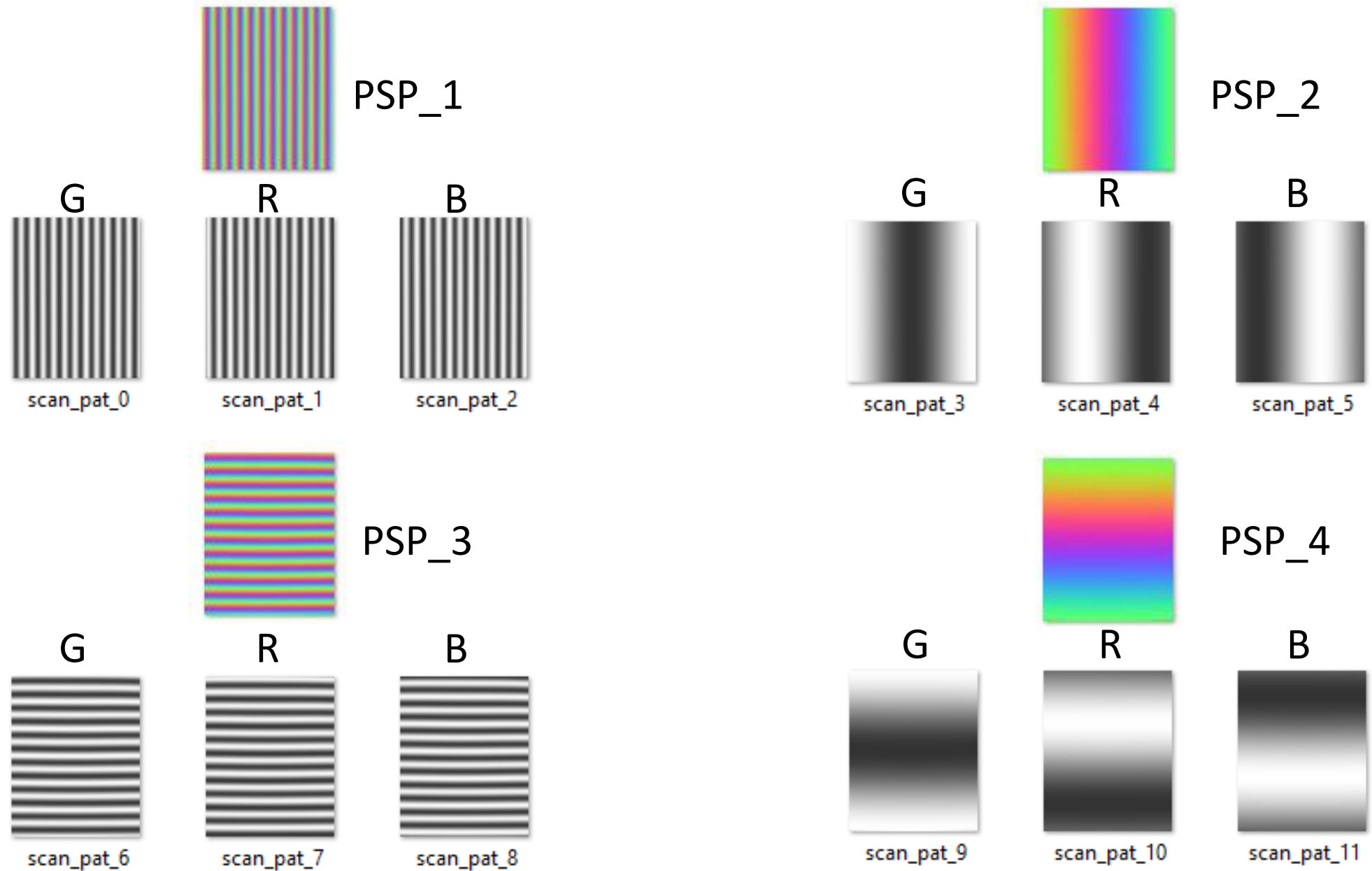# Uploading Patterns onto Lightcrafter 4500

Version 1.0, Revised 22/04/2021
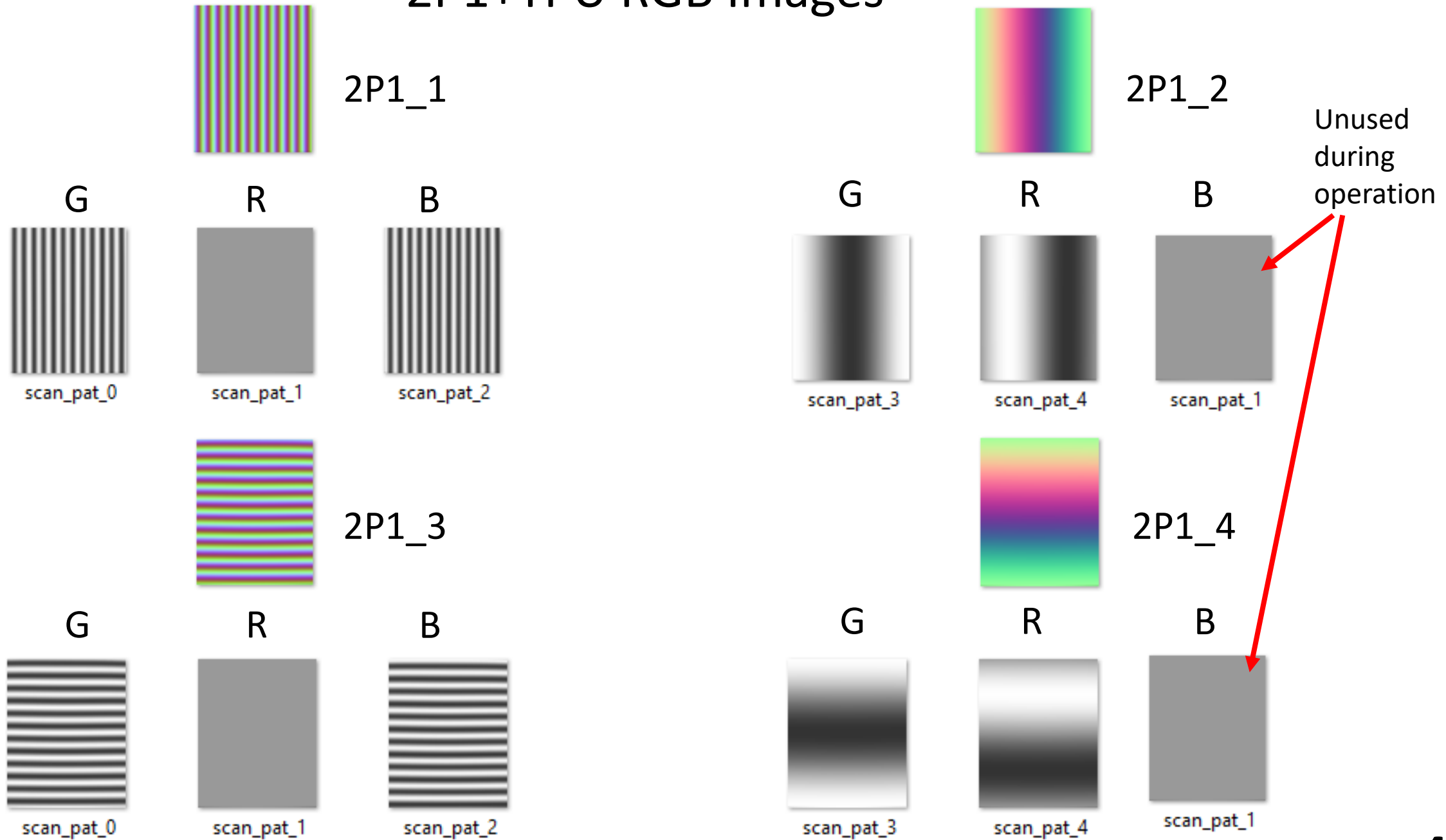
By: Lam Teng Foong

1) Power up projector
2) Launch LightCrafter 4500 GUI, make sure projector is connected
3) Merge 8-bit monochrome patterns into a single RGB image
   - All required patterns are shown in slides 3 and 4
   - Merging instructions on slide 5
4) Append patterned images to firmware (slide 6)
5) Upload firmware (slide 7)

PSP+TPU RGB Images

PSP_1

G	R	B
scan_pat_0	scan_pat_1	scan_pat_2

PSP_2

G	R	B
scan_pat_3	scan_pat_4	scan_pat_5

PSP_3

G	R	B
scan_pat_6	scan_pat_7	scan_pat_8

PSP_4

G	R	B
scan_pat_9	scan_pat_10	scan_pat_11

3

2P1+TPU RGB Images

2P1_1

G	R	B
scan_pat_0	scan_pat_1	scan_pat_2

2P1_2

G	R	B
scan_pat_3	scan_pat_4	scan_pat_1

Unused during operation

2P1_3

G	R	B
scan_pat_0	scan_pat_1	scan_pat_2

2P1_4

G	R	B
scan_pat_3	scan_pat_4	scan_pat_1

4

DLP LightCrafter 4500 Control Software v4.0.0 [Oct 31 2020 03:18:28]

System Control

● Connected   System Reset

Firmware Version: 4.1.0
Firmware Tag: cali_horz5_redo_psp_2p1tpu

● Init Done   ● Seq. Running   ● DRC Error
● Forced Swap   ● Seq. Error   ● DMD Parked
● Buffer Freeze   ● Seq Abort

Apply Solution

Operating Mode
○ Pattern Sequence
○ Pattern Sequence [Variable Exposure]
● Video Mode
○ Power Standby

Image Orientation
☐ North/South Flip   ☐ East/West Flip

Get   Set

LED Driver Control
LED Current (0-255)   LED Selection
Red   104
Green 135   ● Automatic
Blue   130
                             ○ Manual   ☐ Red

                                         ☐ Green

                                         ☐ Blue

Get   Set

Save Solution   Apply Default Solution

Video Mode | Pattern Sequence | Peripheral Control | Image / Firmware | Additional Resources

Create Images | Firmware Build | Firmware Upload

1) Image/Firmware Tab

5) Specify Input Pattern

4) Specify Output Pattern

Input bmp File

2) Image/Firmware Tab

Output bmp file
...   /home/ltf/Desktop/horz5_redo_fixpp/psp/h2.bmp   ...

Bit depth
8

At bit(s) position in the destination file
[G7 G6 G5 G4 G3 G2 G1 G0]

Add to Output File   Clear Output File

3) Set Bit Depth to 8   **6) Specify Colour Channel**   **7) Add pattern to RGB image**

9) Check that image in output directory is correct, if not respecify the output path. Then clear output and proceed with next RGB image

8) Repeat steps 4-7 until all RGB channels are filled

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DLP LightCrafter 4500 Control Software v4.0.0 [Oct 31 2020 03:18:28]

System Control

Connected   System Reset

Firmware Version: 4.1.0
Firmware Tag: cali_horz5_redo_psp_2p1tpu

Init Done   Seq. Running   DRC Error
Forced Swap   Seq. Error   DMD Parked
Buffer   ✓ Auto Update Status

Operating Mode
- Pattern Sequence
- Pattern Sequence [Variable Exposure]
- Video Mode
- Power Standby

Image Orientation
- North/South Flip   East/West Flip

Get   Set

LED Driver Control

LED Current (0-255)   LED Selection
Red 104
Green 135   Automatic
Blue 130
Manual   Red
Green
Blue

Get   Set

Apply Default Solution

Video Mode | Pattern Sequence | Peripheral Control | Image / Firmware

Create Image | Firmware Build | Firmware Upload

Download the latest Firmware release from http://www.ti.com/tool/dlpr350

Firmware File: 350PROM_v4.1.0_with_calibration_patterns.bin   Browse
Retrieved Pattern Images

100%

Selected INI file   Clear
Add Firmware Tag   Clear

Original Images: 7
Images Added: 0
Images Removed: 0
Total Images: 7

TEXAS INSTRUMENTS
www.ti.com/dlplightcrafter4500

DLP
TEXAS INSTRUMENTS

DLP LightCrafter 4500

0   Change
Remove
Add
Select .ini File
Save Updates

RGB Color
Monochrome

Use Red Channel Only
Use Green Channel Only
Use Blue Channel Only

1) Firmware Build Tab

2) Select DLPR350PROM_v4.1.0_with_calibration_patterns.bin found in firmware folder of repo

3) Provide a tag for new firmware

4) Add patterns (0-6 should already be filled)

Indices:
0,1,2 – Lightcrafter test images
3-6 – Calibration images
7-10 – PSP_1, _2, _3, _4
11-14 – 2p1_1, _2, _3, _4

5) Save new firmware file

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DLP LightCrafter 4500 Control Software v4.0.0 [Oct 31 2020 03:18:28]

System Control

Connected

System Reset

Firmware Version: 4.1.0
Firmware Tag: horz5_redo_fixpp

- Init Done
- Forced Swap
- Buffer Freeze
- Seq. Running
- Seq. Error
- Seq Abort
- DRC Error
- DMD Parked
- ✓ Auto Update Status

Operating Mode

- Pattern Sequence
- Pattern Sequence [Variable Exposure]
- ● Video Mode
- Power Standby

Image Orientation

- ☐ North/South Flip
- ☐ East/West Flip

Get   Set

LED Driver Control

LED Current (0-255)
Red   104
Green 135
Blue   130

LED Selection
- ● Automatic
- ○ Manual   ☐ Red
                   ☐ Green
                   ☐ Blue

Get   Set

Apply Solution   Save Solution   Apply Default Solution

Video Mode | Pattern Sequence | Peripheral Control | Image / Firmware | Additional Resources

Create Images | Firmware Build | Firmware Upload

1) Firmware Upload Tab

Download the latest Firmware release from http://www.ti.com/tool/dlpr350
Firmware Upload

Firmware File: _P_stuff/DLPR350PROM_v4.1.0_horz5_redo_fixpp.bi   Browse

2) Search for firmware file to be uploaded

✓ Skip Bootloader Update   ☐ Fast Flash Update
Download Completed in 00:04:45(time in HH:MM:SS)
0%   Upload

3) Upload, wait for 100% completion, projector should restart after that

DLPC350 firmware image contains two applications.
1. **Bootloader Application** - Resides in first 128KB memory in the flash; this application checks for validit...
2. **Main Application** - Controller jumps to Main Application from Boot Loader on Valid image; this is main application responisble configuration and control in various operating modes.
Note
If by any reason the bootloader area is corrupted; system will not boot, in such case you are required to use JTAG tools DLPC350 JTAG tools

Skip Bootloader Update - Checkbox option to skip erase and programming of fisrt 128KB of area where Bootloader Application reside in the flash.

Fast Flash Update - Check box option enable faster programming of the flash, this option when selected, basically compare new Fimrware file with the last programmed content which is maintained as cached file on the PC; then selectively erase and program the mismatch areas on the flash. After updating the new Firmware file is stored as cached file on the PC.

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