

Climatic Test Report

Equipment under Test (EUT): **System board D3313-S30**
with CPU AMD GX-420CA SOC 2.00GHz

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Document No.: CLI+1SB13-0007+K02a
This document replaced the report CLI+1SB13-0007+K02

Test date: September 25, until October 01, 2013

Issue date: January 30, 2014

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Signature

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Signature

The results in this report apply only to the tested sample(s).

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Document no.: CLI+1SB13-0007+K02a

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3. Summary of standards and results

The system was tested according to the applicable standards as referenced below.

3.1. Classification of climatic conditions

Test specification:

Climatic test	DIN EN 60068-1 (Edition 03/95)	Environmental tests part 1, general and guidance.
Climatic test dry heat operation	DIN EN 60068-2-2 (Edition 05/08)	Environmental tests; part 2: test section B, dry heat
Change of temperature	DIN EN 60068-2-14 (Edition 10/00)	Part 2: Tests; test Nb: Change of temperature with specified rate of change

3.2. Summary of results

3.2.1. Valued tests

	passed	failed
Dry heat operation +45°C	X	
Dry heat operation +60°C	X	
Cycle of temperature -8°C / +60°C (5 cycles)	X	

Note: The results are only applicable for the tested configuration.

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3.3. Table of used instruments

Climatic test cabinet

Test- / Measure device	Equipment name			Check / Calibration	
	Manu- facturer	Type	Serial-No.	last*	next*
Climatic test cabinet	Vötsch Industrie- technik	VC ³ 4034	58566117350 010	10.12CH	10.13CH
41. Data Acquisition Unit 30 ch. Thermocouples	Yokogawa Thermocoax	DA100-13-1F Chrom- Alumel	27E539143 Type:K	10.12C with	10.14C Recorder
Multimeter	Fluke	87V TRUE RMS	88630333	11.11C	11.13C

- C = Calibration CH = Check

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4. Equipment under test

4.1. System description

Product: D3313-S30
 Manufacturer: FUJITSU TECHNOLOGY SOLUTIONS GmbH
 Type: System board
 Approval name: D3313-S30

Part no.: S26361-D3313-S30
 Serial no.: 42203620

Component	Model	Manufacturer	Part no.	Serial no.	Rev.	Remark
CPU	GX-420CA SOC	AMD GmbH		n.a.		2.0GHz, with Radeon Graphics, Cooler Master heat sink with fan
BIOS	V4.6.5.4	FTS		n.a.		for D3313-S3x
RAM 2x	HMT325S6CFR8A	SK hynix		n.a.		2GB 1Rx8 PC3L-12800S-11-12-B2 dc:1317
SSD	THSNX032GMCT	Toshiba Corporation		43UB3084KZ SK		32GB

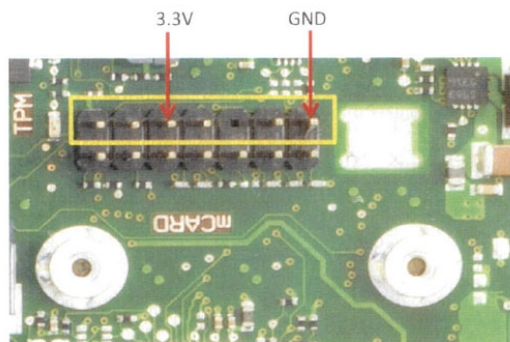
Receipt date: September 23, 2013
 Condition when received: Ready for test

4.2. Additional load

Ausbau Lastbaugruppe

Nennspannung	Lastwiderstand	effektive Spannung an der Last	Strom	max. zul. Strom	Leistung
3.3V	0.66 Ohm	3.0V	4.5A	5A	22.5 W
5V	0.94 Ohm	4V	4.2A	4.5A	18.9 W
12V	4.5 Ohm	11.7V	2.6A	4.5-5A	30.4 W
12V	5 Ohm	11.8V	2.2A		26 W
					98W

Zusatzkabel (3.3V) über TPM-Stecker:



20.09.2013

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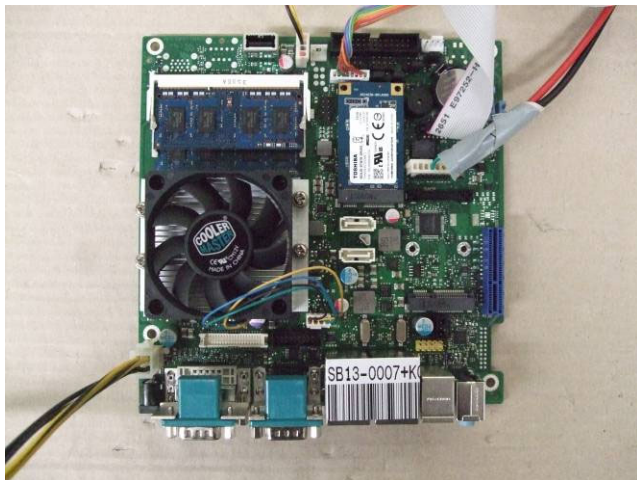
4.3. EUT Photos



Picture no. 1: System board type label



Picture no. 2: Type label of one memory module



Picture no. 3: System board



Picture no. 4: SSD type label

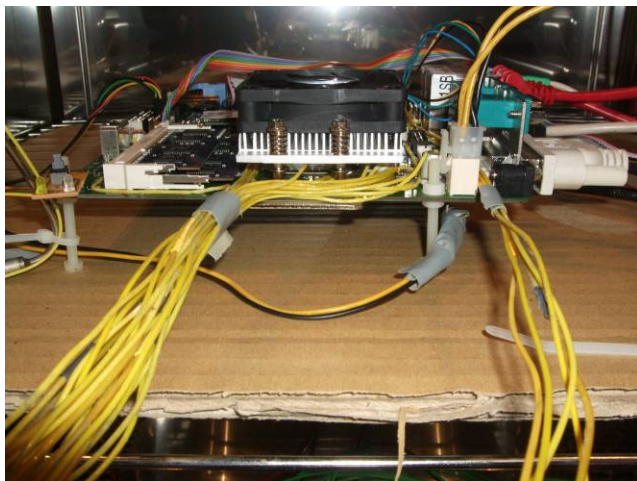
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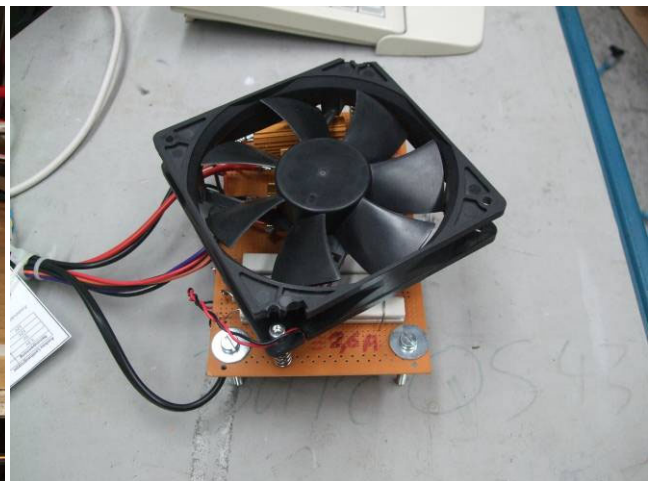
Picture no. 5: EUT in climatic cabinet



Picture no. 6: EUT in climatic cabinet prepared for measuring



Picture no. 7: EUT in climatic cabinet



Picture no. 8: Additional load for EUT

EUT: System board D3313-S30

5. Test results

5.1. Dry heat operation, +45°C

	passed	failed
Operation at high temperature (+45°C)	X	

Standards: DIN EN 60068-2-2 (Issue 05/08) Test section B: dry heat

Temperature values: +45°C

Requirements: Specified performance data must be met.
For all components the maximum temperatures allowed must not be exceeded.

Test software: See pages 9 + 10

Results: No objections

Remarks: After directional stability of all temperatures the tests were running for at least 30 minutes.

EUT: System board D3313-S30

Ch. #	ThC. #	Module/PWB	Component:	1 [°C]	Δt [K]	2 [°C]	Δt [K]	3 [°C]	Δt [K]	4 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	45		45		45				---
2	G60	CPU	100D00 (CPU tcase)	51	39	54	36	69	21			90
3	519	SB	127L10 (VCC_CPU_CORE Spule)	52	38	57	33	74	16			90
4	C1	SB	127V12 (VCC_CPU_CORE Low er FET)	51	39	55	35	79	11			90
5	U52	SB	127V10 (VCC_CPU_CORE Upper FET)	51	39	55	35	77	13			90
6	9	SB	127C22 (VCC_CPU_CORE Elko)	51	17	54	14	66	2			68
7	E12	SB	127C04 (P19VP Filter Core Elko)	50	18	51	17	60	8			68
8	752	SB	127C82 (VCC_CPU_NB elko)	52	16	54	14	65	3			68
9	84	SB	127V70 (VCC_CPU_NB Upper FET)	53	37	54	36	65	25			90
10	D52	SB	127V72(VCC_CPU_NB Low er FET)	54	36	55	35	64	26			90
11	F38	SB	127L70 (VCC_CPU_NB Spule)	55	35	56	34	68	22			90
12	B13	SB	923C95 (P19VP_AUX_FILTER Elko)	53	23	52	24	53	23			76
13	F90	SB	923V50 (P12VP_STBY_Upper FET)	61	29	59	31	60	30			90
14	32	SB	923V51 (P12VP_STBY_Low er FET)	58	32	55	35	55	35			90
15	923	SB	923L50 (P12VP_STBY Spule)	78	22	79	21	88	12			100
16	A19	SB	923C69 (P12VP_STBY Elko)	57	11	56	12	57	11			68
17	H54	SB	122N00 (CPU_CORE CTRL)	52	28	55	25	64	16			80
18	67	SB	430X60 (Battery)	49	11	48	12	49	11			60
19	51	SB	500D00 (SIO SMSC)	57	13	57	13	58	12			70
20	72	SB	760L70 (PWM_FAN Spule)	56	34	56	34	56	34			90
21	F88	SB	505D00 (SIO Nuvoton)	59	11	60	10	60	10			70
22	87	SB	920C57 (P3V3P_STBY Elko)	56	12	57	11	57	11			68
23	242	SB	920L50 (P3V3P_STBY Spule)	66	24	66	24	65	25			90
24	125	SB	920L10 (P5VP_STBY Spule)	65	25	64	26	64	26			90
25	800	SB	920C77 (P5VP_STBY Elko)	59	9	58	10	59	9			68
26	70	SB	620C10 (P12VP Elko)	53	15	53	15	53	15			68
27	219	SB	780D00 (Audio Codec)	59	11	59	11	59	11			70
28	789	SB	820G00 (Quarz (Lan x))	54	16	54	16	54	16			70
29	F86	SB	800G00 (Quarz (Lan x))	54	16	53	17	54	16			70
30	851	SB	592C00 (P5VP_STBY Elko)	50	18	50	18	51	17			68

Description: BIOS: R0.50.1

Col. 1	+24VDC; with load, without additional FAN, without load on "Drive Power"	
	Test: Idle Mode	Date: 30.09.2013 13:34:34
Col. 2	+24VDC; with load, without additional FAN, without load on "Drive Power"	
	Test: SysTest32	Date: 01.10.2013 05:18:44
Col. 3	+24VDC; with load, without additional FAN, without load on "Drive Power"	
	Test: ThermNow! 100%	Date: 30.09.2013 12:47:24
Col. 4		

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Ch. #	ThC. #	Module/PWB	Component:	5 [°C]	Δt [K]	6 [°C]	Δt [K]	7 [°C]	Δt [K]	8 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	45		45		45				---
2	B26	SB BS	524D00 (COM Driver)	51	19	53	17	54	16			70
3	893	SB BS	560D00 (SATA Switch)	58	27	61	24	63	22			85
4	B2	SB BS	522D00 (COM Driver)	58	12	59	11	60	10			70
5	C21	SB BS	820D00 (LAN CTRL)	57	13	58	12	57	13			70
6	D4	SB BS	800D00 (LAN CTRL)	58	12	59	11	60	10			70
7	D79	SB BS	520D00 (COM Driver)	55	15	57	13	59	11			70
8	507	SB BS	861D00 (DP Switch)	53	32	58	27	65	20			85
9	858	SB BS	865D00 (DP to LVDS Converter)	54	16	56	14	60	10			70
10	754	SB BS	165N00 (DDR Term)	50	35	53	32	55	30			85
11	75	SB BS	920N00 (5V/3V3 CTRL)	57	33	58	32	57	33			90
12	H51	SB BS	923N00 (12V STBY CTRL)	65	20	68	17	71	14			85
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Description: BIOS: R0.50.1

Col. 5 +24VDC; with load, without additional FAN, without load on "Drive Power"
Test: Windows IdleMode with load Date: 15.11.2013 03:16:06

Col. 6 +24VDC; with load, without additional FAN, without load on "Drive Power"
Test: SysTest with load Date: 14.11.2013 12:50:12

Col. 7 +24VDC; with load, without additional FAN, without load on "Drive Power"
Test: ThermNow! 100% with load Date: 14.11.2013 16:41:12

Col. 8 _____

EUT: System board D3313-S30

5.2. Dry heat operation, +60°C

	passed	failed
Operation at high temperature (+60°C)	X	

Standards: DIN EN 60068-2-2 (Issue 05/08) Test section B: dry heat

Temperature values: +60°C

Requirements: Specified performance data must be met.
For all components the maximum temperatures allowed must not be exceeded.

Test software: See page 12 – 16 (pages 15 + 16 only for Information, not rated!)

Results: **430X60 (Battery) exceeds its maximum temperature. The customer knows and accepts it, because there's a remark in the technical documentation of the system board:**

1) Note: Battery operation is specified in temperature range up to 60°C.
Operation between 60°C and 70°C may result in:

- Higher self discharge rate
- Decline of specified characteristics
- Danger of leakage increases

Remarks: After directional stability of all temperatures the tests were running for at least 30 minutes.

EUT: System board D3313-S30

Ch. #	ThC. #	Module/PWB	Component:	9 [°C]	Δt [K]	10 [°C]	Δt [K]	11 [°C]	Δt [K]	12 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	60		60		60				---
2	G60	CPU	100D00 (CPU tcase)	62	28	65	25	77	13			90
3	519	SB	127L10 (VCC_CPU_CORE Spule)	62	28	67	23	67	23			90
4	C1	SB	127V12 (VCC_CPU_CORE Low er FET)	62	28	65	25	68	22			90
5	U52	SB	127V10 (VCC_CPU_CORE Upper FET)	62	28	65	25	67	23			90
6	9	SB	127C22 (VCC_CPU_CORE Elko)	62	6	64	4	62	6			68
7	E12	SB	127C04 (P19VP Filter Core Elko)	61	7	62	6	60	8			68
8	752	SB	127C82 (VCC_CPU_NB elko)	62	6	64	4	62	6			68
9	84	SB	127V70 (VCC_CPU_NB Upper FET)	63	27	64	26	67	23			90
10	D52	SB	127V72(VCC_CPU_NB Low er FET)	63	27	65	25	69	21			90
11	F38	SB	127L70 (VCC_CPU_NB Spule)	64	26	66	24	68	22			90
12	B13	SB	923C95 (P19VP_AUX_FILTER Elko)	63	13	63	13	65	11			76
13	F90	SB	923V50 (P12VP_STBY_Upper FET)	67	23	68	22	72	18			90
14	32	SB	923V51 (P12VP_STBY_Low er FET)	65	25	66	24	66	24			90
15	923	SB	923L50 (P12VP_STBY Spule)	83	17	85	15	91	9			100
16	A19	SB	923C69 (P12VP_STBY Elko)	62	6	63	5	66	2			68
17	H54	SB	122N00 (CPU_CORE CTRL)	62	18	64	16	63	17			80
18	67	SB	430X60 (Battery)	60	0	60	0	62	-2			60
19	51	SB	500D00 (SIO SMSC)	62	8	63	7	67	3			70
20	72	SB	760L70 (PWM_FAN Spule)	62	28	63	27	68	22			90
21	F88	SB	505D00 (SIO Nuvoton)	64	6	64	6	69	1			70
22	87	SB	920C57 (P3V3P_STBY Elko)	62	6	62	6	66	2			68
23	242	SB	920L50 (P3V3P_STBY Spule)	68	22	69	21	73	17			90
24	125	SB	920L10 (P5VP_STBY Spule)	68	22	69	21	72	18			90
25	800	SB	920C77 (P5VP_STBY Elko)	63	5	64	4	67	1			68
26	70	SB	620C10 (P12VP Elko)	61	7	61	7	63	5			68
27	219	SB	780D00 (Audio Codec)	66	4	67	3	68	2			70
28	789	SB	820G00 (Quarz (Lan x))	61	9	61	9	63	7			70
29	F86	SB	800G00 (Quarz (Lan x))	62	8	62	8	63	7			70
30	851	SB	592C00 (P5VP_STBY Elko)	60	8	61	7	62	6			68

Description: BIOS: R0.50.1

Col. 9	+24VDC; with load, with additional FAN, without load on "Drive Power"	Test: Idle Mode	Date: 01.10.2013 08:08:54
Col. 10	+24VDC; with load, with additional FAN, without load on "Drive Power"	Test: SysTest32	Date: 01.10.2013 10:06:34
Col. 11	+24VDC; with load, with additional FAN, without load on "Drive Power"	Test: ThermNow! 100%	Date: 01.10.2013 11:45:34
Col. 12			

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Ch. #	ThC. #	Module/PWB	Component:	13 [°C]	Δt [K]	14 [°C]	Δt [K]	15 [°C]	Δt [K]	16 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	60		61		60				---
2	B26	SB BS	524D00 (COM Driver)	62	8	63	7	63	7			70
3	893	SB BS	560D00 (SATA Switch)	65	20	69	16	70	15			85
4	B2	SB BS	522D00 (COM Driver)	65	5	67	3	67	3			70
5	C21	SB BS	820D00 (LAN CTRL)	64	6	65	5	65	5			70
6	D4	SB BS	800D00 (LAN CTRL)	66	4	67	3	68	2			70
7	D79	SB BS	520D00 (COM Driver)	63	7	67	3	68	2			70
8	507	SB BS	861D00 (DP Switch)	63	22	69	16	73	12			85
9	858	SB BS	865D00 (DP to LVDS Converter)	63	7	67	3	69	1			70
10	754	SB BS	165N00 (DDR Term)	60	25	63	22	63	22			85
11	75	SB BS	920N00 (5V/3V3 CTRL)	64	26	66	24	66	24			90
12	H51	SB BS	923N00 (12V STBY CTRL)	70	15	75	10	78	7			85
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Description: BIOS: R0.50.1

- Col. 13 +24VDC; with load, with additional FAN, without load on "Drive Power"
Test: Windows IdleMode with load Date: 15.112013 07:57:36
- Col. 14 +24VDC; with load, with additional FAN, without load on "Drive Power"
Test: SysTest with load Date: 15.112013 09:07:36
- Col. 15 +24VDC; with load, with additional FAN, without load on "Drive Power"
Test: ThermNow! 100% with load Date: 15.112013 10:24:16
- Col. 16 _____

EUT: System board D3313-S30

Ch. #	ThC. #	Module/PWB	Component:	17 [°C]	Δt [K]	18 [°C]	Δt [K]	19 [°C]	Δt [K]	20 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	60		60		60		60		---
2	9	SB	923C95 P10VP_AUX_FILTER Elko	71	5	73	3	65	11	66	10	76
3	C45	SB	923V50 P12VP_STBY Upper FET	81	9	84	6	67	23	69	21	90
4	E4	SB	923V51 P12_STBY Lower FET	84	6	88	2	68	22	69	21	90
5	E11	SB	923L50 P12VP_STBY Spule	93	7	98	2	73	27	75	25	100
6	848	SB	923C69 P12VP_STBY Elko	66	2	67	1	62	6	63	5	68
7	H96	SB	920C57 P3V3P_STBY Elko	65	3	65	3	60	8	59	9	68
8	G23	SB	920L50 P3V3P_STBY Spule	71	19	71	19	60	30	60	30	90
9	726	SB	920L70 P5VP_STBY Spule	72	18	72	18	62	28	61	29	90
10	397	SB	920C77 P5VP_STBY Elko	66	2	66	2	61	7	61	7	68
11	F49	SB BS	920N00 5V/3V3 CTRL	69	21	68	22	61	29	60	30	90
12	A83	SB BS	923N00 12V STBY CTRL	77	13	79	11	68	22	69	21	90
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Description: BIOS: 0.99.3; Core regulator final design

- Col. 17 +24VDC; with load, with additional FAN, without load on "Drive Power"
Test: SysTest Date: 23.012014 08:07:28

- Col. 18 +24VDC; with load, with additional FAN, without load on "Drive Power"
Test: ThermNow! 100% Date: 23.012014 08:42:28

- Col. 19 +24VDC; without load, with additional FAN
Test: SysTest Date: 23.012014 10:24:48

- Col. 20 +24VDC; without load, with additional FAN
Test: ThermNow! Date: 23.012014 09:49:28

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The following tables are not rated (for information only), because operation at 60°C without sufficient cooling is not permitted by manufacturer!

Ch. #	ThC. #	Module/PWB	Component:	21 [°C]	Δt [K]	22 [°C]	Δt [K]	23 [°C]	Δt [K]	24 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	60		60		60				---
2	G60	CPU	100D00 (CPU tcase)	63	27	66	24	80	10			90
3	519	SB	127L10 (VCC_CPU_CORE Spule)	64	26	69	21	85	5			90
4	C1	SB	127V12 (VCC_CPU_CORE Lower FET)	63	27	68	22	86	4			90
5	U52	SB	127V10 (VCC_CPU_CORE Upper FET)	63	27	67	23	84	6			90
6	9	SB	127C22 (VCC_CPU_CORE Elko)	63	5	65	3	76	-8			68
7	E12	SB	127C04 (P19VP Filter Core Elko)	62	6	63	5	71	-3			68
8	752	SB	127C82 (VCC_CPU_NB elko)	64	4	66	2	77	-9			68
9	84	SB	127V70 (VCC_CPU_NB Upper FET)	64	26	66	24	78	12			90
10	D52	SB	127V72 (VCC_CPU_NB Lower FET)	65	25	66	24	77	13			90
11	F38	SB	127L70 (VCC_CPU_NB Spule)	66	24	69	21	80	10			90
12	B13	SB	923C95 (P19VP_AUX_FILTER Elko)	63	13	63	13	66	10			76
13	F90	SB	923V50 (P12VP_STBY Upper FET)	73	17	75	15	82	8			90
14	32	SB	923V51 (P12VP_STBY Lower FET)	74	16	76	14	83	7			90
15	923	SB	923L50 (P12VP_STBY Spule)	85	15	88	12	102	-2			100
16	A19	SB	923C69 (P12VP_STBY Elko)	67	1	67	1	72	-4			68
17	H54	SB	122N00 (CPU_CORE CTRL)	64	16	67	13	76	4			80
18	67	SB	430X60 (Battery)	64	-4	63	-3	65	-5			60
19	51	SB	500D00 (SIO SMSC)	68	2	69	1	73	-3			70
20	72	SB	760L70 (PWM_FAN Spule)	67	23	67	23	70	20			90
21	F88	SB	505D00 (SIO Nuvoton)	70	0	71	-1	74	-4			70
22	87	SB	920C57 (P3V3P_STBY Elko)	66	2	67	1	71	-3			68
23	242	SB	920L50 (P3V3P_STBY Spule)	76	14	76	14	80	10			90
24	125	SB	920L10 (P5VP_STBY Spule)	75	15	75	15	79	11			90
25	800	SB	920C77 (P5VP_STBY Elko)	68	0	69	-1	73	-5			68
26	70	SB	620C10 (P12VP Elko)	65	3	64	4	67	1			68
27	219	SB	780D00 (Audio Codec)	71	-1	71	-1	73	-3			70
28	789	SB	820G00 (Quarz (Lan x))	66	4	66	4	68	2			70
29	F86	SB	800G00 (Quarz (Lan x))	67	3	67	3	70	0			70
30	851	SB	592C00 (P5VP_STBY Elko)	62	6	63	5	67	1			68

Description: BIOS: R0.50.1

Col. 21	+24VDC; with load, without additional FAN, without load on "Drive Power"	Test: Idle mode	Date: 27.09.2013 11:15:34
Col. 22	+24VDC; with load, without additional FAN, without load on "Drive Power"	Test: SysTest32	Date: 27.09.2013 10:35:34
Col. 23	+24VDC; with load, without additional FAN, without load on "Drive Power"	Test: ThermNow! 100%	Date: 27.09.2013 12:03:04
Col. 24			

EUT: System board D3313-S30

Ch. #	ThC. #	Module/PWB	Component:	25 [°C]	Δt [K]	26 [°C]	Δt [K]	27 [°C]	Δt [K]	28 [°C]	Δt [K]	Max [°C]
1	13	Unit	Ambient air	60		60		60		60		---
2	9	SB	923C95 P12VP_AUX_FILTER Elko	76	0	80	-4	68	8	70	6	76
3	C45	SB	923V50 P12VP_STBY Upper FET	87	3	93	-3	71	19	74	16	90
4	E4	SB	923V51 P12_STBY Lower FET	91	-1	96	-6	72	18	74	16	90
5	E11	SB	923L50 P12VP_STBY Spule	100	0	107	-7	78	22	81	19	100
6	848	SB	923C69 P12VP_STBY Elko	68	0	69	-1	65	3	66	2	68
7	H96	SB	920C57 P3V3P_STBY Elko	69	-1	70	-2	65	3	65	3	68
8	G23	SB	920L50 P3V3P_STBY Spule	75	15	76	14	66	24	66	24	90
9	726	SB	920L70 P5VP_STBY Spule	78	12	78	12	66	24	66	24	90
10	397	SB	920C77 P5VP_STBY Elko	69	-1	69	-1	65	3	64	4	68
11	F49	SB BS	920N00 5V/3V3 CTRL	75	15	75	15	66	24	66	24	90
12	A83	SB BS	923N00 12V STBY CTRL	85	5	88	2	74	16	75	15	90
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Description: BIOS: 0.99.3; Core regulator final design

- Col. 25 +24VDC; with load, without additional FAN, without load on "Drive Power"
Test: SysTest Date: 23.012014 12:33:38
- Col. 26 +24VDC; with load, without additional FAN, without load on "Drive Power"
Test: ThermNow! 100% Date: 23.012014 13:55:28
- Col. 27 +24VDC; without load, without additional FAN
Test: SysTest Date: 23.012014 11:28:08
- Col. 28 +24VDC; without load, without additional FAN
Test: ThermNow! 100% Date: 23.012014 14:07:58

EUT: System board D3313-S30

5.3. Cycle of temperature, -8°C / +60°C

	passed	failed
Cycle of temperature (-8°C / +60°C 5 cycles)	X	

Standards: DIN EN 60068-2-14 (Edition 04/10) Test section Nb

Temperature values: -8°C / +60°C

Test conditions: 5 cycles

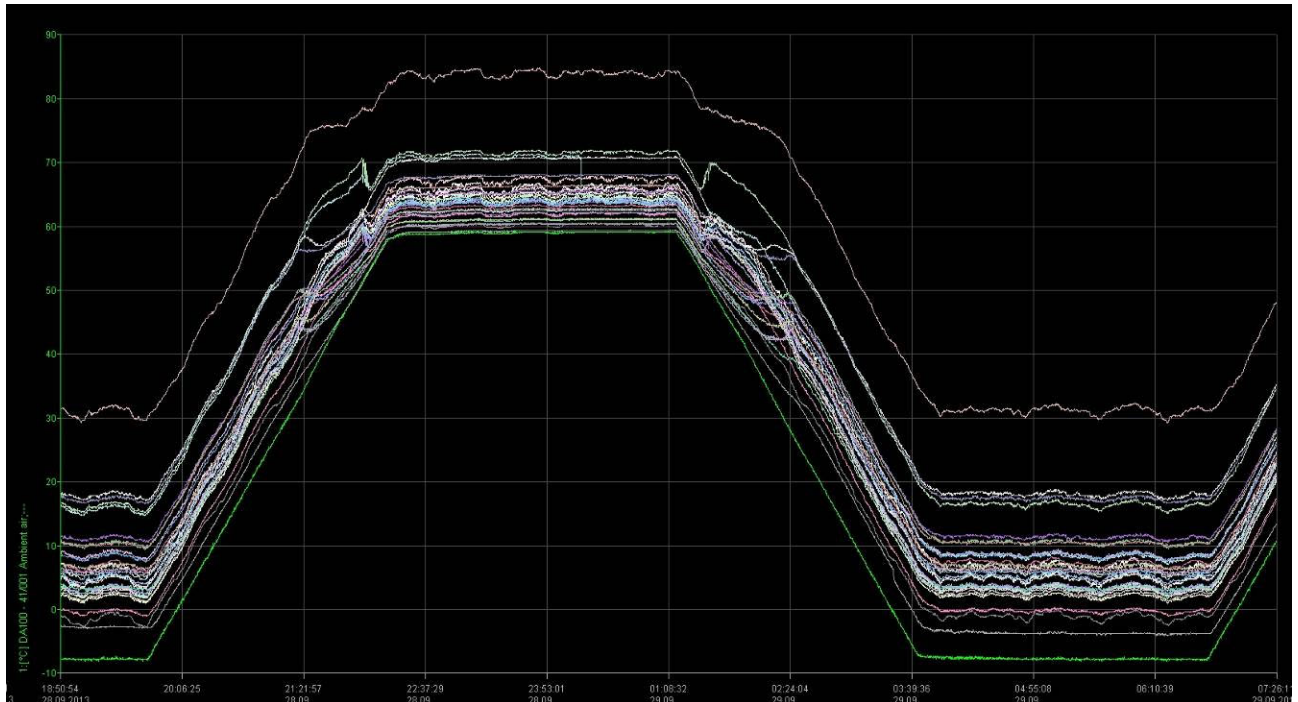
Dwell time: 3 hours per temperature + 2.5 hours change of temperature

Test software: Windows 7 with SysTest32 (all tests continuous running)

Requirements: Function

Results: No objections

Remarks: ---



Temperature diagram for one temperature cycle