GT-22-114

COAX CONTACT, G-LINK, BMB to SMA, SIZE 8, 50 OHMS

CONTACTS 852-157 and 852-158

RF Signal Integrity Report

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Revision History

Rev	Date	Issued	Approved	Description
A	12/1/2022	L. Blackwell	G. Hunziker	Initial Release

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1. Introduction

This document contains results from testing that was performed to evaluate the high-frequency electrical performance of the Glenair G-Link Size 8 BMB to SMA contacts in a Super-Nine connector with the grounding plane option. This report outlines the frequency domain performances of Insertion Loss (IL), Return Loss (RL), Voltage Standing Wave Ratio (VSWR) as well as the time-domain characteristic impedance performance.

2. Product Overview

To address SWaP (Size, Weight, and Power) concerns, RF designers are continually designing components smaller, with more, higher density, and higher frequency RF connections. Glenair has taken the MIL-STD-348, BMB interface, and incorporated it into a Size 8 contact that allows customers much more freedom when choosing a multiple cavity circular or rectangular connector. The Glenair BMB contact has been designed and optimized for low insertion loss, low VSWR and improved impedance allowing performance to 26 GHz.

3. Test Information

3.1. Test Samples

The test sample consisted of the BMB to SMA pin insert, 852-157, and the BMB to SMA socket insert, 852-158. These inserts are shown in Figure 1.

Figure 1. Test Contact Samples

The contacts were assembled in a 233-217 type, Super Nine circular connector with a ground plane construction. The assembled, mated sample, with two contact pairs (positions A and H), is shown in Figure 2.

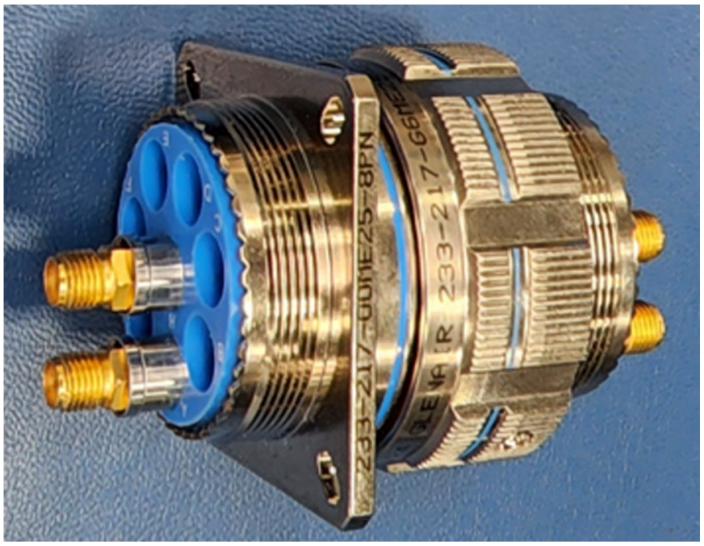

Figure 2. BMB Mated Connection

3.2.Test Setup

All measurements were taken using a Tektronix DSA8300 Digital Serial Analyzer and a Keysight N5227B PNA network analyzer. No test fixturing was required as the test samples are directly connected to the test equipment. The test data was saved in a touchstone (.s4p) format for the s-parameters and in a .csv format for the impedance data.

4. Test Results

4.1. Frequency Domain Analysis

4.1.1. Insertion Loss

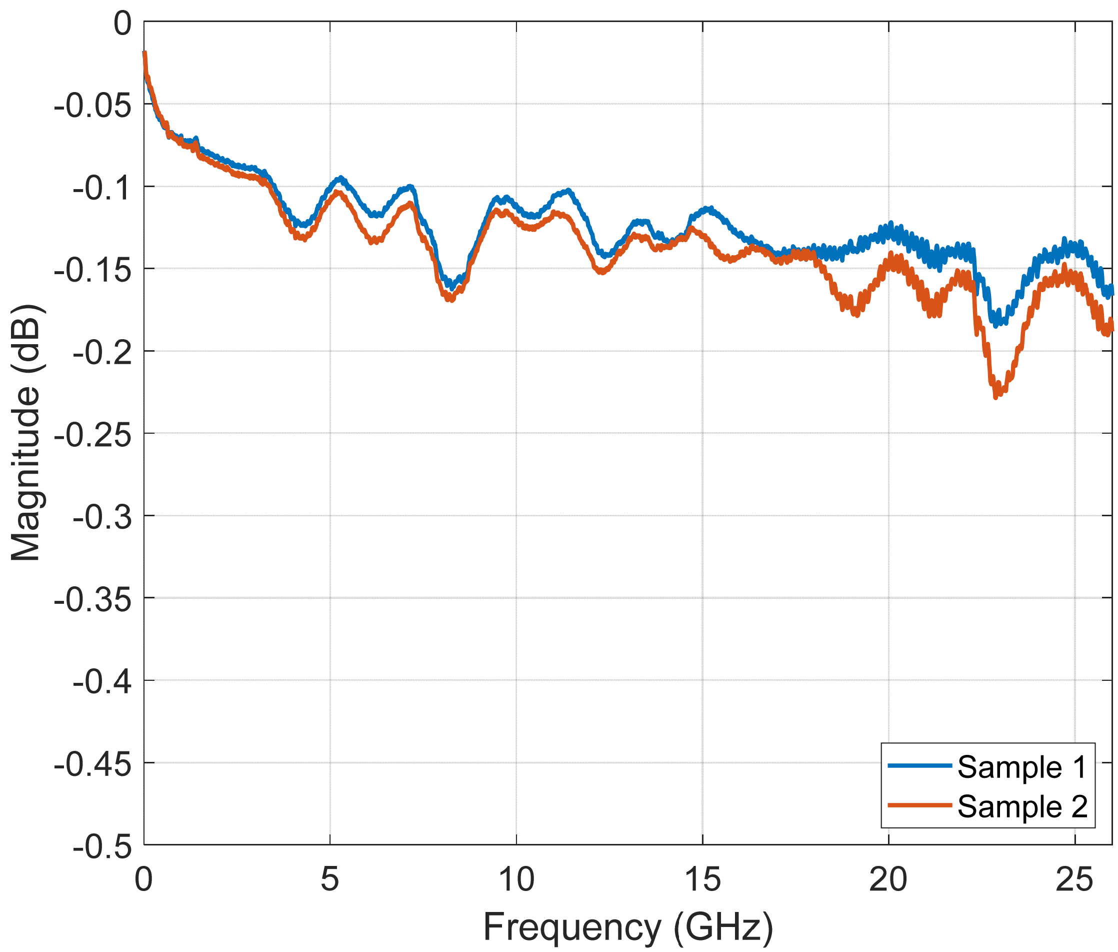

Figure 3. Insertion Loss

4.1.2. Return Loss

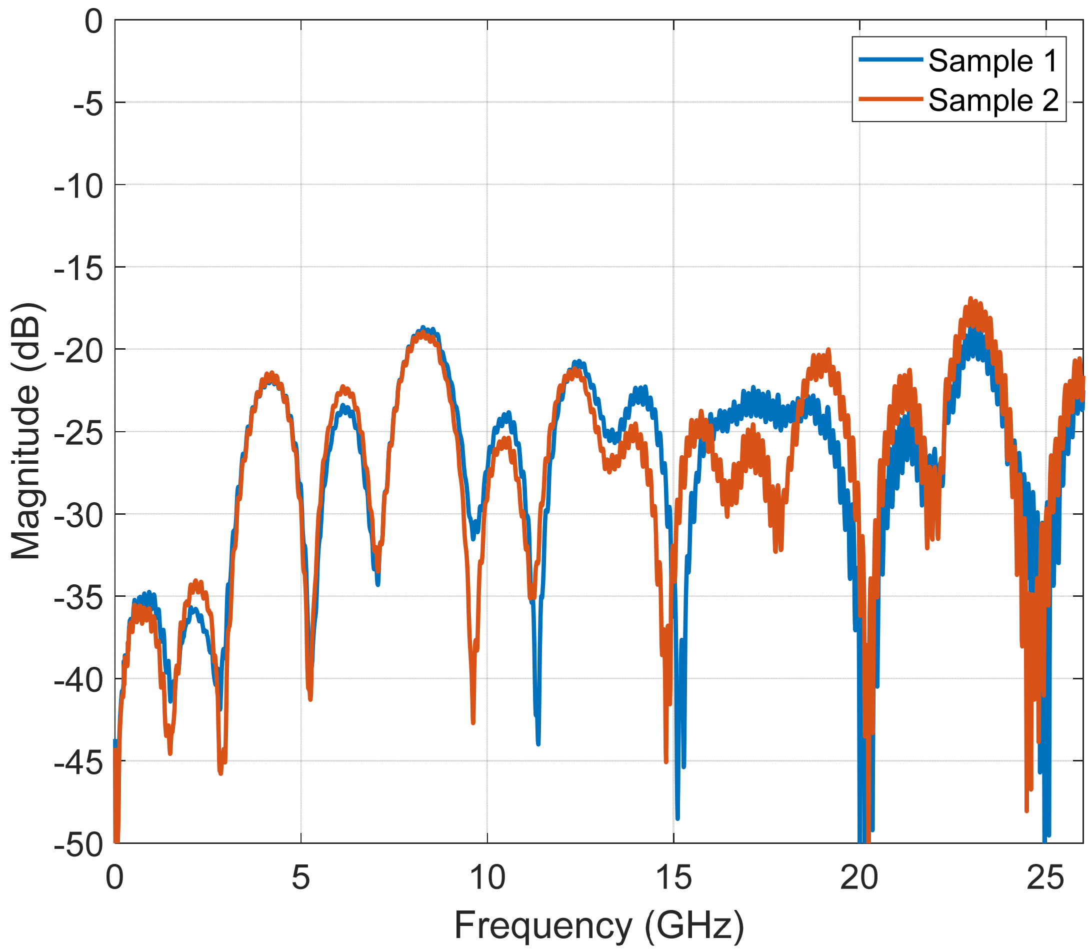

Figure 4. Return Loss

4.1.3. VSWR

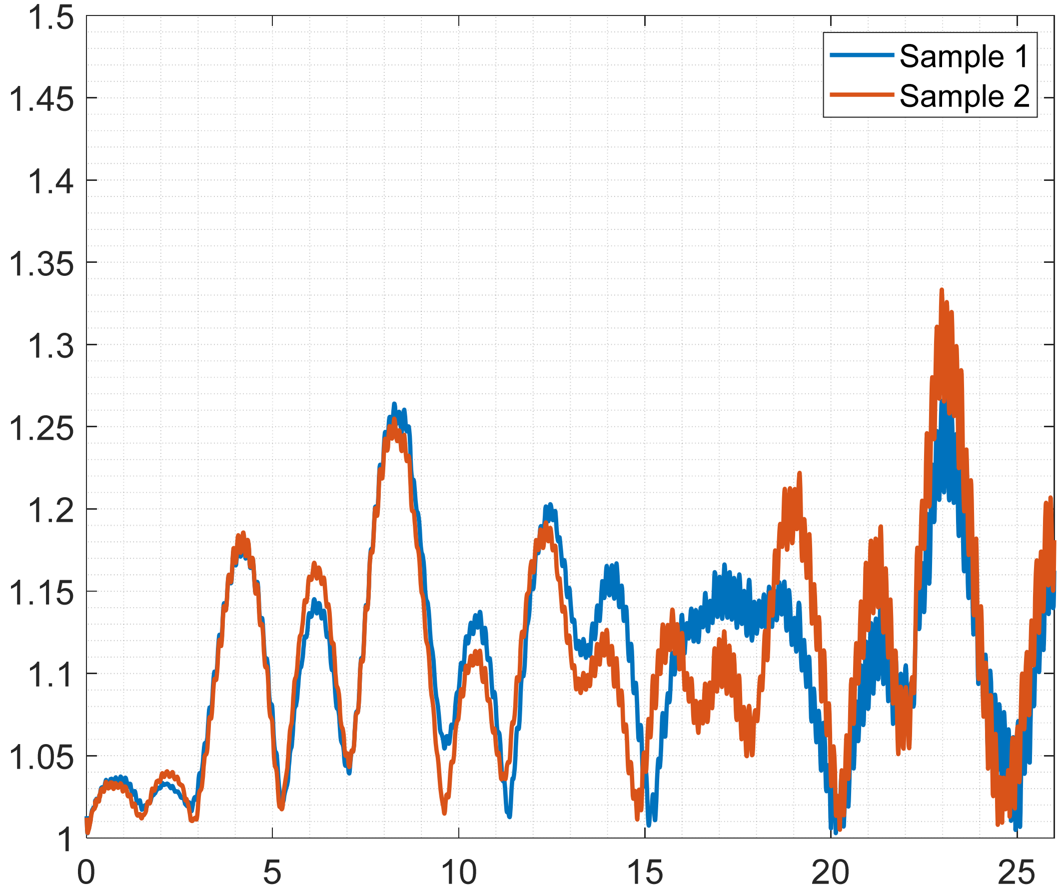

Figure 5. VSWR

4.2. Time Domain Analysis

Time domain data was generated in real time using a Tektronix DSA8300 Digital Serial Analyzer. Figure 6 shows the impedance profile of Contact A at rise times of 25ps and 50ps. Rise time is defined at 10% to 90% of the signal's rising edge. The following table shows the relative bandwidth, BW, for a given TDR test step rise time, t_r.

t_r (ps)	BW(GHz)
25	14
50	7

Table 1. Bandwidth to Rise Time Relationship

The assembly's physical features and resulting impedance discontinuities are labeled in each plot.

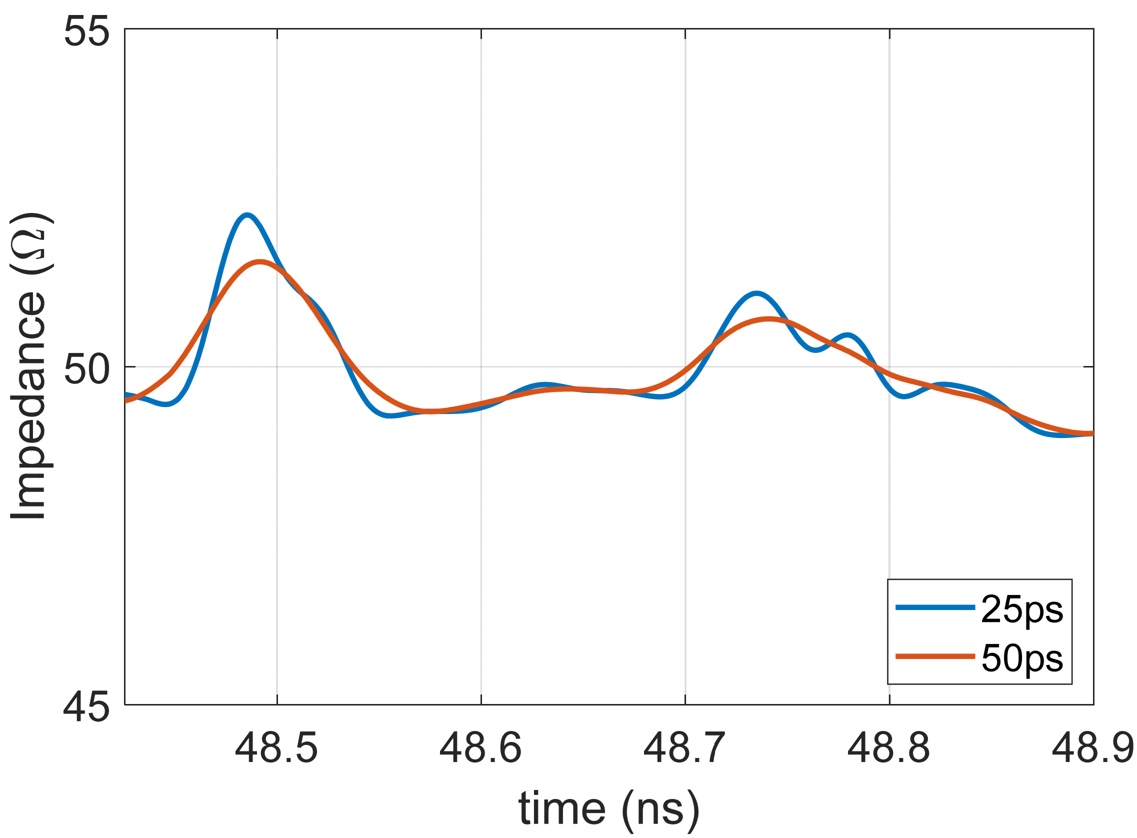

Figure 6. TDR Profile