



AEC Q100 RELIABILITY TEST REPORT

Company : CHIPSEA TECHNOLOGIES (SHENZHEN) CORP.

Sample Name : CSA37F62-LQFP48

Package : LQFP48

Lot number : 2007AGM/2007BGM/2007CGM

Report date : 2021/01/18

Operating Temperature Grade : Grade 3

Accreditation & Certificates

Certified by ISO 9001 and IECQ 17025.

Certified by ISO 27001.

IECQ Certificate No : IECQ-L ULTW 16.0003-03

	Name	Signature	Date
Testing Engineer	Jinyu Liu	Jinyu Liu	2020/07/14
Manager	Lily LI	Lily	2021/01/15
Director	Eleven Zhu	Eleven Zhu	2021/01/19





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1 Background Information

1.1 Client Information

Company: CHIPSEA TECHNOLOGIES (SHENZHEN) CORP.

User Name : Xiecc

Mail: xiecc@chipsea.com

1.2 Testing Inquiry

Sample Name	LOT	Test Item	Quantity
CSA37F62	2007AGM 2007BGM 2007CGM	Pre-condition	762ea
		Biased-HAST	77ea*3
		Unbiased-HAST	77ea*3
		Temperature Cycling Test	77ea*3
		High Temperature Storage Life	45ea
		High Temperature Operating Life	77ea*3
		Early Life Failure Rate	800ea*3
		Wire Bond Shear	5ea
		Wire Bond Pull	5ea
		Tin whisker	18ea
		HBM	3ea
		CDM	3ea
		Latch-Up	6ea

1.3 Pass/Fail Criteria

No obvious appearance issue.



2 Testing Summary

Stress	Reference AEC Q100 Test Group	Condition	Test Method	Brand/Model No.	Judgment
Pre-condition	A1	Bake: 125°C 24 hours	JEDEC JESD22-A113 J-STD-020	ESPEC/ SEG-021H	Pass
		Soak: 30°C / 60%RH 192 hours		ESPEC/ SETH-A-040L	
		Reflow: Peak temp.: 260°C Time within 5 °C of the peak temp: at least 30 sec Duration: 3 times		TANGTECK/ SMD-10-M16HAO	
Highly Accelerated Temperature and Humidity Stress Test	A2	130°C/85%RH/96hours PS=3.3V	JEDEC JESD22-A110	ESPEC/ EHS-431M-L-2	Pass
Unbiased-HAST	A3	Temperature: 130°C Humidity: 85%R.H Duration: 96 hours	JEDEC JESD22-A118	ESPEC/ EHS-221MD-2	Pass
Temperature Cycling Test	A4	-55°C/10mins~125°C/10mins Ramp Time: 5°C/ min Duration:500 cycles	JEDEC JESD22-A104	ESPEC/ TCC-150W	Pass
High Temperature Storage Life	A6	Temperature: 125°C Duration: 1000 hours	JEDEC JESD22-A103	ESPEC/ SEG-041H	Pass
High Temperature Operating Life	B1	Ta=85°C 1000 hours PS=3.6V	JEDEC JESD22-A108	TERCHY/ CK-290CB	Pass
Early Life Failure Rate	B2	Ta=105°C 24 hours PS=3.6V	AEC Q100-008	KYE/680	Pass
Wire Bond Shear	C1	Test speed: 60 um/s Test load: 100g Land speed: 60 um/s Shear height: 3um Shear tool: 2mil	AEC Q100-001	Nordson Dage 4000	Pass
Wire Bond Pull	C2	Test speed: 100 um/s Test load: 10g	MIL-STD883 Method 2011	Nordson Dage 4000	Pass



Electrostatic Discharge Human Body Model	E2	$\pm 500\text{V}/\pm 1000\text{V}/\pm 2000\text{V}/\pm 6000\text{V}$	AEC-Q100-002 RevE	MK2	Pass
Electrostatic Discharge Charged Device Model	E3	$\pm 250\text{V}/\pm 500\text{V}$ with conner pins= $750\text{V}/\pm 2000\text{V}$	AEC Q100-011RevD	Orion	Pass
Latch-Up	E4	$\pm 100\text{mA}/1.5*\text{VDDmax}$ Class II, 85°C	AEC Q100-004RevB	MK2	Pass
Tin whisker	/	/	/	/	Pass

3 Testing Items, Conditions, and Raw Data

3.1 Pre-condition

3.1.1 Test System

Brand/Model No.	Calibration Date
ESPEC/SEG-021H	2020/05/09~2021/05/08
ESPEC/SETH-A-040L	2020/05/09~2021/05/08
TANGTECK/SMD-10-M16HAO	2020/06/22~2021/06/21

3.1.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: JESD22-A113 & J-STD-020

Environmental Temperature / Humidity : 25°C±5°C / 55%RH±10%

Test Condition :

Test	Model Name	Condition	
Bake	CSA37F62	Temperature	125℃
		Total Time	24 Hours
Soak		Temperature	30℃
		Humidity	60%RH
		Total Time	192 Hours
Reflow		Peak temp.	260℃
		Time within 5 °C of the peak temp.	≧ 30 sec.
		Duration	3 times

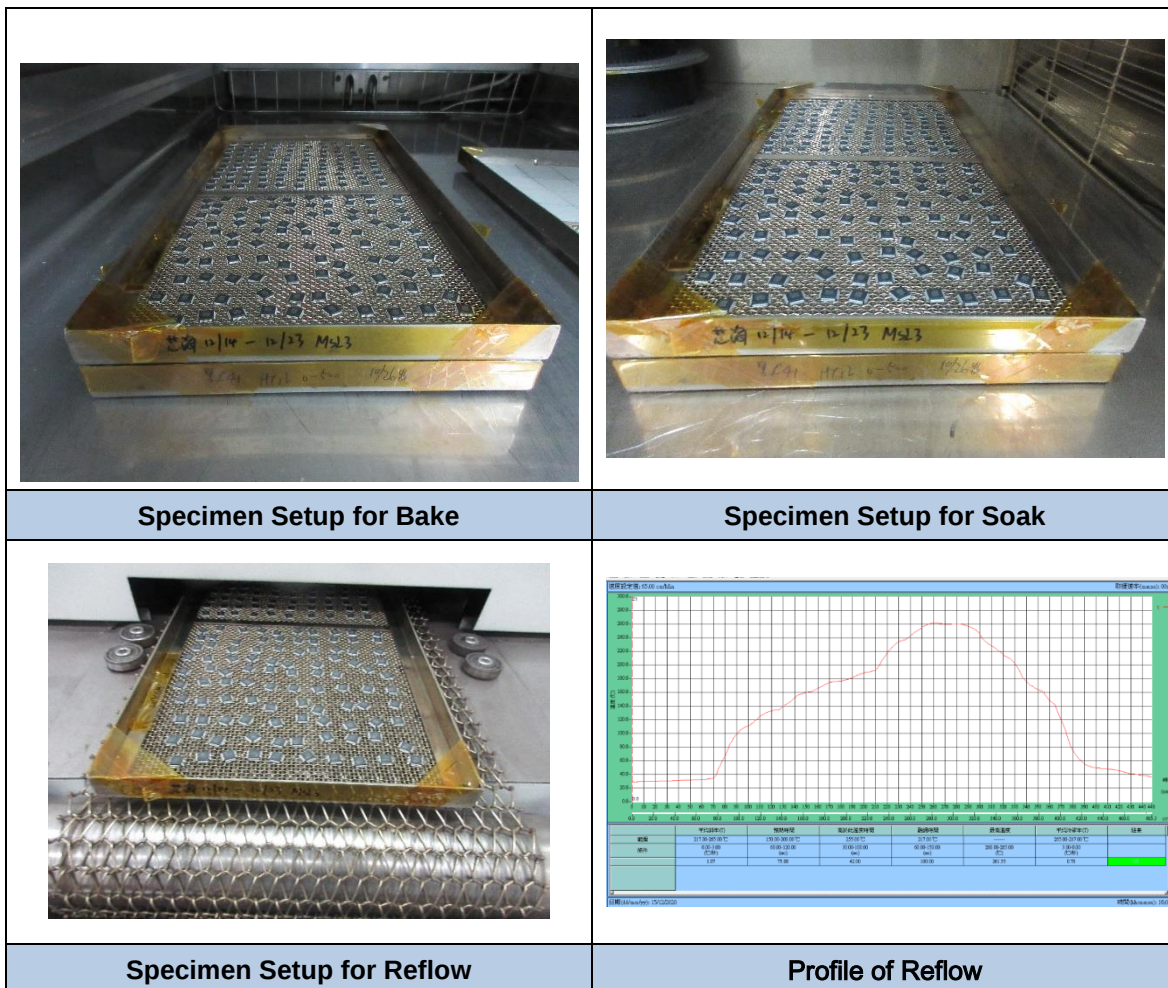
3.1.3 Test Results

After test, there is no abnormal finding during visual inspection

Functional test will be conducted by client.

Test Item	Model Name	Test result	
		Passed	Failed
Full functional test	CSA37F62	762 ea	0 ea

3.1.4 Picture of Pre-condition



3.2 Unbiased-HAST

3.2.1 Test System

Brand/Model No.	Calibration Date
ESPEC/EHS-221MD-2	2020/04/07~2021/04/16

3.2.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: JESD22-A118

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

Test	Model Name	Condition	
Unbiased-HAST	CSA37F62	Temperature	130°C
		Humidity	85%
		Duration	96 Hours

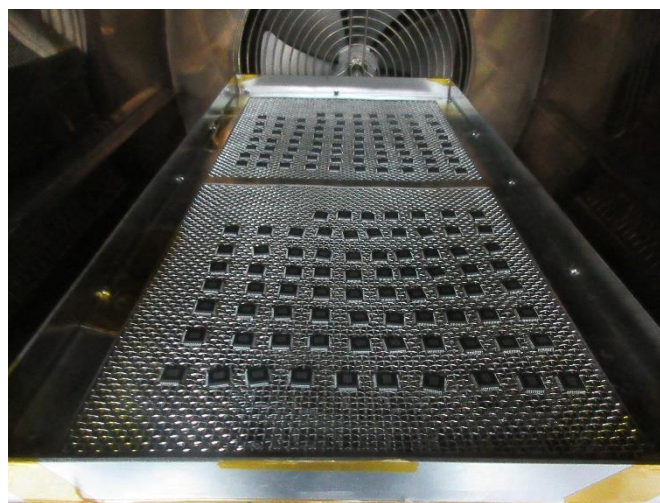
3.2.3 Test Results

After test, there is no abnormal finding during visual inspection

Functional test will be conducted by client.

Test Item	Model Name	Test result	
		Passed	Failed
Full functional test	CSA37F62	77 ea*3	0 ea

3.2.4 Picture of Unbiased-HAST



Specimen Setup for Unbiased-HAST

3.3 Highly Accelerated Temperature and Humidity Stress Test

3.3.1 Test System

Brand/Model No.	Calibration Date
ESPEC/431M-L-2	2020/07/23~2021/07/22

3.3.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: JESD22-A110-D

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

Test	Model Name	Condition	
Highly Accelerated Temperature and Humidity Stress Test	CSA37F62	Temperature	130°C / 85%RH
		Duration	96 Hours
		PS=3.3V	

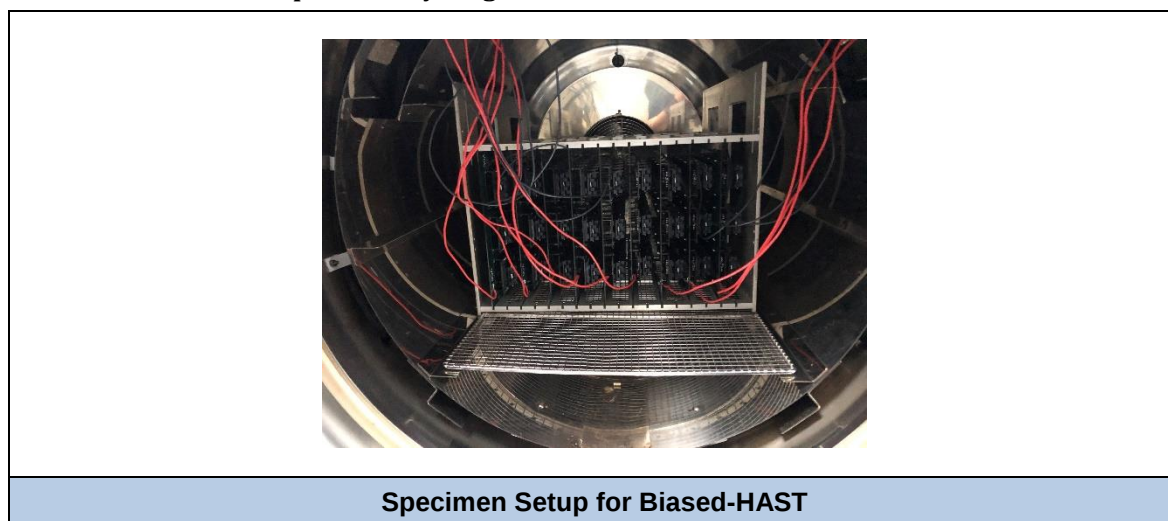
3.3.3 Test Results

After test, there is no abnormal finding during visual inspection

Functional test will be conducted by client.

Test Item	Model Name	Test result	
		Passed	Failed
Full functional test	CSA37F62	77 ea*3	0 ea

3.3.4 Picture of Temperature Cycling Test



Specimen Setup for Biased-HAST

3.4 Temperature Cycling Test

3.4.1 Test System

Brand/Model No.	Calibration Date
ESPEC/TSA-71H	2020/06/22~2021/06/21

3.4.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: JESD22-A104

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

Test	Model Name	Condition	
Temperature Cycling Test	CSA37F62	Temperature	-55°C~125°C
		Dwell	10 mins
		Ramp Time	5 min
		Cycles	500Cycles



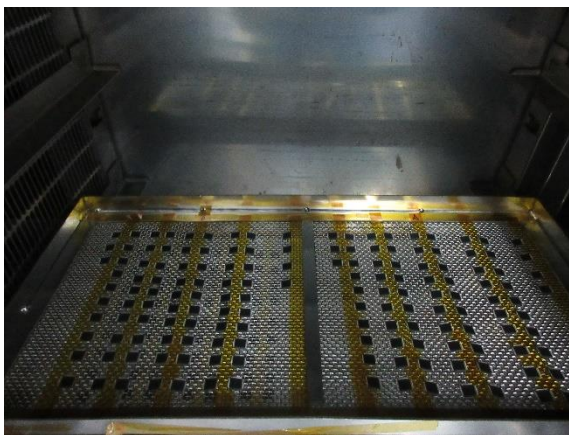
3.4.3 Test Results

After test, there is no abnormal finding during visual inspection

Functional test will be conducted by client.

Test Item	Model Name	Test result	
		Passed	Failed
Full functional test	CSA37F62	77 ea*3	0 ea

3.4.4 Picture of Temperature Cycling Test



Specimen Setup for Temperature Cycling Test

3.5 High Temperature Storage Life

3.5.1 Test System

Brand/Model No.	Calibration Date
ESPEC/ SEG-041H	2020/05/09~2021/05/08

3.5.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: JESD22-A103

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

3.5.3 Test Condition :

Test	Model Name	Condition	
High Temperature Storage Life	CSA37F62	Temperature	125°C
		Duration	1000Hours

3.5.4 Test Results

After test, there is no abnormal finding during visual inspection

Functional test will be conducted by client.

Test Item	Model Name	Test result	
		Passed	Failed
Full functional test	CSA37F62	45 ea	0 ea

3.5.5 Picture of High Temperature Storage Life



Specimen Setup for High Temperature Storage Life

3.6 High Temperature Operating Life

3.6.1 Test System

Brand/Model No.	Calibration Date
TERCHY/CK-290CB	2020/03/12~2021/03/11

3.6.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: JESD22-A108

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

Test	Model Name	Condition	
High Temperature Operating Life	CSA37F62	Temperature	Ta=85°C
		Duration	1000 Hours
		PS=3.6V	

3.6.3 Test Results

High Temperature Operation Life Test (HTOL) was conducted for : CSA37F62 with 77ea*3 samples. All of these samples were no defects by visual inspection and qualified after test

Test Item	Model Name	Test result	
		Passed	Failed
Full functional test	CSA37F62	77ea*3	0 ea

3.6.4 Picture of High Temperature Operating Life



Specimen Setup for High Temperature Operating Life

3.7 Early Life Failure Rate

3.7.1 Test System

Brand/Model No.	Calibration Date
TERCHY/CK-290CB	2020/03/12~2021/03/11

3.7.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: AEC Q100-008

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

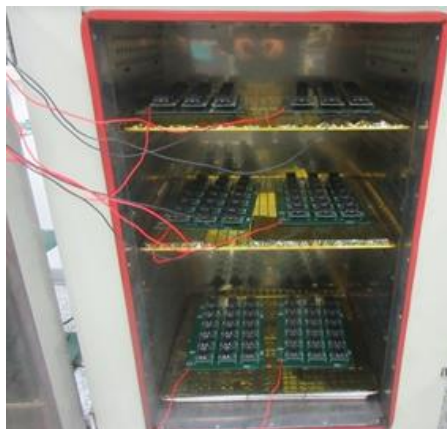
Test	Model Name	Condition	
Early Life Failure Rate	CSA37F62	Temperature	Ta=105°C
		Duration	24 Hours
		PS=3.6V	

3.7.3 Test Results

Early Life Failure Rate (ELFR) was conducted for : CSA37F62 with 800ea*3 samples. All of these samples were no defects by visual inspection and qualified after test.

Test Item	Model Name	Passed	Failed
Full Functional	CSA37F62	800ea*3	0ea

3.7.4 Picture of Early Life Failure Rate



Specimen Setup for Early Life Failure Rate

**3.8 Wire Bond Shear****3.8.1 Test System**

Brand/Model No.	Calibration Date
Nordson Dage 4000	2020/08/10~2021/8/09

3.8.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: AEC Q100-001

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

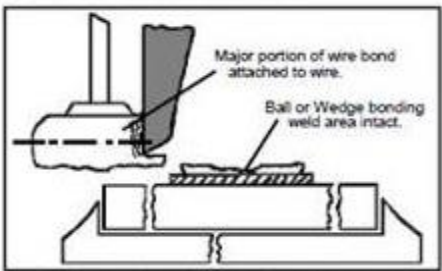
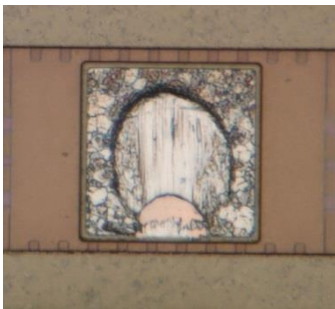
Test	Model Name	Condition	
Wire Ball shear	CSA37F62	Test speed	60 um/s
		Test load	100 g
		Land speed	60 um/s
		Shear height	3 um
		Shear tool	2 mil

3.8.3 Test Record

Sample #	Pad no.	Shear mode	Value
78	1	1 (Bond Lift)	20.93
	2	1 (Bond Lift)	21.3
	3	1 (Bond Lift)	20.98
	4	1 (Bond Lift)	20.05
	5	1 (Bond Lift)	20.34
	6	1 (Bond Lift)	20.98
78#3	1	1 (Bond Lift)	20.27
	2	1 (Bond Lift)	20.38
	3	1 (Bond Lift)	19.79
	4	1 (Bond Lift)	19.9
	5	1 (Bond Lift)	20.86
	6	1 (Bond Lift)	20.38
80	1	1 (Bond Lift)	18.5
	2	1 (Bond Lift)	18.56
	3	1 (Bond Lift)	18.85
	4	1 (Bond Lift)	19.45
	5	1 (Bond Lift)	19.01



	6	1 (Bond Lift)	19.36
80#1	1	1 (Bond Lift)	21.14
	2	1 (Bond Lift)	21.34
	3	1 (Bond Lift)	21.32
	4	1 (Bond Lift)	20.94
	5	1 (Bond Lift)	20.22
	6	1 (Bond Lift)	20.18
80#2	1	1 (Bond Lift)	21.96
	2	1 (Bond Lift)	21.79
	3	1 (Bond Lift)	21.42
	4	1 (Bond Lift)	22.47
	5	1 (Bond Lift)	22.83
	6	1 (Bond Lift)	22.85

Test value		
Minimum		18.5
Maximum		21.3
Mean		19.99
Range		2.8
Sigma		0.88
CPK		5.51
Break position		Optical-images
 TYPE 2: Bond Shear - Gold/Aluminum		
	Minimum sample Average	Minimum Individual shear Reading
Ball shear Strength Criteria (gram)	11.50	5.5
Test machine	DAGE series 4000 wire pull & ball shear machine.	
Reference document	AEC - Q100-001 - REV-C (METHOD - 001WIRE BOND SHEAR TEST).	
	EIA/JESD22-B116 (Wire Bond Shear Test Method).	

**3.9 Wire Bond Pull****3.9.1 Test System**

Brand/Model No.	Calibration Date
Nordson Dage 4000	2020/08/10~2021/08/09

3.9.2 Test Method and Condition

Specification : The test based on Customer's specification.

Reference spec.: MIL-STD-883

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

Test	Model Name	Condition	
Wire Bond Pull	CSA37F62	Test speed	100 um/s
		Test load	10 g

3.9.3 Test Record

Sample #	Pad no.	Break position	Value
78	1	B (Ball Neck.)	6.212
	2	B (Ball Neck.)	6.309
	3	B (Ball Neck.)	6.933
	4	B (Ball Neck.)	7.615
	5	B (Ball Neck.)	7.147
78#3	6	B (Ball Neck.)	6.911
	1	B (Ball Neck.)	6.219
	2	B (Ball Neck.)	6.348
	3	B (Ball Neck.)	6.774
	4	B (Ball Neck.)	6.883
80	5	B (Ball Neck.)	6.854
	6	B (Ball Neck.)	6.907
	1	B (Ball Neck.)	6.219
	2	B (Ball Neck.)	6.438
	3	B (Ball Neck.)	6.997
80#1	4	B (Ball Neck.)	7.159
	5	B (Ball Neck.)	7.213
	6	B (Ball Neck.)	6.935
	1	B (Ball Neck.)	5.783

	2	B (Ball Neck.)	6.787
80#2	3	B (Ball Neck.)	6.865
	4	B (Ball Neck.)	6.736
	5	B (Ball Neck.)	7.238
	6	B (Ball Neck.)	6.265
	1	B (Ball Neck.)	6.29

Test value	
Minimum	5.688
Maximum	8.104
Mean	6.89
Range	2.416
Sigma	0.62
CPK	2.08
Break position	Optical-images
Bond Strength Criteria (gram)	3.00
Test machine	DAGE series 4000 wire pull & ball shear machine.
Reference document	MIL-STD-883E method 2011.7 BOND STRENGTH. MIL-STD-883E method 2023.5 NONDESTRUCTIVE BOND PULL.

**3.10 Tin Whisker****3.10.1 Test System**

Brand/Model No.	Calibration Date
ESPEC/TSA-71H-W-2	2019/10/29~2020/10/28
ESPEC/SH-641/ ESPEC/SH-222	2020/02/13~2021/02/12
HITACHI/SU8220	NA

3.10.2 Test Method and Condition

Specification : The test based on JESD201A.

Environmental Temperature / Humidity : 25°C±5°C / 55%R.H±10%

Test Condition :

Model Name	Test Item	Condition	Quantity
CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Temperature Cycling Test	-50~85°C,Dwell 10Mins, Trans 5Mins,500Cycles	1ea
			1ea
			1ea
CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Temperature Cycling Test	-50~85°C,Dwell 10Mins, Trans 5Mins,1500Cycles	1ea
			1ea
			1ea
CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Temperature and Humidity Storage Test	30°C,60%RH,1000Hours	1ea
			1ea
			1ea
CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Temperature and Humidity Storage Test	30°C,60%RH,4000Hours	1ea
			1ea
			1ea
CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Temperature and Humidity Storage Test	55°C,85%RH,1000Hours	1ea
			1ea
			1ea
CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Temperature and Humidity Storage Test	55°C,85%RH,4000Hours	1ea
			1ea
			1ea



3.10.3 Test Results

Test	Condition	Model Name	Judgment
Temperature Cycling Test	-50~85°C,Dwell 10Mins, Trans 5Mins,1500Cycles	CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Pass
Temperature and Humidity Storage Test	30°C,60%RH,4000Hours	CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Pass
Temperature and Humidity Storage Test	55°C,85%RH,4000Hours	CSA37F62-LQFP48 2007AGM 2007BGM 2007CGM	Pass

3.10.4 Pass/Fail Criteria

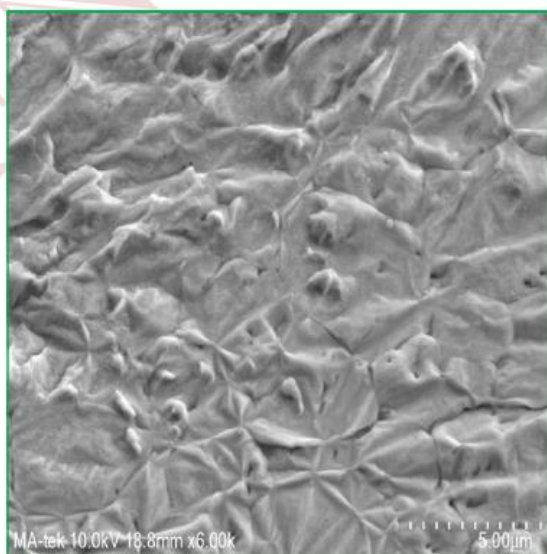
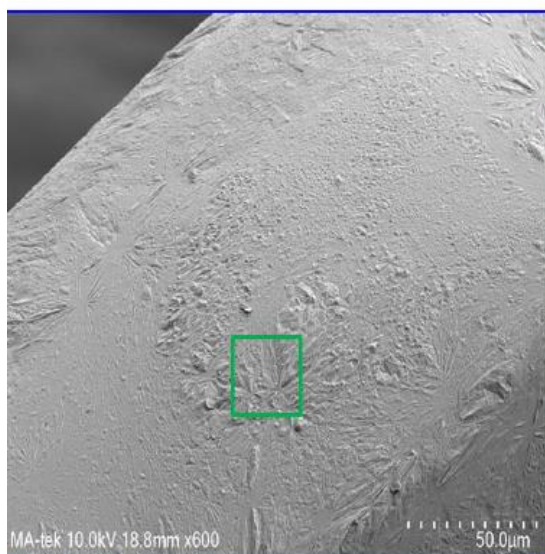
Temperature Cycling Item : Whisker growth is less than 45um

Temperature and Humidity Storage Item : Whisker growth is less than 40um

3.10.5 Pictures of Whisker Growth by SEM Analysis

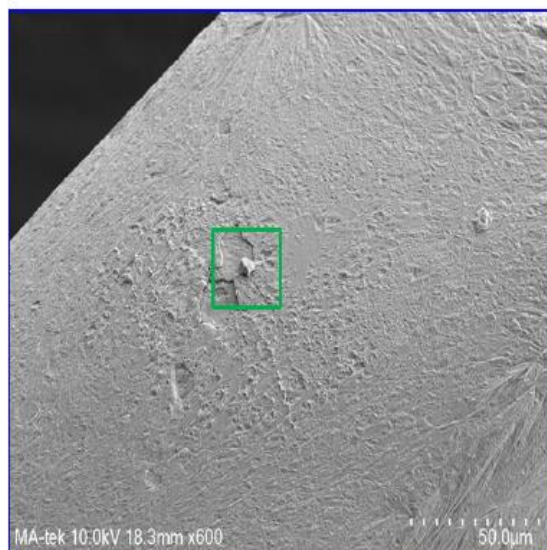
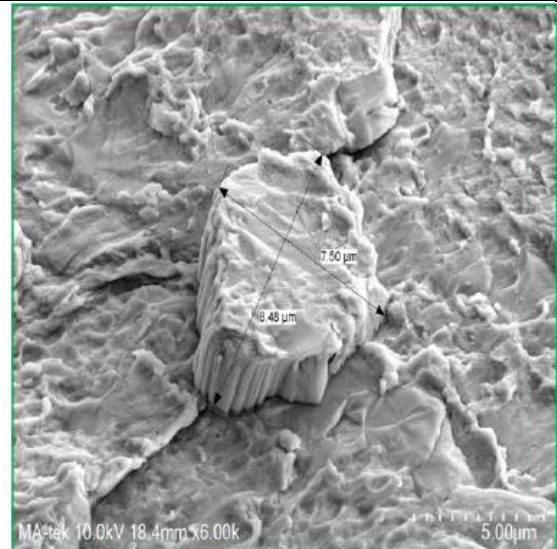
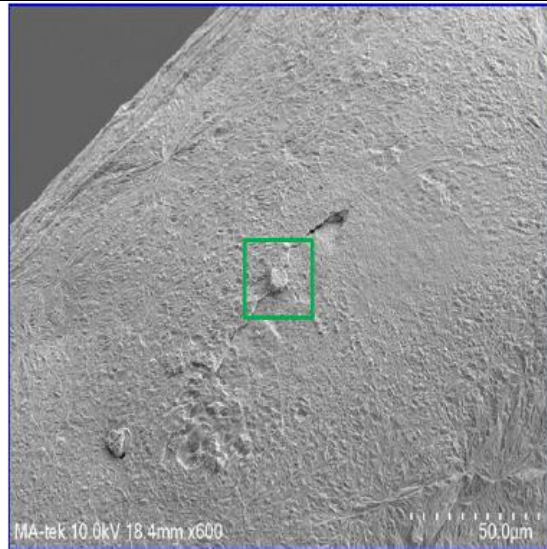


CSA37F62-LQFP48_Lot_2007AGM_TCT 500Cycles_SEM Analysis

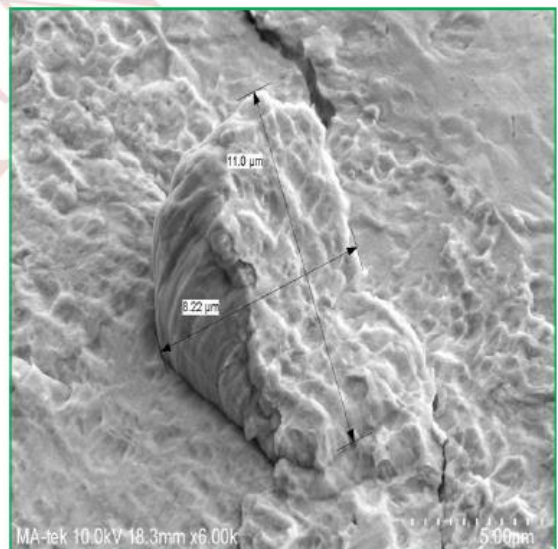
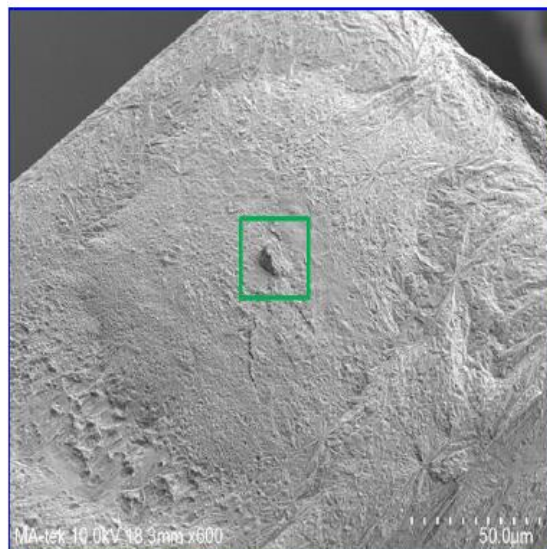




CSA37F62-LQFP48_Lot_2007BGM_TCT 500Cycles_SEM Analysis

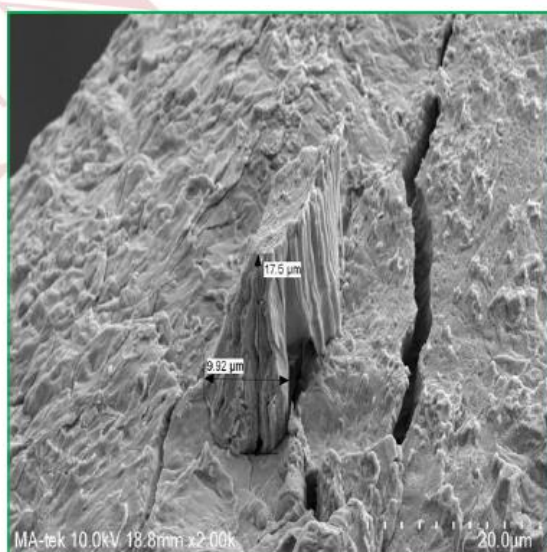
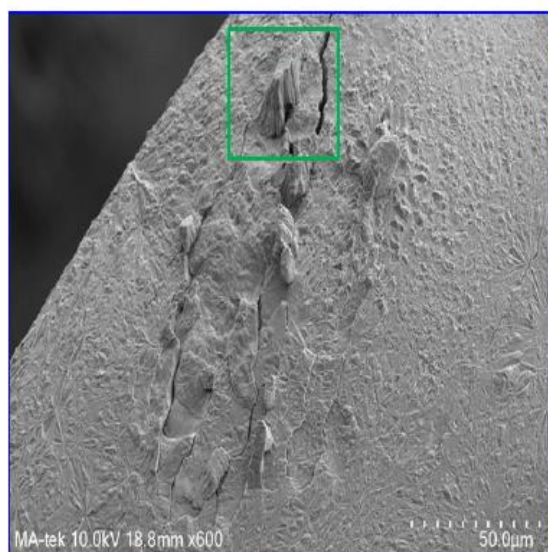
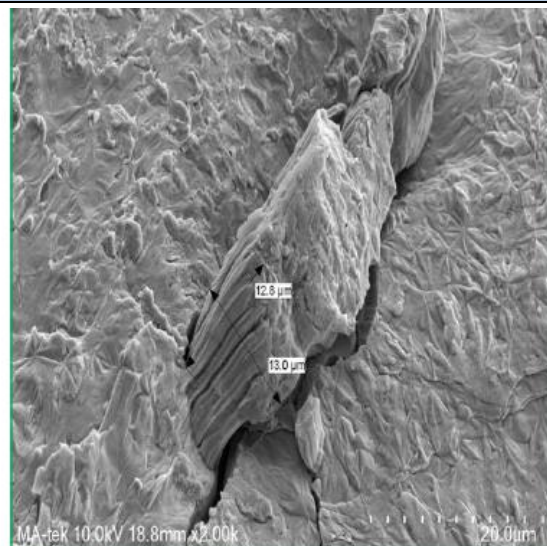
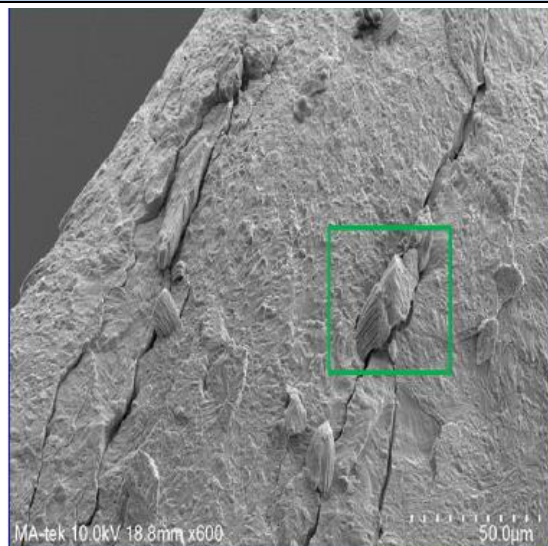


CSA37F62-LQFP48_Lot_2007CGM_TCT 500Cycles_SEM Analysis



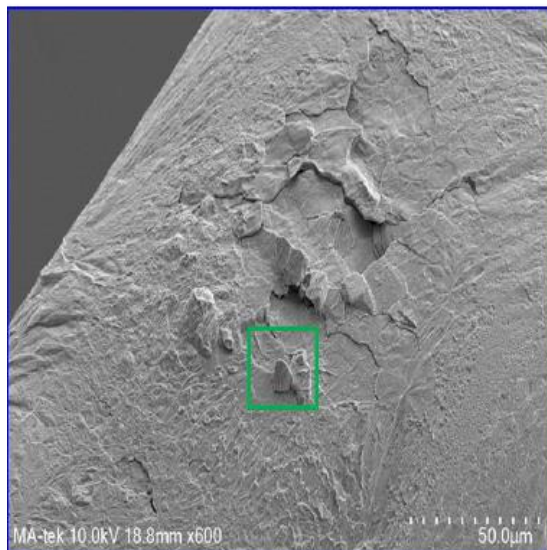
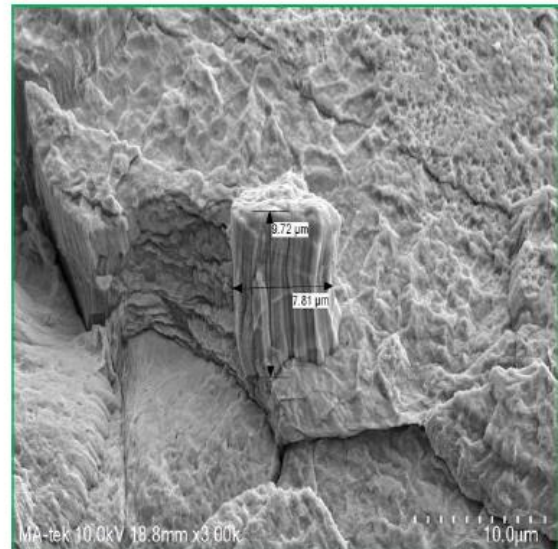
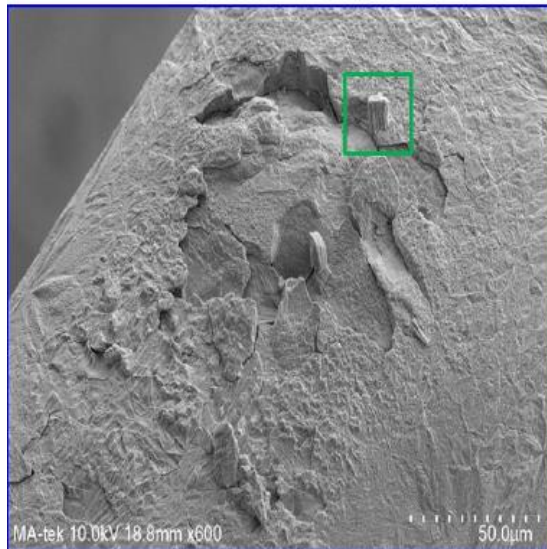


CSA37F62-LQFP48_Lot_2007AGM_TCT1500Cycles_SEM Analysis



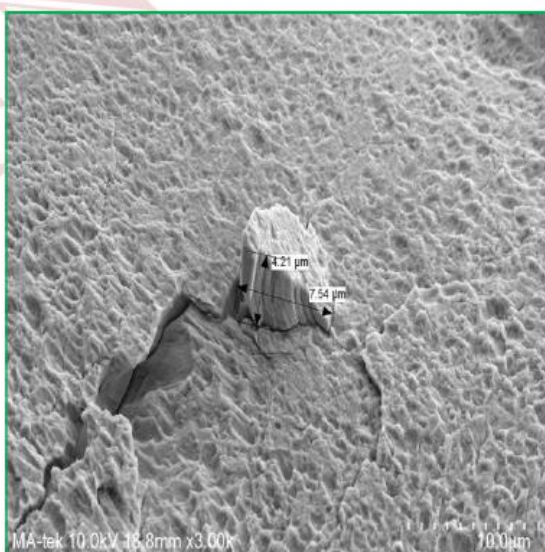
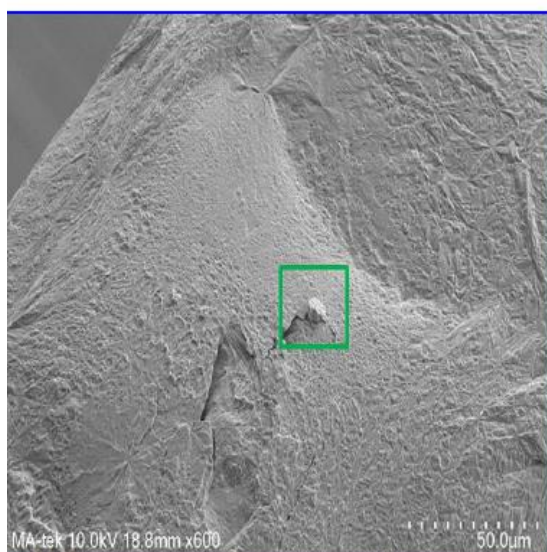
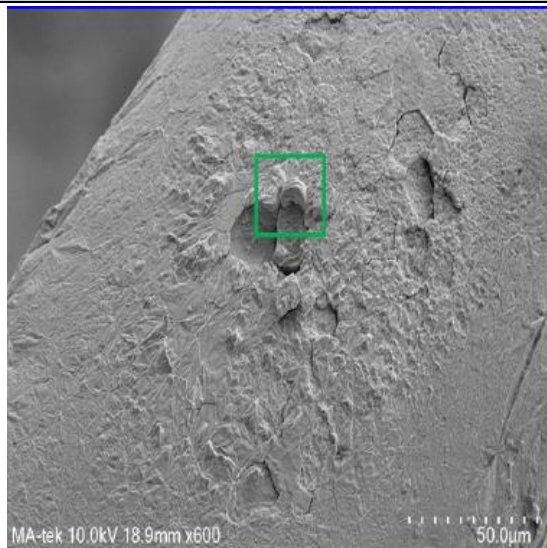


CSA37F62-LQFP48_Lot_2007BGM_TCT 1500Cycles_SEM Analysis



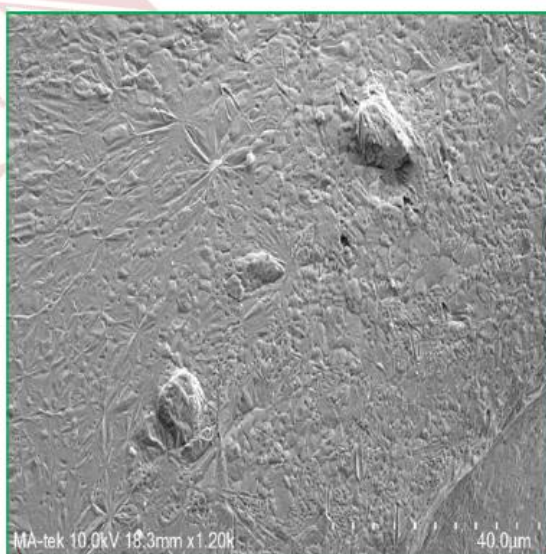
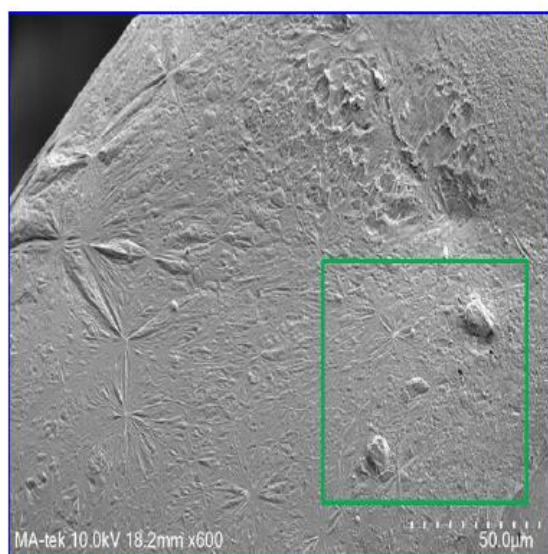
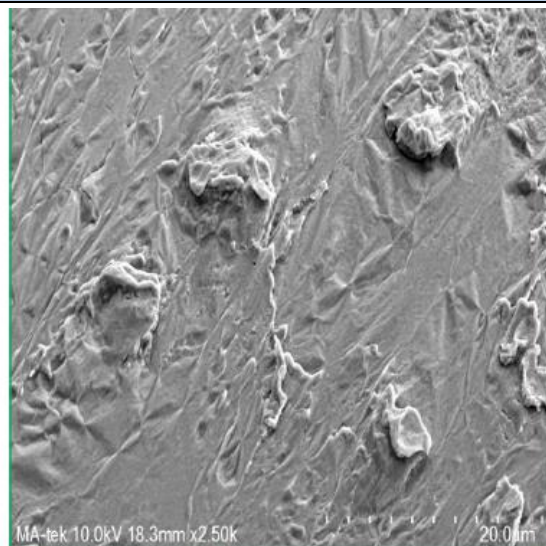
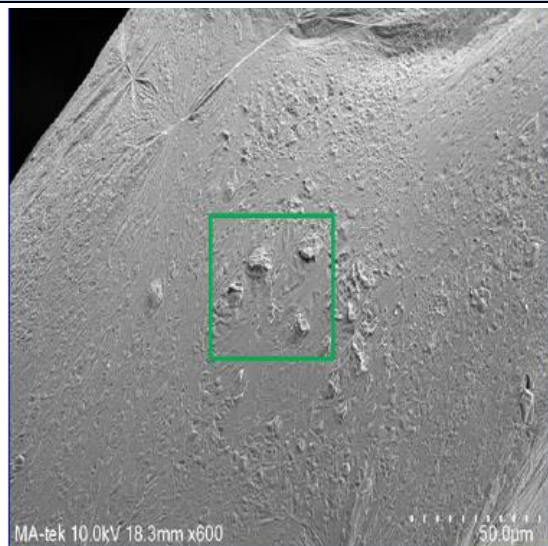


CSA37F62-LQFP48_Lot_2007CGM_TCT 1500Cycles_SEM Analysis



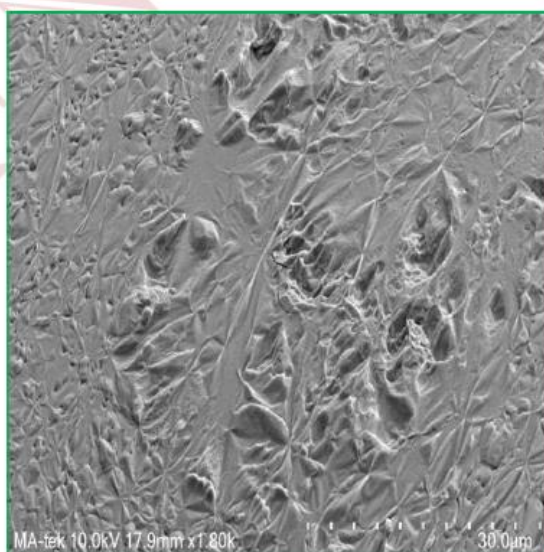
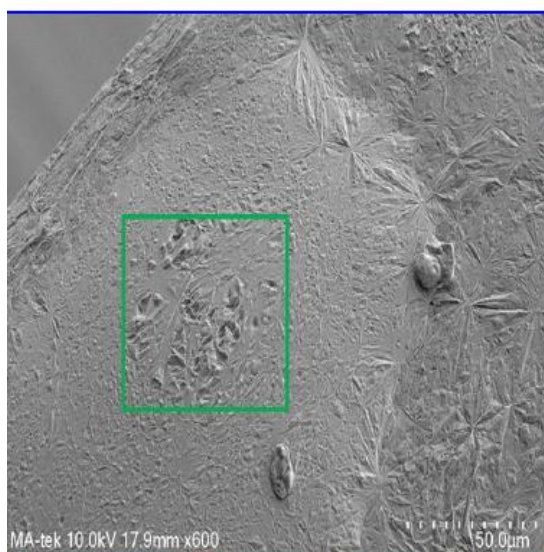
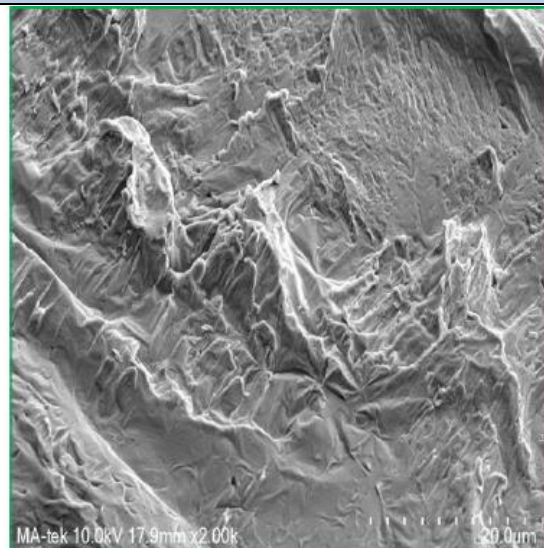
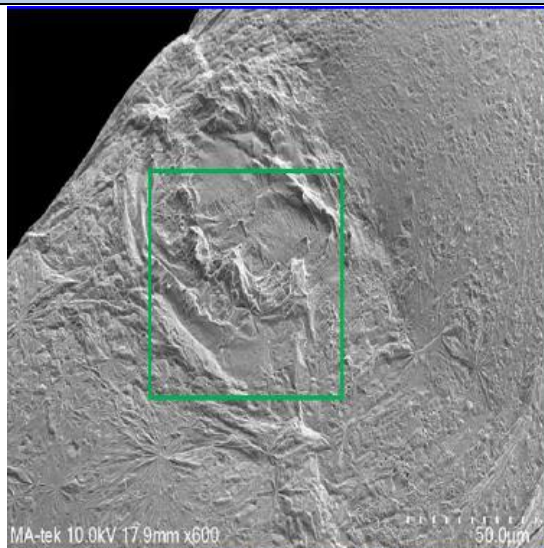


CSA37F62-LQFP48_Lot_2007AGM_THST 1000hrs_SEM Analysis



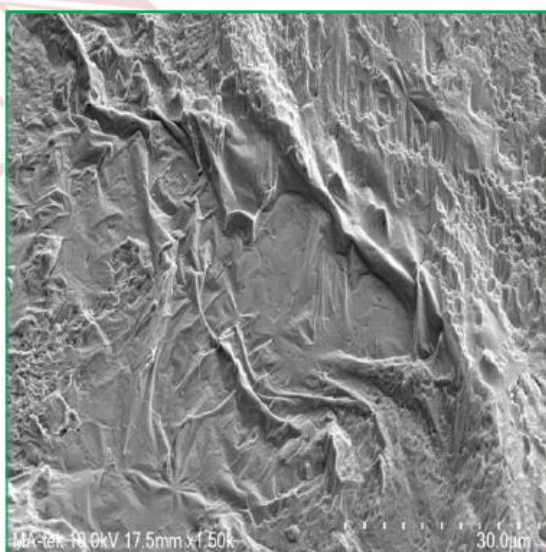
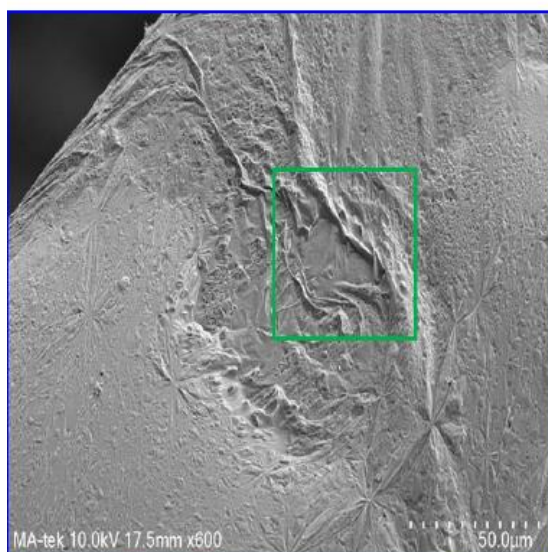
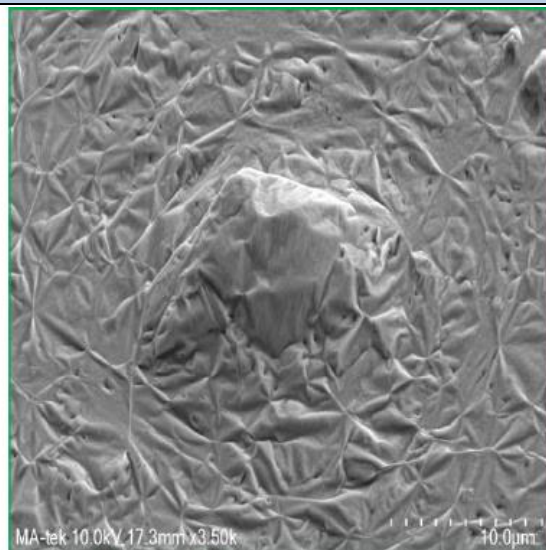


CSA37F62-LQFP48_Lot_2007BGM_THST 1000hrs_SEM Analysis



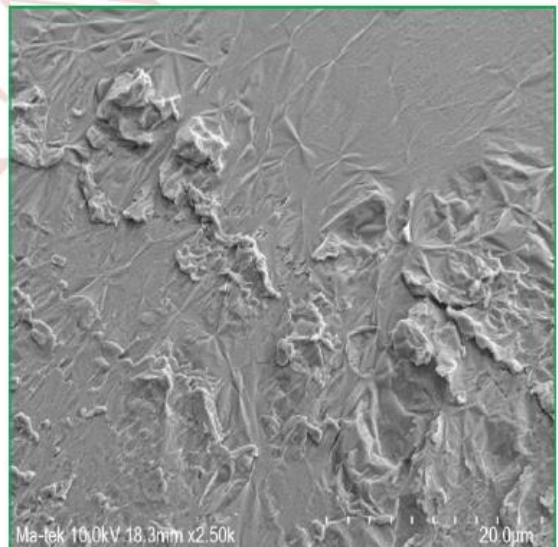
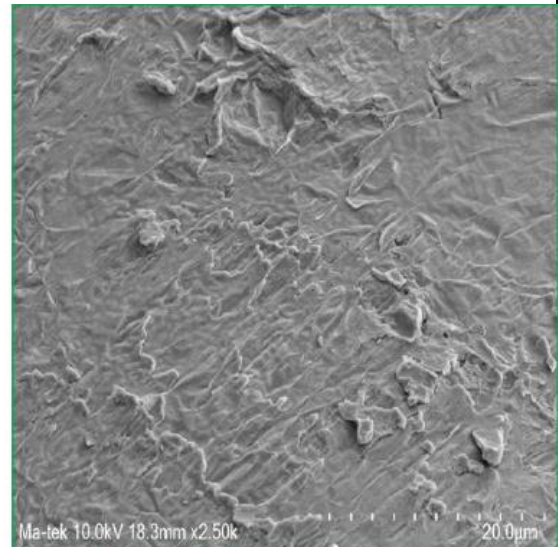
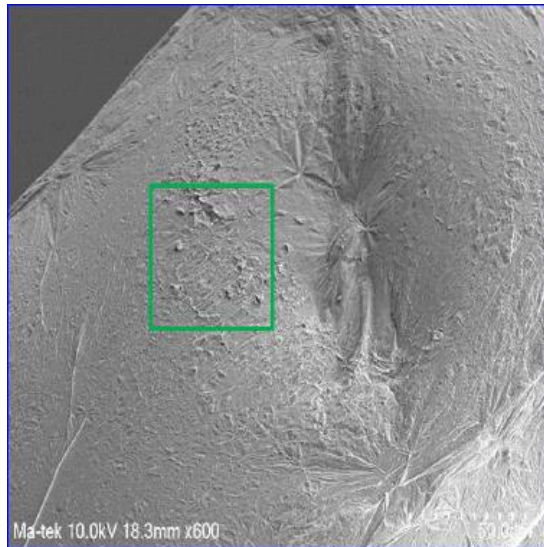


CSA37F62-LQFP48_Lot_2007CGM_THST 1000hrs_SEM Analysis



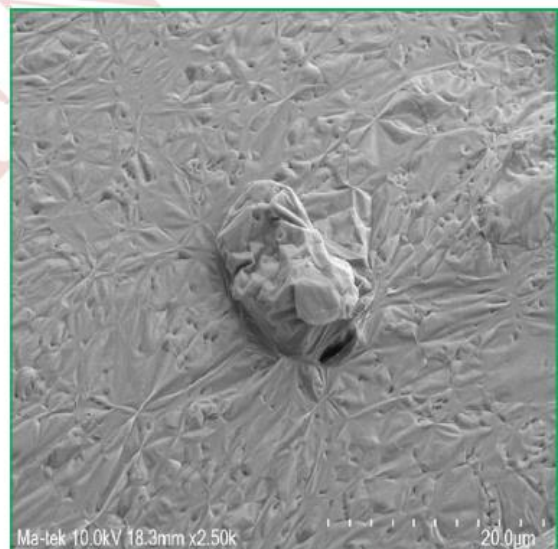
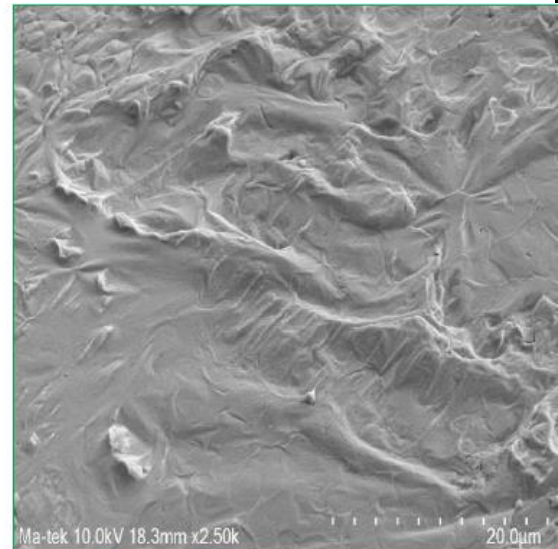
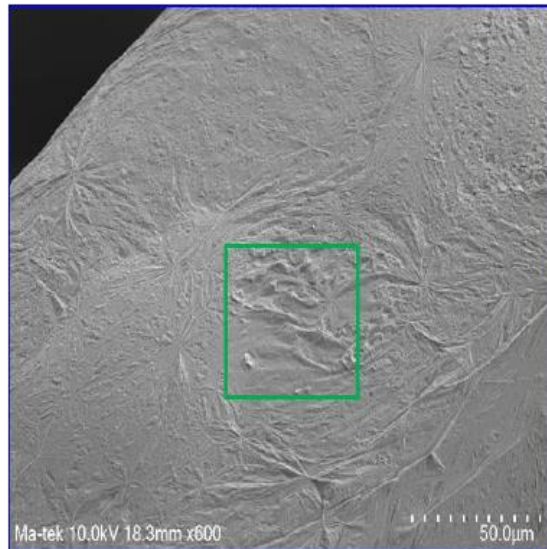


CSA37F62-LQFP48_Lot_2007AGM_THST 4000hrs_SEM Analysis



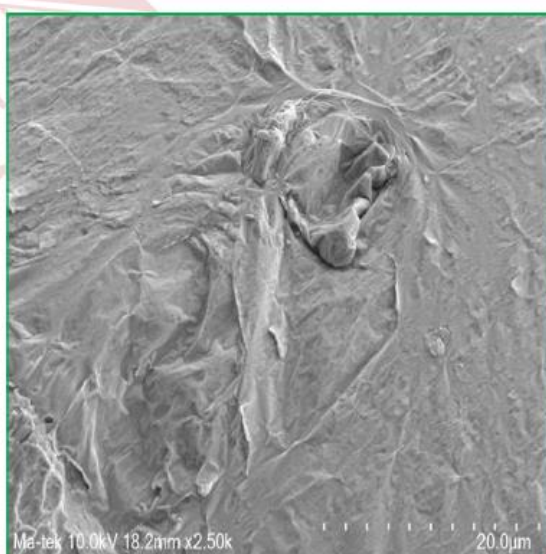
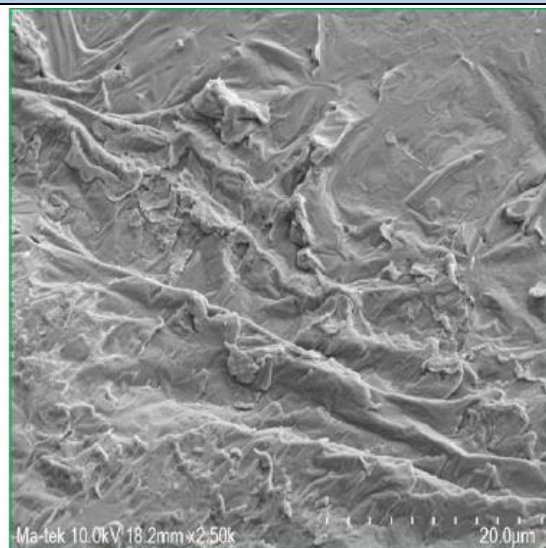
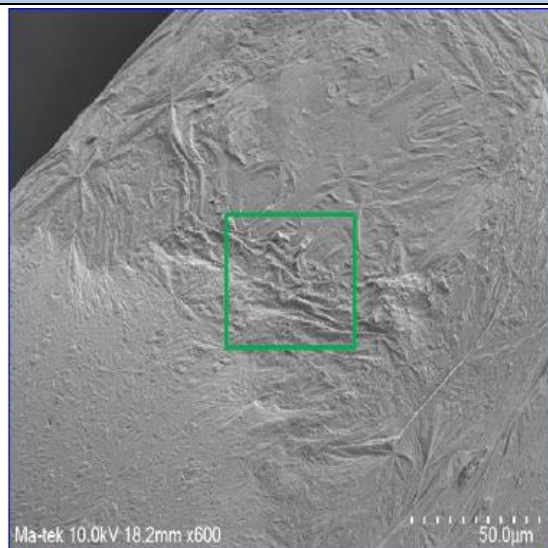


CSA37F62-LQFP48_Lot_2007BGM_THST 4000hrs_SEM Analysis



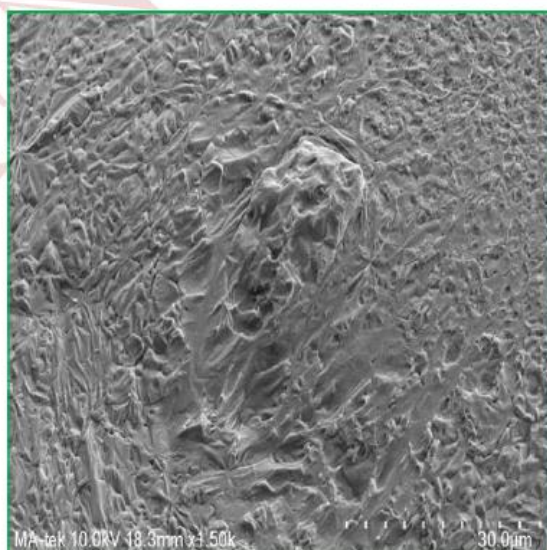
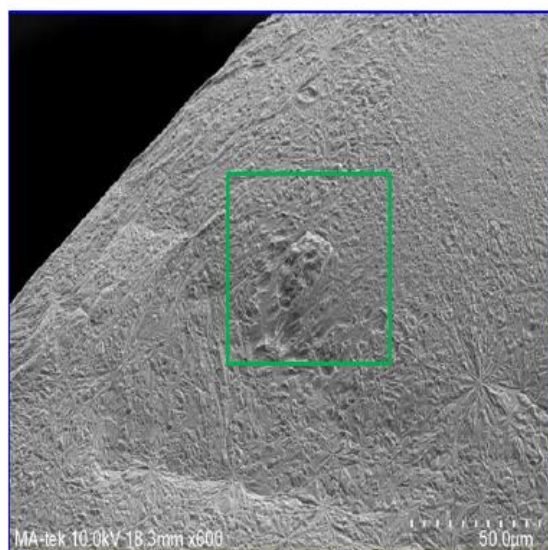
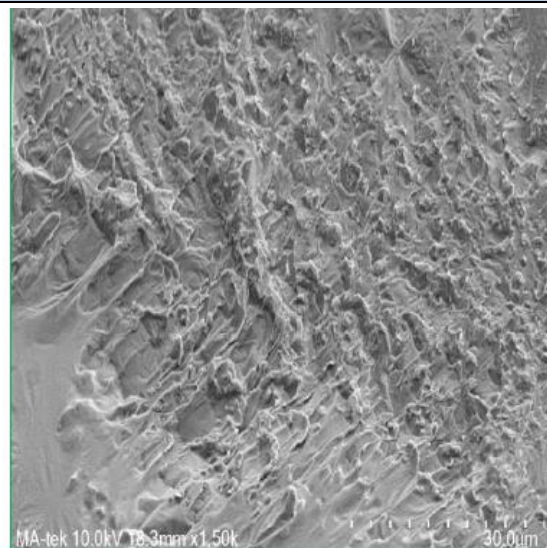
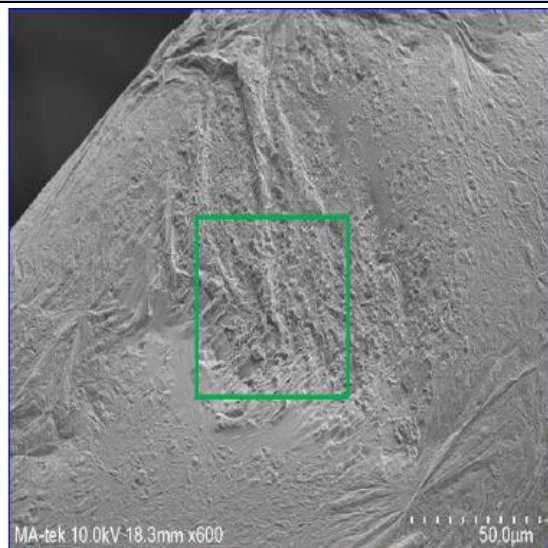


CSA37F62-LQFP48_Lot_2007CGM_THST 4000hrs_SEM Analysis



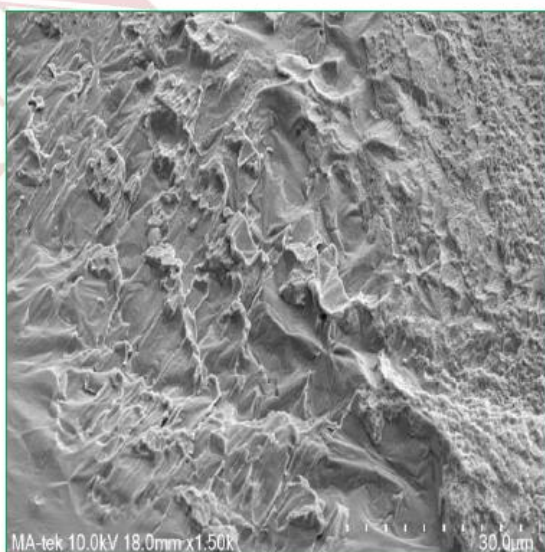
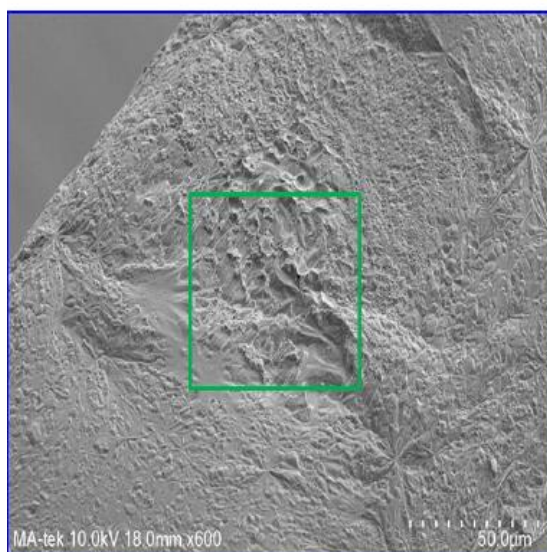
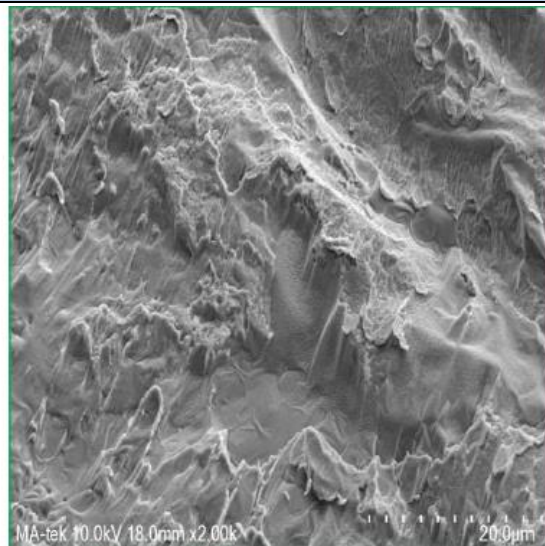
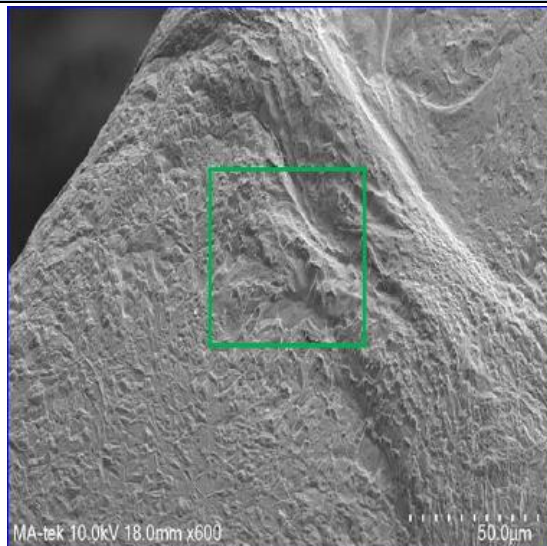


CSA37F62-LQFP48_Lot_2007AGM_THST 1000hrs_SEM Analysis



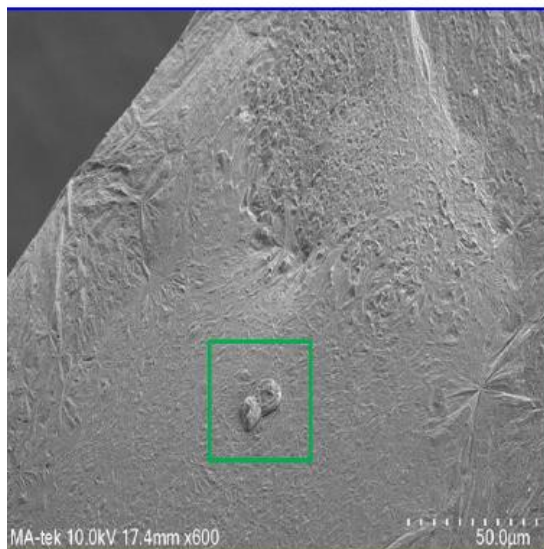
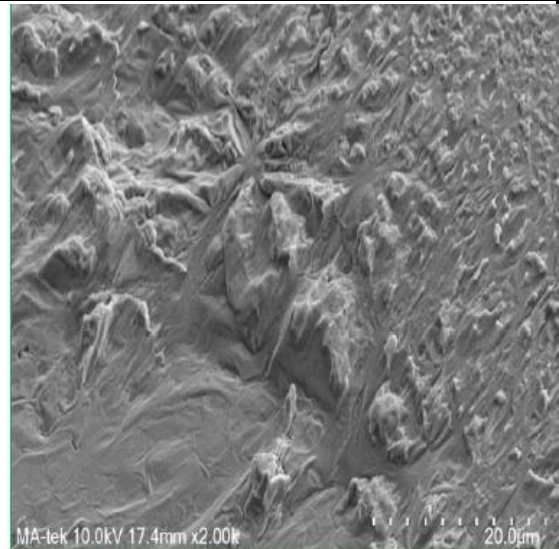
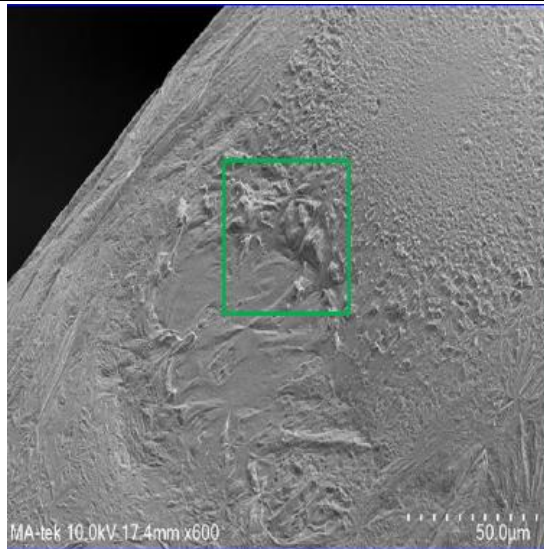


CSA37F62-LQFP48_Lot_2007BGM_THST 1000hrs_SEM Analysis



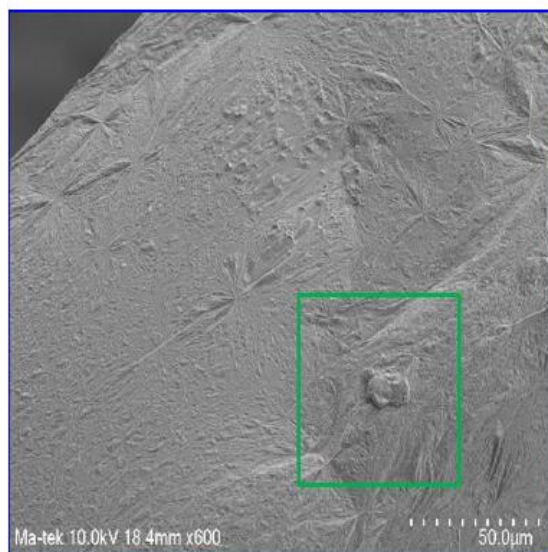
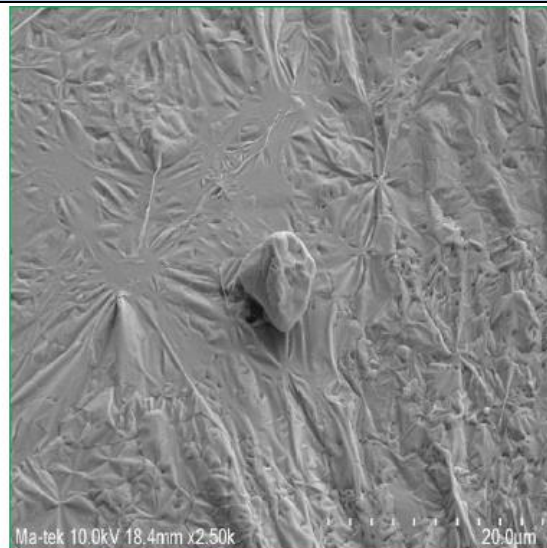
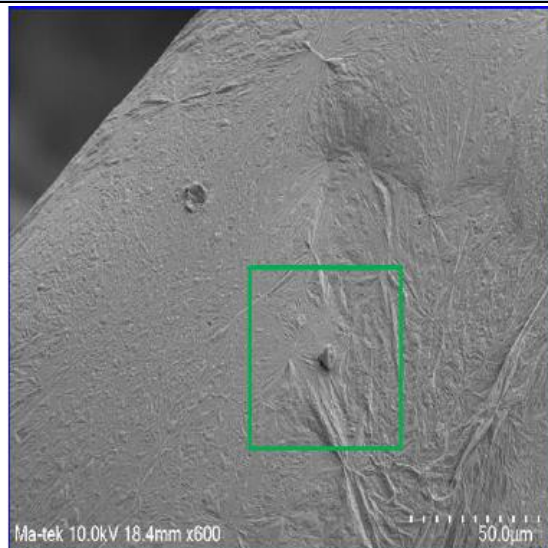


CSA37F62-LQFP48_Lot_2007CGM_THST 1000hrs_SEM Analysis

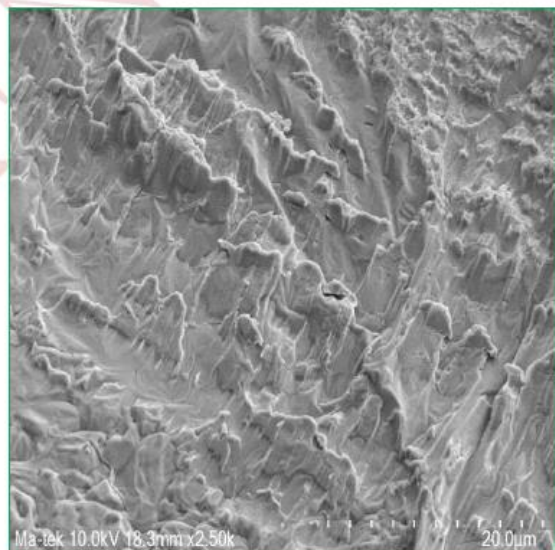
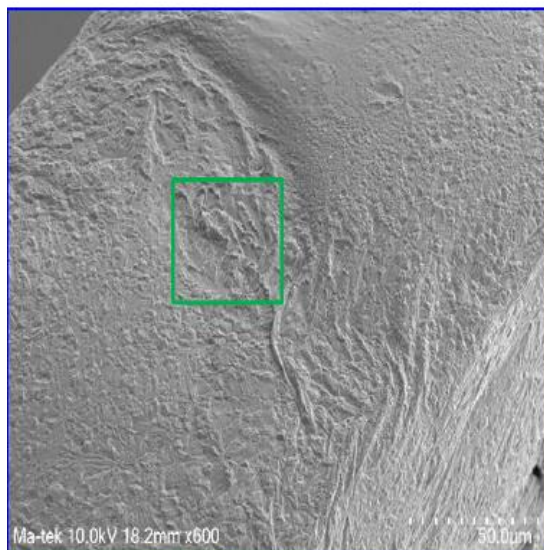
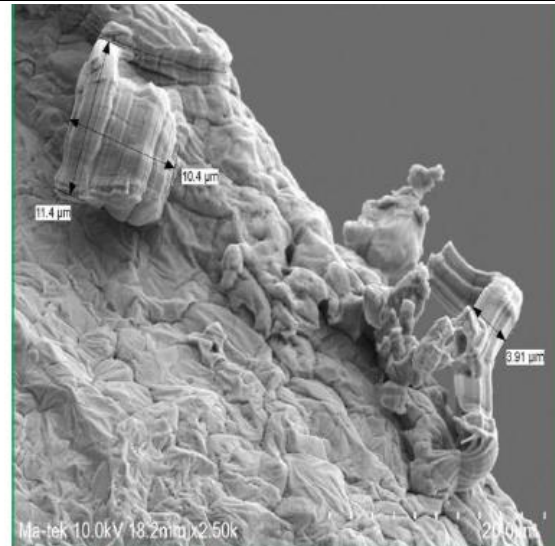
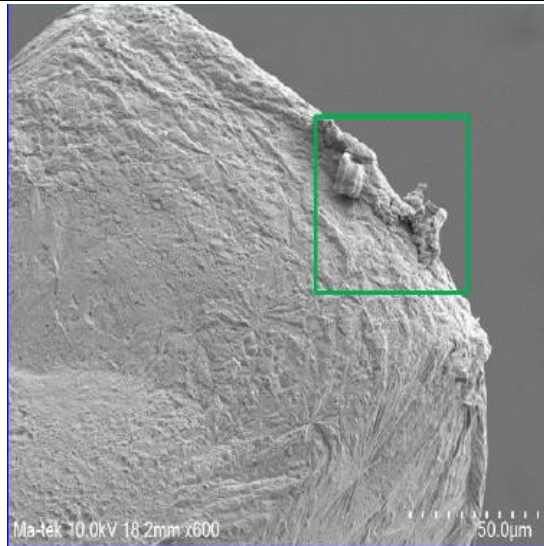




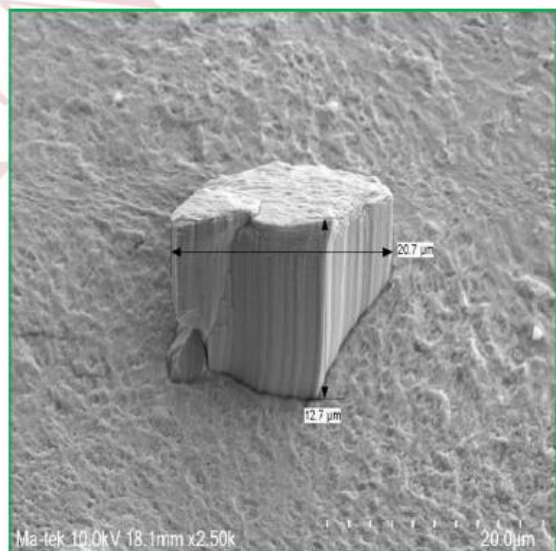
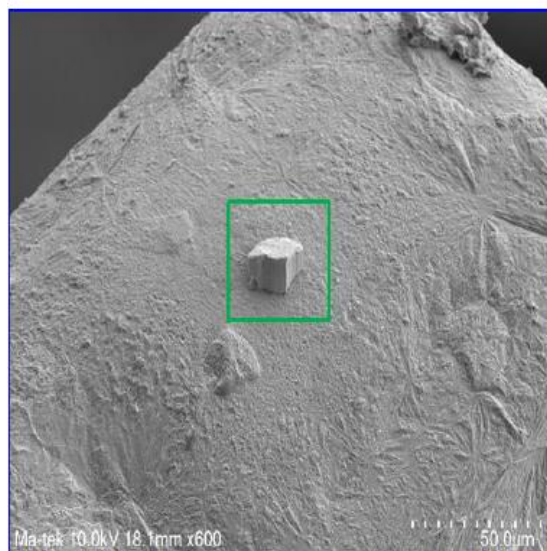
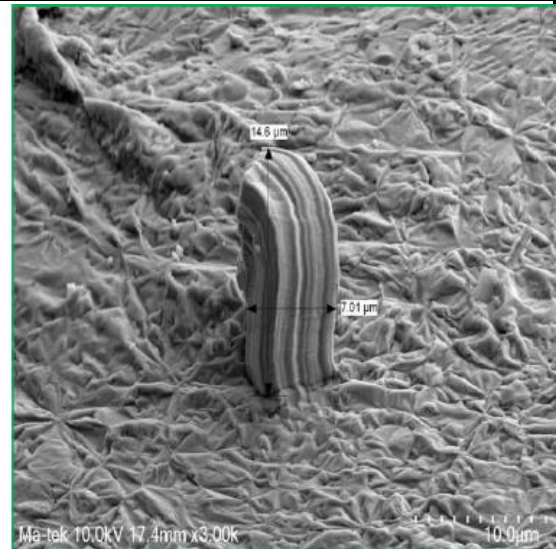
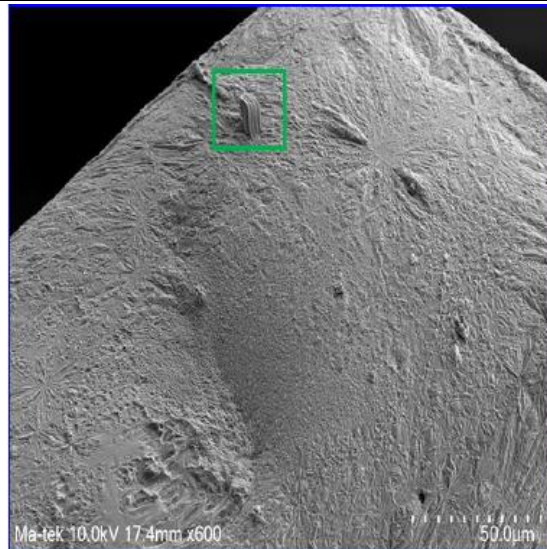
CSA37F62-LQFP48_Lot_2007AGM_THST 4000hrs_SEM Analysis



CSA37F62-LQFP48_Lot_2007BGM_THST 4000hrs_SEM Analysis



CSA37F62-LQFP48_Lot_2007CGM_THST 4000hrs_SEM Analysis





3.11 Electrostatic Discharge Human Body Model Test

3.11.1 Electrostatic Discharge Human Body Model Test Summary

<u>Sensitivity Pass: ±6000V</u> <u>AEC-Q100-002 RevE</u> <u>Class-H3A</u> Class-H0 : ≤250 Class-H1A : >251 to ≤500 Class-H1B : >500 to ≤1000 Class-H1C : >1000 to ≤2000 Class-H2 : >2000 to ≤4000 Class-H3A : >4000 to ≤8000 Class-H3B >8000 ESD Zap Interval: ≥ 500mS Zap: 3 pulse	Pin Combination	Sample	Pass Level
	All other pins to VSS(±500V)	3	±500V
	All other pins to VCC(±500V)		
	IO pins to IO pins(±500V)		
	All other pins to VSS(±1000V)	3	±1000V
	All other pins to VCC(±1000V)		
	IO pins to IO pins(±1000V)		
	All other pins to VSS(±2000V)	3	±2000V
	All other pins to VCC(±2000V)		
	IO pins to IO pins(±2000V)		
	All other pins to VSS(±6000V)	3	±6000V
	All other pins to VCC(±6000V)		
	IO pins to IO pins(±6000V)		

3.11.2 Raw Data

HBM All Combinations Test_±500 (Unit: V)							
Test Pin Fail Voltage	#1_A	#1_B	#1_C	Test Pin Fail Voltage	#1_A	#1_B	#1_C
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				

HBM All Combinations Test_±1000 (Unit: V)							
Test Pin Fail Voltage	#2_A	#2_B	#2_C	Test Pin Fail Voltage	#2_A	#2_B	#2_C
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				

HBM All Combinations Test_±2000 (Unit: V)							
Test Pin Fail Voltage	#3_A	#3_B	#3_C	Test Pin Fail Voltage	#3_A	#3_B	#3_C
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				



HBM All Combinations Test_±6000 (Unit: V)							
Test Pin Fail Voltage	#1	#4	#5	Test Pin Fail Voltage	#1	#4	#5
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				

Pin Group	PAD Pins
VSS	1, 6, 25, 42, 43
VCC	2, 44
IO	26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 47, 46, 3, 48

3.12 Electrostatic Discharge Charged Device Model Test

3.12.1 Electrostatic Discharge Charged Device Model Test Summary

Sensitivity Pass: ±2000V Class-C3 AEC-Q100-011 RevD Class-C0a : 0 - <125 Class-C0b : 125 - <250 Class-C1 : 250 - <500 Class-C2 : 500 - <750 Class-C2a : 500 - <750 (with corner pins [1] ≥TC750V) Class-C2b : 750 - <1000 Class-C3 : >1000 ESD Zap Interval: ≥ 1S Zap: 3 pulse	Pin Combination	Sample	Pass Level
	All pins(±250V)	3	±250V
	All pins(±500V)	3	±500V
	Corner pins(±750V)		±750V
	All pins(±2000V)	3	±2000V

3.12.2 Raw Data

CDM All pins Test_±250 (Unit: V)							
Test Pin Fail Voltage	#4_A	#4_B	#5_B	Test Pin Fail Voltage	#4_A	#4_B	#5_B
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				



CDM All pins Test_±500V/Corner pins Test_±750 (Unit: V)							
Test Pin Fail Voltage	#5_A	#4_C	#5_C	Test Pin Fail Voltage	#5_A	#4_C	#5_C
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				

CDM All pins Test_±2000 (Unit: V)							
Test Pin Fail Voltage	#6	#7	#8	Test Pin Fail Voltage	#6	#7	#8
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				

Pin Group	PAD Pins
VSS	1, 6, 25, 42, 43
VCC	2, 44
IO	26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 47, 46, 3, 48

3.13 Latch-Up Test

3.13.1 Latch-Up Test Summary

CLASS: II @85°C NOTE: Class I – Latch-up testing performed at room temperature. Class II – Latch-up testing performed at maximum ambient rated temperature for the device.	Trigger Model	Test Pin	Sample	Passing Current or Voltage
	+IT	+IT_IO	6	Pass(+100mA)
	-IT	-IT_IO	6	Pass(-100mA)
	Vsupply Over voltage test	OV_VCC	6	Pass(+8.25V)



3.13.2 Raw Data

Positive/Negative Current Trigger_+/-100mA (Unit:mA)							
Test Pin Fail Current	#6_A	#7_A	#6_B	Test Pin Fail Current	#7_B	#6_C	#7_C
VCC	Pass	Pass	Pass	VSS	Pass	Pass	Pass
IO	Pass	Pass	Pass				

V supply Over Voltage Test_+8.25V (Unit:V)							
Test Pin Fail Voltage	#6_A	#7_A	#6_B	Test Pin Fail Voltage	#6_A	#7_A	#6_B
VCC	Pass	Pass	Pass				