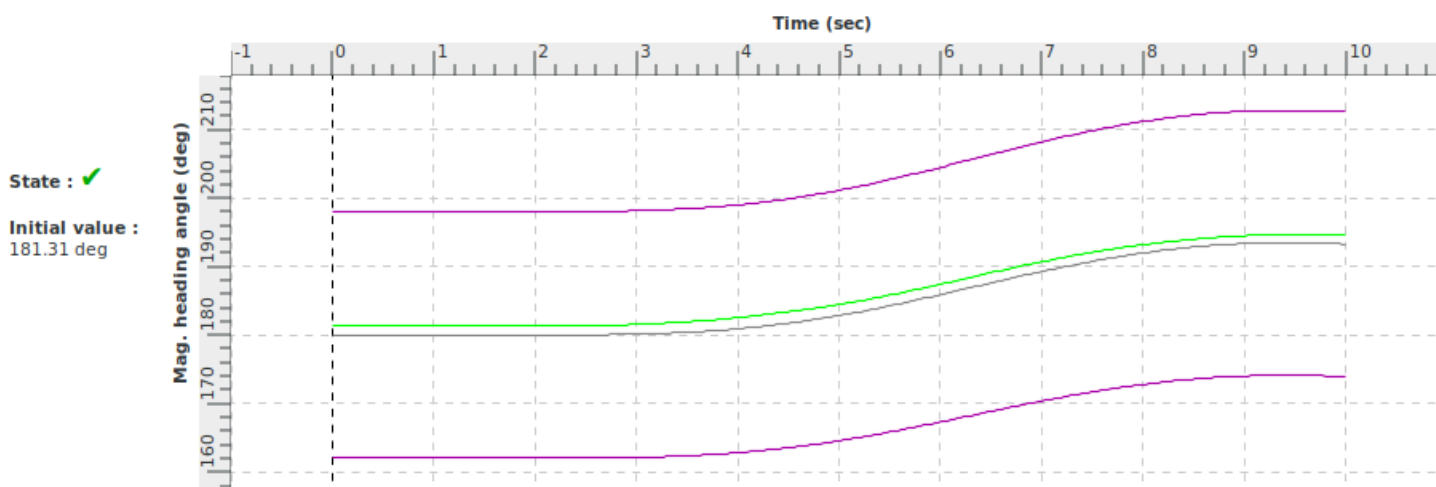
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Roll response rate during cruise		
Id	2 d ii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the simulation of the dynamic lateral/directional characteristics in the spiral mode during cruise conform to the class of aeroplanes	Max Roll Rate of return = 1 °/s Delta Roll angle from max to 20 sec after = +15 deg
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.d.iv.1.b	Correct trend and +/- 2 deg or +/- 10 % Bank in 20 seconds

Demonstration procedure	From steady cruise initial conditions, a wheel deflection is applied in order to establish a steady right turn of about 25 ° afterwards the wheel is released to neutral.
Manual test procedure	In ISA conditions and cruise condition, the pilot trims the airplane to symmetrical wing level flight . Smooth roll until about 25° of the bank angle is initiated and roll control slowly returned to neutral and controls released.
Automatic test procedure	2 d iv 1 b

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_VZ
<p>Automatic IAS (airspeed) and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and IAS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 (free) IAS (kt) : 139 Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

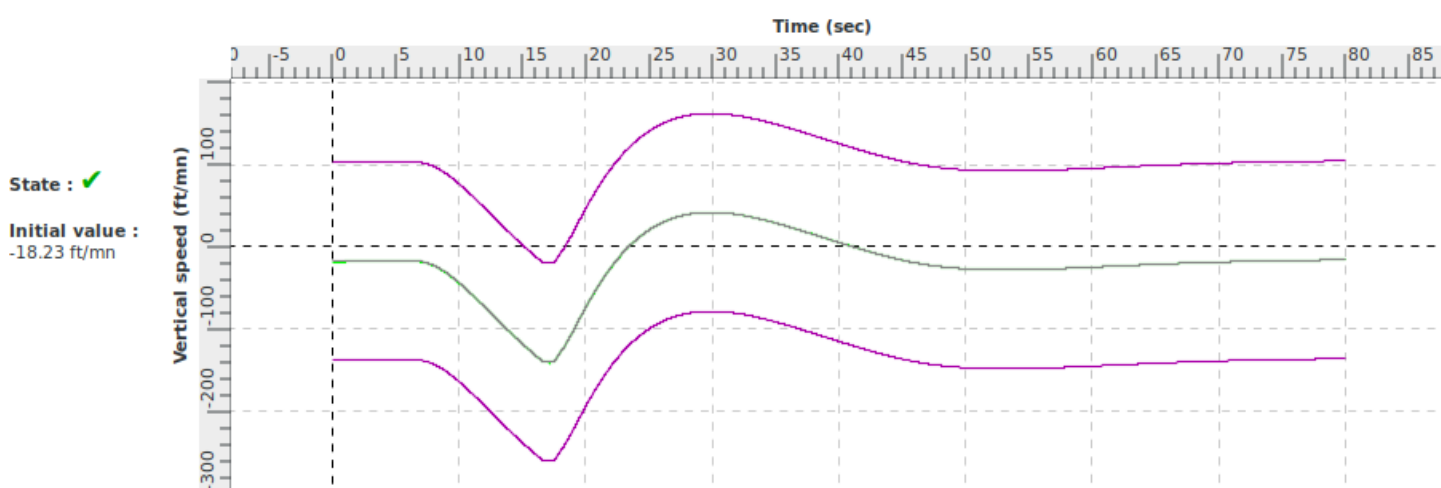
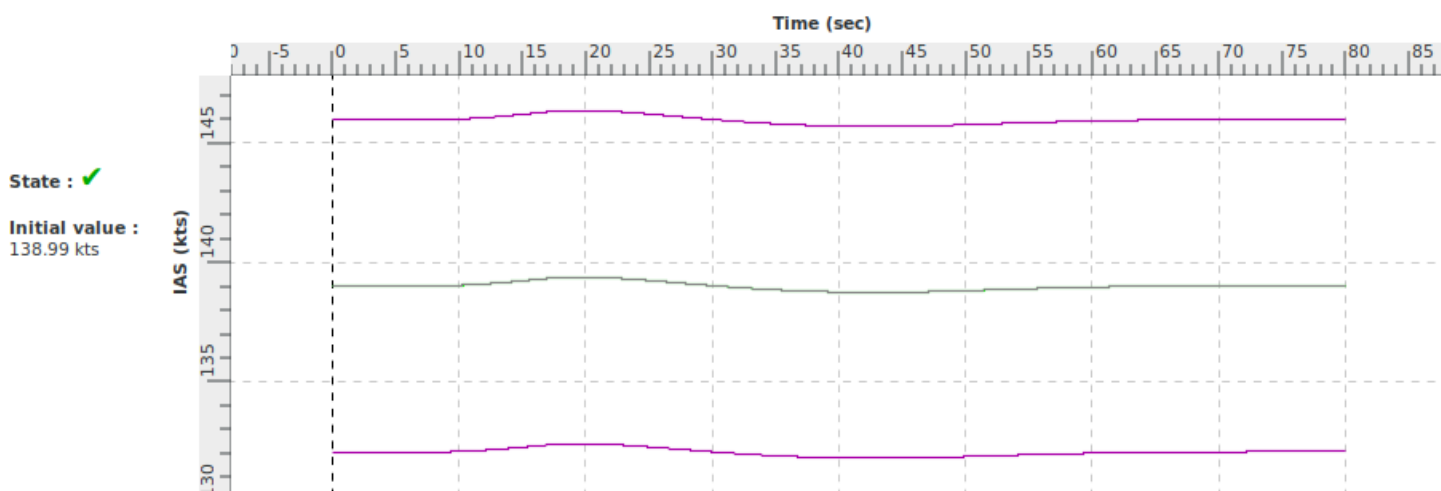
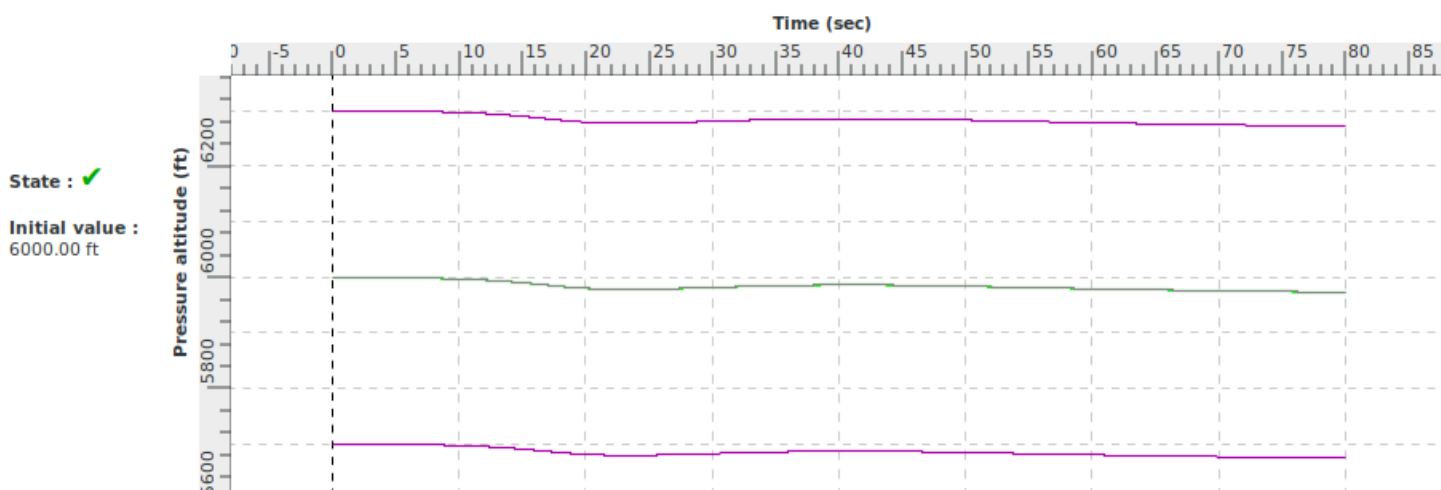
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
1.0	SetRudderCmdPalier	0.0	Send a step in the rudder govern
5.0	SetRollCmdPalier	7.0	Send a step in the roll govern
16.0	SetRollCmdPalier	0.0	Send a step in the roll govern
80.0	Stop_Test	0.0	Stop the test procedure

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.02	27/07/21	2012-R1 Master. Expected results unchanged.

Notes

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



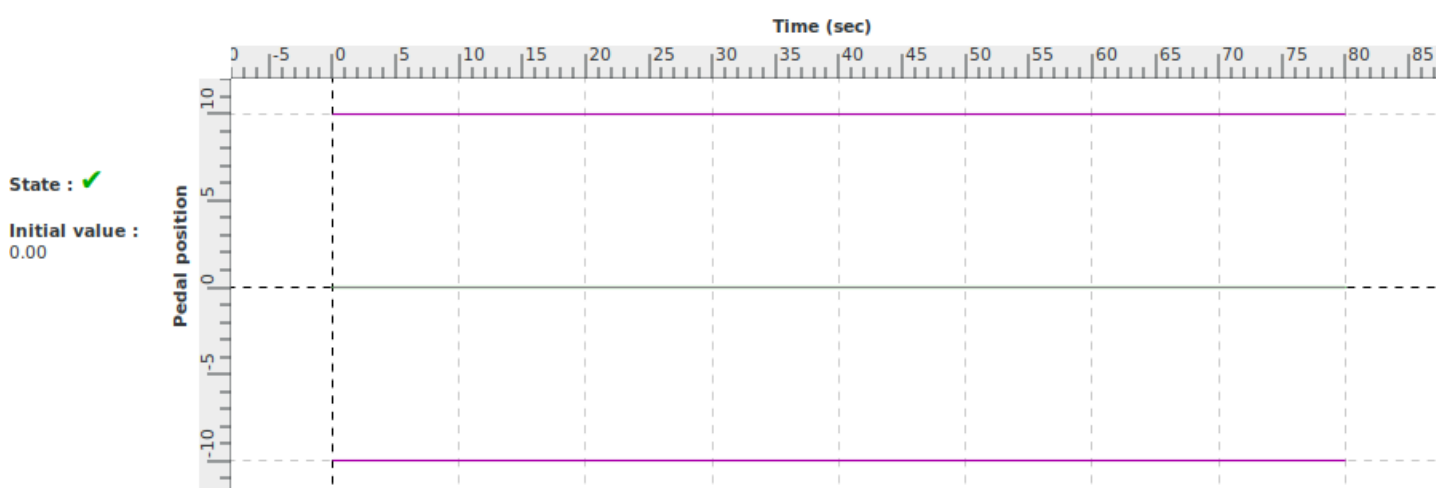
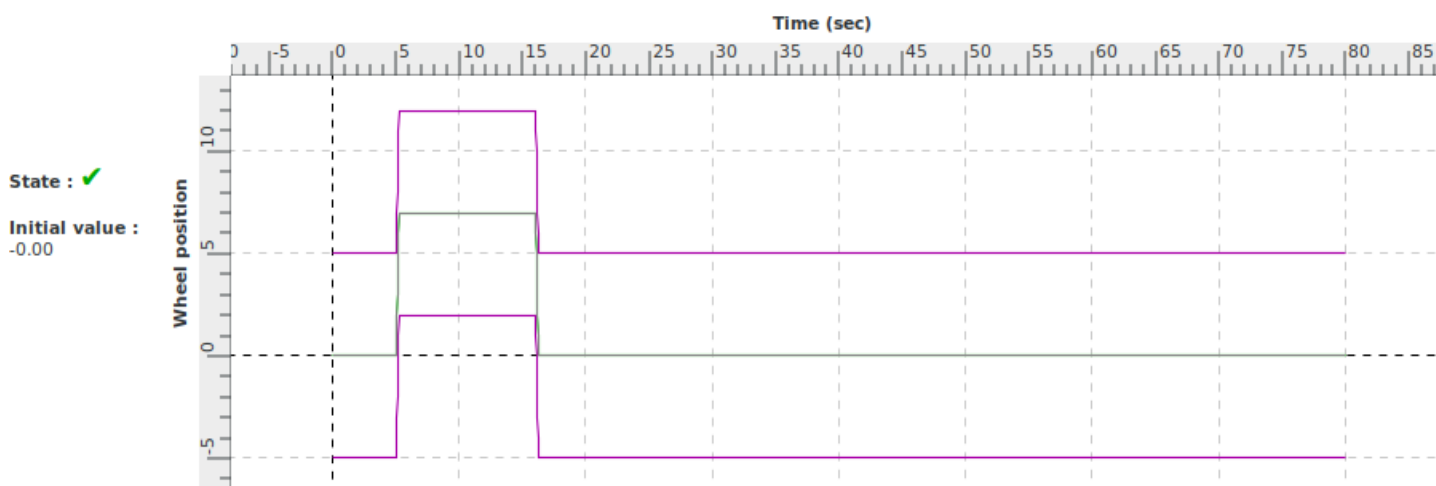
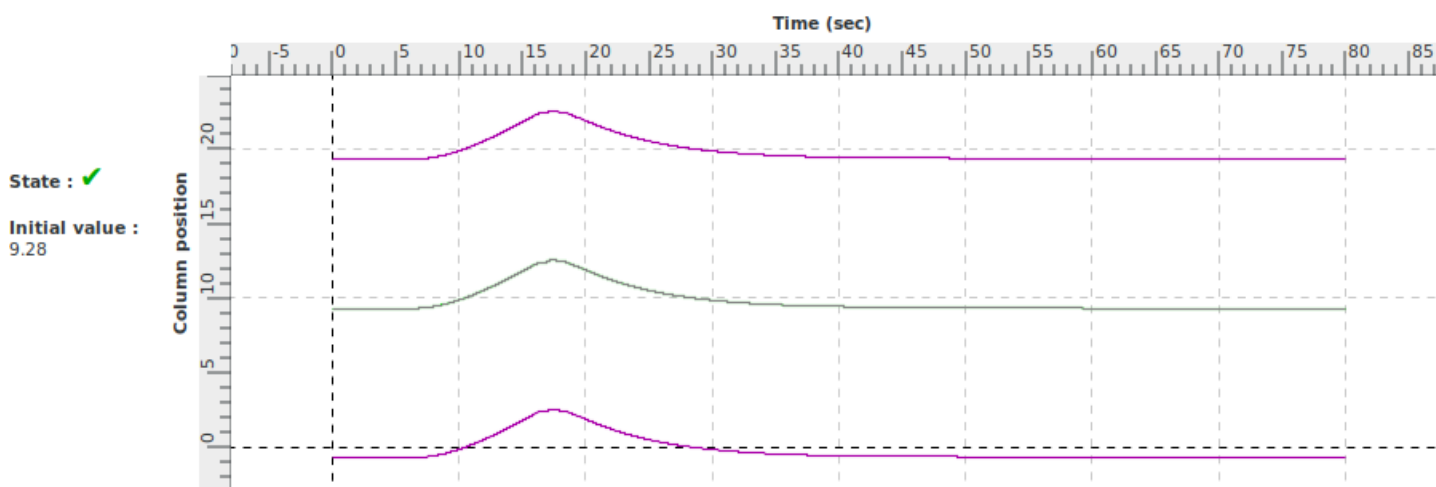
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsिम

grey : master

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



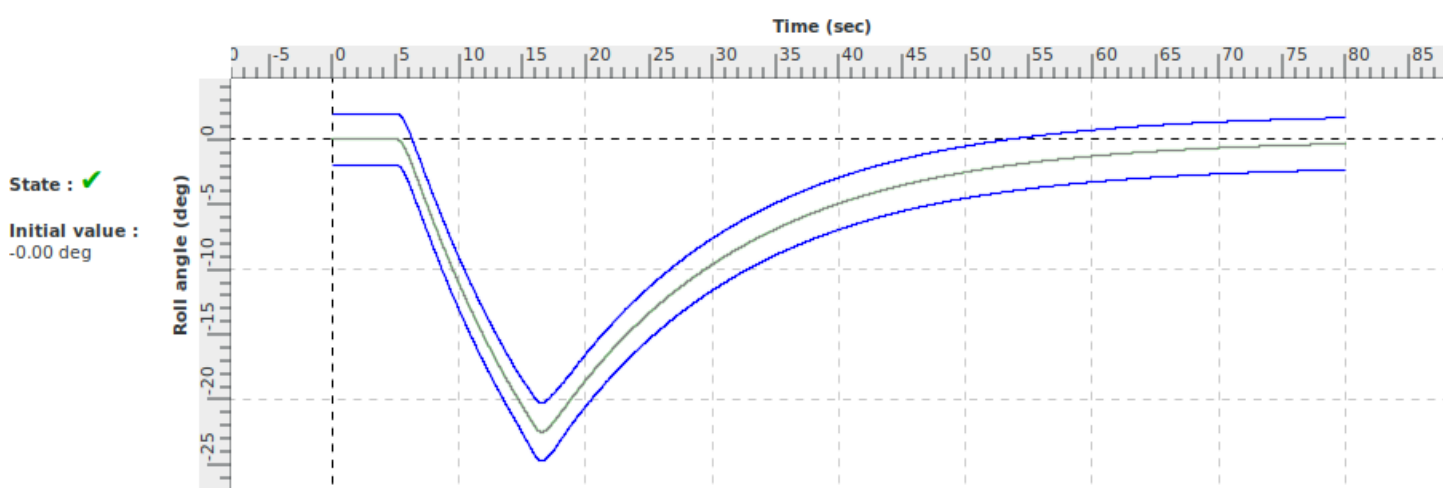
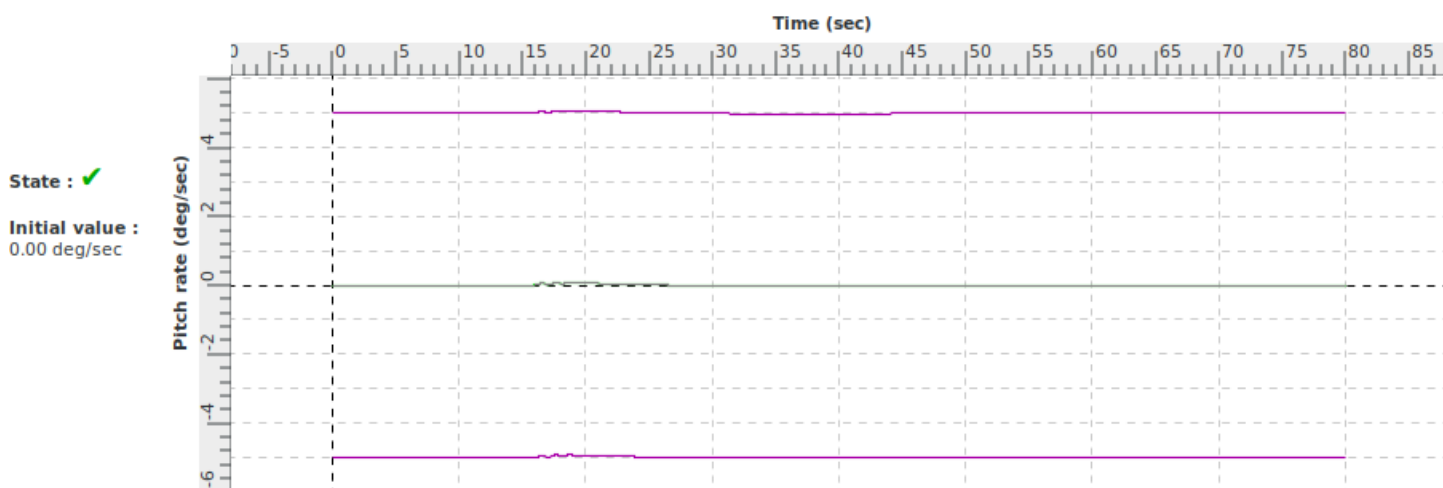
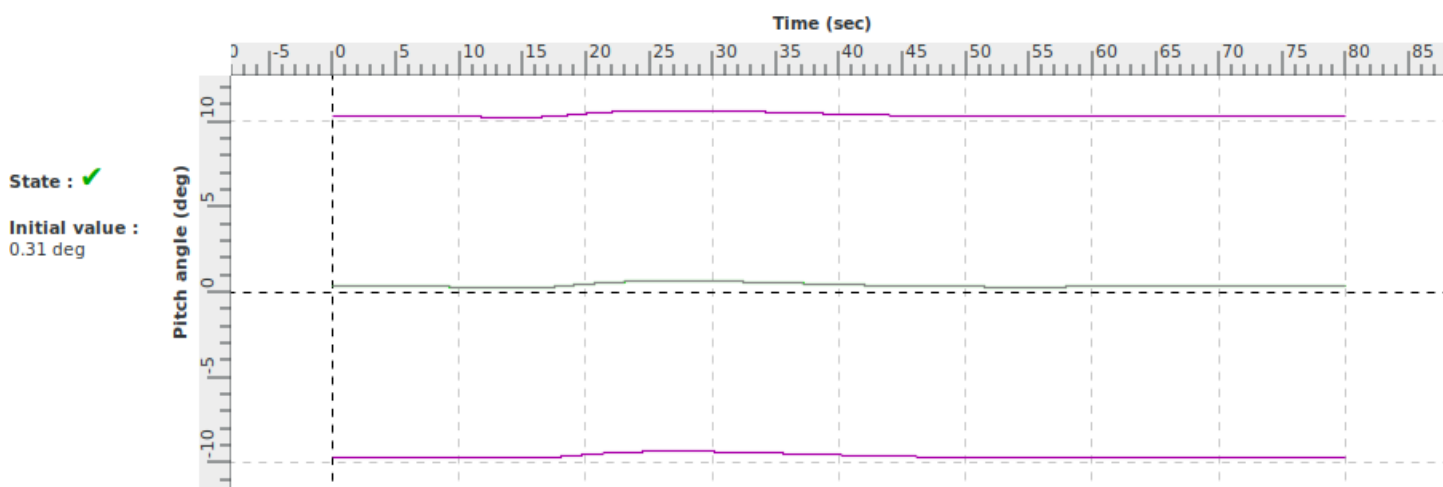
Legend :

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blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



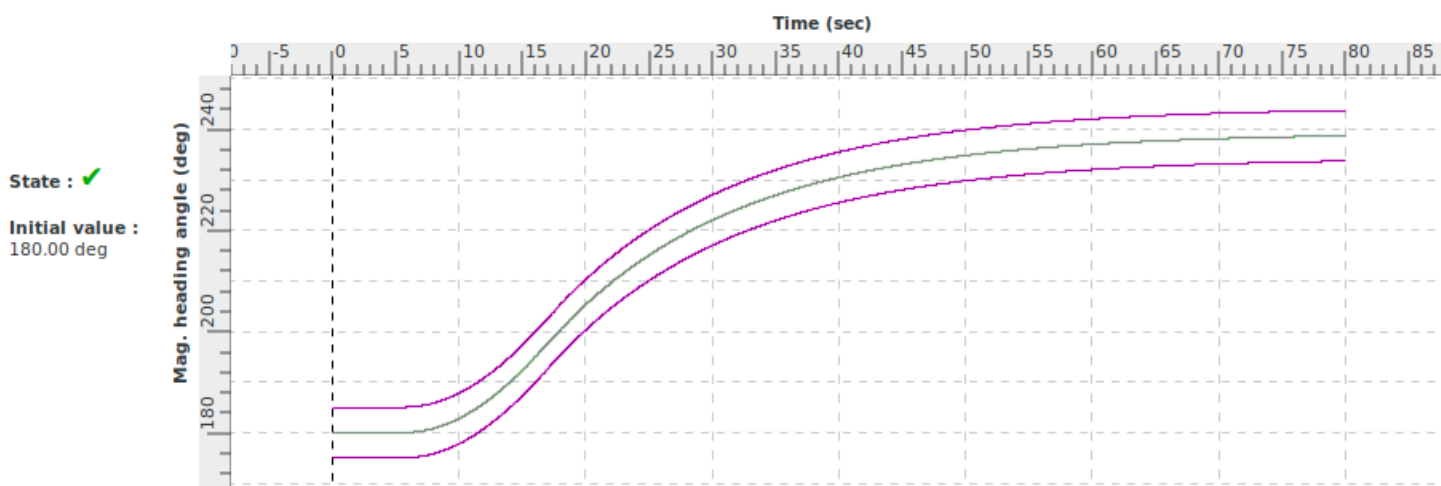
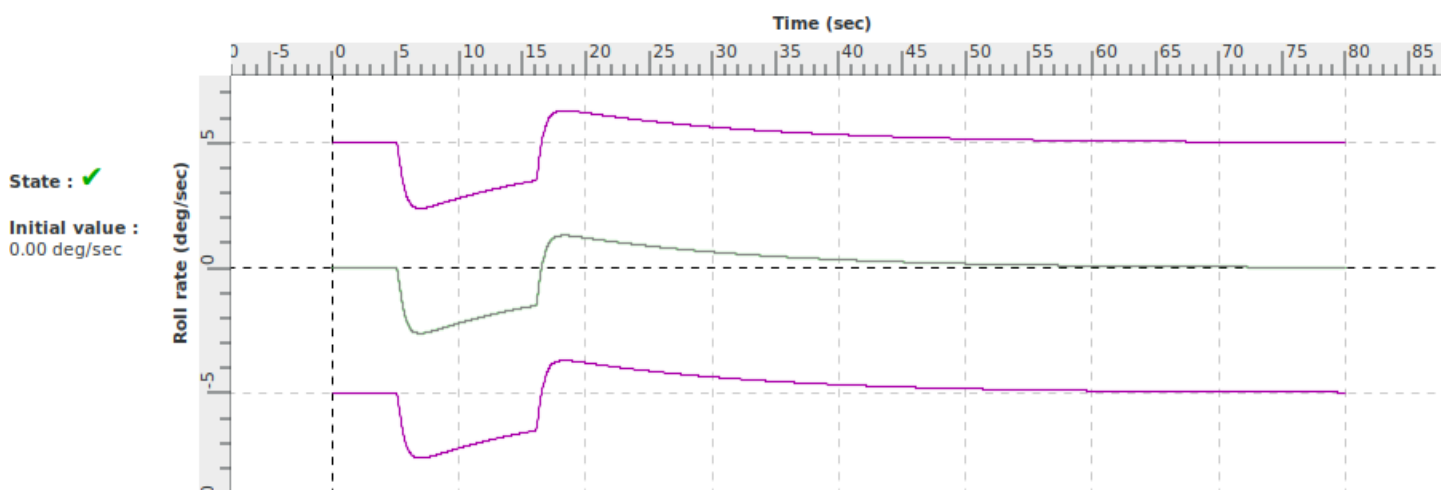
Legend :

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violet : tolerances Alsim

grey : master

Title	Right spiral stability during cruise		
Id	2 d iv 1 b	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Objective	Expected Results
Demonstrate that the lateral/directional dynamic stability characteristics of the simulator in the dutch roll mode during cruise conform to the class of aeroplanes	Roll/yaw period: 1.42 s Time to half amplitude: 1.8 s Phase Delay: 0.7 s (results to be determined using the Table Sheet AL42_DA42VI_Tables_QTG_VolIII.xls)
Reference	Evaluation Criteria
Chapter 12 - Validation data - Handling Qualities - Test 2.d.vii.a	+/- 0.5s or 10% of period +/-10% of time of 1/2 amplitude or 0.02 of damping ratio +/-20% or +/-1s of time difference between peaks of bank and sideslip

Demonstration procedure	From steady cruise initial conditions, a short pedal impulse is applied in both directions left then right in order to excite the Dutch roll mode. The period and, time to 1/2 amplitude and time difference between peaks must be computed manually using the "Plot" function available on the graphs and compared with expected results. Tolerances proposed by Alsim on relevant graphs are more restrictive than required ones.
Manual test procedure	In ISA conditions and cruise configuration, the pilot trims the airplane at cruise. Then, the pilot applies impulse excitation on the pedals and leaves the controls free 5 to 10 seconds.
Automatic test procedure	2 d vii a

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 IAS (kt) : 139 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

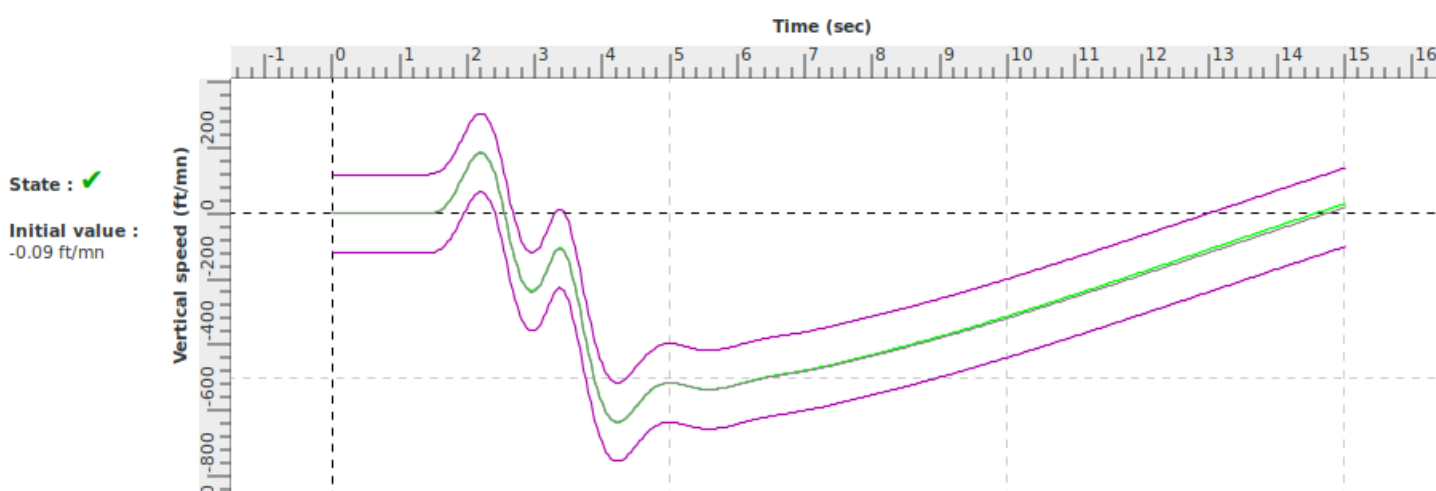
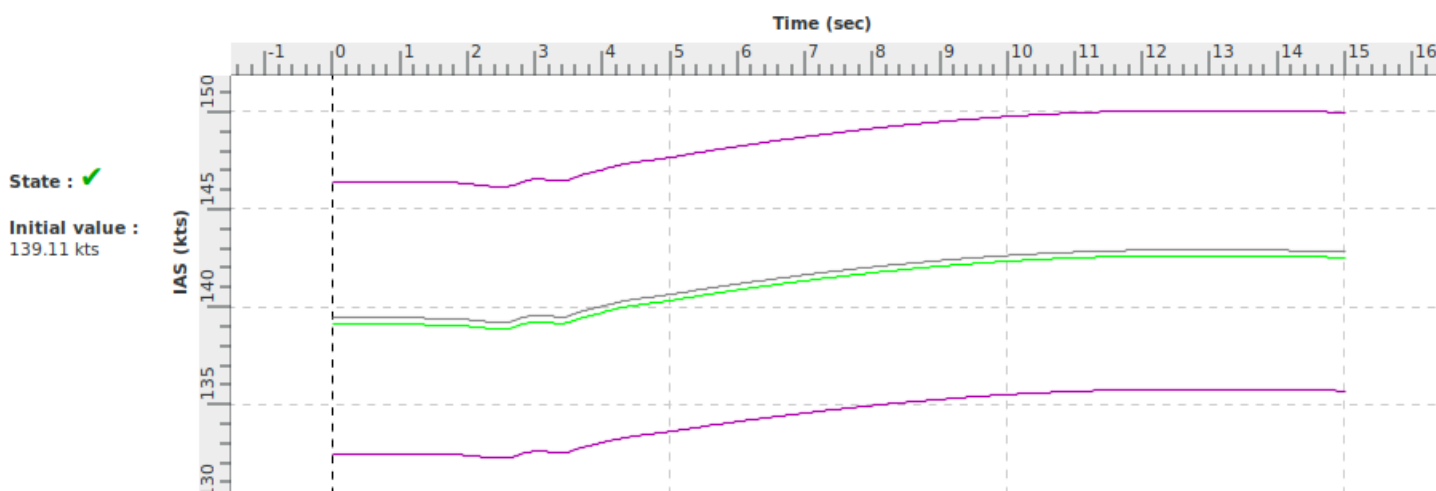
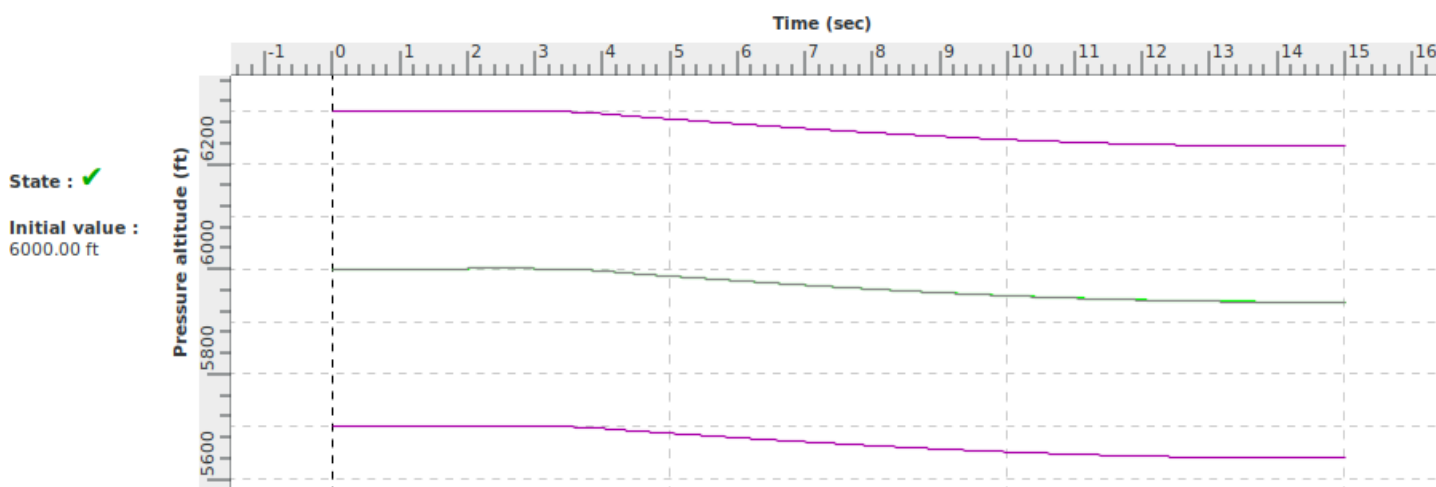
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
0.0	deconnectionPA_roll	0.0	disable QTG Autopilot in roll axis
1.0	SetRudderCmdPalier	-70.0	Send a step in the rudder govern
1.0	SetAttCmdPalier	0.0	Send a step in the attitude govern
2.0	SetRudderCmdPalier	70.0	Send a step in the rudder govern
3.0	SetRudderCmdPalier	0.0	Send a step in the rudder govern
15.0	Stop_Test	0.0	Stop the test procedure

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01

Log of Revision		
Rev. Nbr	Date	Reason for revision
1.01	29/03/21	1909 Master. New expected results of Time of half amplitude.
1.02	27/07/21	2012-R1 Master. Expected results unchanged.

Notes

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



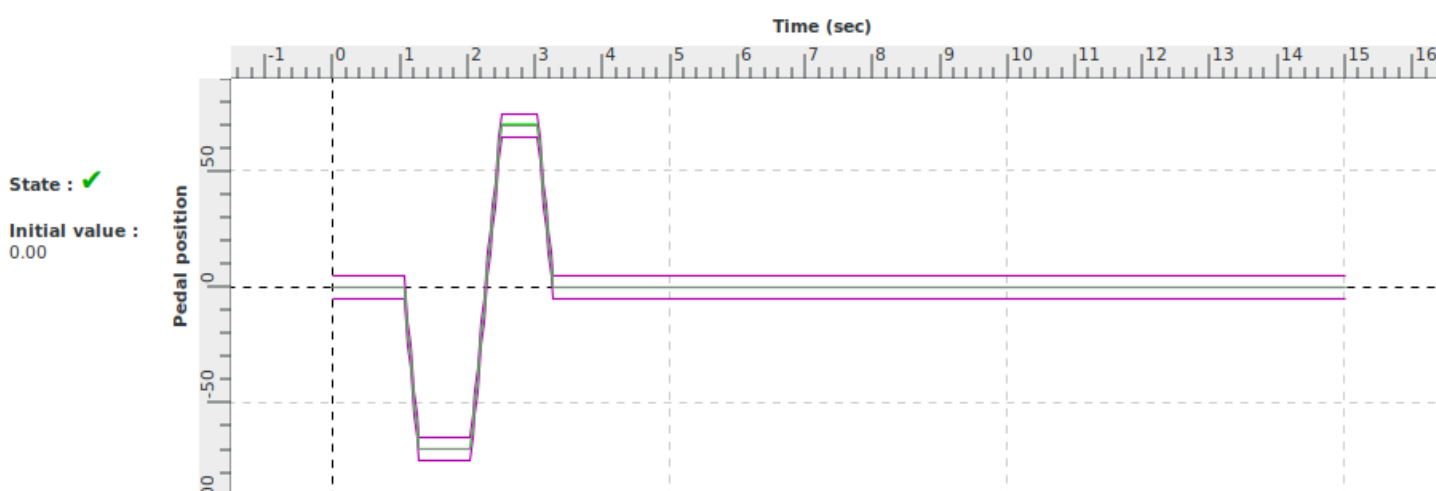
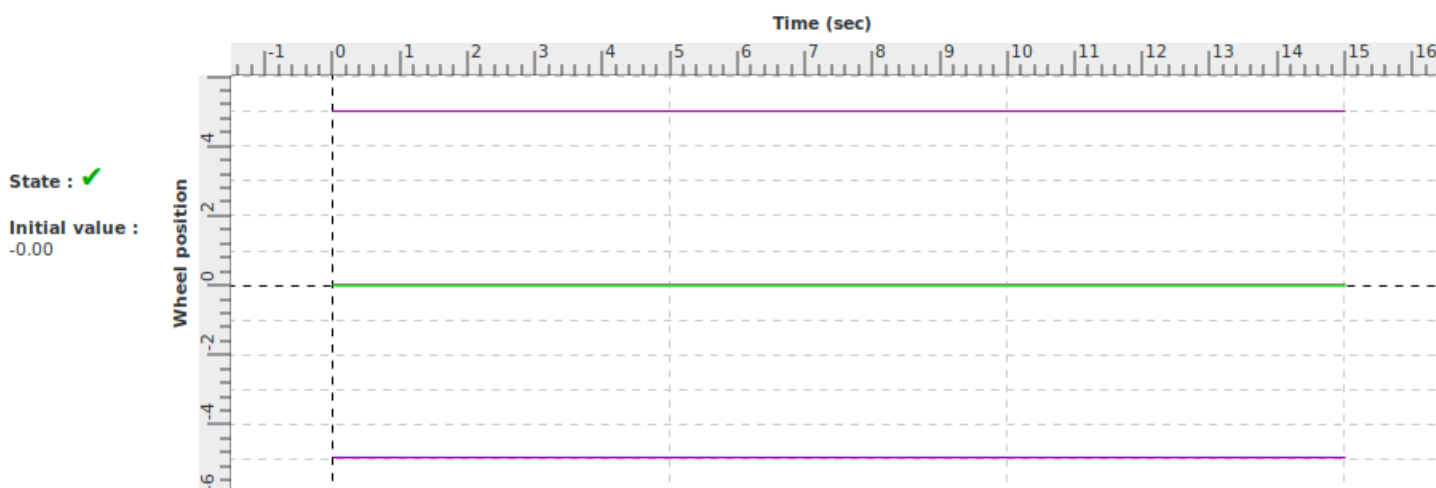
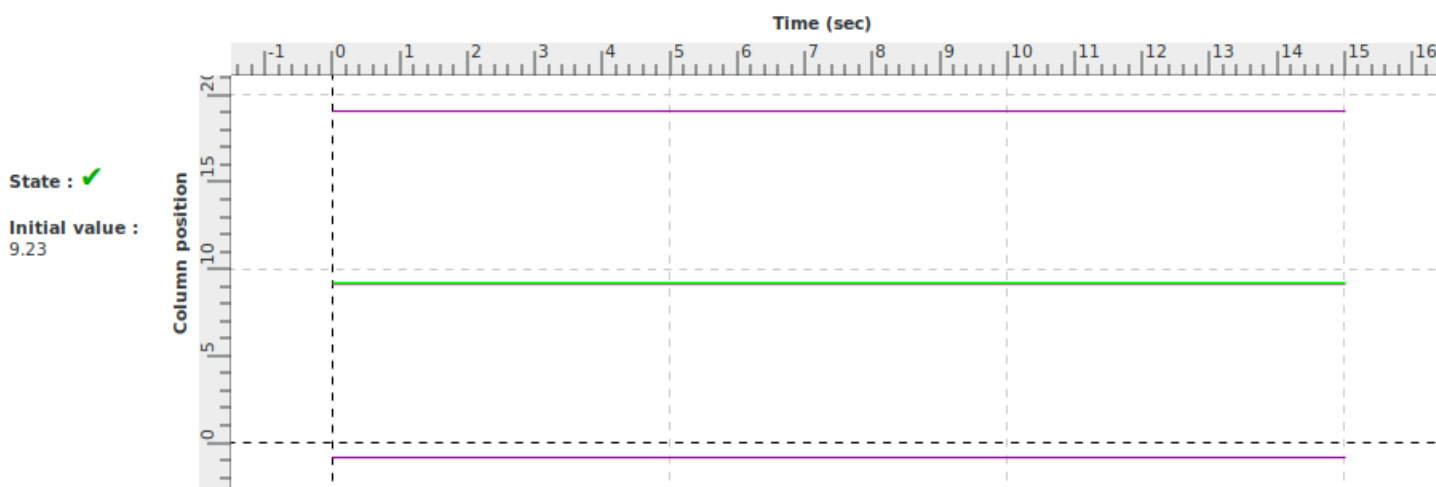
Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



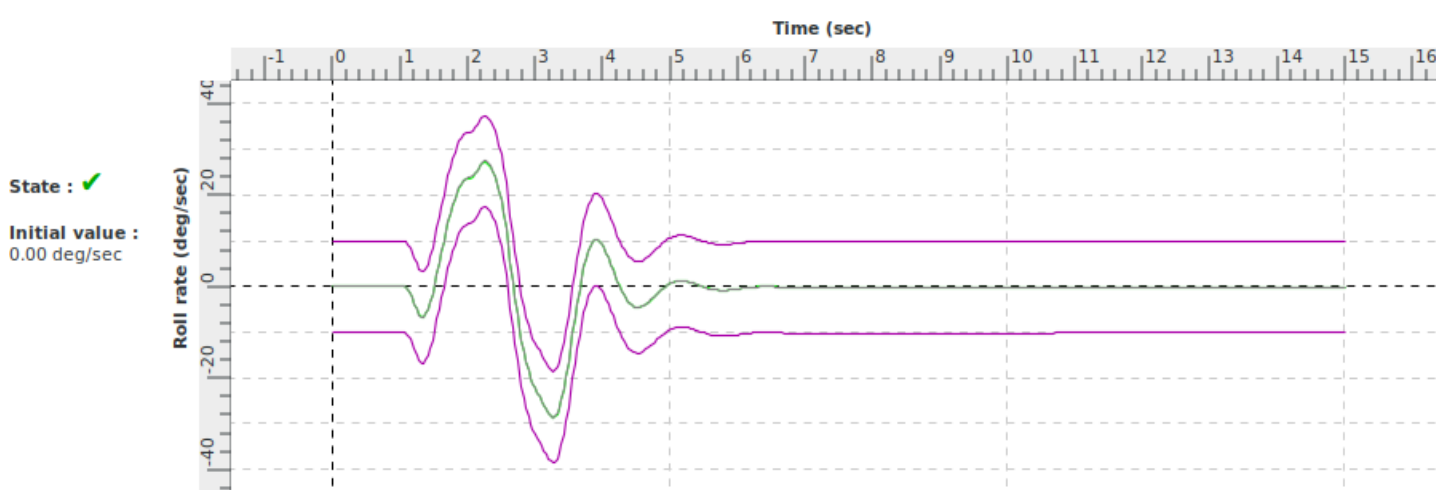
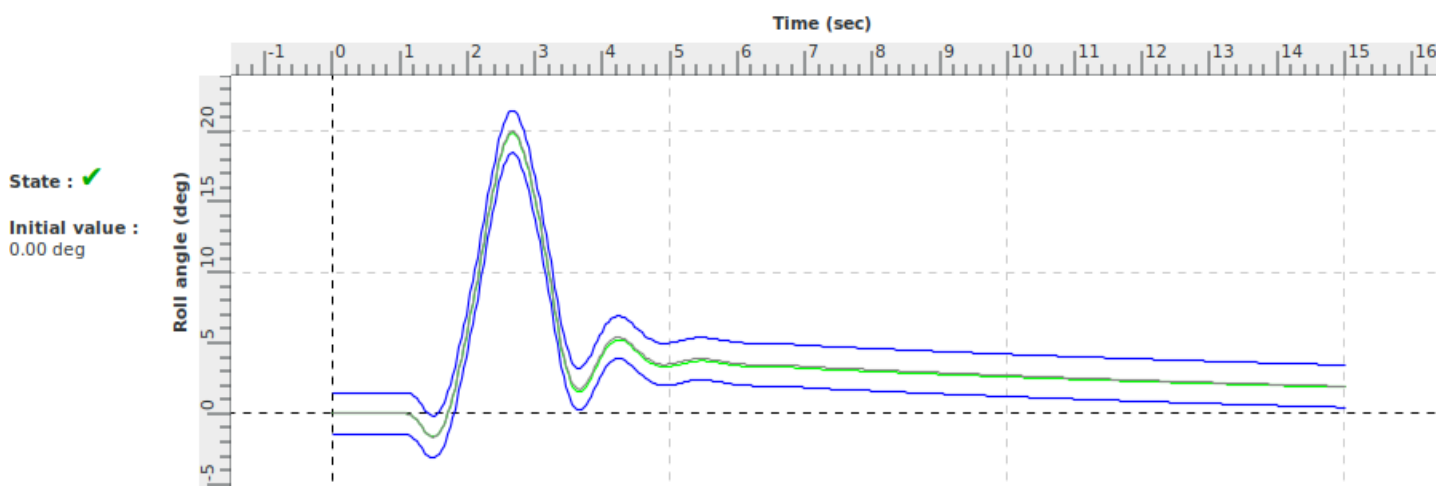
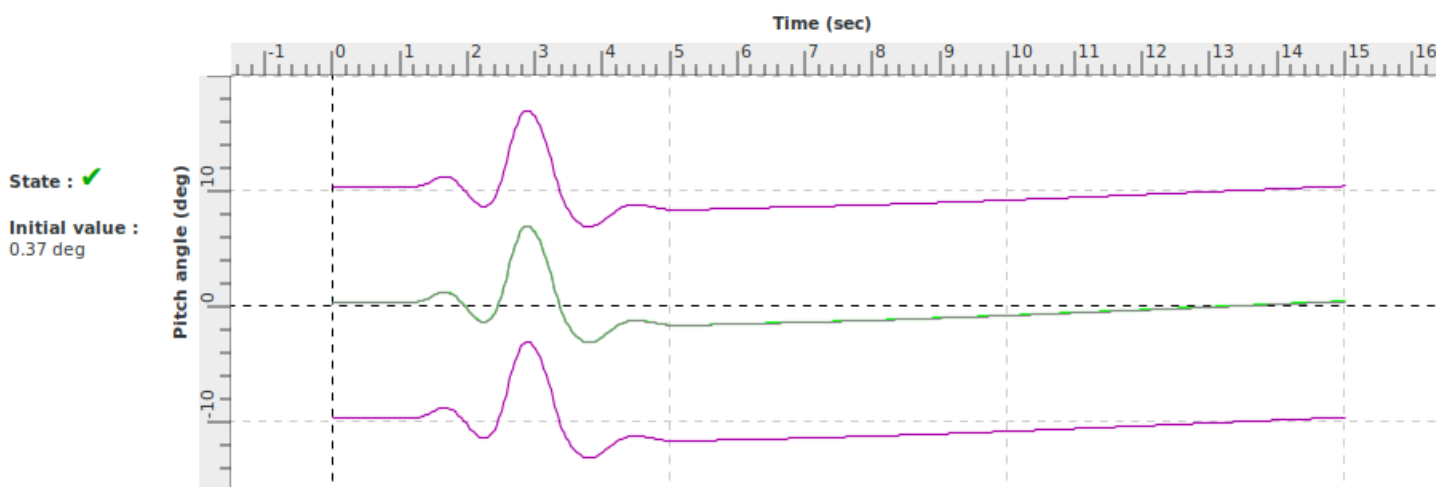
Legend :

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red : results out of tolerances
violet : tolerances Alsim

grey : master

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



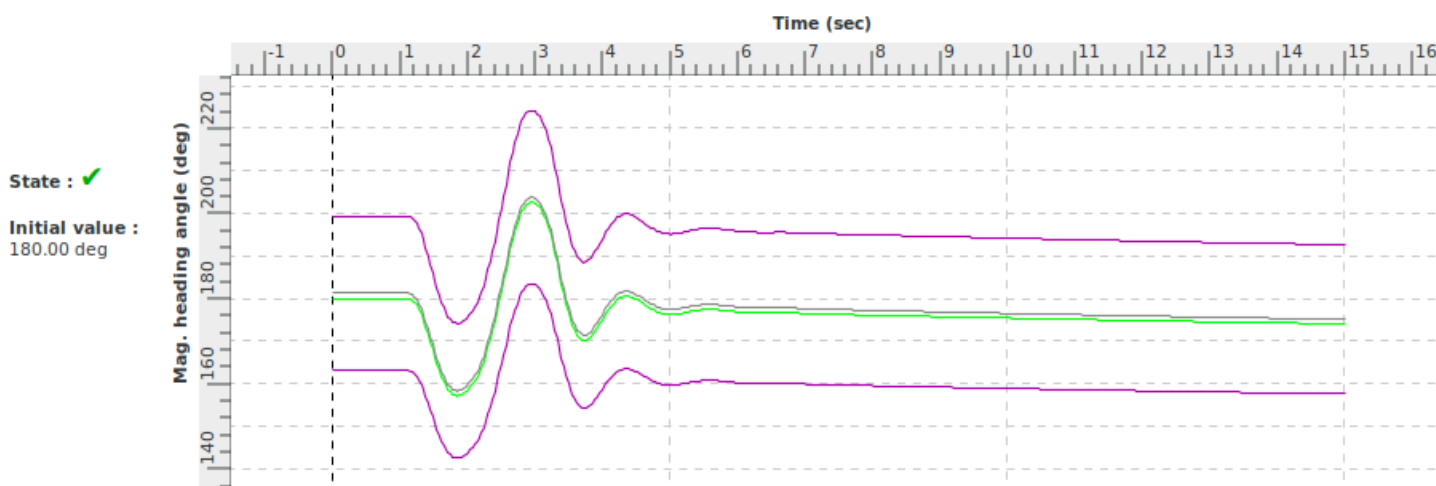
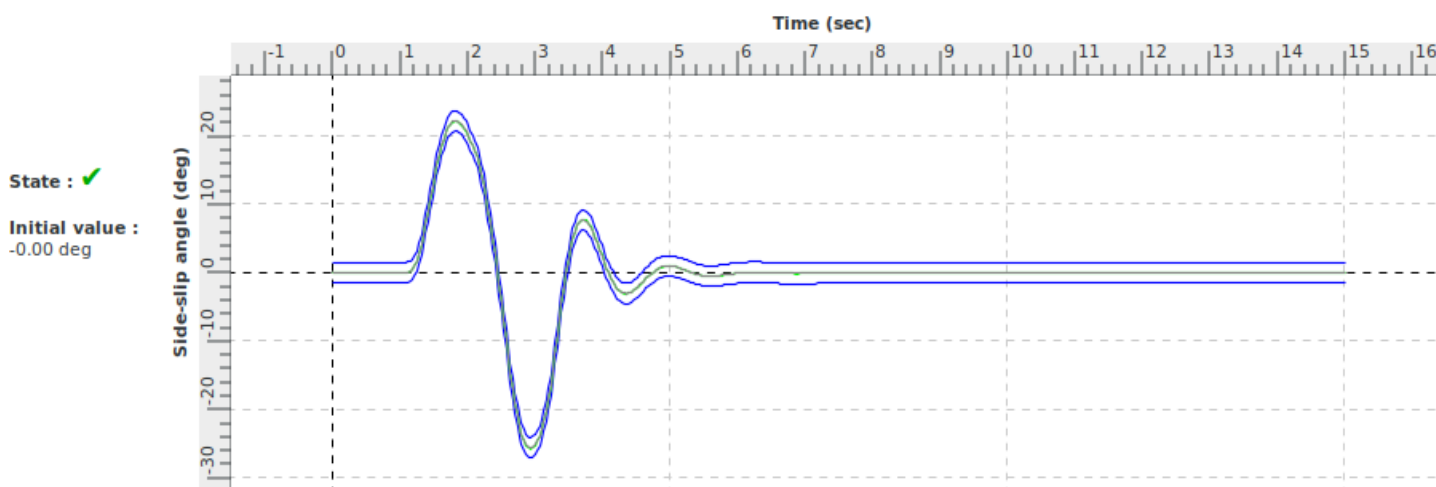
Legend :

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violet : tolerances Alsim

grey : master

Title	Dutch roll (yaw damper off) during cruise		
Id	2 d vii a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.02
Result Date	14/06/23	Master Date	27/07/21
Result Load	2012.01	Master Load	2012.01



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master

VALIDATION TEST

Title	Transport delay on pitch axis		
Id	4 a i a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Objective	Expected Results
Demonstrate that the cue correlation and responses of visual and instrument drives are sufficient to be representative of the cues perceived in the class of aeroplanes	Transport delay time : less than 300 ms
Reference	Evaluation Criteria
Chapter 12 - Validation data - Visual System Tests - Test 4.a.i.a	less than 300 ms

Demonstration procedure	The pitch trim is moved to force the control loading system to move the pitch control. The column position is plotted versus time while the instruments and visual system response are also plotted versus time
Manual test procedure	The pilot moves rapidly the pitch control of about 20% on one side.
Automatic test procedure	4 a i a

Authority's approval (date, signature and comments)	Operator's approval (date, signature and comments)

Title	Transport delay on pitch axis		
Id	4 a i a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Autopilot mode	AUTO_SPEED
<p>Automatic Vertical Speed and power maintain mode : it changes the attitude through pitch trim value and the power levers to maintain power and VS. Roll Trim is computed to maintain 0° bank angle.</p>	

Initial parameters	CRUISE
Gross weight (kg) : 1900 Balance (%) : 50 Altitude (ft) : 6000 Vertical speed (ft/min) : 0 IAS (kt) : 139 (free) Heading (°) : 0 (free) Bank (°) : 0 Attitude (°) : 0 Pedal Position (%) : 0 Column Position (%) : 9 Wheel Position (%) : 0	Flaps lever position : 0 Gear lever position : 0 Left Load (%) : 70 Right Load (%) : 70 Left RPM : 2060 Right RPM : 2060

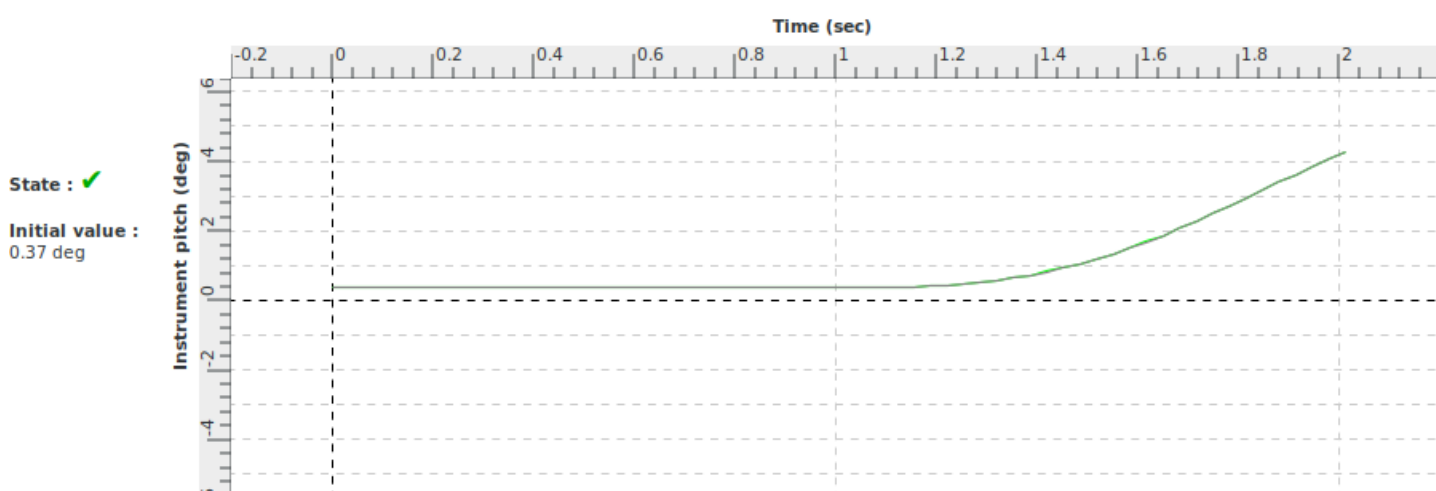
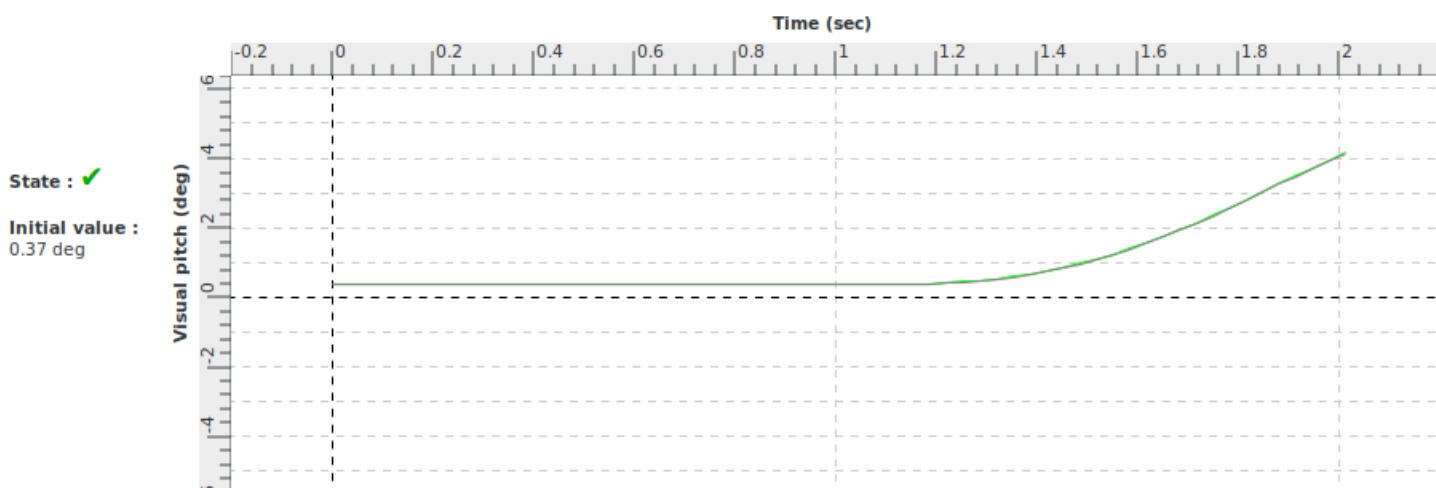
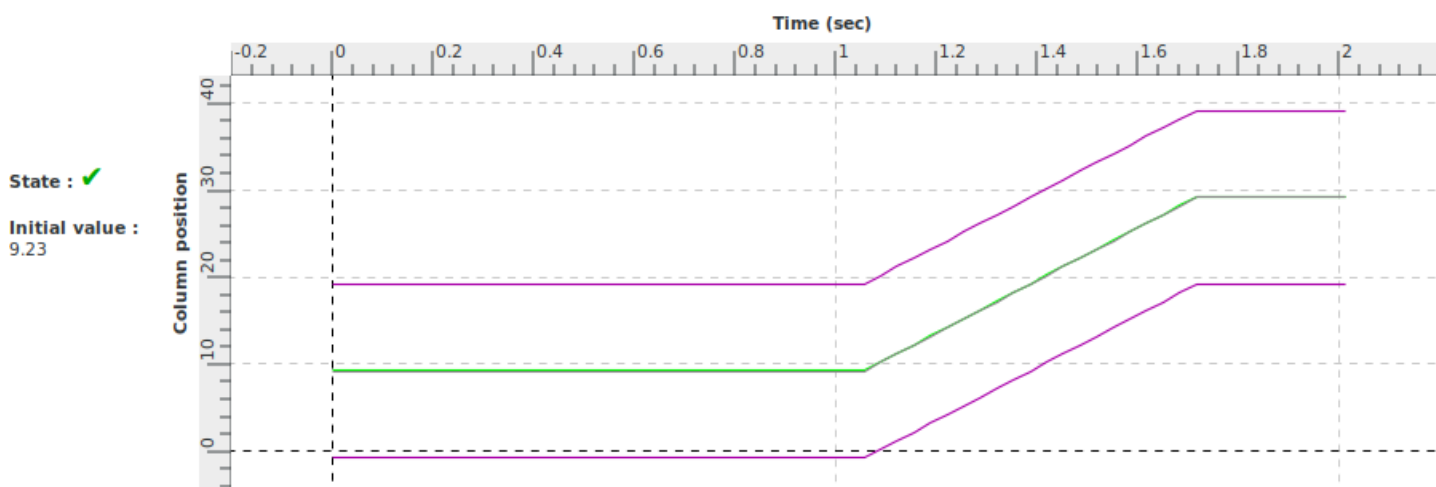
Commands			
Time	Name	Param	Explanations
0.0	Start_Test	0.0	Start the results recording
1.0	SetAttCmdPalier	20.0	Send a step in the attitude govern
2.0	Stop_Test	0.0	Stop the test procedure

Title	Transport delay on pitch axis		
Id	4 a i a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Qualification Level	FNPT2	Operator	AFTA
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902

Log of Revision		
Rev. Nbr	Date	Reason for revision

Notes

Title	Transport delay on pitch axis		
Id	4 a i a	Aircraft	DA42-VI
Device	A42M2-12	Version	1.0
Result Date	14/06/23	Master Date	01/03/19
Result Load	2012.01	Master Load	1902



Legend :

green : results within tolerances
blue : tolerances

red : results out of tolerances
violet : tolerances Alsim

grey : master