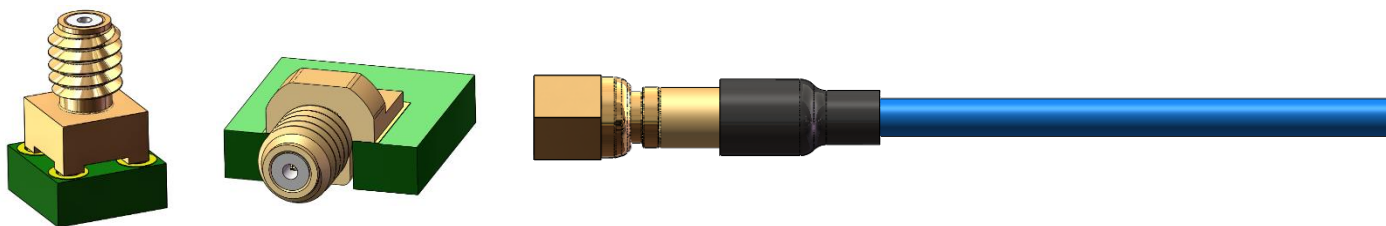


Nano Coax – Standalone Board Mount – RF Characterization

T160114 Rev2 – July 11, 2018



1. Product Description

- 1.1. **Assembly P/N:** A75593-001 mated to A75590-001 & A75592-001
- 1.2. **Connector Description:** Nano Coax Board Mount connectors
- 1.3. **Cable:** Temp-Flex 047SC-2901

2. Test Summary

- 2.1. **VSWR:** 1.3:1 to 20 GHz (Edge Launch); 1.3:1 to 10 GHz (Through Hole)
- 2.2. **Return Loss:** -19 dB to 20 GHz (Edge Launch); -15 dB to 10 GHz (Through Hole)
- 2.3. **Insertion Loss:** -1.9 dB to 20 GHz (Edge Launch); -2.0 dB to 10 GHz (Through Hole)
- 2.4. **Impedance:** 50Ω± 2.5Ω (Edge Launch); 50Ω± 5Ω (Through Hole)

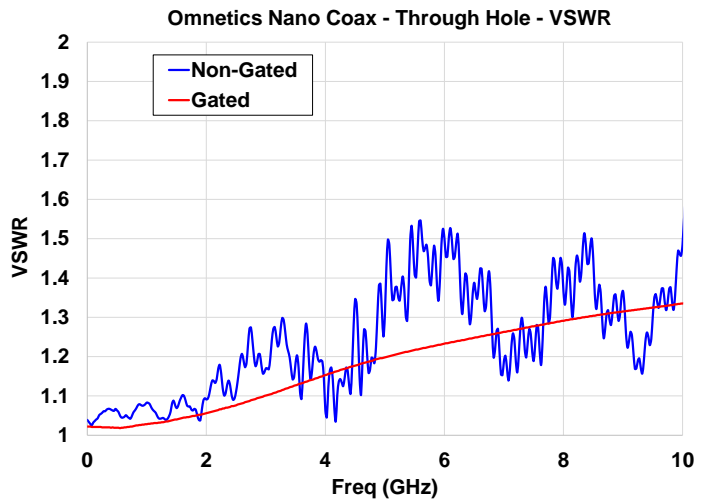
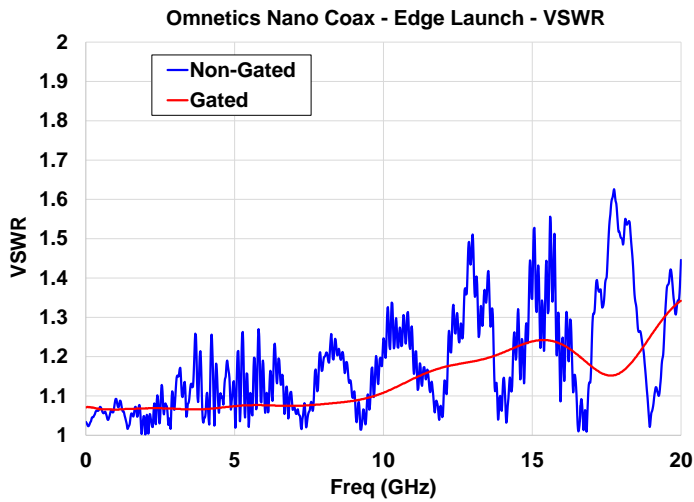
		Edge Launch		Through Hole	
Frequency Range		DC to 20 GHz		DC to 10 GHz	
Impedance		50Ω ± 2.5Ω		50Ω ± 5Ω	
		Gated ¹	Non-Gated	Gated	Non-Gated
VSWR	DC - 10 GHz	1.1:1	1.3:1	1.3:1	1.55:1
	10 GHz - 20 GHz	1.3:1	1.6:1	N/A	N/A
Return Loss	DC - 10 GHz	-23 dB	-19 dB	-15 dB	-13 dB
	10 GHz - 20 GHz	-19 dB	-13 dB	N/A	N/A
Insertion Loss	DC - 10 GHz	-0.7 dB	-1.5 dB	-2.0 dB	-2.9 dB
	10 GHz - 20 GHz	-1.9 dB	-3.0 dB	N/A	N/A

¹ See Appendix 3 for explanation of gating.

2.1 Voltage Standing Wave Ratio (VSWR)

Voltage Standing Wave Ratio (VSWR) measures the amount of signal that is reflected back to the source.

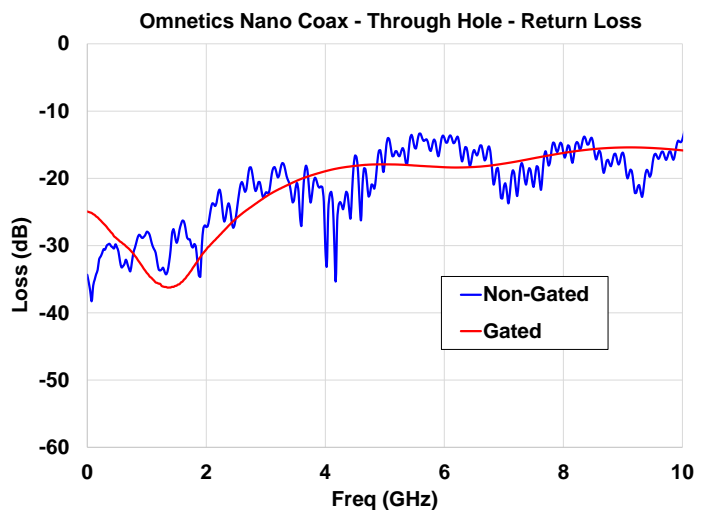
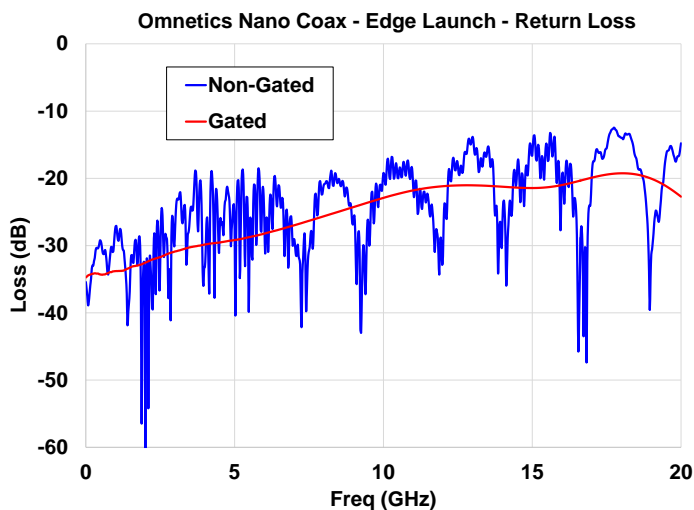
		Edge Launch		Through Hole	
VSWR	Freq Range	Gated	Non-Gated	Gated	Non-Gated
	DC - 10 GHz	1.1:1	1.3:1	1.3:1	1.55:1
	10 GHz - 20 GHz	1.3:1	1.6:1	N/A	N/A



2.2 Return Loss

Return loss is the ratio of the reflected signal to the incident signal.

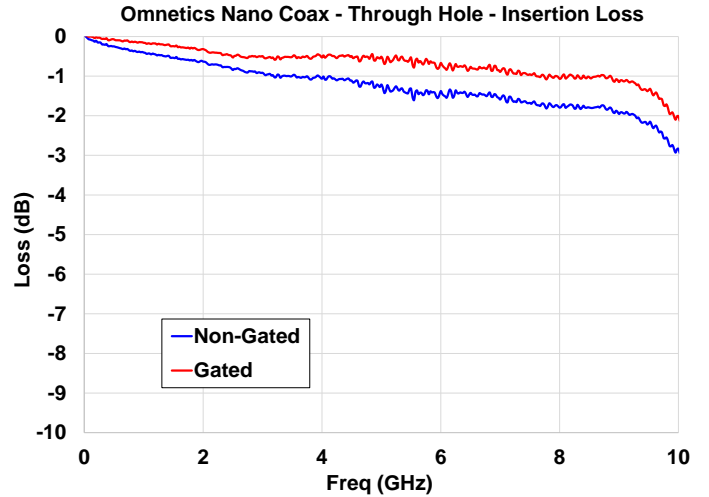
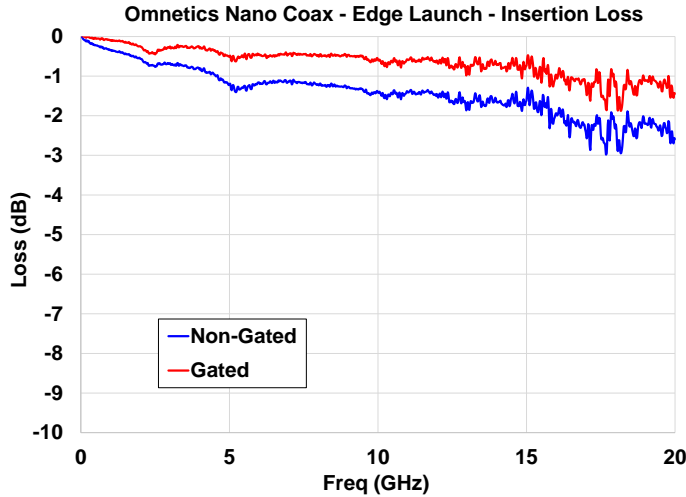
		Edge Launch		Through Hole	
Return Loss	Freq Range	Gated	Non-Gated	Gated	Gated
	DC - 10 GHz	-23 dB	-19 dB	-15 dB	-13 dB
	10 GHz - 20 GHz	-19 dB	-13 dB	N/A	N/A



2.3 Insertion Loss

Insertion loss is the ratio of the transmitted signal to the incident signal.

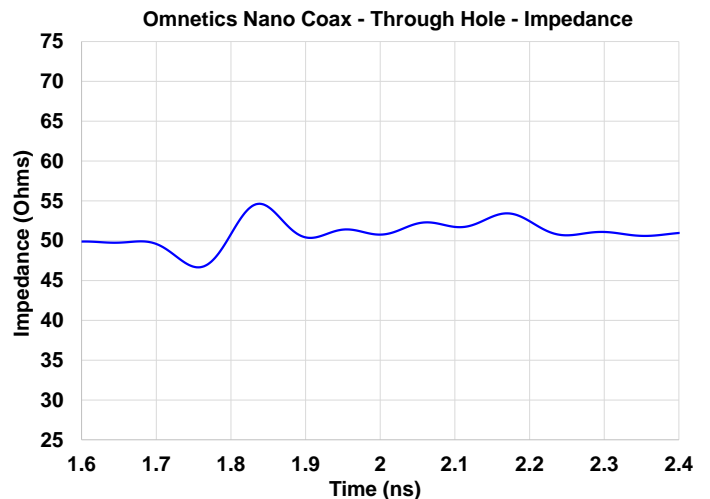
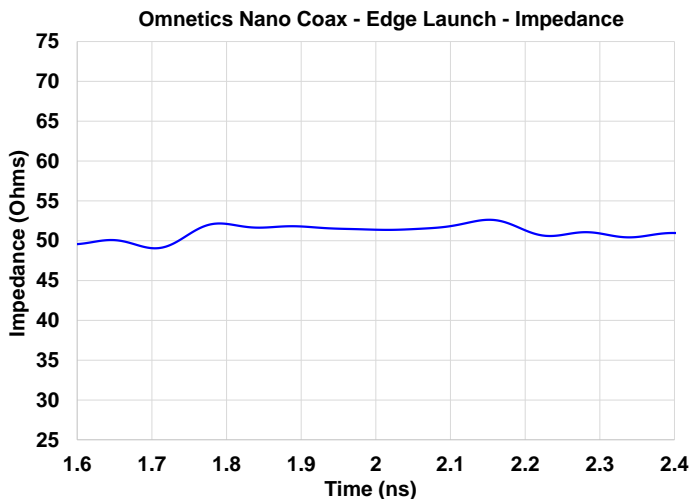
		Edge Launch		Through Hole	
Return Loss	Freq Range	Gated	Non-Gated	Gated	Non-Gated
	DC - 10 GHz	-0.7 dB	-1.5 dB	-2.0 dB	-2.9 dB
	10 GHz - 20 GHz	-1.9 dB	-3.0 dB	N/A	N/A



2.4 TDR (Impedance)

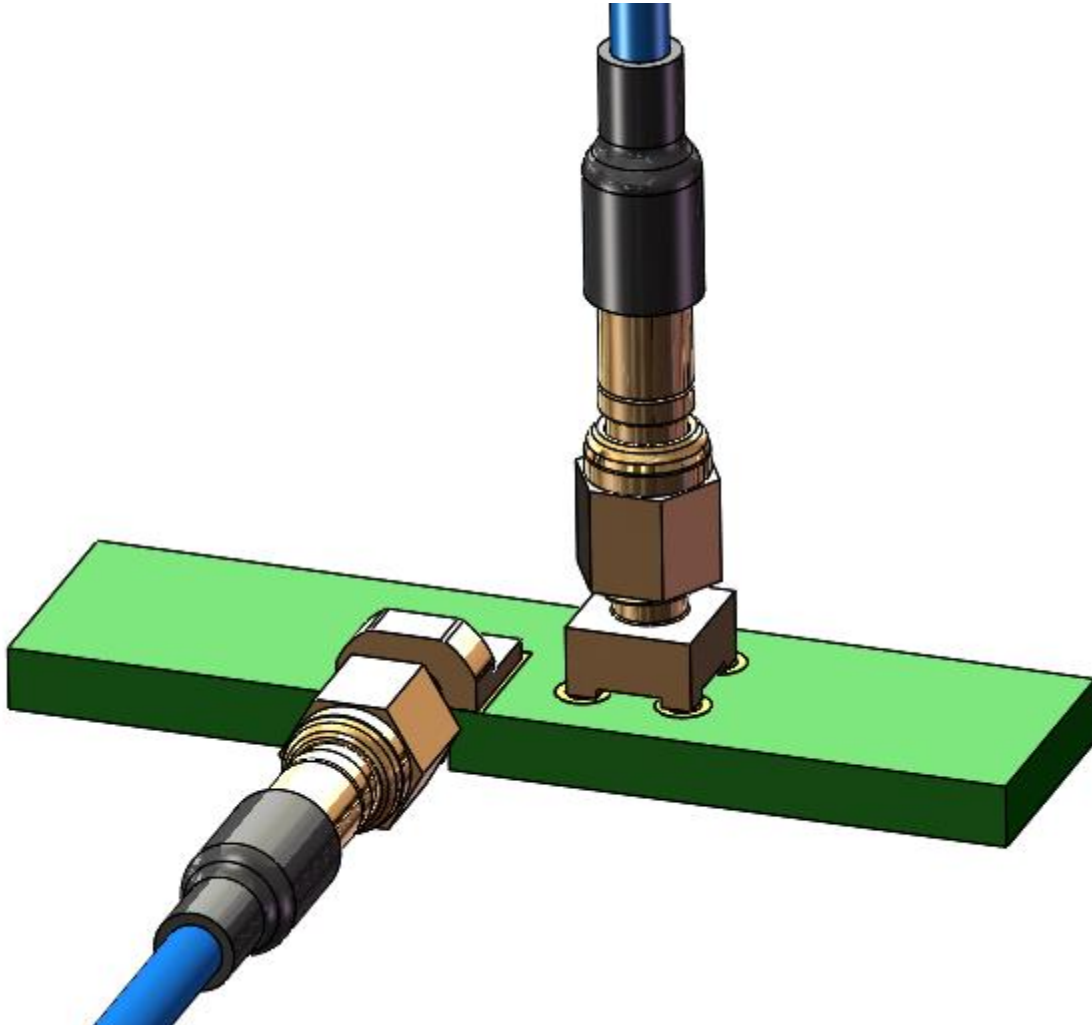
TDR (Time Domain Reflectometer) is a measure of the impedance through the cable/coax assembly. TDR results are provided below based on a 100ps rise time (0%-100%).

	Edge Launch	Through Hole
Impedance	50Ω ± 2.5Ω	50Ω ± 5Ω



Appendix 1 – Nano Coax Model

Below is a 3D-view of the two standalone coax board mount versions: Edge Launch (left) and Through Hole (right).



Appendix 2 – Measured Path

A basic diagram for the measured path is shown below. The assembly uses a Molex 73252-0130 2.92mm connector, a Temp-Flex 047SC-2901 50Ω cable, and custom Omnetics PCB with 50 Ohm traces.



Appendix 3 – What is Gating?

Gating is a mathematical function that removes undesired responses from portions of the measured path. In the case of this report, the focus was the mated Nano Coax. In order to achieve the performance of this specific portion of the path, the remaining portion was gated out.

The initial measurement was for the entire path shown in **Figure A 1**:



Figure A 1. Full measured assembly.

The gate function removed the impact from the portions shown in **Figure A 2**:

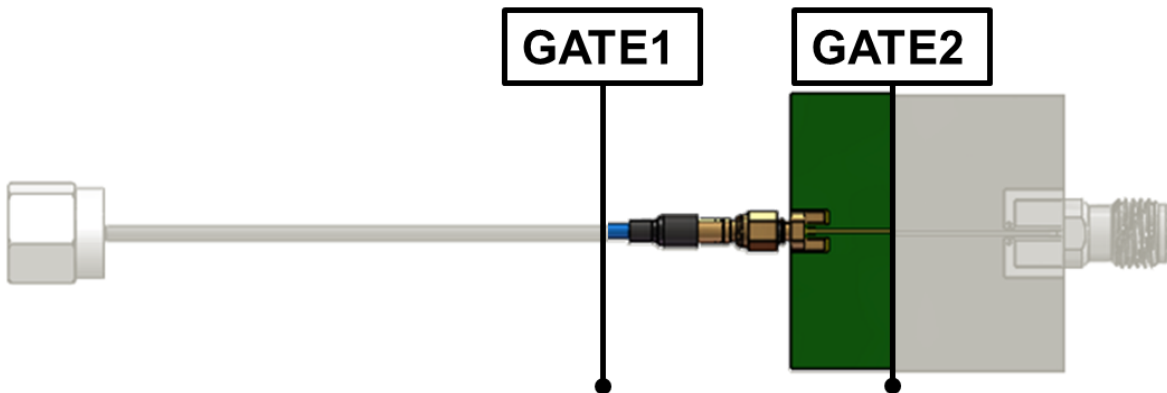


Figure A 2. Measured assembly with gating enabled.

The results is the performance of the path shown in **Figure A 3**:

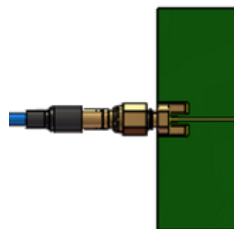


Figure A 3. The path of the measured gated results.

Appendix 4 - Equipment List:

VNA	Agilent 8722ES
Test Fixtures	Omnetics Custom

Revision Control:

Rev1	August 16, 2016
Rev2	July 11, 2018 – Modified format to standardize for all high-speed reports