## Automotive/ Industrial/ Multi-Market Qualification Report Summary

Objective: To Qualify	Objective: To Qualify Anguilla 3M59B Mask Set Change - ADC Improvement (4 layers RPO, N+, P+, M3)							
Freescale PN: MC56F80XX Part Name: Anguilla		Customer Name(s): V PN(s):	'arious		Plan or Results: 0 Revision # & Date: 22-Jun-10			
r art Name. Angulia		114(5).				Hevision # & Date.	22-0011-10	
Technology: E025AFXQ		Design Engr: Bishnoi Navin-B12218				166399		
Package: LQFP 32 7*7*	1.4P0.8	Phone #: 9	1-120-3952123		QUARTZ Tracking #: 181061			
Fab / Assembly / Final Test Sites: TSMC11/ASE		ee Swee.San-R64732			(Signature/Date shown below may be electronic)			
Maskset#: M59B Rev#: 3		Prod. Package Engr: Phone #: n			PPE Approval (for DIM/BOM results) Signature & Date: not required, existing BOM used			
Die Size (in mm) W x L x T 3.070 x 3.070 mm		NPI PRQE: Miza Ismail - r27786 Phone #: 603 78732723				NPI PRQE Approval Miza Ismail - r27786 Signature & Date:		
Part Operating Temp. Grade: Grade 1	-40C to 125C	Trace/DateCode:	LOT A WK1982.02	LOT B WK2158.02	LOT C WK1985.02	CAB Approval Signature & Date:		
Target Dates Test Start: 11/30/10 Test Finish: 06/28/10						Customer Approval Signature & Date:		

(see Instruction #8 for use of rows 10-13; see examples below)

PC JST JEST AC A A A A A A A A A A A A A A A A A A	ESD22- A113 STD-020 ESD22- A101 A110 ESD22- A102 A118 ESD22- A104 EC Q100-	This testing is pe  Test Conditions  Preconditioning (PC): PC required for SMDs only. MSL 3@ 280°C, +5'.0°C (or document otherwise with justification)  Preconditioning (PC): PC required for SMDs only. MSL 3@ 280°C, +5'.0°C CSAM before and after Highly Accelerated Stress Test (HAST): PC before HAST (for SMDs only): Required HAST (150°CSMP): Hard for MSL Bias — Max Vot (or justify otherwise) Timed RO of 48hrs. MAX  Autoclaive (AC): PC before TC (for SMDs only): Required AC = 121°C(10°RMDs only): Required AC = 121°C(10°RMDs only): Required To = 15°C to 150°C for 50°C oyeles. High Temperature Cycle (TC): Temperature Cycle (TC)		cale Reliability Lab ( ELERATED ENVIRE Minimum Sample Size (Note 1) All surface mount device PC+PTC and as require  CSAM SS=11 units per  77  77  77	# of Lots  # of Lots  es prior to THB, HAST, id per test conditions.	Total Units including spares	Results Lot ID-(#Rej/SS) NA=Not Applicable  pass	Comments (Note 2)  not required  not required  Generic data: 3M67E (Q120497): 0/240 @ 1008hrs THB  not required  not required  Generic data: 3M67E (Q120497): 0/240 @ 1008hrs, 150C	
PC JST JEST AC A A A A A A A A A A A A A A A A A A	ESD22- A113 STD-020 ESD22- A103 A110 ESD22- A101 A110 ESD22- A102 A118 ESD22- A102 A118	Preconditioning (PC): PC required for SMDs only. MSL 3@ 2007 C, 54-07 C for document otherwise with justification)  Preconditioning (PC): Preconditioning (PC): Preconditioning (PC): Preconditioning (PC): PC equired for SMDs only. MSL 3@ 2007 C, 54-07 C SAM bafore and after Highly Accelerated Stress Test (HAST): PC bafore HAST 130 Cc85%HH for 36 hrs. Bass — Max Vol (or SMDs only): Required HAST = 130 Cc85%HH for 36 hrs. Bass — Max Vol (or Justify othrwise) Timed RO of 48hrs. MAX  Autoclave (AC): PC bafors AC for SMDs only): Required Act = 12**C10**C19**C19**C19**C19**C19**C19**C19	End Point Requirements TEST @ RHC  CSAM  TEST @ RH  TEST @ RHC  TEST @ RHC For AEC: WBP =/> 3 grams	Minimum Sample Size (Note 1) All surface mount device (Note 1) All surface mount device (Note 1) CSAM SS=11 units per 77 77 77	# of Lots as prior to THB, HAST, d per test conditions.  Qualification tot  0	Total Units including spares AC, UHST, TC,	Lot ID-(#Fie)/SS) NA=Not Applicable	(Note 2) not required not required Generic data: 3M67E (Q120497): 0/240 @ 1008hrs THB not required not required Generic data:	
PC JST JEST AC A A A A A A A A A A A A A A A A A A	ESD22- A113 STD-020 ESD22- A103 A110 ESD22- A101 A110 ESD22- A102 A118 ESD22- A102 A118	Preconditioning (PC): PC required for SMDs only. MSL 3@ 2007 C, 54-07 C for document otherwise with justification)  Preconditioning (PC): Preconditioning (PC): Preconditioning (PC): Preconditioning (PC): PC equired for SMDs only. MSL 3@ 2007 C, 54-07 C SAM bafore and after Highly Accelerated Stress Test (HAST): PC bafore HAST 130 Cc85%HH for 36 hrs. Bass — Max Vol (or SMDs only): Required HAST = 130 Cc85%HH for 36 hrs. Bass — Max Vol (or Justify othrwise) Timed RO of 48hrs. MAX  Autoclave (AC): PC bafors AC for SMDs only): Required Act = 12**C10**C19**C19**C19**C19**C19**C19**C19	TEST ⊕ RHC  CSAM  TEST ⊕ RH  TEST ⊕ RHC  For AEC: WBP =/> 3 grams	(Note 1) All surface mount device PC+PTC and as require CSAM SS=11 units per  77  77  77	es prior to THB, HAST, d per test conditions.  Qualification lot  0	spares AC, UHST, TC,	NA=Not Applicable	not required  not required  Generic data : 3M67E (Q120497) : 0/240 @ 1008hrs THB  not required  not required  Generic data :	
PC JS1  PC JS1  AC AC  TC AC  HTSL	A113 STD-020 EESD22- A113 STD-020 EESD22- A101 A110 EESD22- A102 A118 EESD22- A102 A118	PC required for SMDs only.  SMSL 3 @ 200 °C, -54 °C (or document otherwise with justification)  Preconditioning (PC): PC (or of occument otherwise with justification)  Preconditioning (PC): PC (or of occument otherwise)  RSL 3 @ 200 °C, -54 °C °C  SSAM bafore and after  Highty Accelerated Stress Test (HAST): PC bafore HAST = 130 °C 085 °K; HI for 96 °Ks.  Autoclave (To SMDs only): Required HAST = 130 °C 085 °K; HI for 96 °Ks.  Autoclave (AC): PC SMDs only): Required HAST = 130 °C 085 °K; HI for 96 °Ks.  Autoclave (AC): PC SMDs only): Required Master of the SMDs only): Required Master of the SMDs only): Required Master of the SMDs only): Required Company only): Required Company only): Required Company only): Required Company only): Required	CSAM  TEST @ RH  TEST @ RHC For AEC: WBP ≈/> 3 grams	PC+PTC and as require  CSAM SS=11 units per  77  77	qualification lot  0  0	0		not required  Generic data : 3M67E (Q120497) : 0/240 @ 1008hrs THB  not required  not required  Generic data :	
PC J-ST JEST AC A-EC- HTSL	A113 STD-020 IESD22- A101 A110 IESD22- A102 A118 IESD22- A102 CQ 0100- IESD22- ESD22- A104 A105 A106 A107 A108 A108 A108 A108 A108 A108 A108 A108	PC required for SMDs only.  MSL 3@ 2007, 5-50°C  GSAM before and after  Highly Accelerated Stress Test (HAST);  PC before HAST (for SMDs only): Required  HAST = 130°C S69°FHH for 96 hrs.  Bits = Max Vdd (or justify othrwise)  Timed RO of 48hrs. MAX  Autoclave (AC);  PC before AC (for SMDs only): Required  AC = 121°C 100°R;HH15 paig for 96 hrs.  Timed RO of 48hrs. MAX  Temperature Cycle (TC);  PC before TC (for SMDs only): Required  TC = 55°C to 150°C for 500°C oydes.  High Temperature Storage Life (HTSL);  (Devices incorporating NVM shall receive NVM  Clevices incorporating NVM shall receive NVM  Clevices incorporating NVM shall reserve NVM  Clevices incorporating NVM shall reserve NVM  Clevices incorporating NVM shall reserve NVM  Clevices incorporating NVM test sequencing after this  test, and special NVM test sequencing after this  test, and special NVM test sequencing after this  test, and sequencing after this	TEST @ RHC TEST @ RHC For AEC: WBP =/> 3 grams	77 77 77	0	0		Generic data : 3MS7E (Q120497) : 0/240 @ 1008hrs THB not required not required Generic data :	
AC AAC  TC AEC  HTSL	A101 A110 ESD22- A102 A118 ESD22- A104 EC Q100- ESD22-	PC before NAST (for SMDs only): Required HAST = 130°CS/SHH for 98 hrs. Bits = Max Vdd (or justify othrwise) Timed RO of 48 hrs. MAX Autoclave (AC): PC before AC (for SMDs only): Required AC = 121°C/100°KRH/15 paig for 98 hrs. Timed RO of 24 sMPs. MAX Temperature Cycle (TC): PC before TC (for SMDs only): Required TC = 55°C to 150°C for 500°Cycles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 1000°C for 500°C yeles. High Temperature Storage Life (HTSL): 150°C for 100°C for	TEST @ RHC For AEC: WBP =/> 3 grams	77	0	0		3M67E (Q120497) : 0′240   ⊕ 1008hrs THB  not required  not required  Generic data :	
AC A A A A A A A A A A A A A A A A A A	A102 A118 ESD22- A104 EC Q100- ESD22-	PC before AC (for SMDs only): Required AC = 121°C10'DRHIT5 peigl for 99 hrs Timed RO of 2-48/hrs. MAX  **Temperature Cycle (TC):  **PC before TC (for SMDs only): Required TC = -85°C to 150°C for 500 cycles.  **High Temperature Storage Life (HTSL): 150°C for 1000 hrs. Mail receive NVM endurance preconditioning (EDR) prior to this test, and special NVM test sequencing after this test; see AEC-Olfor for defails)	TEST @ RHC For AEC: WBP =/> 3 grams	77	0	0	pass	not required  Generic data :	
TC AREC	A104 EC Q100- ESD22-	PC before TC (for SMbs only): Required TC = -65°C to 150°C for 500 cycles. High Temperature Storage Life (HTSL): 150°C for 1000 hrs (Devices incorporating NVM shall receive 'NVM endurance preconditioning'(EDR) prior to this test, and special NVM test sequencing after this test; see AEC-1000 for details)	For AEC: WBP =/> 3 grams				pass	Generic data :	
HTSL	ESD22- A103	150 °C for 1000 hrs (Devices incorporating NVM shall receive 'NVM endurance preconditioning' (EDR) prior to this test, and special NVM test sequencing after this test; see AEC-Q100 for details)	TEST @ RHC	77	0	0	pass		
Stress Test Refe									
Stress Test Refe		TEST GROUP B - ACCELERATED LIFETIME SIMULATION TESTS							
	eference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units including spares	Results Lot ID-(#Rej/SS) NA=Not Applicable	Comments or Generic Data	
	ESD22- A108	High Temperature Operating Life (HTOL): AEC Ta = 125°C (Tj = 135C) for 168hrs (qual), 1008hrs (tj), Blas = IO : 3.8V, Core : 2.9V  Prior to HTOL, W/E 10k @ 125C  Timed RO of 96hrs. MAX	TEST @ HC	77	3	231	Lot A: 0/80 Lot B: 0/80 Lot C: 0/80	Generic data for Non BI Flow: 3M67E (0120497) : 0'240 @ 125C, 741hrs, 1008hrs (RHC) 4M67E (0136498) : 0'80 @ 125C, 168hrs (RHC)	
	A108	High Temperature Operating Life (HTOL): AEC 1a - 125°C to 188/hrs (qual), 1008/hrs (fy) Bias = 10 : 3.8V, Core : 2.9V Prior to HTOL, W/E 10k @ 125°C Timed RO of 96/hrs. MAX	TEST @ RHC	77	3	231	Lot A: 0/80 Lot B: 0/80 Lot C: 0/80	Generic data for BI Flow : 3M6/E/C (0120497) : 0/240 @ 125C, 741hrs, 1008hrs (RH-C) 2M59B (84057) : 0/240 @ 150C, 504hrs (RHC)	
AEC (	005	NVM Endurance at Cold, Data Retention, and Operational Life (EDR):  WIK @ -40C ~> DRB @ 150 for 1008hrs Devices incorporating NVM shall receive 'NVM endurance preconditioning' (W/E cycling). Test R, H, C after W/E cycling.  Timed RO of 96hrs. MAX	TEST @ RHC	90	0	0		not required	
	005	NVM Endurance at Hot, Data Retention, and Operational Life (EDR): WE @ 125C > DRB @ 150 for 1008hrs  Devices incorporating NVM shall receive 'NVM endurance preconditioning' (W/E cycling). Test R, H, C after W/E cycling).	TEST @ RHC	90	0	0		not required	
		R, H, C after W/E cycling. Timed RO of 96hrs. MAX	TEOT	O. BAOK: 27		TEOTO			
Stress Test Refe	eference	Test Conditions	End Point Requirements	C - PACKAGE ASSI Minimum Sample Size	# of Lots	TESTS  Total Units including spares	Results Lot ID-(#Rej/SS) NA=Not Applicable	Comments or Generic Data	
WBS AEC	EC Q100- 001	Wire Bond shear (WBS)	Cpk = or > 1.67	30 bonds from minimum 5 units	0	0	Te teres Applicable	not required	
	ilStd883- 2011	Wire Bond Pull (WBP): Cond. C or D	Cpk = or > 1.67	30 bonds from minimum 5 units	0	0		not required	
	ESD22- B102	Solderability (SD): 8hr.(1 hr. for Au-plated leads) Steam age prior to test. If production burn-in is done, samples must also	>95% lead coverage of critical areas	15	0	0		not required	
	ESD22- B100	undergo burn-in prior to SD.  Physical Dimensions(PD):  PD per FSL 98A drawing	Cpk = or > 1.67	10	0	0		not required	

AEC-Q100- 010	Dimensional (DIM):  PPE to verify P results against valid 98A drawing.  BOM Verification (BOM):  PPE to verify oral of EPR BOM is accurate.  Solder Ball Shear (SBS):  Performed on all solder ball mounted packages and solder ball mounted packages to the properties of the properties	Cpk = or >1.67	10			DIM: BOM:	not required
010 JESD22-	Performed on all solder ball mounted packages e.g. PBGA, Chip Scale, Micro Lead Frame (but NOT Flip Chip).	Cpk = or >1.67					
	before shear.		(5 balls from a min. of 10 devices)	0	0		not required
	Lead Integrity (LI): Not required for surface mount devices; Only required for through-hole devices.	No lead breakage or cracks	5 (10 leads from each of 5 parts)	0	0		
		TEST GRO	UP E - ELECTRICAL	VERIFICATION TE	STS		
Reference	Test Conditions	End Point Requirements	Minimum Sample Size	# of Lots	Total Units including spares	Results Lot ID-(#Rej/SS) NA=Not Applicable	Comments or Generic Data
002 / JESD22- A114E Jan 2007	ElectroStatic Discharge/ Human Body Model Classification (HBM): Test @ 500/1000/1500/2000 Volts For AEC, see AEC-Q100-002 for classification levels.	TEST @ RH 2KV min.	3 units per Voltage level	1	15	Lot A: 500V: 0/3 1kV: 0/3 1.5kV: 0/3 2kV: 0/3	
003 or JESD22	Machine Model Classification m(MM): Test @ 50/100/200 Volts For AEC, see AEC-Q100-003 for classification levels.	TEST @ RH 200V min.	3 units per Voltage level	1	12	Lot A: 50V: 0/3 100V: 0/3 150V: 0/3 200V: 0/3	
	ElectroStatic Discharge/ Charged Device Model Classification (CDM): Test @ 250/500/750cp Volts For AEC, see AEC-Q100-011 for classification levels. Timed RO of 96hrs MAX.	TEST @ RH All pins =/> 500V For AEC, Corner pins =/> 750V;	3 units per Voltage level	1	12	Lot A: 250V: 0/3 500V: 0/3 750V cp: 0/3	
	Latch-up (LU): Test per JEDEC JESD78 with the AEC-Q100- 004 requirements for AEC. Ta= Maximum operating temperature Vsupply = Maximum operating voltage	TEST @ RH	6	1	6	Lot A: 0/6	
009, Freescale 48A spec	pre and post HTOL	TEST @ RHC For AEC, Cpk target > 1.67	30	3	90	Cpk > 1.67	
AEC-Q003	Ony performed on new technologies and part families per AEC Q003.						
AEC-Q100- 006	(GL): 155°C, 2.0 min, +400/-400 V Per AEC Q100 Rev G, this test is performed for	TEST @ R	6	0	0		not required
	AEC-Q100- 002 / JESD22- A114E Jan 2007 AEC-Q100- 003 or JESD22 AEC-Q100- 011  JESD78 plus AEC-Q100- 004 for AEC AEC-Q100- For AEC, AEC-Q003 For AEC, AEC-Q100- 006 AEC-Q100- 006 For AEC, AEC-Q003	AEC-0100- DELECTOSTATIC DIscharge/ Human Body Model Classification (HBM): JESD22- A114E Jan Test @ 500/1000/1500/2000 Volts Test @ 500/1000/1500/2000 for classification levels.  AEC-0100- BectroStatic Discharge/ Machine Model Classification m(MM): Test @ 500/000/750cp Volts For AEC, see AEC-0100-003 for classification levels. Timed Bod of Behrs MAX.  JESD78 plus Test per JEDEC JESD78 with the AEC-0100-004 Test @ 250/500/750cp Volts Test per JEDEC JESD78 with the AEC-0100-004 Test @ 250/500/750cp Volts Test per JEDEC JESD78 with the AEC-0100-004 Test Maximum operating temperature Description of the State of Sta	Reference Test Conditions Requirements AEC-Q100.  DELECTOSTAILS Discharge* TEST @ RH 2007  Test @ 5001000150002000 Votls For AEC, see AEC-Q100-002 for classification levels.  AEC-Q100.  ElectroStatic Discharge*  TEST @ RH 2007  Test @ 5001000150002000 Votls For AEC, see AEC-Q100-003 for classification levels.  Test @ 500100200 Votls Test @ 500100200 Votls For AEC, see AEC-Q100-003 for classification levels.  Test @ 50100200 Votls For AEC, see AEC-Q100-003 for classification levels.  Test @ 50100200 Votls For AEC, see AEC-Q100-011 for classification levels.  Timed RO of 86hrs MAX.  Test @ 50100200 Votls For AEC, Comprise  Test per JEDEC JESD78 with the AEC-Q100-004 for equirements for AEC.  ON 100 for AEC Test Maximum operating temperature  Vaupby = Maximu	Reference  Redurements  Requirements  Size  Requirements  Requirements  Size  Requirements  Size  Requirements  Requirements  Size  Size  Requirements  Size  Size	Test Conditions Requirements Size # of Lots  AEC-Q100- 002 / JESSE JESS	Reference  REC-0100- 003 / JESD22- 12 et @ 5001000/15002000 Volts For AEC, soe AEC-0100-002 for classification (HBM): 12 et @ 5001000/15002000 Volts For AEC, see AEC-0100-002 for classification (HBM): 12 et @ 5001000/15002000 Volts For AEC, see AEC-0100-003 for classification (HBM): 12 et @ 50010000/15002000 Volts For AEC, see AEC-0100-003 for classification (HBM): 12 et @ 50010000 Volts For AEC, see AEC-0100-003 for classification (HBM): 13 units per Voltage 14 level 15 evel 16 evel 17 et @ 50010000 Volts For AEC, see AEC-0100-003 for classification (HBM): 18 evel 19 evel 10 evel 10 evel 11 evel 200 min. 20	End Point   Requirements   Require

## BOM Information of Qual Vehicles :

Part Number	Moo	Die Size	Quartz	Wafer Fab/ Polymide	Die Attach	Mold Compound	Leadframe Flagsize	Wire
	Number							
MC56F80XXX	3M59B			TSMC11 / 8124	EN4900G	CEL9240HF	Cu Frame 5x5	0.98mils
			181061					

Generic Data:								
Part Number	Moo	Die Size	Quartz	Wafer Fab/ Polymide	Die Attach	Mold Compound	Leadframe Flagsize	Wire
	Number					-		
MC56F802/3XXXX	3M67E 4M67E	3.820 x 3.820mm	120497 (3M) and 136498 (4M)	ATMC	EN4900G	CEL9240HF	Cu Frame	0.98mils

Revision	Date	Comments	Author
Rev O	22-Jun-10	Qualification Report	Miza Ismail