ANNEX 2: STEP BY STEP PROCEDURE

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Tab 12-1- I/F plate – baseplate screw torque log sheet

PART	SCREW ID	BOLT SIZE	Torque reported in Vibration test report DOC#[2] Doc. N°: PDS-RP-CGS-118 I.S. 1 Date: 09/9/09	measured Torque [Nm]	Date	Signature	PA Signature	Remarks
BASEPLATE	BP1	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]	
	BP2	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]	
	BP3	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]	
	BP4	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]	
	BP5	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]	
	BP6	NAS1351N3-10	3.5	3.5	25/08/09	MG	[illegible]	

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[2] To fill by test conductor with "PDS-PFM vibration test report" document number and date

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BP7	NAS1351N3-10	3.5	3.5	25/08/09	MG	[illegible]		
BP8	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]		
BP9	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]		
BP10	NAS1351N3-10	3.7	3.7	25/08/09	MG	[illegible]		
BP11	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]		
BP12	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]		
BP13	NAS1351N3-10	3.5	3.5	25/08/09	MG	[illegible]		
BP14	NAS1351N3-10	3.4	3.4	25/08/09	MG	[illegible]		
BP15	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]		
BP16	NAS1351N3-10	3.5	3.5	25/08/09	MG	[illegible]		
BP17	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]		
BP18	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]		
BP19	NAS1351N3-10	3.3	3.3	25/08/09	MG	[illegible]		

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BP20	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP21	NAS1351N3-10	3.3	3.3	25/08/09	MG	RJ		
BP22	NAS1351N3-10	3.3	3.3	25/08/09	MG	RJ		
BP23	NAS1351N3-10	3.3	3.3	25/08/09	MG	RJ		
BP24	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP25	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP26	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP27	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP28	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP29	NAS1351N3-10	3.4	3.4	25/08/09	MG	RJ		
BP30	NAS1351N3-10	3.3	3.3	25/08/09	MG	RJ		
BP31	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	RJ		
BP32	NAS1351N3-10	3.2	3.2	25/08/09	[illegible]	RJ		

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BP33	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP34	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP35	NAS1351N3-10	3.4	3.4	25/08/09	[illegible]	[illegible]		
BP36	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP37	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP38	NAS1351N3-10	3.4	3.4	25/08/09	[illegible]	[illegible]		
BP39	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP40	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP41	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP42	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP43	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP44	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		
BP45	NAS1351N3-10	3.3	3.3	25/08/09	[illegible]	[illegible]		

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BP46	NAS1351N3-10	3.4	3.4	25/08/09	*	[illegible]	
BP47	NAS1351N3-10	3.3	3.3	25/08/09	*	[illegible]	
BP48	NAS1351N3-10	3.2	3.2	25/08/09	*	[illegible]	
BP49	NAS1351N3-10	3.4	3.4	25/08/09	*	[illegible]	
BP50	NAS1351N3-10	3.3	3.3	25/08/09	*	[illegible]	

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ANNEX 2 TO

CARLO GAVAZZI SPACE SpA	AMS02-PDS	N° Doc: / Doc N°: PDS-PR-CGS-012	N° Doc: / Doc N°: PDS-RP-CGS-120
	PDS-PFM THERMAL VACUUM TEST PROCEDURE	Ediz.: / Issue: 2 — Data: / Date: 16/07/2009	Ediz.: / Issue: 1 — Data: / Date: SEPT 09
		Pagina / Page 31 di / of 40	Pagina / Page 6 di / of 15
		TEST PROCEDURE REFERENCE	TEST REPORT REFERENCE

UUT DATA : **Model** PFM **Item** AMS-02 POWER DISTRIBUTION SISTEM **C.I.** PDS 18 **S/N** FM01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
1	**Preliminary operations**			
1.1	Record the UUT S/N	FM01	FM01	
1.2	Take the PDS (connected to IF plate) out of the container and perform a visual inspection to check no visible damage occurred during the transportation.		EVERYTHING ok	
1.3	Remove the protective tape from the silver Teflon tape on the top rear cover		NOT REMOVED	SEE PVS #1
1.4	Clean all the surface of PDS (connected to IF plate) with isopropyl alcohol		ok	
1.5a	Check Final torque of the screws connecting the IF plate to the PDS baseplate. Report measured torque in Tab 12-1 Compile all fields of the table: • Date • Signature • Pa signature • Remarks (if needed)		ok	See filled Table annexed
1.5b	Position and fix PDS (connected to IF plate) on the top baseplate of the chamber		ok	2 bolts could not be inserted
1.6	Remove dust caps and install savers on all PDS connectors		ok/NO SAVERS	SEE PVS #3
1.7	Connect all electronics cables to the UUT and verify harness		ok	
1.8	Position additional thermal sensors as described in this document (see paragraph 6.3)		ok	STEP PERFORMED BETWEEN 1.5a AND 1.5b; SEE PVS #2
1.9	Connect all sensors to chamber acquisition system		23 ok; 1 NOT ok	SEE PVS #4
1.10	Switch ~~UTT~~ UUT on	ON	ok, ON	

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DATE: 25/08/2009	TEST CONDUCTOR A. FRANZOSO	QA S. ALIA	CUSTOMER

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ANNEX 2 TO

CARLO GAVAZZI SPACE SpA	AMS02-PDS PDS-PFM THERMAL VACUUM TEST PROCEDURE	N° Doc: / Doc N°: PDS-PR-CGS-012 Ediz.: / Issue: 2 Data: / Date: 16/07/2009 Pagina / Page 32 di / of 40 TEST PROCEDURE REFERENCE	N° Doc: / Doc N°: PDS-RP-CGS-120 Ediz.: / Issue: 1 Data: / Date: SEPT 09 Pagina / Page 7 di / of 15 TEST REPORT REFERENCE

UUT DATA : Model PFM Item AMS-02 PDS C.I. PDS 18 S/N FM01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
1.11	Perform a reduced functional test at room condition (room temperature and pressure) ACCORDING TO THE FOLLOWING PROCEDURE (TO BE FILLED BY RVT TEST CONDUCTOR): TITLE: AMS02-PDS PFM REDUCED FUNCTIONAL TEST PROCEDURE DOC. N°: PDS-PR-CGS-020 Is. 1 ISSUE: 1 DATE: 10/07/2009 TEST RESULTS ARE REPORTED IN THE FOLLOWING REPORT (TO BE FILLED BY RVT TEST CONDUCTOR): TITLE: AMS02-PDS PFM REDUCED FUNCTIONAL TEST REPORT AFTER VIBRATION TEST DOC. N°: PDS-RP-CGS-119 ISSUE: 1 DATE: 6/08/2009	All test OK	OK	If functional test fails suspend the test Reduced functional test already performed after vibrations. Checks on UUT have been performed only. RESULT OK SEE RESULTS REPORTED IN DOC PDS-RP-CGS-124 Iss 1
1.12	Switch UTT off	OFF	OFF	
1.13	Close TVC	Close	CLOSED	
1.14	Start vacuum pumping	Pressure decrease	OK	
1.15	Start data acquisition		STARTED	
2	**Thermal test 1st cycle - non operative/operative**			
2.1	Verify pressure is lower than 10E-5 bar	P<10E-5 bar	P = 9.5E-5	
2.2	Set TVC baseplate and shroud (Tb) set up temperature in order to obtain the	Ttrp = 80°C	T_{TRP} = 82.9°C	TOLERANCE -0°C +3°C SEE Pg 18

DATE: 25/8/09 26/8/09	TEST CONDUCTOR A. FRANZOSO	QA S. ALLA	CUSTOMER

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ANNEX 2 TO PDS-RP-CGS-120 IS. 1 7/15

UUT DATA : **Model** PFM **Item** AMS-02 PDS **C.I.** PDS-18 **S/N** FM 01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	maximum non operative temperature			
2.3	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10min~~) 1°C/hr		< 1°C in 1 hour	ERROR IN PROCEDURE → SEE PUS #5
2.4	Keep stabilization for at least 2hr		OK. 2h 20'	→ TEMPERATURE OFFSET ~4°C → SEE NCR-PDS-CGS-C-138
2.5	Set TVC baseplate and shroud (Tb) set up temperature in order to obtain on the TRP the maximum operative temperature.	Ttrp = 53°C	T = 53.0°C	TOLERANCE -0°C +3°C SEE Pg 18
2.6	Switch on UUT – BUS A	ON	ON	
2.7	Set PDS on nominal operative mode BUS A (120V) and keep TVC baseplate and shroud (Tb) set up temperature in order to obtain on the TRP the maximum operative temperature. **Record baseplate/shroud setup temperature <u>Tmax</u>** **<u>USE THIS Tmax AS REFERENCE FOR ALL THE NEXT STEPS where Tmax is recalled</u>**	Ttrp = 53°C	T_{TRP} = 53°C (INTERNAL THERMISTORS ~55.5°C)	**Tmax =** +2°C TOLERANCE -0°C +3°C SEE PAGE 18 SEE NCR-PDS-CGS-C-138
2.8	Wait for stabilization (criteria ΔT/Δt < 2°C/10min)		OK, < 1°C/h	
2.9	Keep stabilization for at least 2hr		OK, 2h 5min	
2.10	Perform full functional test of PDS BUS A keep TVC baseplate and shroud set up temperature in order to obtain on the TRP the maximum operative temperature.	Ttrp = 53°C	T = 53 ± 3°C	See **PDS-PR-CGS-006 iss2** ~~SEE~~ PDS-RP-CGS-121 iss 1
2.11	Switch off the unit		OFF	
2.12	Set TVC baseplate and shroud (Tb) set up temperature in order to obtain on the TRP the maximum operative temperature.	Ttrp = 53°C	T = 53,5°C	
2.13	Switch on UUT – BUS B	ON	ON	
2.14	Set PDS on nominal operative mode BUS B (120V) and keep TVC baseplate	Ttrp = 53°C	T_{TRP} = 56.9 ~~EXT~~ (54.6 INT)	TOLERANCE -0°C +3°C SEE Pg 18

DATE: 24/08/09	TEST CONDUCTOR M. Grüller M. Grüller A. Franzoso	QA S. Alla	CUSTOMER

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ANNEX 2 TO

CARLO GAVAZZI SPACE SpA	AMS02-PDS PDS-PFM THERMAL VACUUM TEST PROCEDURE	N° Doc: / Doc N°: PDS-PR-CGS-012 Ediz.: / Issue: 2 Data: / Date: 16/07/2009 Pagina / Page 34 di / of 40 TEST PROCEDURE REFERENCE	N° Doc: / Doc N°: PDS-RP-CGS-120 Ediz.: / Issue: 1 Data: / Date: SEPT 09 Pagina / Page 9 di / of 15 TEST REPORT REFERENCE

UUT DATA : Model PFM Item AMS-02 PDS C.I. PDS-18 S/N FM 01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
	and shroud (Tb) set up temperature to **Tmax** in order to obtain on the TRP the maximum operative temperature.			
2.15	Wait for stabilization (criteria ΔT/Δt < 2~~°C/10min~~) 1°C\h		OK, <1°C/hr	SEE PVS 5
2.16	Keep stabilization for at least 2hr		T>2hr	
2.17	Perform full functional test of PDS BUS B keep TVC baseplate and shroud set up temperature in order to obtain on the TRP the maximum operative temperature.	Ttrp = 53°C	T_{trp} = 58.7(-4°C	See **PDS-PR-CGS-006 iss2** Internal Sensor 55.2 °C SEE PDS-RP-CGS-121 iss 1
2.18	Switch off the unit		OK	
2.19	Set TVC baseplate (Tb) set up temperature in order to obtain the minimum non operative temperature	Tb = -40°C	T_L = -42	TOLERANCE -3°C +0°C SEE Pg 18
2.20	Wait for stabilization (criteria ΔT/Δt < 2°C/10min)		1°C/h	
2.21	Keep stabilization for at least 2hr		2hr	
2.22	Activate thermal interlock bypass Bus A		OK	
2.23	Set TVC baseplate (Tb) set up temperature in order to obtain the minimum operative temperature wait for stabilization (criteria ΔT/Δt < 2°C/10min)	Ttrp = -25°C	T_{TRP} = -25.8	TOLERANCE -3°C +0°C SEE Pg 12
2.24	Switch on PDS BUS A – bypass will allow switching on of the UUT Perform test indicated in **PDS-PR-CGS-006 iss2** par.10.3.1.2		OK, ON	SEE PVS#6 about BUS B switch ON
2.25	Switch off the UUT		OFF	
2.26	Remove thermal interlock bypass Bus A		OK, A&B	BOTH REMOVED, see PVS#6
2.27	Set TVC baseplate and shroud (Tb) set up temperature to Tb=-30°C in order to be sure the interlock thermostats are open. Wait for TRP to be at -30°C	Ttrp = -30°C	NOT NEEDED	→ Thermostats never closed during tests

DATE: 28/08/09 29/08/09	TEST CONDUCTOR A. FRANZOSO M. Gröller	QA S. ALVA	CUSTOMER

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UUT DATA : Model PFM Item AMS-02 PDS C.I. PDS-18 S/N FM 01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
2.28	Switch on PDS BUS A – Thermostats should avoid switching on because of the cold temperature	PDS off	PDS OFF	
2.29	Gradually increase TVC baseplate and shroud (Tb) set up temperature in order to obtain the PDS BUS A to switch on. **Record this temperature TswitchON** **USE THIS TswitchON AS REFERENCE FOR ALL THE NEXT STEPS where TswitchON is recalled**	Tb ≈ -20°C PDS on	BUS A: -20.2 BUS B: -21.3	**TswitchON=** → A internal -20.4 → B internal -21.6
2.30	Set PDS on nominal operative mode BUS A		A ON / B OFF	SEE PVS #7
2.31	Set TVC baseplate and shroud (Tb) set up temperature in order to obtain on the TRP the minimum operative temperature. **Record this temperature Tmin** **USE THIS Tmin AS REFERENCE FOR ALL THE NEXT STEPS where Tmin is recalled**	Ttrp = -25°C	T_{TRP} = -27.0	**Tmin=** -54°C on baseplate
2.32	Wait for stabilization (criteria ΔT/Δt < 2°C/10min)		< 1°C/h	
2.33	Keep stabilization for at least 2hr		OK, 2h	
2.34	Perform full functional test of PDS BUS A keep TVC baseplate and shroud set up temperature in order to obtain on the TRP the minimum operative temperature.	Ttrp = -25°C	T_{TRP} = -27.0	See **PDS-PR-CGS-006 iss2** SEE PDS-RP-CGS-122 iss 1
2.35	Switch off the unit		OFF	
2.39	Activate thermal interlock bypass bus B		N.A.	SEE PVS #6
2.40	Set TVC baseplate (Tb) set up temperature in order to obtain the minimum operative temperature wait for stabilization (criteria ΔT/Δt < 2°C/10min)	Ttrp = -25°C	N.A.	SEE PVS #6

DATE: 29/08/09	TEST CONDUCTOR A. Fernando M. Gröller	QA S. ALLA	CUSTOMER

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CARLO GAVAZZI SPACE SpA	AMS02-PDS PDS-PFM THERMAL VACUUM TEST PROCEDURE	N° Doc: / Doc N°: PDS-PR-CGS-012 Ediz.: / Issue: 2 Data: / Date: 16/07/2009 Pagina / Page 36 di / of 40 TEST PROCEDURE REFERENCE	N° Doc: / Doc N°: PDS-RP-CGS-120 Ediz.: / Issue: 1 Data: / Date: SEPT 09 Pagina / Page 11 di / of 15 TEST REPORT REFERENCE

UUT DATA : **Model** PFM **Item** AMS-02 PDS **C.I.** PDS 18 **S/N** ~~PDS 01~~ FM01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
2.41	Switch on PDS BUS B – bypass will allow switching on of the UUT Perform test indicated in **PDS-PR-CGS-006 iss2** par.10.3.1.2		N.A.	SEE PVS #6
2.42	Switch off the UUT		N.A	SEE PVS #6
2.43	Remove thermal interlock bypass bus B		N.A	SEE PVS #6
2.44	Set TVC baseplate (Tb) set up temperature to Tb=-30°C in order to be sure the interlock thermostats are open Wait for the TRP to be at -30°C		N.A.	SEE PVS #6
2.45	Switch on PDS BUS B – Thermostats should avoid switching on because of the cold temperature	PDS off	N.A.	SEE PVS #6
2.46	Gradually increase TVC baseplate and shroud (Tb) set up temperature to **TswitchON** in order to obtain the PDS BUS B to switch on.	Tb = TswitchON PDS on	N.A.	SEE PVS #6
2.47	Set PDS on nominal operative mode BUS B		ON, MIN POWER	~~SEE~~ PVS #7
2.48	Set TVC baseplate and shroud (Tb) set up temperature to **Tmin** in order to obtain on the TRP the minimum operative temperature.	Ttrp = -25°C	T_{TRP} = -25.1	
2.49	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10min~~) 1°C/h		OK < 1°C/h	SEE PVS 5
2.50	Keep stabilization for at least 2hr		OK > 2h	
2.51	Perform full functional test of PDS BUS B keep TVC baseplate and shroud set up temperature in order on the TRP to obtain the minimum operative temperature.	Ttrp = -25°C	T = -25±3	See **PDS-PR-CGS-006 iss2** SEE PDS-RP-CGS-122 iss 1
3	**Thermal test 2nd cycle – only operative**			
3.1	Verify PDS is switched ON BUS B and loaded in nominal configuration	PDS on	ON	
3.2	Set TVC baseplate and shroud (Tb) set up temperature to **Tmax** in order to obtain on the TRP the maximum operative temperature.	Ttrp = 53°C	T_{trp} = 53.6°C	
3.3	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10min~~) 1°C/h		OK < 1°C/h	SEE PVS 5

DATE: 29/08/09 30/08/09	TEST CONDUCTOR M. Gröller A. Franzolo	QA S. ALIA	CUSTOMER

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ANNEX 2 TO

CARLO GAVAZZI SPACE SpA	AMS02-PDS PDS-PFM THERMAL VACUUM TEST PROCEDURE	N° Doc: / Doc N°: PDS-PR-CGS-012 Ediz.: / Issue: 2 Data: / Date: 16/07/2009 Pagina / Page 37 di / of 40 TEST PROCEDURE REFERENCE	N° Doc: / Doc N°: PDS-RP-CGS-120 Ediz.: / Issue: 1 Data: / Date: SEPT 09 Pagina / Page 12 di / of 15 TEST REPORT REFERENCE

UUT DATA : Model PFM Item AMS-02 PDS C.I. PDS-18 S/N FM 01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
3.4	Keep stabilization for at least 2hr		2h	
3.5	Set TVC baseplate and shroud (Tb) set up temperature to **Tmin** in order to obtain on the TRP the minimum operative temperature.	Ttrp = -25°C	-25.1°C	
3.6	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10~~min) 1°C/h		< 1°C/h	SEE PVS5
3.7	Keep stabilization for at least 2hr		2h	
4	**Thermal test 3rd cycle – only operative**			
4.1	Set TVC baseplate and shroud (Tb) set up temperature to **Tmax** in order to obtain on the TRP the maximum operative temperature. When TRP is close to 0°C Switch Off the UUT - BUS B and switch on BUS A loaded in nominal config 120V	Ttrp = 53°C	T_{TRP} = 54.5	SEE PVS #8 on ON/OFF SEQUENCE $T_{COLDPLATE}$ ~ -4 to -2°C
4.2	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10~~min) 1°C/h		<1°C/hr	SEE PVS5
4.3	Keep stabilization for at least 2hr		t > 2hr	
4.4	Set TVC baseplate and shroud (Tb) set up temperature to **Tmin** in order to obtain on the TRP the minimum operative temperature.	Ttrp = -25°C	T_{trp} = -25.4	
4.5	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10min~~) 1°C/h		< 1°C/h	SEE PVS5
4.6	Keep stabilization for at least 2hr		2h	
5	**Thermal test 4th cycle – only operative**			
5.1	Set TVC baseplate and shroud (Tb) set up temperature to **Tmax** in order to obtain on the TRP the maximum operative temperature. When TRP is close to 0°C Switch Off the UUT - BUS A and switch on BUS B loaded in nominal config 120V	Ttrp = 53°C	T_{trp} = 53.7	
5.2	Wait for stabilization (criteria ΔT/Δt < 2°C/10min)		< 1°C/h	
5.3	Keep stabilization for at least 2hr		OK, > 2h	

DATE: 30/08/09 31/08/09 1/09/09	TEST CONDUCTOR M. Gröller M. Gröller M. Gröller A. Franzoso [signature]	QA S. ALLA [signature]	CUSTOMER

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UUT DATA : Model PFM Item AMS-02 PDS C.I. PDS-18 S/N FM 01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
5.4	Set TVC baseplate and shroud (Tb) set up temperature to **Tmin** in order to obtain on the TRP the minimum operative temperature.	Ttrp = -25°C	T_{trp} = -26.0°C	$T_{COLDPLATE}$: -54.0°C
5.5	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10~~min) 1°C/h		< 1°C/1hr	SEE PVS 5
5.6	Keep stabilization for at least 2hr		OK, > 2hr	$T_{COLDPLATE}$ -56°C
6	**Thermal test 5th cycle – only operative**			
6.1	Set TVC baseplate and shroud (Tb) set up temperature to **Tmax** in order to obtain on the TRP the maximum operative temperature. When TRP is close to 0°C Switch Off the UUT - BUS B and switch on BUS A loaded in nominal config 120V	Ttrp = 53°C	T_{trp} = 55.1°C	ADDITIONAL 50°C STABILIZATION PERFORMED (SEE PVS 10) FOR INVESTIGATION FOR UNWANTED PB2#3 SIDE-A SW OFF DURING HOT PLATEAU (SEE NCR-PDS-CGS-C-139)
6.2	Wait for stabilization (criteria ΔT/Δt < ~~2°C/10~~min) 1°C/h		< 1°C/h	SEE PVS 5
6.3	Keep stabilization for at least 2hr		> 2h	
6.4	Set TVC baseplate and shroud (Tb) set up temperature to **Tmin** in order to obtain on the TRP the minimum operative temperature.	Ttrp = -25°C	-25.5°C	
6.5	Wait for stabilization (criteria ΔT/Δt < 2°C/10min)		< 1°C/h	
6.6	Keep stabilization for at least 2hr		> 2hr	SEE PAGE 14
7	**End of test**			SEE ADDITIONAL STEPS IN PVS#9
7.1	TVC baseplate and shroud (Tb) set up temperature to ambient temperature.	Tb = 20°C	T_{trp} = 21°C	
	When all temperature are around ambient temperature (±5°C) switch off the UUT		OFF	
7.3	Switch off the vacuum pump	Vacuum pump Off	OK	
7.4	Wait for the pressure to reach ambient condition	Pressure = 1bar	OK	

DATE: 1/09/09 2/09/09	TEST CONDUCTOR A. FRANZOSO M. Gröller	QA S. ALVA	CUSTOMER

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UUT DATA : Model PFM Item AMS-02 PDS C.I. PDS-18 S/N FM 01

ADDITIONAL STEPS PER PVS # 09

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
6.7	Increase chamber temperature in order to obtain on both TRP a temperature higher than -18°C.	T_{TRP}>-18°C	T_{TRP} > -18°C FOR BOTH SIDES	
6.8	switch OFF the PDS-busB input voltage	OFF	OFF	
6.9	remove bypasses of "thermal interlock" thermostats on J300 test box, from both unit sides	Removed	OK, REMOVED	
6.10	switch ON both sides, at minimum power	ON	ON	
6.11	decrease chamber temperature to gradually lower TRP temperature and to force thermostats opening	T_{TRP} decreasing	OK	
6.12	record TRP temperature and internal thermistor reading at the moment of thermostat opening (PDS busses off)	T=-27.2±1.7°C	T_{TRP}(A)= -24.9°C T_{TRP} (B)= -24.6°C	INTERNAL SENSOR CLOSE TO THERMOSTATS: T(A) -28.6°C T(B) -28.6°C
6.13	set chamber temperature at -25°C	Tchamber = -25°C	OK, set To -25°C	

DATE: 2/03/09	TEST CONDUCTOR A. Flavoso	QA	CUSTOMER

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ANNEX 2

CARLO GAVAZZI SPACE SpA	AMS02-PDS PDS-PFM THERMAL VACUUM TEST PROCEDURE	N° Doc: / Doc N°: PDS-PR-CGS-012 Ediz.: / Issue: 2 Data: / Date: 16/07/2009 Pagina / Page 39 di / of 40 TEST PROCEDURE REFERENCE	N° Doc: / Doc N°: PDS-RP-CGS-120 Ediz.: / Issue: 1 Data: / Date: SEPT. 09 Pagina / Page 15 di / of 15 TEST REPORT REFERENCE

UUT DATA : **Model** PFM **Item** AMS-02 PDS **C.I.** PDS-18 **S/N** FM 01

STEP n°	TEST SEQUENCE	EXPECTED VALUE	MEASURED VALUE	REMARKS
7.5	Perform a reduced functional test for both bus A and B at room condition (room temperature and pressure)		OK T_{HRP}=38°C	AS THE UNIT HAS BEEN SW ON DURING ALL CICLES ONLY UUT CHECKS HAVE BEE PERFORMED RESULTS OK
7.5	Stop acquisition		OK	
7.6	Open the TVC		OK	
7.7	Disconnect and dismount all cables and sensors		OK	
7.9	Remove the UUT from the chamber		OK	
7.10	Test ended		END	

RESULTS ARE REPORTED IN PDS-RP-CGS-125 IS. 1

ANNEX 2 TO PDS-RP-CGS-120 IS. 1

DATE: 2.09.09 3/9/09	TEST CONDUCTOR M. Gröller A. Franzoso	QA S. Alva	CUSTOMER

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