PER-T356

Environment Test Report

Report NO: 15I020022

Summary	☑ **Pass** ☐ **Fail** Note : There is/are ___ defect(s) not list in the report, please check it in the DTS Website. ☐ **Pass with Deviation** **Comment: _____**

Issue date	Approval	Test Engineer
2015-12-01	**KJ Wang**	**Jerry Chen**

Test item list

Testing Result

Num	Test item list	Result	Remark
1	Temperature rise test	Pass	
2	Temperature cycle operation test	Pass	
3	Cold start and hot start test	Pass	

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Configuration of EUT

Num	Item	Spec
1.	**Test Product: PER-T356**	
	Model Name:	PER-T356 Ver. A0.2
	Board Name:	PER-T356 Ver. A0.2
	Main Chipset:	PLX.PEX8716-CA80BC G
2.	**Client (Main aid test of system)**	
	1. System Name	FWS-7400 Ver. A1.0
	2. Main board	FWB-7400 Ver. A1.0
	3. BIOS Ver.	FWS-7400 R1.5 (K741AM15) (06/12/2015)
	4. CPU Type	Intel Core i3-4360 3.7GHz x 4
	5. Chipset	Intel H81
	6. LAN Module	PER-C39L Ver. A0.1 x 1 (LAN Chipset – Intel 82580EB)
	7. RISER Module	PER-T356 Ver. A0.2
	8. Memory	DSL DDR3 1333 4GB CL9 (ELPID / J2108BCSE - DJ – F) x 1
	9. 2.5” SATA HDD	Toshiba / MQ01ABD032 320GB
	10. Test Software	ubuntu 14.10 / Run iPerf test
	11. Power supply	FSP / FSP250-50LC
3.	**Server (Secondary aid test of system)**	
	1. System Name	FWS-7811 Ver. A1.0
	2. Main board	FWB-7400 Ver. A1.0
	3. BIOS Ver.	FWS-7400 R1.5 (K741AM15) (06/12/2015)
	4. CPU Type	Intel Core i3-4360 3.7GHz x 4
	5. Chipset	Intel H81
	6. LAN Module	PER-C39L Ver. A0.1 x 1 (LAN Chipset – Intel 82580EB)
	7. RISER Module	PER-T356 Ver. A0.2
	8. Memory	Transcend DDR3 1333 U 4GB (SEC 231 HCKO K4B2G0846D) x 1
	9. 2.5” SATA HDD	Toshiba / MQ01ABD032 320GB
	10. Test Software	ubuntu 14.10 / Run iPerf test
	11. Power Supply	Zippy / R1V2-5275V4H

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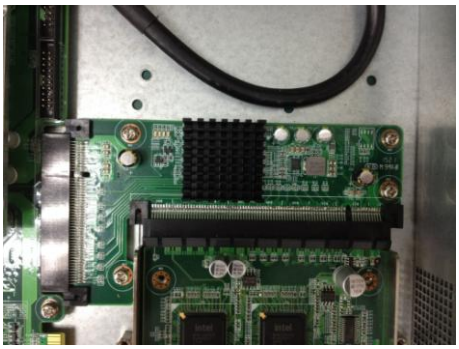
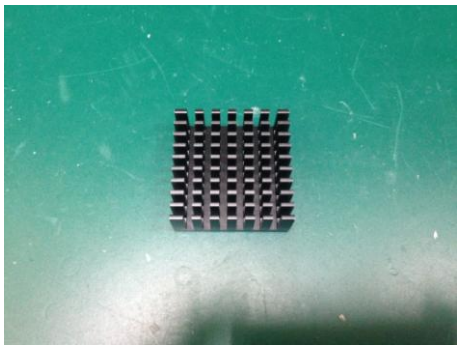
Photos

Riser Module - PER-T356	LAN Module - PER-C39L	Chipset Heat Sink
		

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Temperature rise test

Test Date: 11-26 ~ 27-2015

Test Product: PER-T356 with PER-C39L and FWS-7400

Test Site: AAEON QE Dept.

Test Standard: Refer to EN 61131-2(94), UL508 (94)

Temperature Measurement:

40 Channel Thermal Recorder:
YOKOGAWA Inc,
Model: DA100-13-1D
Date of Calibration: 09/10/2015
Serial Number: 12A323190

Test Condition:

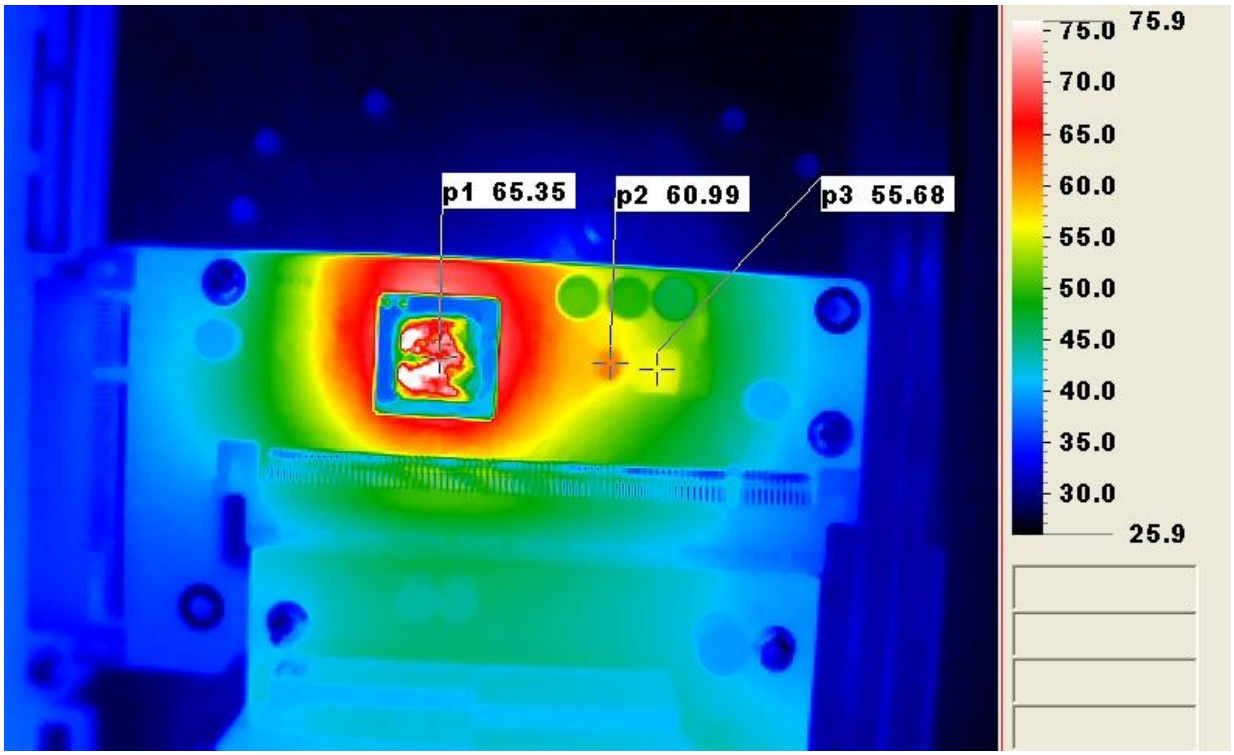
Ambient temperature: 40℃
Continuous running till thermal stable (within less than 1℃)

Test Software:

ubuntu 14.10 / Run iPerf test

Terminal Recorder:

Front Side:



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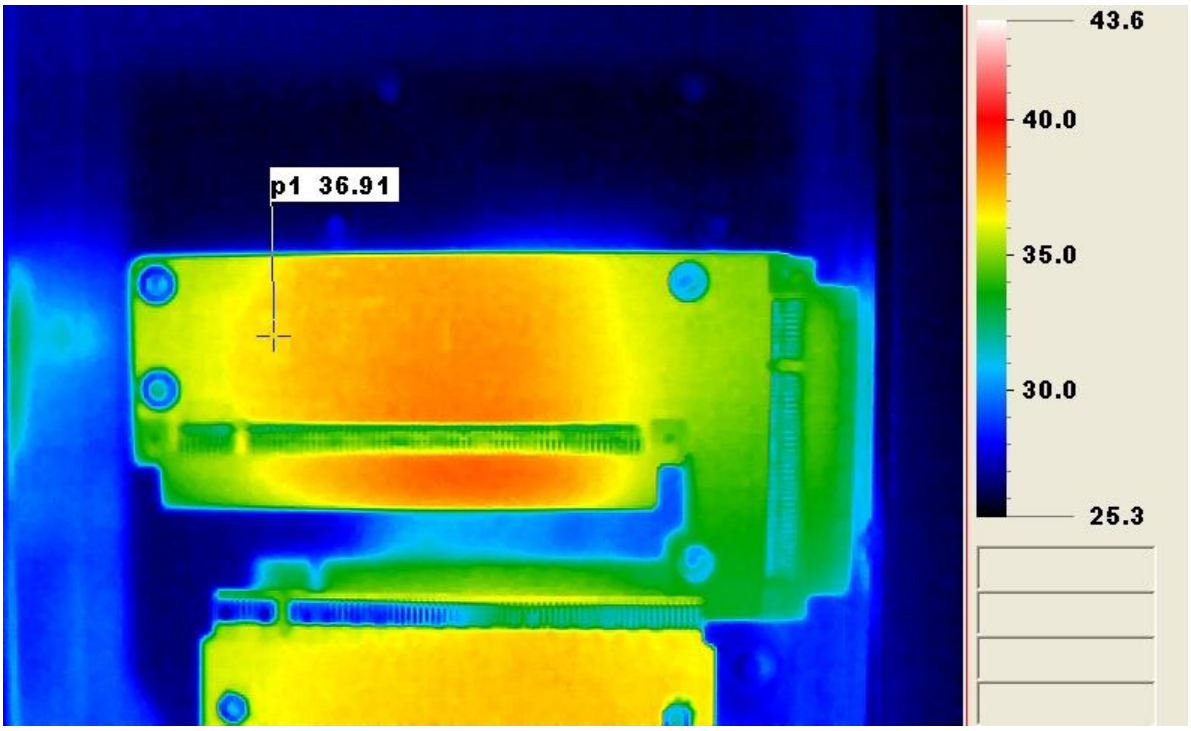
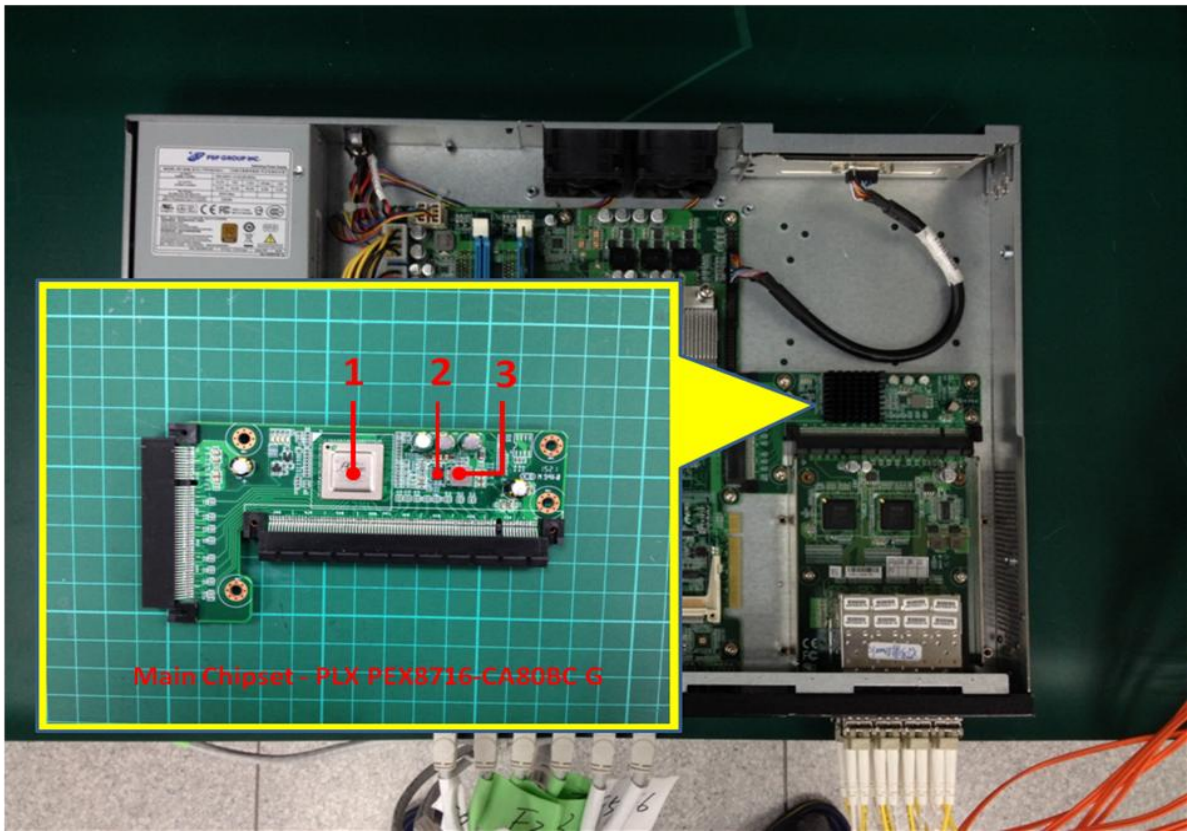
Temperature rise test

Rear Side:



Measuring Thermal Couple Position：

Front Side:



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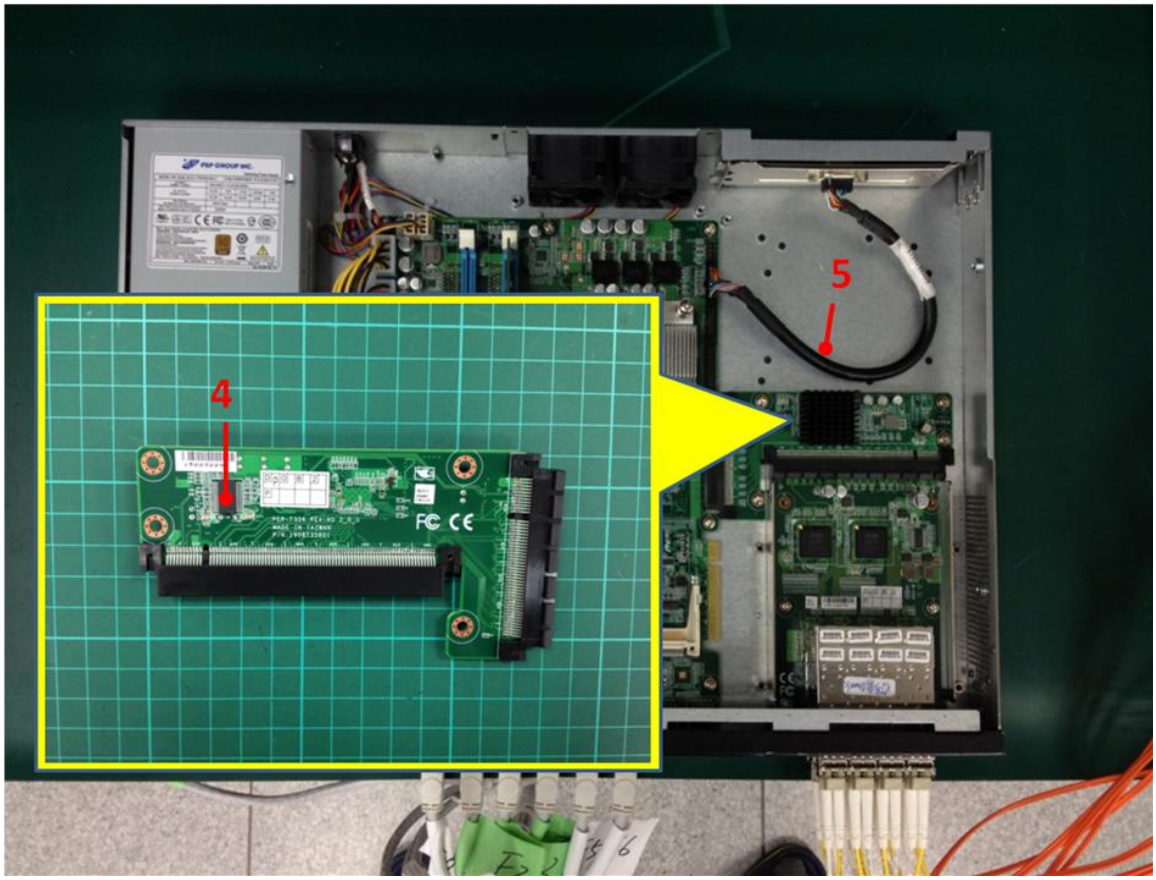
Temperature rise test

Rear Side:



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Temperature rise test

Thermal profile data:

PER-T356 with PER-C39L and FWS-7400

Point	Position	Describe	Tc (*1) (℃)	TAT(*2) 40℃	TPT(*3) 25℃	Note
1	U1	IC.PCIe-PCIe Bridge.FCBGA 324Pin.PLX.PEX8716-CA80BC G	85	79.5	64.5	
2	U5	IC.10A.Synchronous Step down.QFN16.3X4mm.MPS.MP8762GLE-Z	100	65.1	50.1	
3	L1	COIL.1.5uH.Idc=10A.DCR=10.6mohm.CYNTEC.PCMB063T-1R5MS	140	61.2	46.2	
4	U6	IC.SMD SSOP 28P.Clock Buffer.ICS.ICS9DB104FLFT	115	58.9	43.9	
5	N/A	Control Box Inside Air Temperature	N/A	41	26	
6	N/A	Control Box External Surface Temperature	N/A	39.9	24.9	
7	N/A	Chamber Air Temperature	N/A	40	25	

Note(*):

1. **"Tc"** indicates the component's case maximum temperature value specified in its datasheet.

2. **"TAT"** indicates the actual measured temperature under product specification.

3. **"TPT"** indicates the predicted temperature under 25℃ working environmental.

4. **"Tm"** indicates the measured Tc value under working environmental temperature within product specification.

5. Judgment Criteria:

- **Fail** : Tm > Tc; The measured value is over specification plus margin.
- **Margin** : Tc > Tm > Tc-5℃; The measured value is within specification with margin. For FANLESS system application, it is strongly recommended to add thermal dissipation design for better reliability.
- **Pass** : Tm < Tc-5℃; The measured value is with safety margin.

4. Defect NO.

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Temperature cycle test

Test Date: 11-23 ~ 25-2015

Test Product: PER-T356 with PER-C39L and FWS-7400

Test Site: AAEON QE Dept.

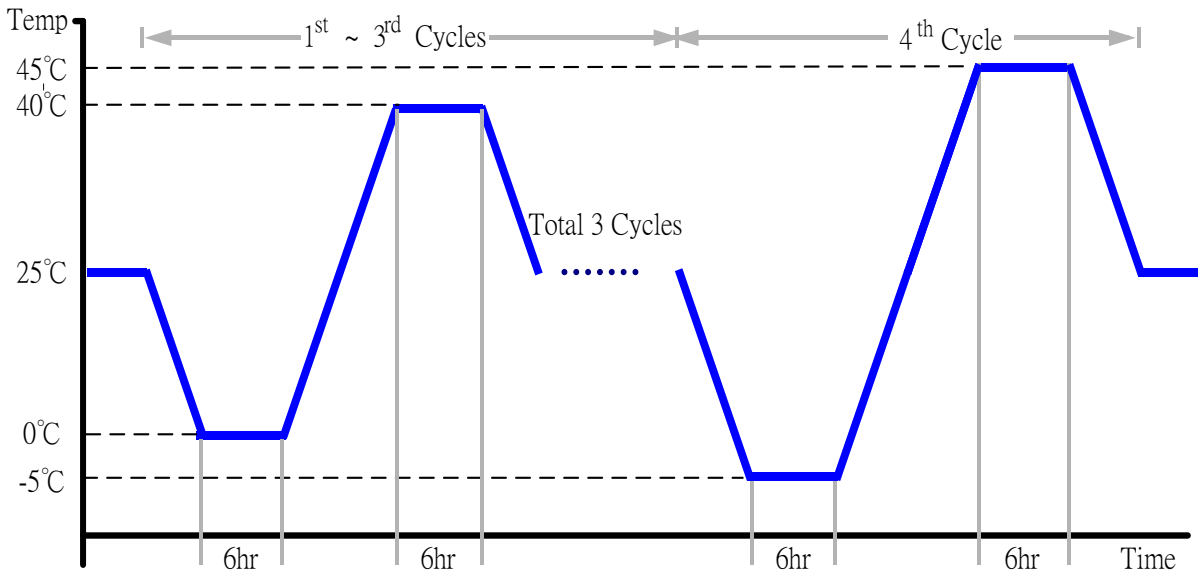
Test Standard: Refer to IEC68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H + - 100
Date of Calibration: 11/13/2015
Serial Number: 2582

Test Condition:

1. Test Low Temperature: 0℃ (1~3 cycles)
   -5℃ (4^{th} cycle)
2. Test High Temperature: 40℃ (1~3 cycles)
   45℃ (4^{th} cycle)
3. Test dwell time: 6Hrs
4. Temperature slope: 2℃/min
5. Test cycle: 4 cycles
6. Test Environment Curve:



Sample Configuration & Quantity Under Test:

Quantity: 1 (PER-T356)

Test Result:

No issues were found during the temperature operation cycle test.

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Cold start and hot start test

Test Date: 11-25 ~ 26-2015

Test Product: PER-T356 with PER-C39L and FWS-7400

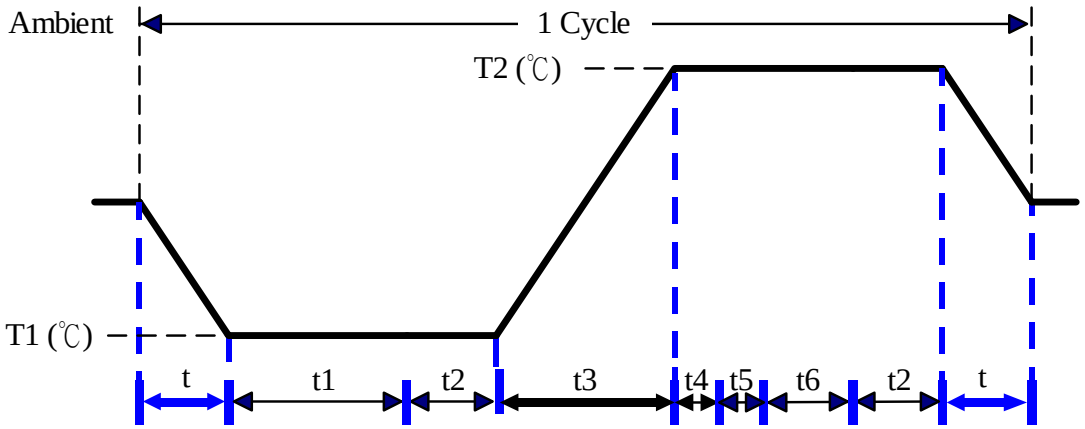
Test Site: AAEON QE Dept.

Test Standard: Refer to IEC 68-2-14 Testing procedures
Test N: Change of temperature Test

Test Equipment:

Programmable Temperature & Humidity Chamber: (K.SON. INS. TECH. CORP.)
Model: THS-D4H + - 100
Date of Calibration: 11/13/2015
Serial Number: 2582

Test Condition:



Parameters	Description
T1	-5℃
T2	45℃
t1	4 hrs
t2, t6	2 hrs
t4, t5	1hrs
t, t3	2℃/min
n (Cycle)	1

t = temprature slope
t , t1, t6: Power Off
t2: Power on/off test 10 times (on 2 min / off 5min)
t3, t4: Run iPerf test
t5: ubuntu 14.10 Software restart test 3 times
Test Software: ubuntu 14.10

Test Result:

a. No issues were found during the cold start test.

b. No issues were found during the hot start test.

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