VERA C. RUBIN OBSERVATORY

Vera C. Rubin Observatory
Software Test Report

System-level Science Verification Acceptance Test Campaign: Photometric Calibration Test Plan

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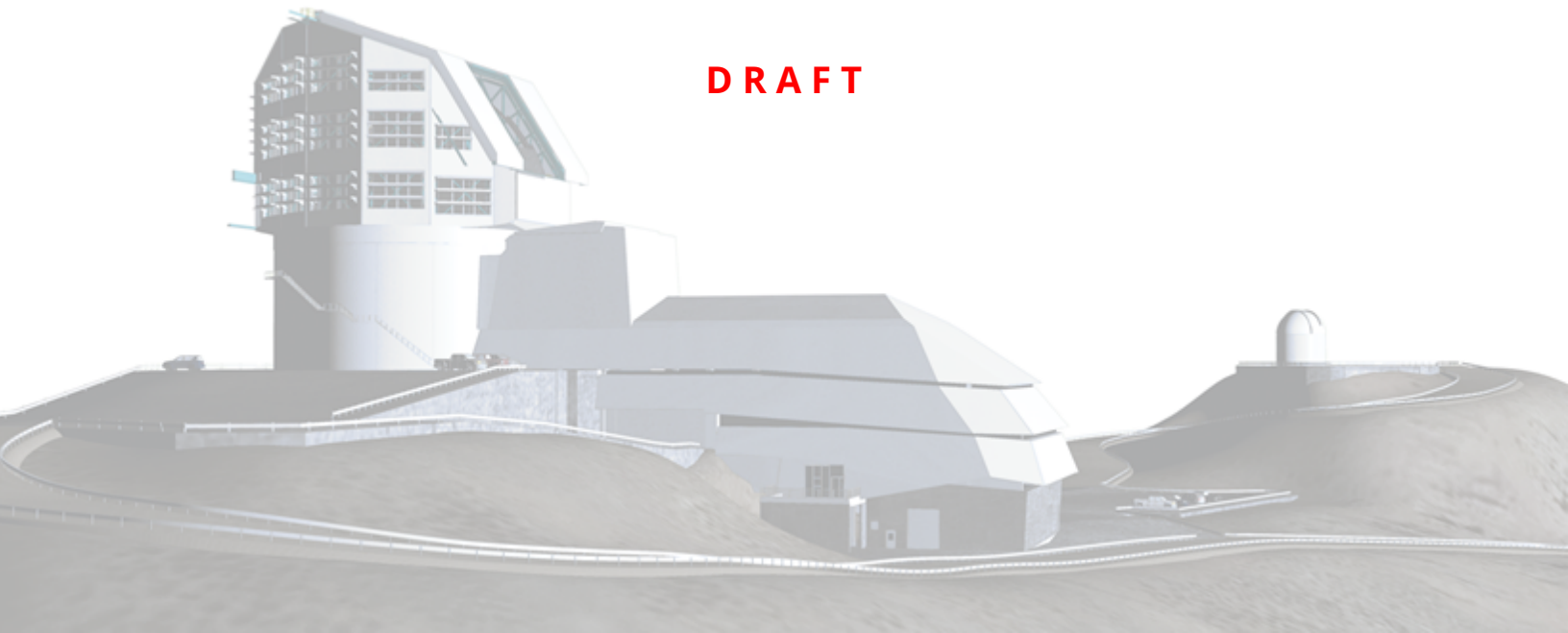
SCTR-116

Latest Revision: 2025-02-03

DRAFT



Abstract

This is the test plan for **Photometric Calibration** (System-level Science Verification Acceptance Test Campaign), an LSST milestone pertaining to the Project System Engineering and Commissioning.
This document is based on content automatically extracted from the Jira test database on 2025-02-03 . The most recent change to the document repository was on 2025-02-03.

Change Record

Version	Date	Description	Owner name
	2025-01-31	First draft	Jeff Carlin

Document curator: Jeff Carlin
Document source location: `https://github.com/lsst-dm/SCTR-116`
Version from source repository: a9b1da1

Contents

System-level Science Verification Acceptance Test Campaign: Photometric Calibration Test Plan

1 Introduction

1.1 Objectives

This acceptance test campaign will verify system-level science performance metrics in the OSS and LSR associated with photometric calibration.

1.2 System Overview

None

1.3 Document Overview

This document was generated from Jira, obtaining the relevant information from the LVV-P135 Jira Test Plan and related Test Cycles (LVV-R301).

Section 1 provides an overview of the test campaign, the system under test (Science Verification), the applicable documentation, and explains how this document is organized. Section 2 provides additional information about the test plan, like for example the configuration used for this test or related documentation. Section 3 describes the necessary roles and lists the individuals assigned to them.

Section 4 provides a summary of the test results, including an overview in Table 2, an overall assessment statement and suggestions for possible improvements. Section **??** provides detailed results for each step in each test case.

The current status of test plan LVV-P135 in Jira is **Draft** .

1.4 References

[1] **[DMTN-140]**, Comoretto, G., 2021, Documentation Automation for the Verification and Validation of Rubin Observatory Software, URL https://dmtn-140.lsst.io/, Vera C. Rubin Observatory Data Management Technical Note DMTN-140

[2] **[DMTN-178]**, Comoretto, G., 2021, Docsteady Usecases for Rubin Observatory Constructions, URL https://dmtn-178.lsst.io/, Vera C. Rubin Observatory Data Management Technical Note DMTN-178

[3] **[LSE-160]**, Selvy, B., 2013, Verification and Validation Process, URL https://ls.st/LSE-160, Vera C. Rubin Observatory LSE-160

2 Test Plan Details

2.1 Data Collection

Observing is not required for this test campaign.

2.2 Verification Environment

None

2.3 Entry Criteria

None

2.4 Exit Criteria

None

2.5 Related Documentation

Docushare collection where additional relevant documentation can be found:

- None

2.6 PMCS Activity

Primavera milestones related to the test campaign: None

3 Personnel

The personnel involved in the test campaign is shown in the following table.

	T. Plan LVV-P135 owner:	**Jeffrey Carlin**	
	T. Cycle LVV-R301 owner:	**Jeffrey Carlin**	
Test Cases	**Assigned to**	**Executed by**	**Additional Test Personnel**
LVV-E3919	Jeffrey Carlin	Undefined	b″
LVV-E3920	Jeffrey Carlin	Undefined	b″
LVV-E3921	Jeffrey Carlin	Undefined	b″
LVV-E3935	Jeffrey Carlin	Undefined	b″
LVV-E3936	Jeffrey Carlin	Undefined	b″
LVV-E3938	Mostafa Lutfi	Undefined	b″
LVV-E3939	Sam Schmidt	Undefined	b″

4 Test Campaign Overview

4.1 Summary

T. Plan LVV-P135:	**System-level Science Verification Acceptance Test Campaign: Photometric Calibration**	Draft
T. Cycle LVV-R301:	**System-level Science Verification Acceptance Test Campaign: Photometric Calibration (ComCam)**	Not Executed

Test Cases	**Ver.**
LVV-E3919	1.0(d)
LVV-E3920	1.0(d)
LVV-E3921	1.0(d)
LVV-E3935	1.0(d)
LVV-E3936	1.0(d)
LVV-E3938	1.0(d)
LVV-E3939	1.0(d)

Table 2: Test Campaign Summary

4.2 Overall Assessment

None

4.3 Recommended Improvements

5 Detailed Tests

5.1 Test Cycle LVV-R301

Open test cycle *System-level Science Verification Acceptance Test Campaign: Photometric Calibration (ComCam)* in Jira.

Test Cycle name: System-level Science Verification Acceptance Test Campaign: Photometric Calibration (ComCam)
Status: Not Executed

Test campaign supporting "System-level Science Verification Acceptance Test Campaign: Photometric Calibration" using ComCam.

5.1.1 Software Version/Baseline

b"

5.1.2 Configuration

b"

5.1.3 Test Cases in LVV-R301 Test Cycle

5.1.3.1 LVV-E3919 - Instrumental Calibration reproducibility

Version **1.0(d)**. Open *LVV-E3919* test case in Jira.

None

Preconditions:
None

Final comment:

None

Detailed steps :

5.1.3.2 LVV-E3920 - Flat fielding errors -- effect on photometric repeatability

Version **1.0(d)**. Open *LVV-E3920* test case in Jira.

Verify the effect of flat fielding errors on photometric repeatability

Preconditions:
None

Final comment:
None

Detailed steps :

5.1.3.3 LVV-E3921 - Shutter Timing Allocations

Version **1.0(d)**. Open *LVV-E3921* test case in Jira.

Verify the shutter timing allocations

Preconditions:
None

Final comment:
None

Detailed steps :

5.1.3.4 LVV-E3935 - Single Visit Photometric Repeatability

Version **1.0(d)**. Open *LVV-E3935* test case in Jira.

Verify that the RMS of magnitudes in all filters and outlier rate of magnitudes is within specification

Preconditions:
Multi epoch observations of bright, isolated, unresolved, un-saturated stars, observed at varying photometric conditions, air mass, and water vapor.

Final comment:
None

Detailed steps :

5.1.3.5 LVV-E3936 - The spatial uniformity of photometric zeropoints

Version **1.0(d)**. Open *LVV-E3936* test case in Jira.

The distribution width (rms) of the internal photometric zero-point error (the system stability across the sky) will not exceed PA3/PA3u millimag, and no more than PF2 % of the distribution will exceed PF4 millimag. Applies to both bright and faint ends to constrain non-linearity of the flux scale

Preconditions:
None

Final comment:
None

Detailed steps :

5.1.3.6 LVV-E3938 - Verify White Dwarf Flux Standards

Version **1.0(d)**. Open *LVV-E3938* test case in Jira.

Create a catalog with WDs, plot distribution over the sky, calculate the distance between nearest neighbors, compare to the field of view of LSSTCam

Preconditions:
None

Final comment:
None

Detailed steps :

5.1.3.7 LVV-E3939 - Physical Scale Transform

Version **1.0(d)**. Open *LVV-E3939* test case in Jira.

The accuracy of the transformation of the internal LSST photometry to a physical scale (e.g. AB magnitudes) with an accuracy of PA6 (10 mmag).

Preconditions:
None

Final comment:
None

Detailed steps :

A Documentation

The verification process is defined in LSE-160. The use of Docsteady to format Jira information in various test and planing documents is described in DMTN-140 and practical commands are given in DMTN-178.

B Acronyms used in this document

Acronym	Description
DMTN	DM Technical Note
LSE	LSST Systems Engineering (Document Handle)
LSR	LSST System Requirements; LSE-29
LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
LVV	LSST Verification and Validation
OSS	Observatory System Specifications; LSE-30
PMCS	Project Management Controls System
PSE	Project Systems Engineering
RMS	Root-Mean-Square