



## MH1 Qualification Report MH101 and MH102 Included by Similarity

### Introduction

The MH1 is a passive FET mixer that provides high dynamic range performance in a low cost SOIC-8 package. Testing for Conversion Loss and IIP3 were performed at the following 3 discrete test frequency points:

1. RF = 1700 MHz, LO = 1450 MHz, IF = 250 MHz
2. RF = 2000 MHz, LO = 1950 MHz, IF = 50 MHz
3. RF = 2000 MHz, LO = 1750 MHz, IF = 250 MHz

R-I isolation was tested at 1700 MHz, while L-R isolation and L-I isolation were tested at an LO frequency of 1450 and 1950 MHz. Failures are defined as any variation of 10% or greater.

### Scope

This report summarizes the reliability qualification of the MH1 mixer produced at the WJ Communications facility in Milpitas, CA and assembled in an SOIC-8 plastic package. The reliability data are obtained through the performance of specified accelerated stress tests described in this document.

### Applicable Documents

All the test procedures and test methods are consistent with industry standards. The standards referenced in this document are JEDEC standard 22.

### Qualification Test Plan

Stress or Test	Procedures/Conditions	Device Hrs/Cycles	Sample Size	Failed Units	Date	Reference Document	Part Tested
Preconditioning Level 3	Temp. & Humidity Test: 192 hrs, +30°C, 60%RH High Temp. Storage Life: 24 hrs, +125°C Infrared Solder Reflow (IR) test: 3 cycles w/flux immersion	N/A	3 lots of 305 = total 915	0	Q4 2001	JESD22-A113 JESD22-A101 JESD22-B101 JESD22-103 JESD22-A112.4	MH1
Temperature Cycle	-65°C to +150°C Dwell time = 10 ≥ 15	1000 cycles	3 lots of 80 = total 240	0	Q4 2001	JESD22-A104-B	MH1
Unbiased Autoclave	121°C, 15 PSI, 100% RH	96 (-1, +5) hours	3 lots of 105 = total 315	0	Q4 2001	JESD22-A102-C	MH1
Unbiased High Temperature Storage	Temp. 125°C (+/- 5°C)	1000 hours	3 lots of 78 = total 234	0	Q4 2001	JESD22-A108-B	MH1
ESD	Human Body Model (HBM) Charged Device Model (CDM)	N/A	3 lots of 16 = total 48	0	Q3 2003	JESD22-A114 JESD22-C101-A	MH1
Physical Dimensions	N/A	N/A	3 lots of 2 = total 6	0	Q4 2001	JESD22-B100-A	MH1
Lead Integrity-Bending Stress	N/A	N/A	3 lots of 4 = total 12	0	Q4 2001	JESD22-B105-A&B	MH1

Note: Mask Set – FM12C      Wafer #:      Lot:  
60244239      60244239      D086-5  
60244243      60244243      D056  
60244244      60244244      D055



## Discussion of Results

### 1. Pre Conditioning

Three lots of 305, a total of 915 MH1 devices, have completed pre conditioning with no failures.

### 2. Temperature Cycle

Three lots of 80, a total of 240 MH1 devices, have completed 1000 temperature cycles with no failures.

### 3. Unbiased Autoclave

Three lots of 105, a total of 315 MH1 devices, have completed 96 hours of Autoclave with no failures.

### 4. Unbiased High Temperature Storage

Three lots of 78, a total of 234 MH1 devices, have completed 1000 hours of Unbiased High Temperature Storage with no failures.

### 5. ESD

The MH1 completed ESD testing with classification levels of Class 0 for the HBM model and Class II for the CDM model.

### 6. Physical Dimensions

Three lots of 2, a total of 6 MH1 devices, have completed Inspection with no failures.

### 7. Lead Integrity-Bending Stress

Three lots of 4, a total of 12 MH1 devices, have completed testing with no failures.

## Conclusion

The Reliability Qualification Data demonstrates that the MH1 amplifier fabricated at the WJ Communications Milpitas facility and assembled in a SOIC-8 package demonstrates high reliability and quality levels.