



Operating DM280e in Non-ideal Conditions

Application Notes

Version 1.0, 05-2013

Table of Contents

TABLE OF CONTENTS	1
SECTION 1: OVERVIEW	2
SECTION 2: DM280E OPERATIONS	3
2.1 MIPI COMPLIANCE.....	3
2.2 MIPI COMPLIANCE VIOLATION	4
SECTION 3: REVISION HISTORY	5

Section 1: Overview

This application note discusses the impact of operating DM280e in non-ideal conditions that violate MIPI specifications, and then provides methods to work-around the issues resulting from such violations.

Section 2: DM280e Operations

2.1 MIPI Compliance

Per MIPI specification, the electrical characteristics for SCLK and SDATA shall be guaranteed using the device characterization circuit shown in Figure 1. The characterization trace impedance in the figure is only for characterization purpose, and does not reflect real trace impedance in an application that may be different.

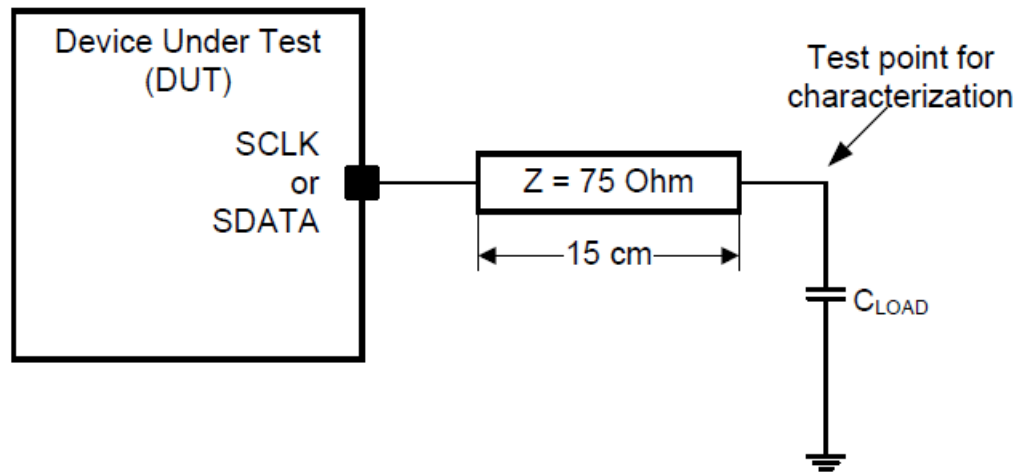


Figure 1: Device Characterization Circuit

The minimum transition time on the SCLK or SDATA line is directly related to the physical bus distance and the level of EMI generated from the bus lines. The maximum physical distance between a transmitter and a receiver is expected to be less than 15 cm, which implies a minimum transition time of 2.1 ns for both SCLK and SDATA. The lower the desired EMI and the longer this bus distance, the longer the transition time needed to generate a reliable clock signal without signal integrity issues such as generating interference, reflections, voltage overshoot or undershoot.

2.2 MIPI Compliance Violation

DM280e is compliant with MIPI standard. However, during actual testing, some conditions might violate the MIPI compliance of DM280e.

- 1) Distance between Master (DM280e) and Slave (DUT).
 - a. However it may be impractical to use transmission cables of lengths less than or equal to 15cm in production
 - i. Therefore there may be no choice but to violate this portion of the specification.
 - ii. In the event that that such a position must be taken, user must be aware of the propagation delay and compensate it accordingly during MIPI read operation. Refer to DM280e programming manual for more information.
- 2) Characterization impedance value of the transmission cable from Master (DM280e) to Slave (DM280e) may not be matched appropriately at 75ohms.
 - a. This may result in a distortion of the signal quality from the Slave (DUT)

The violation of the MIPI RFFE specification may cause MIPI operations to fail especially at high frequency such as 26MHz (Fmax). Depending on the drive strength of the DUT, read operation may fail miserably too.

Therefore the proposed solution is to use `DM280e_CONFIGURE_MIPI_DELAY` to account for transmission lengths which may be much greater than 15cm (refer to DM280e Programming manual) or reduce the frequency of the read back operations if the signal quality is severely impacted.

Section 3: Revision History

1.0	MAY 2013	INITIAL RELEASE
-----	----------	-----------------