



Qualification Report

MH203 High Linearity Cellular-Band MMIC Mixer

The Communications Edge™

Product Information

I. SUMMARY

The MH203 is a high-side LO mixer that offers excellent dynamic range packaged in a surface-mount SOIC-8 package. An off-chip 6-element diplexer is required to separate the IF and RF signals. Section IV of this report details the similarities between this product and the MH1, justifying a claim of qualification by similarity.

II. SCOPE

This report justifies a qualification by similarity to the MH1. The MH203 is produced at WJ Communications' facility in Milpitas, CA and assembled in a SOIC-8 surface mount plastic package. See the [MH1 Qualification Report](#) for a description of the accelerated stress tests used in that qualification plan.

III. APPLICABLE DOCUMENTS

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

IV. QUALIFICATION TEST PLAN

This section considers the items in JEDEC Standard No. 47-A: "Table 3 – Process change qualification guidelines for the selection of tests" to justify qualification of the MH203 by similarity to the MH1.

Design: The circuit topology of the MH203 is identical to that of the MH1. Circuit rerouting is minimal. Only the values of passive circuit elements have changed. The total die area dedicated to capacitive elements has increased by 12%. The largest area capacitor on the MH203 has increased in by 39% over the MH1. The LO balun is 17% larger and has 8 turns instead of 6 turns. From a reliability standpoint, these changes are negligible.

Wafer Process: Both the MH1 and MH203 utilize the same process at WJ Communications' Milpitas, California facility. The wafer dimensions are identical.

Process, Packaging and Assembly: Both the MH1 and MH203 utilize the same leadframe, wire bond material, die attach material, and molding compound. Both devices are packaged and assembled at the same qualified supplier.

Human Body Model and Charged Device Model ESD ratings were verified for the MH205, the low-side LO version of this mixer. Because the MH205 differs from the MH203 only in the dimensions of its balun, the ESD test results can be extended to the MH203. Note the MH205 obtained the same ESD rating as the MH1 (Class III for CDM and Class 1B for HBM). See Section V of the [MH205 Qualification Report](#) for the results and methodology used to determine ESD rating.

V. DISCUSSION OF RESULTS

Not Applicable.

VI. CONCLUSIONS

This report demonstrates the MH203 is qualified by similarity to the MH1.