

TI DLPC900 Two Controller - Port Configuration Issue

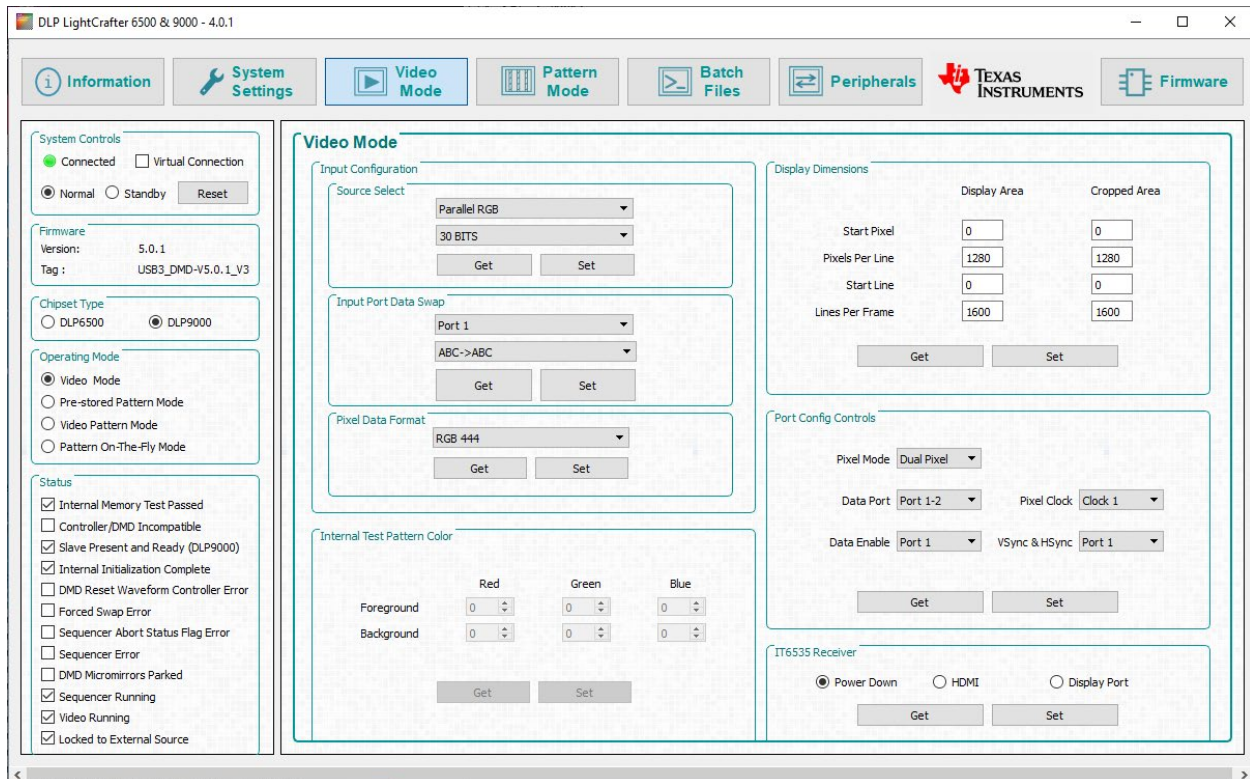
October 9, 2020

Hardware: BLI designed DLPC900 Two Controller PCA. Display Port and HDMI removed and USB3 is used as the imaging interface to the DLPC900s.

Background:

We can project images but occasionally (about once every three days) the image gets squeezed into the top or bottom half of the DMD as shown:

Normal Operation:



Once every three days:



There is no way to detect this state:

DLP LightCrafter 6500 & 9000 - 4.0.1

Information System Settings **Video Mode** Pattern Mode Batch Files Peripherals Texas Instruments Firmware

System Controls

☒ Connected ☐ Virtual Connection

☒ Normal ☐ Standby

Firmware

Version: 5.0.1

Tag: USB3_DMD-V5.0.1_V3

Chipset Type

☐ DLP6500 ☒ DLP9000

Operating Mode

☒ Video Mode

☐ Pre-stored Pattern Mode

☐ Video Pattern Mode

☐ Pattern On-The-Fly Mode

Status

☒ Internal Memory Test Passed

☐ Controller/DMD Incompatible

☒ Slave Present and Ready (DLP9000)

☒ Internal Initialization Complete

☐ DMD Reset Waveform Controller Error

☐ Forced Swap Error

☐ Sequencer Abort Status Flag Error

☐ Sequencer Error

☐ DMD Micromirrors Parked

☒ Sequencer Running

☒ Video Running

☒ Locked to External Source

Video Mode

Input Configuration

Source Select

Parallel RGB

30 BITS

Input Port Data Swap

Port 1

ABC->ABC

Pixel Data Format

RGB 444

Internal Test Pattern Color

	Red	Green	Blue
Foreground	0	0	0
Background	0	0	0

Display Dimensions

	Display Area	Cropped Area
Start Pixel	0	0
Pixels Per Line	1280	1280
Start Line	0	0
Lines Per Frame	1600	1600

Port Config Controls

Pixel Mode: Dual Pixel

Data Port: Port 1-2 Pixel Clock: Clock 1

Data Enable: Port 1 VSync & HSync: Port 1

IT6535 Receiver

☒ Power Down ☐ HDMI ☐ Display Port

We have stumbled onto a way to re-create the problem:

- 1) While imaging, send the following two commands:
- 2) Send a CLK_SEL : 0xD0 (We know this is an invalid command) <- DMD goes blank
- 3) Send a CLK_SEL : 0x02 <- DMD goes into weird state

We have been able to recover by sending the following:

- 1) Sending one additional CLK_SEL : 0x02 <- DMD returns to normal

Questions for TI:

- 1) How can we detect that the DLPC900 is in this weird state?
- 2) What causes this, and is there a way to prevent this state?