

Horizon Robotics	Doc.#	QR-2500-02				
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# Sunrise 3.0 (X3)

## Qualification Report

(Internal use only)

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## Revision History

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## 1 Introduction

### 1.1 Purpose

This document depicts the product qualification test result on Horizon Sunrise 3.0 (X3) product.

### 1.2 Reference

The standards are JEDEC Standard, AEC Q100, MIL-STD-883 for all test items.

### 1.3 Definitions, Acronyms, and Abbreviations

Term/Acronym	Definition & Abbreviated Terms
CDM	Charge Device Model
ESD	Electro Static Discharge
HBM	Human Body Mode
HTOL	High Temperature Operating Life
HTSL	High Temperature Storage Life
LU	Latch-Up
PC	Preconditioning
SAT	Scanning Acoustic Tomography
TC	Temperature Cycle
UHASt	Unbiased Highly Accelerated Temperature and Humidity Stress Test

## 2 Summary

This report summarizes the product qualification of Horizon Sunrise 3.0 (X3) typical parts.

### 2.1 Product description

Production Information	
Package type	HFC BGA
Package size	15X15mm
Package thickness	2.876mm (with ball height)
Pin count	483L
Substrate layer	3+2+3
Substrate thickness	1156um

## 2.2 Qualification result summary

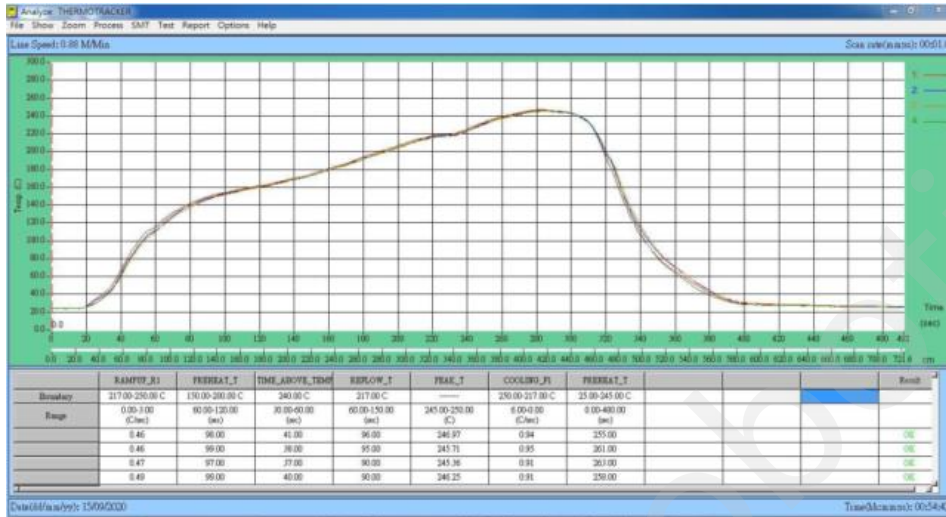
Test Item	Test #	Test Method	Test Condition	Read Point	Fail/SS		Result
					Lot #	Electrical Test	
PC	A1	JEDEC J-STD-020	-55℃~125℃ 5cycles Baking:125℃,24hr Soak:30℃,60%RH,192hr Reflow: 245℃ 3 cycles	0 Hour	3	0/154	PASS
				MSL3	3	0/154	PASS
UHASt	A3	JESD22-A118	130℃, 85%RH 33.3PSIA	96 Hours	3	0/77	PASS
				192 Hours	3	0/77	PASS
TC	A4	JESD22-A104	-55℃~125℃	700 Cycles	3	0/77	PASS
				1000 Cycles	3	0/77	PASS
HTSL	A6	JESD22-A103	150℃	500 Hours	3	0/77	PASS
				1000 Hours	3	0/77	PASS
HTOL	B1	JESD22-A108	+105℃ Ta	168 Hours	1	0/77	PASS
				500 Hours	1	0/77	PASS
				1000 Hours	1	0/77	PASS
HBM	E2	AEC Q100-002 JS-001	500V(±),1000V(±), 2000V(±)	500V(±)	1	0/3	PASS
				1000V(±)	1	0/3	PASS
				2000V(±)	1	0/3	PASS
CDM	E3	AEC - Q100-011	250V (±), 500V (±), 750V (±)	250V (±)	1	0/3	PASS
				500V (±)	1	0/3	PASS
				750V (±)	1	0/3	PASS
LU	E4	AEC Q100-004	105℃	I trigger	1	0/3	PASS
				Over voltage test	1	0/3	PASS

## 2.3 Conclusion

Base on the qualification results summary above, the product: Sunrise 3.0 (X3) successfully passed product qualification as planned.

## 3 Appendix

### 3.1 Reflow Profile



### 3.2 SAT

After Preconditioning

