Process Change Notice #1305241

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PCN Date: 5/24/2013	**Effective Date:** 8/29/2013	
Title: EZRadio (3x3mm) and EZRadioPRO (4x4mm) QFN Conversion to Copper Bond Wire		
Originator: Vivek Mohan	**Phone:** 1-408-702-1251	**Dept:** Embedded Systems
Customer Contact: Kathy Haggar	**Phone:** 1-512-532-5261	**Dept:** Inside Sales

PCN Type:

☐ **Datasheet**
☐ **Product Revision**
☐ **Discontinuance**
☐ **Foundry**
☒ **Assembly**
☐ **Test**
☐ **Packing**
☐ **Labeling**
☐ **Other**

Last Order Date: Not Applicable

PCN Details

Description of Change:

Silicon Laboratories is pleased to announce the successful qualification of copper-palladium bond wire at Advanced Semiconductor Engineering (ASECL) for the 20-QFN-4x4 and 20-QFN-3x3 EZRadio and EZRadioPRO product families. Silicon Laboratories has proactively invested in copper-palladium bond wire process to insulate customers from the impact of escalating gold prices. To date, Silicon Laboratories has been absorbing the rising cost of gold.

After the effective date of this PCN, Si4x5x and Si4x6x product will ship with either gold bond wire from SPIL or copper bond wire from ASECL.

ASECL is an existing assembly site for Silicon Laboratories and is certified for ISO9001, ISO14001, ISO/TS 16949 and is a Sony Green Partner.

Reason for Change:
Move to Copper-Palladium wire for sustainability and to mitigate increasing gold prices.

Impact on Form, Fit, Function, Quality, Reliability:

There is no impact to the Form, Fit, Function, Quality or Reliability of the Si4x6x and Si4x5x devices. All devices comply fully with datasheet parameters and quality levels. There is no change required for board layout or soldering profiles. Products using Cu wire meet all Moisture Sensitivity Level (MSL) specifications and are a direct drop-in replacement for the existing packages. There are no changes to the mechanical specifications or drawings. Products using Cu wire meet all RoHS requirements where applicable.

Process Change Notice #1305241

Product Identification:

Ordering Part Number	Package
Si4464-B1B-FM(R)	20-QFN 4x4mm
Si4463-B1B-FM(R)	20-QFN 4x4mm
Si4461-B1B-FM(R)	20-QFN 4x4mm
Si4460-B1B-FM(R)	20-QFN 4x4mm
Si4455-B1A-FM(R)	20-QFN 3x3mm
Si4355-B1A-FM(R)	20-QFN 3x3mm
Si4362-B1B-FM(R)	20-QFN 4x4mm
Si4063-B1B-FM(R)	20-QFN 4x4mm
Si4060-B1B-FM(R)	20-QFN 4x4mm
Si4438-B1C-FM(R)	20-QFN 4x4mm

Last Date of Unchanged Product: 8/29/2013

Qualification Samples:

Samples are available upon request. Please contact your local Silicon Laboratories sales representative to order samples. A list of Authorized representatives may be found at www.silabs.com

Customer Early Acceptance Sign Off:

Customers may approve early PCN acceptance by completing the information below:

Early Acceptance: **Date:** ______________________________

Name: ______________________________

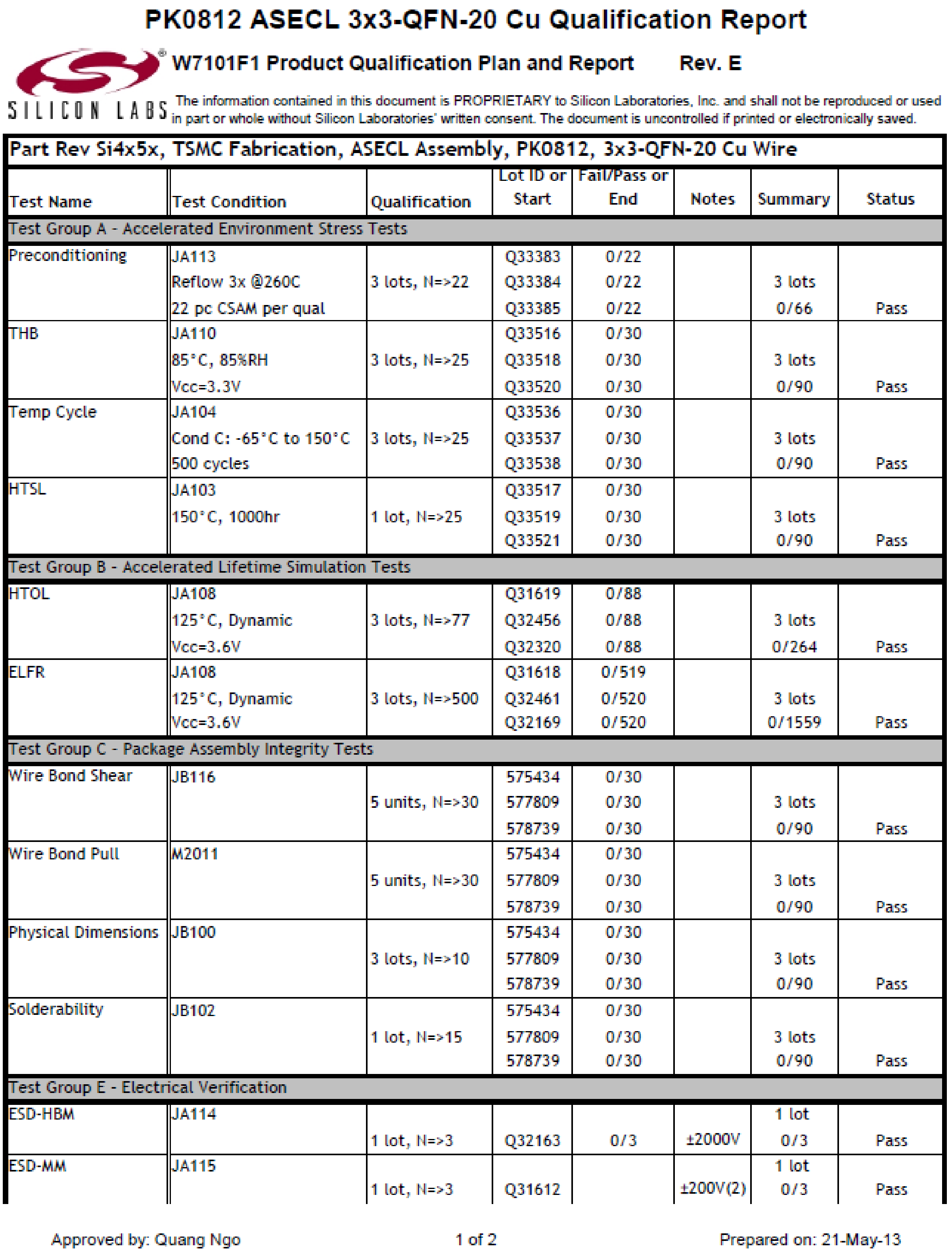
Company: ___________________________

Email your early Acceptance approval to: katherine.haggar@silabs.com

Qualification Data:

See Appendix A and B for the Qualification Reports.

Appendix A – 3x3 Qualification Report



PK0812 ASECL 3x3-QFN-20 Cu Qualification Report

W7101F1 Product Qualification Plan and Report Rev. E

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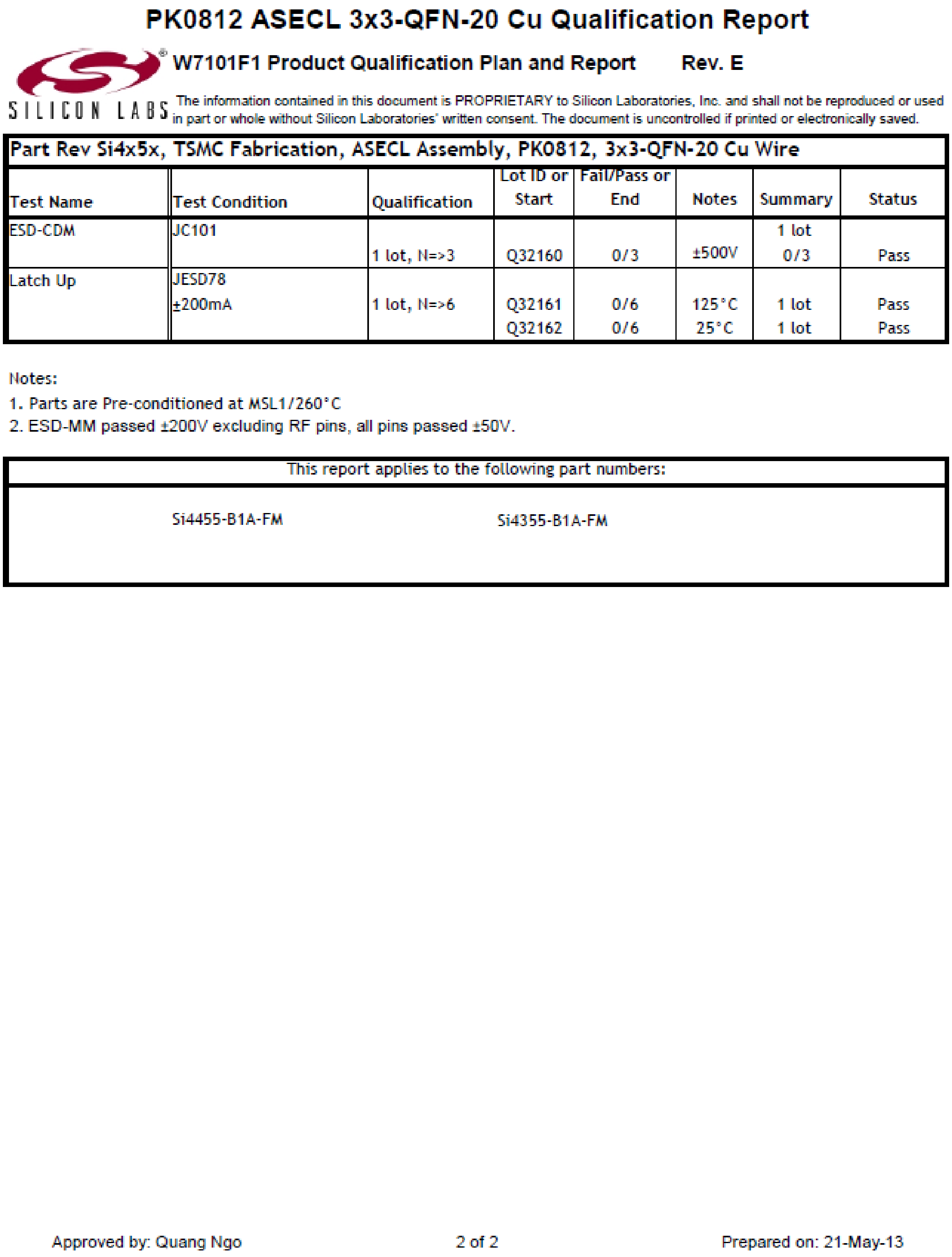
Part Rev Si4x5x, TSMC Fabrication, ASECL Assembly, PK0812, 3x3-QFN-20 Cu Wire

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group A - Accelerated Environment Stress Tests							
Preconditioning	JA113 Reflow 3x @260C 22 pc CSAM per qual	3 lots, N=>22	Q33383 Q33384 Q33385	0/22 0/22 0/22		3 lots 0/66	Pass
THB	JA110 85°C, 85%RH Vcc=3.3V	3 lots, N=>25	Q33516 Q33518 Q33520	0/30 0/30 0/30		3 lots 0/90	Pass
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q33536 Q33537 Q33538	0/30 0/30 0/30		3 lots 0/90	Pass
HTSL	JA103 150°C, 1000hr	1 lot, N=>25	Q33517 Q33519 Q33521	0/30 0/30 0/30		3 lots 0/90	Pass
Test Group B - Accelerated Lifetime Simulation Tests							
HTOL	JA108 125°C, Dynamic Vcc=3.6V	3 lots, N=>77	Q31619 Q32456 Q32320	0/88 0/88 0/88		3 lots 0/264	Pass
ELFR	JA108 125°C, Dynamic Vcc=3.6V	3 lots, N=>500	Q31618 Q32461 Q32169	0/519 0/520 0/520		3 lots 0/1559	Pass
Test Group C - Package Assembly Integrity Tests							
Wire Bond Shear	JB116	5 units, N=>30	575434 577809 578739	0/30 0/30 0/30		3 lots 0/90	Pass
Wire Bond Pull	M2011	5 units, N=>30	575434 577809 578739	0/30 0/30 0/30		3 lots 0/90	Pass
Physical Dimensions	JB100	3 lots, N=>10	575434 577809 578739	0/30 0/30 0/30		3 lots 0/90	Pass
Solderability	JB102	1 lot, N=>15	575434 577809 578739	0/30 0/30 0/30		3 lots 0/90	Pass
Test Group E - Electrical Verification							
ESD-HBM	JA114	1 lot, N=>3	Q32163	0/3	±2000V	1 lot 0/3	Pass
ESD-MM	JA115	1 lot, N=>3	Q31612		±200V(2)	1 lot 0/3	Pass

Approved by: Quang Ngo   1 of 2   Prepared on: 21-May-13

Appendix A, 3x3 Qualification Report, cont.



PK0812 ASECL 3x3-QFN-20 Cu Qualification Report

W7101F1 Product Qualification Plan and Report **Rev. E**

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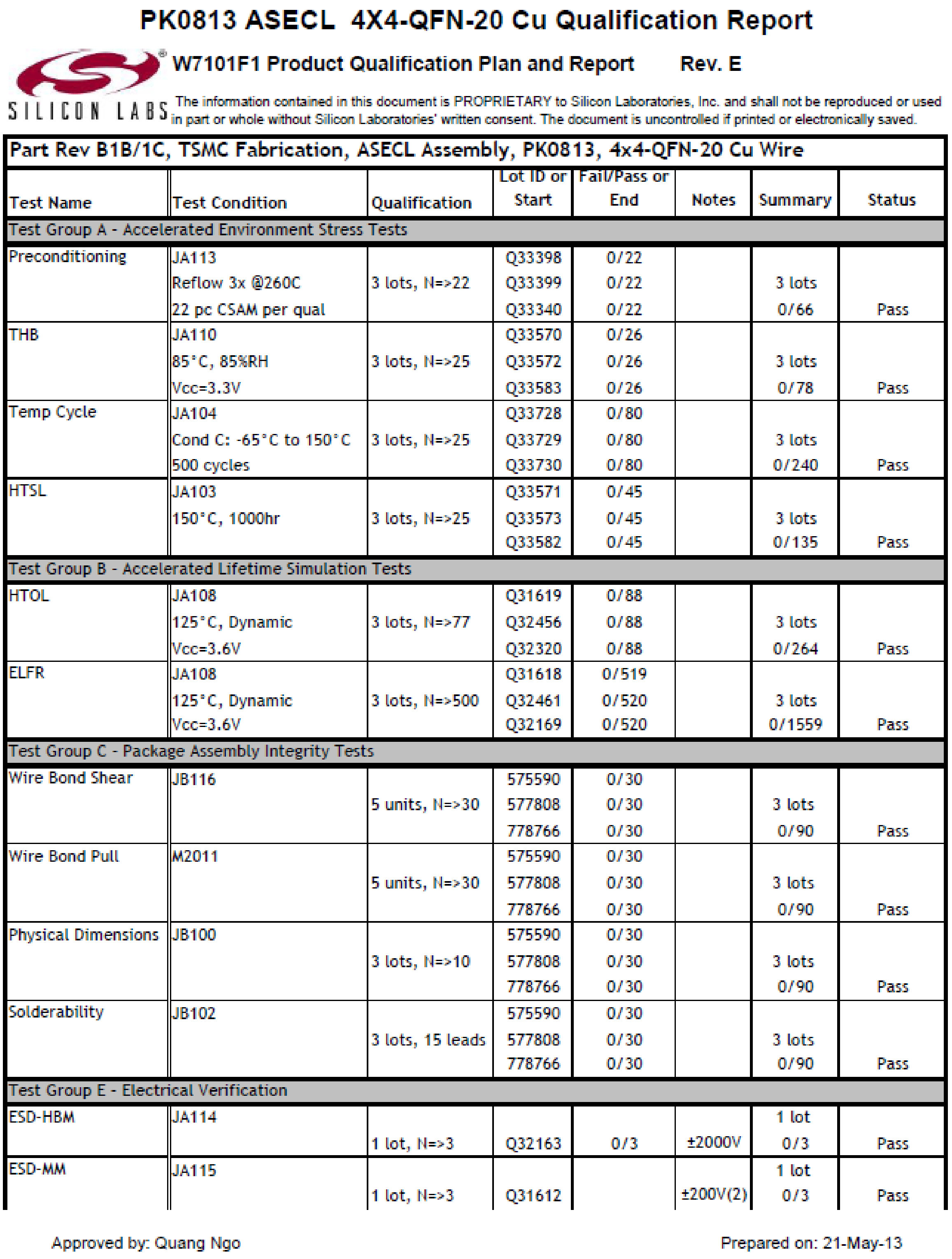
Part Rev Si4x5x, TSMC Fabrication, ASECL Assembly, PK0812, 3x3-QFN-20 Cu Wire							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
ESD-CDM	JC101	1 lot, N=>3	Q32160	0/3	±500V	1 lot 0/3	Pass
Latch Up	JESD78 ±200mA	1 lot, N=>6	Q32161 Q32162	0/6 0/6	125°C 25°C	1 lot 1 lot	Pass Pass

Notes:
1. Parts are Pre-conditioned at MSL1/260°C
2. ESD-MM passed ±200V excluding RF pins, all pins passed ±50V.

This report applies to the following part numbers:	
Si4455-B1A-FM	Si4355-B1A-FM

Approved by: Quang Ngo 2 of 2 Prepared on: 21-May-13

Appendix B, 4x4 Qualification Report



PK0813 ASECL 4X4-QFN-20 Cu Qualification Report

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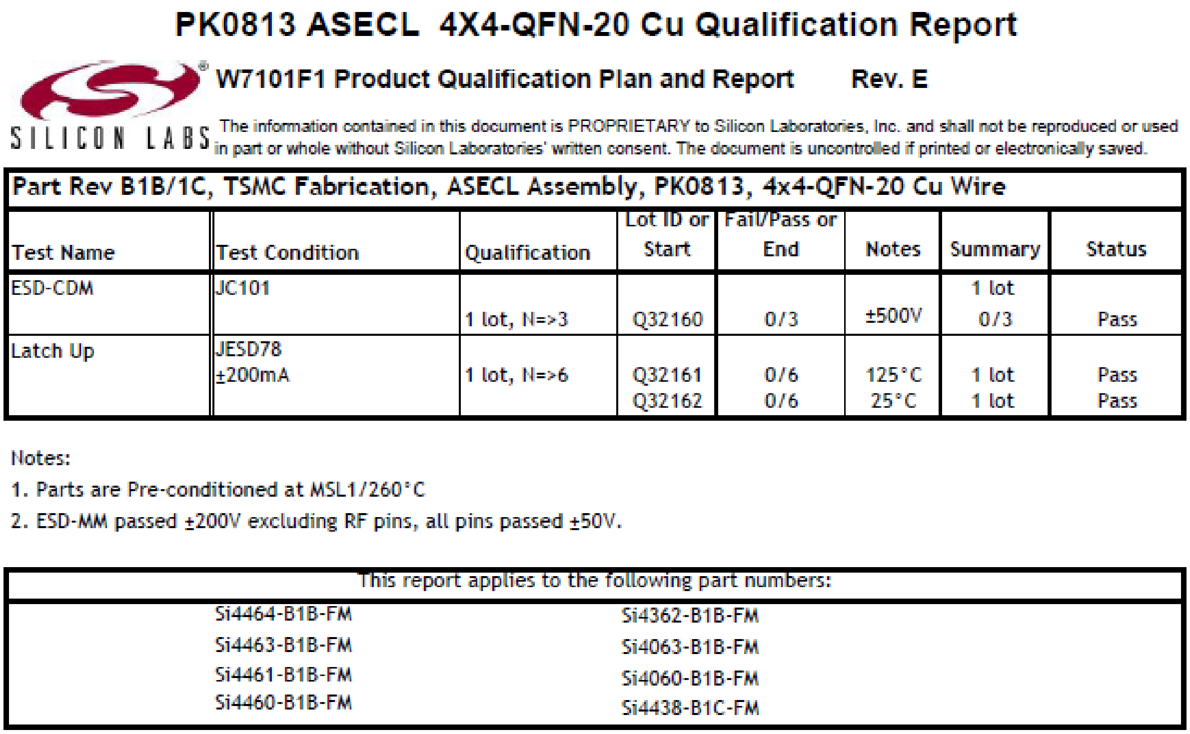
Part Rev B1B/1C, TSMC Fabrication, ASECL Assembly, PK0813, 4x4-QFN-20 Cu Wire

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group A - Accelerated Environment Stress Tests							
Preconditioning	JA113		Q33398	0/22			
	Reflow 3x @260C	3 lots, N=>22	Q33399	0/22		3 lots	
	22 pc CSAM per qual		Q33340	0/22		0/66	Pass
THB	JA110		Q33570	0/26			
	85°C, 85%RH	3 lots, N=>25	Q33572	0/26		3 lots	
	Vcc=3.3V		Q33583	0/26		0/78	Pass
Temp Cycle	JA104		Q33728	0/80			
	Cond C: -65°C to 150°C	3 lots, N=>25	Q33729	0/80		3 lots	
	500 cycles		Q33730	0/80		0/240	Pass
HTSL	JA103		Q33571	0/45			
	150°C, 1000hr	3 lots, N=>25	Q33573	0/45		3 lots	
			Q33582	0/45		0/135	Pass
Test Group B - Accelerated Lifetime Simulation Tests							
HTOL	JA108		Q31619	0/88			
	125°C, Dynamic	3 lots, N=>77	Q32456	0/88		3 lots	
	Vcc=3.6V		Q32320	0/88		0/264	Pass
ELFR	JA108		Q31618	0/519			
	125°C, Dynamic	3 lots, N=>500	Q32461	0/520		3 lots	
	Vcc=3.6V		Q32169	0/520		0/1559	Pass
Test Group C - Package Assembly Integrity Tests							
Wire Bond Shear	JB116		575590	0/30			
		5 units, N=>30	577808	0/30		3 lots	
			778766	0/30		0/90	Pass
Wire Bond Pull	M2011		575590	0/30			
		5 units, N=>30	577808	0/30		3 lots	
			778766	0/30		0/90	Pass
Physical Dimensions	JB100		575590	0/30			
		3 lots, N=>10	577808	0/30		3 lots	
			778766	0/30		0/90	Pass
Solderability	JB102		575590	0/30			
		3 lots, 15 leads	577808	0/30		3 lots	
			778766	0/30		0/90	Pass
Test Group E - Electrical Verification							
ESD-HBM	JA114					1 lot	
		1 lot, N=>3	Q32163	0/3	±2000V	0/3	Pass
ESD-MM	JA115					1 lot	
		1 lot, N=>3	Q31612		±200V(2)	0/3	Pass

Approved by: Quang Ngo

Prepared on: 21-May-13

Appendix B, 4x4 Qualification Report, cont.



PK0813 ASECL 4X4-QFN-20 Cu Qualification Report

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Part Rev B1B/1C, TSMC Fabrication, ASECL Assembly, PK0813, 4x4-QFN-20 Cu Wire

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
ESD-CDM	JC101	1 lot, N=>3	Q32160	0/3	±500V	1 lot 0/3	Pass
Latch Up	JESD78 ±200mA	1 lot, N=>6	Q32161 Q32162	0/6 0/6	125°C 25°C	1 lot 1 lot	Pass Pass

Notes:

1. Parts are Pre-conditioned at MSL1/260°C
2. ESD-MM passed ±200V excluding RF pins, all pins passed ±50V.

This report applies to the following part numbers:	
Si4464-B1B-FM	Si4362-B1B-FM
Si4463-B1B-FM	Si4063-B1B-FM
Si4461-B1B-FM	Si4060-B1B-FM
Si4460-B1B-FM	Si4438-B1C-FM