

**6/25/2020**



**RELIABILITY MONITOR REPORT  
FOR**

**uMAX Package**

**MAXIM INTEGRATED**

**160 RIO ROBLES  
SAN JOSE, CA 95134**

**This Report was prepared by  
MAXIM INTEGRATED Reliability Engineering**

## Summary:

The data in the tables that follow was generated as the result of an on-going Package Reliability Monitor. The specific assemblies included in this package monitor are:

ASSY SITE	PINS	PACKAGE		
ATP (Amkor, PI)	8	uMax (Pb-Free)	Greatek	8 uMax (Pb-Free)
UTL (NSEB) UTAC	8	uMax (Pb-Free)	UTL (NSEB) UTAC	10 uMax (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 99991 FITS: 1.1**

The parameters used to calculate this failure rate are as follows:

**Cf: 60% Ea: 0.7 Tu: 25 °C**

The reliability data follows. At the start of this data is a description of the assembly vehicle used to generate this reliability data. The next section is the detailed reliability data for each stress. The reliability data section includes the latest data available. This report covers data between 1/1/2020 and 3/31/2020

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### Assembly Information:

Package Type: uMax (Pb-Free)  
Date Code Range: 1811 to 1952

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1838	MAX4003EUA+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1838	MAX4003EUA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1846	MAX4477AUA/V+	125°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1846	MAX4477AUA/V+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1846	MAX4477AUA/V+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1912	MAX4080TAUA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1942	MAX16956AUBC/V+	125°C	1000 HRS	79	0	
<b>Total:</b>						<b>0</b>	

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### PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1811	MAX16992AUBB/V+	260C +0/-5C	3 PASS	90	0	
CONVECTION REFLOW	1843	MAX16992AUBB/V+	260C +0/-5C	3 PASS	90	0	
CSAM	1846	MAX4477AUA/V+		1 PASS	22	0	
CONVECTION REFLOW	1846	MAX4477AUA/V+	260C +0/-5C	3 PASS	400	0	
PHYSICAL DIMENSION	1846	MAX4477AUA/V+	JESD22-B100	1 PASS	15	0	
BOND CRATER	1846	MAX4477AUA/V+	150°C	1 PASS	20	0	
SOLDERABILITY	1846	MAX4477AUA/V+	130C, 85% R.H.	1 PASS	15	0	
CSAM	1846	MAX4477AUA/V+		1 PASS	22	0	
CONVECTION REFLOW	1846	MAX4477AUA/V+	260C +0/-5C	3 PASS	400	0	

PHYSICAL DIMENSION	1846	MAX4477AUA/V+	JESD22-B100	1	PASS	15	0
BOND CRATER	1846	MAX4477AUA/V+		1	PASS	20	0
SOLDERABILITY	1846	MAX4477AUA/V+	130C, 85% R.H.	1	PASS	15	0
CSAM	1846	MAX4477AUA/V+		1	PASS	22	0
CONVECTION REFLOW	1846	MAX4477AUA/V+	260C +/-5C	3	PASS	400	0
PHYSICAL DIMENSION	1846	MAX4477AUA/V+	JESD22-B100	1	PASS	15	0
BOND CRATER	1846	MAX4477AUA/V+		1	PASS	20	0
SOLDERABILITY	1846	MAX4477AUA/V+	130C, 85% R.H.	1	PASS	15	0
CONVECTION REFLOW	1911	MAX669EUB/V+		3	PASS	318	0
CONVECTION REFLOW	1912	MAX4080TAUA+		3	PASS	320	0
CONVECTION REFLOW	1921	MAX9022AUA+	125°C	3	PASS	320	0
CONVECTION REFLOW	1952	MAX1745EUB/V+		3	PASS	320	0
<b>Total:</b>						<b>0</b>	<b>0</b>

### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1846	MAX4477AUA/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1846	MAX4477AUA/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1846	MAX4477AUA/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1907	MAX9921AUB/V+C40	150°C	1000 HRS	80	0	
STORAGE LIFE	1911	MAX4132EUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1912	MAX4080TAUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1921	MAX9022AUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1942	MAX16956AUBC/V+	150°C	96 HRS	80	0	
<b>Total:</b>						<b>0</b>	<b>0</b>

### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1846	MAX4477AUA/V+	-65C TO +150C (Condition C)	1000 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1846	MAX4477AUA/V+	-65C TO +150C (Condition C)	1000 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1846	MAX4477AUA/V+	-65C TO +150C (Condition C)	1000 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1907	MAX9921AUB/V+C40	-65C TO +150C (Condition C)	100 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1911	MAX669EUB/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1911	MAX4132EUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1912	MAX4080TAUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1921	MAX9022AUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1942	MAX16956AUBC/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
						<b>Total:</b>	<b>0</b>

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	40	0
BIASED MOISTURE	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	40	0
BIASED MOISTURE	1907	MAX9921AUB/V+C40	130C, 85% R.H.	96	HRS	78	0
BIASED MOISTURE	1911	MAX669EUB/V+	130C, 85% R.H.	96	HRS	77	0
BIASED MOISTURE	1911	MAX4132EUA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1912	MAX4080TAUA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1952	MAX1745EUB/V+	130C, 85% R.H.	1000	HRS	80	0
						<b>Total:</b>	<b>0</b>

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1846	MAX4477AUA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1942	MAX16956AUBC/V+	130C, 85% R.H.	96	HRS	80	0
						<b>Total:</b>	<b>0</b>

**FAILURE RATE: MTTF (YRS): 99991 FITS: 1.1**