



# Harwin Test Report Summary

**HT08101**

Datamate (M80 Series)  
Coax Signal Integrity Testing

Datamate

A decorative graphic at the bottom of the page consisting of numerous thin, red, wavy lines that flow from the left side towards the right, creating a sense of motion and depth.

## 1. Introduction

### 1.1. Description and Purpose

The Harwin Datamate Coaxial contacts are a range of high-rel special contacts designed to provide higher speed signal connections with reliable signal integrity. The following tests were performed to confirm the connectors meet the proposed signal integrity specifications.

### 1.2. Conclusion

The following data has been taken from Harwin Test report QA000239. The results were used to define the Component Specification C005XX for the Datamate Semi-Rigid Coax contact M80-310. The tests indicate that the contact adheres to the key existing Datamate mechanical and electrical specifications while showing acceptable performance up to 6GHz.

## 2. Test Method and Requirements

### 2.1. Specification Parameters

The list of tests covered in this summary are as follows:

Testing Standard	Description of Test	Section	Page No.
EIA-364-108: 2000 - Impedance, Reflection Coefficient Return Loss, and VSWR.	Insertion Loss	3.1.1	3
	Return Loss	3.1.2	4
	Impedance	3.1.3	4
	VSWR	3.1.5	4

## 2.2. List of Test Samples

The following mating cables are used throughout the testing. Sample pairings were alternated through each mating sample:

- 150mm 0.047" Semi-rigid SMA terminated to M80-310
- 150mm RG316 SMA terminated to M80-317

## 3. Test Results

### 3.1. Signal Integrity

**Specification:** Contacts were analysed on the following: Insertion loss, Return loss, Impedance, VSWR.

**Methodology:** Multiple samples were tested for insertion and return loss, impedance, and VSWR up to 8.5GHz using a VNA (HWN3819) with the mated samples connected through SMA's to the VNA calibrated test cables.

The following results are averages taken from the overall testing. Single sample plots have been provided for visualization purposes:

#### 3.1.1. Insertion Loss (8.5GHz)

Frequency (GHz)	Insertion Loss (dB)
0.5	-0.29
1	-0.40
2	-0.65
3	-0.72
4	-0.84
5	-1.06
6	-1.06

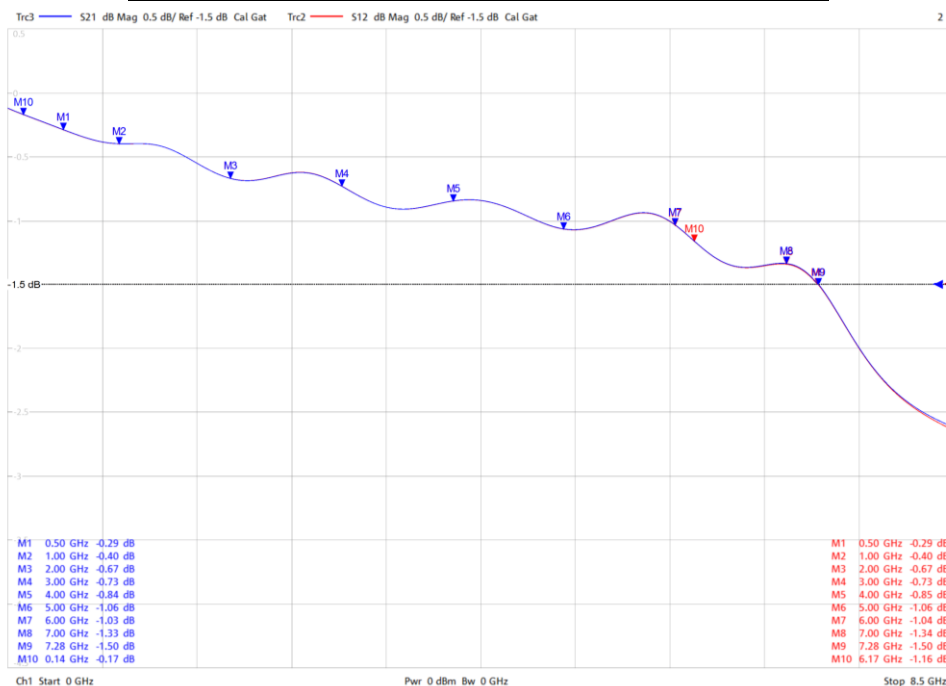


Figure 1: Insertion Loss measured up to 8.5GHz (plot taken from sample 3.1)

### 3.1.2. Return Loss

8.5GHz sweep ..... 6.38GHz @ -15dB

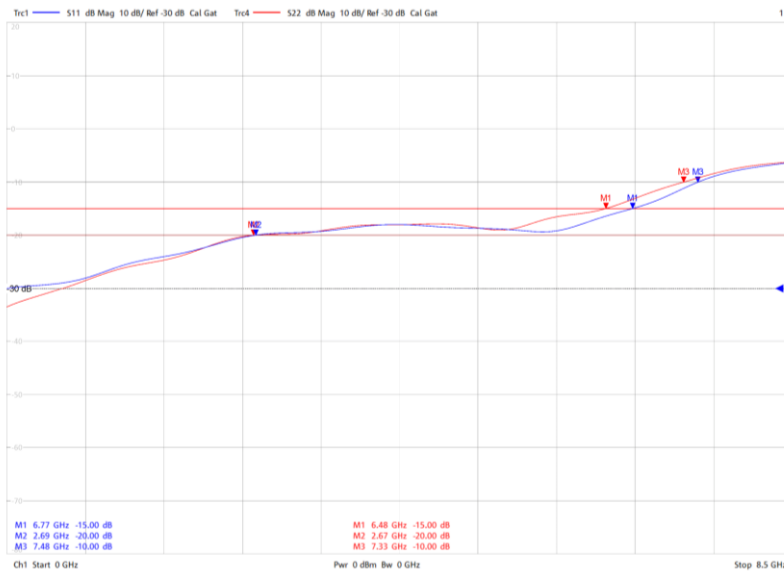


Figure 2: Return Loss measured up to 8.5GHz (plot taken from sample 1.1)

### 3.1.3. Impedance

Impedance Range ..... 41.3 – 50.63Ω

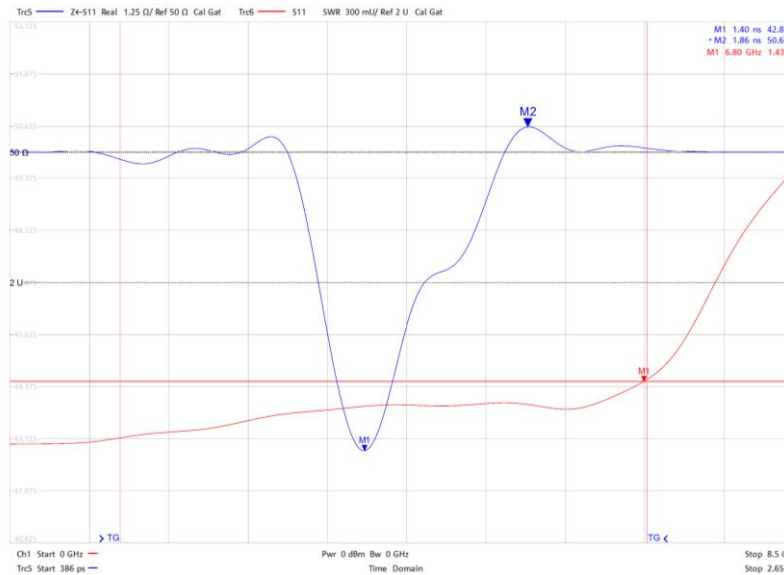


Figure 3: Impedance and VSWR measured up to 8.5GHz (plot taken from sample 1.3)

### 3.1.4. VSWR

Frequency at VSWR of 1.43 ..... 6.42GHz