SST Optics:
M1 Subsystem Technical Requirements Specification

SST-OPT-SPE-102

Version 1.a

Prepared by:		
Giorgia Sironi (INAF)		SST-OPT SS
Latest Release Checked by:		
Gino Tosti (INAF)		SST-STR SE
Nicola La Palombara (INAF)		SST-STR PA/QA
Laura Proserpio (INAF)		SST-OPT SS
Approved by:		
Salvatore Scuderi (INAF)		SST-STR PM

Current Release				
Ver.	Created	Comment	Distribution	Editor(s)
1a	13/02/2024	First issue of the document	SST Consortium	Giorgia Sironi (INAF)

Version History				
Ver.	Created	Comment	Distribution	Editor(s)
1a	13/02/2024	First issue of the document	SST Consortium	Giorgia Sironi (INAF)

Table of Contents

1 Introduction

1.1 Scope & Purpose

This Requirements Specification collects the functional and performance requirement for the design, development, verification, and delivery of the SST M1 Optics.

The requirements collected in this specification are classified as SST Level D requirements.

This document derives from the SST-OPT-SPE-002 and collects only the requirements applicable to the procurement of M1 mirror facets.

1.2 Applicable Documents

[AD1] SST Programme Project Management Plan SST-PRO-PLA-001 Version 1.a
[AD2] SST Configuration Management Plan SST-PRO-PLA-002 Version 1.a
[AD3] CTA-SPE-SEI-400000-0001-1c CTAO South Seismic Risk Specification
[AD4] Panel pad drawing
[AD5] COR1 panel assembly drawing
[AD6] COR2 panel assembly drawing
[AD7] COR3 panel assembly drawing
[AD8] SST-PRO-PLA-005 – SST Programme: Product Assurance and Quality Plan
[AD9] SST-PRO-PLA-006 – SST Programme: Safety Management Plan
[AD10] SST-PRO-SPE-001 – SST Programme: Telescope Technical Requirements Specification

1.3 Reference Documents

NA

1.4 Definition of Terms and Abbreviations

1.4.1 Abbreviations and Acronyms

AIT	Assembly Integration and Testing
AIV	Assembly Integration and Verification
APM	AIV/AIT Project Manager
BKO	Bridging phase Kick-Off
CDR	Critical Design Review
cFOV	Camera Field of View
CPM	Camera Project Manager
CTA	Cherenkov Telescope Array
CTAO	Cherenkov Telescope Array Observatory
FAR	Final Acceptance Review
FOV	Field of View
DR	Delivery Review
DVER	Design Verification Engineering Review
ERIC	European Research Infrastructure Consortium
IKC	In Kind Contribution
INAF	Istituto Nazionale di Astrofisica
M1	Primary Mirror

M2	Secondary Mirror
MPIK	Max-Planck-Institut für Kernphysik
PA	Product Assurance
PBS	Product Breakdown Structure
PR	Product Review
PSF	Point Spread Function
PKO	Programme Kick-Off
PMP	Programme Management Plan
PO	Project Office
PQR	Production Qualification Review
PRM	Programme Manager
PRR	Production Readiness Review
PSE	Programme System Engineer
PT	Product Tree
QA	Quality Assurance
QM	Quality Manager
RAMS	Reliability, Availability, Maintainability, and Safety
SE	System Engineer
SPM	Structure Project Manager
SST	Small Size Telescope
T-TRR	Telescope Test Readiness Review
TRR	Test Readiness Review
WBS	Work Breakdown Structure
WP	Work Package

1.4.2 Glossary

TERM	DEFINITION
"As Built" Configuration	The as-built configuration or applied configuration is defining the as-built status per each serial number of Configuration Item (CI) subject to formal acceptance.
"As Designed" Configuration	The as-designed configuration or Applicable configuration is defining the current design status of a Configuration Item (CI)
AIV	AIV is the Assembly Integration and Verification, which is referred to the integration activities related with the verification of the system or sub-system. In the framework of SST for briefness this term includes also the Assembly Integration and Testing which is related with the integration activities and testing to be performed during the integration at system and subsystem levels
Baseline	Set of information which describes exhaustively a situation at a given instant of time or over a given time interval.
Change	Vehicle for proposing modifications to an approved baselined data or the business agreement.
Configuration	Functional or physical Characteristics of a product defined in configuration definition documents subject to configuration baseline.
Configuration Item	Aggregation of hardware, software, processed materials, services or any of its discrete portions, that is designated for configuration management and treated as a single entity in the configuration management process. **NOTE:** A configuration item can contain other lower level configuration item(s).
Deviation	Written authorization to depart from the originally specified requirements for a product prior to its production.
Firmware	Firmware is software programmed onto an electronic device which is treated like a pure hardware.
Executive Steering Committee	The SST Executive Steering Committee (ESC) is the high-level decision-making body which will manage the strategic direction of the Programme and will be in charge of overseeing progress and facilitating global collaboration among the participating groups.
Institutes	Research Institutes involved in the SST Programme.
Contractor	Industry involved in the SST Program which has a contract with an institute
SST-PRO	It is the team composed by Institutes and Contractors responsible, involved in the production of SST telescopes elements, which coordinate the project level activities.
Hardware	Hardware is a single or an assembly of physical electronic devices which cannot be changed in its user environment.
Item	Any part, component device, sub-unit, unit, equipment or device that can be individually considered.
Model	Physical or abstract representation of relevant aspects of an item or process that is put forward as a basis for calculations, predictions or further assessment useful for the preparation of SST production
Partners	are those entities taking responsibility for IKC delivery by signing IKC agreements with CTAO, plus any organisation identified by these signing entities as playing an essential role in SST delivery. The institutes are the partners of the CTA-SST consortium.
Product	A product (hardware, software, service) required in the frame of the program and included as element of the product tree having a unique identifier. A product may be deliverable or not.
Product Breakdown Structure	Hierarchical structure depicting the product orientated breakdown of the project into successive levels of detail down to the configuration items necessary to deliver the required functions. The Product Breakdown Structure (PBS) in general is influenced by Institutes/partners decisions to group certain products or by program history. It identifies products and their interfaces, it serves as the basis for the WBS
Service	Service is the result of at least one activity necessarily performed at the interface between the SST consortium and CTA and is generally intangible.
Software	Set of computer programs, procedures, documentation and their associated data.
SST-E2E	The SST end-to-end telescope, or simply SST, will consist of the SST Structure and the SST Camera (including all mechanics, mirrors, auxiliary devices and required software), integrated and commissioned on-site including all required documents. It ends at (and integrates into CTA via) the system interfaces specified by the CTA PBS.
SST Consortium	The SST Consortium then consists of the Partners and their associated Teams, where a Team is a set of individuals within a single organisation at a single location (such as a University group).
System	An entity of products assembled or working together for a well defined specified purpose. In SST the term system can be utilised in alternative to Telescope End-to-End.
Sub-System	Like a system but a lower level. In SST the SST system is composed by the subsystem SST-MECH, SST-OPT, SST-TCS and SST-CAM.
Waiver	Written authorization to use or release a product which does not conform to the specified requirements
Work Breakdown Structure	Hierarchical representation of the activities necessary to complete a project.

1.4.3 Optics Related definitions

- (Optical) Point-Spread-Function (PSF): The optical point-spread-function (PSF), as measured in the telescope focal plane, describes the response of the optical system to a point-like source of light. In general, this is a function of the position within the field of view and the pointing direction of the telescope and is affected by the environmental conditions. The optical PSF is typically characterised by the 80% angular light containment diameter Theta_80.
- Theta_80: Theta_80 (θ80) is the standard parameter for characterising the optical PSF of a telescope. It is the opening angle (diameter) relative to the light centroid at a specific place within the focal plane, within which 80 percent of those photons that are reflected into a 1 degree diameter circle on the camera fall. Unless otherwise specified, the source of light should be assumed to be at infinity. Photons in the wavelength range 300 - 550 nm with the Cherenkov Reference Spectrum. Operating Illumination should be assumed.
- Mirror Reflectivity: The fraction of photons incident on an optical element (facet) of a reflector dish, that are focussed into the required cFOV. The mirror reflectivity does not include any effects from shadowing by, for example, the support structure of either incoming or outgoing light.
- Geometrical Mirror Area: It is the projected area of the primary mirror multiplied by (1-f), where f is the fraction of photons lost due to shadowing (for example by support structures, secondary mirror, camera etc.). The geometrical mirror area is generally a function of the position within the field of view.
- Effective Mirror Area: The effective mirror area characterises the light-collection power of the optical system. This quantity is the average of the product of the Geometrical Mirror Area and the mirror reflectivity weighted, in the range 300-550 nm, by the Cherenkov Reference Spectrum. The effective mirror area is generally a function of the position within the field of view.
- Optical Efficiency: The overall optical efficiency of the system for signal photons, ε_{sig}, is defined as:

  $$\varepsilon_{\mathrm{sig}} = \int_0^{\infty} F(\lambda)\varepsilon(\lambda)d\lambda / \int_{300\mathrm{nm}}^{550\mathrm{nm}} F(\lambda)d\lambda$$

  where F(λ) is the nominal Cherenkov Reference Spectrum and ε is the probability that a photon of a given wavelength, incident on the primary mirror and parallel with the optical axis, results in the generation of a detectable photoelectron. This efficiency therefore includes the reflectivity of the mirrors, of light concentrators if present, camera dead space and the quantum and collection efficiencies of photosensors.

  The optical efficiency for background, ε_{bg}, is defined in an identical way but with F(λ) replaced by the Background Light Reference Spectrum.

1.5 Optical Requirements Coding

XYZZ

X	Y	ZZ
3 - General	0- Design	Sequential number
4 – M1	1 - Performance	
5 – M2	2 - Physical	
6 –Mirror Monitoring system	3 – Interface	

7 – Mirror level control system	4 - Environmental	
	5 - Lifetime, Maintainability and Product Assurance	
	6 - Safety	
	7 - Packaging, Transportation and Handling	
	8 - Documentation	

1.6 VERIFICATION METHODS

1.6.1 D – By review of design

Verification by Review of design shall consist of using approved records or evidence (e.g. design documents and reports, technical descriptions, engineering drawings) that unambiguously show that the requirement is fully satisfied.

The compliance shall be demonstrated by an adequate design, which will be checked by INAF during the design phase of the contract by review of the design documentation.

1.6.2 A – By analysis

Verification by analysis shall consist of performing theoretical or empirical evaluation using techniques agreed with INAF (such as systematic, statistical, and qualitative design analysis, modelling, and computational simulation).

The fulfilment of the specified performance shall be demonstrated by appropriate analysis which will be checked by INAF during the design phase.

1.6.3 I – By inspection

Verification by inspection shall consist of visual determination of physical characteristics (such fabrication features, hardware conformance to document drawing or workman requirements, physical conditions, software source code conformance with coding standards).

1.6.4 T – By test

Verification by test shall consist of measuring product performance and functions under representative conditions (i.e., simulated environments), or under conditions that can be clearly traced to operational ones. The analysis of data derived from testing shall be an integral part of the test and the results included in the test report. When the test objectives include the demonstration of qualitative operational performance, the execution shall be observed, and results recorded.

2 General Requirements

2.1 Design Requirement

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	VM
D-SST-OPT-0330	C-SST-TEL-0330	Flood Protection	Mirrors shall be designed to prevent all effects of water collection caused by surface water runoff.	D, T

2.2 Performance Requirement

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	VM
D-SST-OPT-0120	C-SST-TEL-0120	Mirror Reflectivity	The initial average specular reflectivity of all reflective surfaces of the Telescope shall be ≥90% at all wavelengths from 300-550 nm.	T, A
D-SST-OPT-0125	C-SST-TEL-0125	Reflectivity Degradation	The loss in specular reflectivity of all reflective surfaces of the Telescope shall be <4% per year at all wavelengths from 300-550 nm.	T, A
D-SST-OPT-3101		Reflectivity degradation in lifetime	The loss in specular reflectivity of all reflective surfaces shall be less than 15% at all wavelengths in the range 300-550 nm over their lifetime.	T, A
D-SST-OPT-3102		Reflectivity uniformity	The mirrors shall have initial reflectivity non-uniformity over the entire area lesser than 8% in the wavelength range 300-550 nm.	T, A

2.3 Environmental Requirement

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	VM
D-SST-OPT-0324	C-SST-TEL-0324	Survival humidity	Damage shall not occur due to relative humidity within the range 2% to 100% when in the Initialized State or when no power is available.	T, A
D-SST-OPT-0334	C-SST-TEL-0334	Optical Surfaces Misting	The Telescope shall operate with un-misted optical surfaces (Mirror and camera window) when the dew point temperature is at least 2ºC lower than the ambient temperature.	A
D-SST-OPT-0412	C-SST-TEL-0412	Rain in 24 hours	Damage shall not occur due to rain precipitation of up to 200 mm in 24 hours.	T, A
D-SST-OPT-0422	C-SST-TEL-0422	Rain in 1 hour	Damage shall not occur due to rain precipitation of up to 70 mm in 1 hour.	T, A
D-SST-OPT-0428	C-SST-TEL-0428	Rain wind speed	Damage beyond the Serviceability Limit State shall not occur due to precipitation in the form of rain, snow or hail for wind speeds of up to 90km/h, averaged over 10 minutes.	T, A

D-SST-OPT-0460	C-SST-TEL-0460	Rain during transition	During transitions, damage shall not occur due to rainfall of up to 2 mm/hour.	T, A
D-SST-OPT-0525	C-SST-TEL-0525	Survival snow load	Damage beyond the Serviceability Limit State shall not occur on the CTA site whilst in the Initialized state due to snow loads of up to 20kg / m^2.	T, A
D-SST-OPT-0810	C-SST-TEL-0810	Solar radiation level	Damage shall not occur to components regularly exposed to direct solar radiation of up to 1200 W/m^2 (averaged over 1 hour) at a maximum ambient temperature of 35ºC	T, A
D-SST-OPT-0915	C-SST-TEL-0915	Dust and sand	Damage shall not occur due to an environment with up to 2.9 x 10^5 particles of ≥5µm size per m^3 of air for 90% of the time at 2m above ground. Note: This limit corresponds to the definition of ISO-Class 9 of ISO14644-1 for particles of this size	T, A
D-SST-OPT-1020	C-SST-TEL-1020	Aggressive atmosphere	Damage shall not occur on the CTA-S site due to the following Aggressive Atmospheric Concentration ranges: NO, NO2, SO2 < 4ppb	T, A
D-SST-OPT-1112	C-SST-TEL-1112	Earthquake damage limitation (South)	The SST type telescopes shall meet the Damage Limitation Requirement (DLR) as defined in Eurocode 8 based on the earthquake excitation at ground level defined in [AD3]	T, A
D-SST-OPT-1120	C-SST-TEL-1120	Earthquake collapse prevention (South)	The SST type telescopes shall meet the No-Collapse Requirement (NCR) as defined in Eurocode 8, based on the earthquake excitation at ground level defined in [AD3]	T, A
D-SST-OPT-0135	C-SST-TEL-0135	Performance Atmospheric Pressure	Mirrors shape error requirements shall be met in the atmospheric pressure range of 770 +/- 50 mbar.	A
D-SST-OPT-0210	C-SST-TEL-0210	Performance Temperature	Mirrors shape error requirements shall be met in the temperature range -5ºC to 25ºC	T, A
D-SST-OPT-0225	C-SST-TEL-0225	Survival Temperature	Mirrors shall survive in the temperature range -15°/35°	T
D-SST-OPT-0230	C-SST-TEL-0230	Temperature Gradient	Mirrors shape error requirements shall be met during air temperature gradients of less than 7.5ºC/h	T, A
D-SST-OPT-0250	C-SST-TEL-0250	Survival temperature gradients	Mirrors shall survive to air temperature gradients of up to 0.5ºC/min for 20 minutes	T, A
D-SST-OPT-0530	C-SST-TEL-0530	Hailstone damage	Damage shall not occur due to the impact of 5 mm diameter hailstones with kinetic energy of 0.2 Joule.	T, A
D-SST-OPT-0625	C-SST-TEL-0625	Survival ice load	Damage beyond the Serviceability Limit State shall not occur due to an ice thickness (on all surfaces) of up to 20 mm.	T, A
D-SST-OPT-0743	C-SST-TEL-0743	Damage Wind Speed	No damage shall occur due to wind speed of up to 80 km/h, averaged over 10 minutes.	T, A

D-SST-OPT-0744	C-SST-TEL-0744	Survival Wind Speed	Damage shall not occur due to wind speeds of up to 80 km/h, averaged over 10 minutes, and damages beyond the Serviceability Limit State shall not occur due to wind speeds of up to 100 km/h averaged over 10 minutes, when the Structure is parked and the Lids are closed.	T, A
D-SST-OPT-0745	C-SST-TEL-0745	Survival Wind Gusts	Damage beyond the Serviceability Limit State shall not occur on the CTA site due to wind gusts (duration 1 s) of up to 170 km/h.	T, A

2.4 Lifetime, Maintainability and Product Assurance

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	TM
D-SST-OPT-0540	C-SST-TEL-0540	Mirror Lifetime	All Telescope reflective surfaces shall be designed for an operational Lifetime of 15 years	A
D-SST-OPT-3501		Glass Cleanness	The Air side of the glass plate shall be carefully cleaned and degreased prior to the forming process.	D

2.5 Safety Requirement

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	TM
D-SST-OPT-0322	C-SST-TEL-0322	Fire Protection	Systems shall be designed for compliance with fire regulations described in the Guide to application of the Machinery Directive 2006/42/EC, Edition 2.2 – October 2019, Annex I, 1.5.6 §227, 3.5.2 §321.	D

2.6 Packaging, Transportation and Handling requirements

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	TM
D-SST-OPT-3701		Packaging functionality	The mirrors packaging shall prevent damages during transportation.	D
D-SST-OPT-3702		Packaging regulations	The mirrors packaging shall be compliant with national regulations (Italy/Chile)	D
D-SST-OPT-3703		Front side protective plastic film	A removable plastic film shall protect the front of coated mirrors during transportation, storage and installation. The plastic film shall not leave any residual material on the mirror surface.	D
D-SST-OPT-3704		Back side protective plastic film	The mirrors' back-structure shall be protected by a plastic film.	D

D-SST-OPT-3705		Packaging coding	Each layer used for the packaging of the mirror (e.g. cartoon box, barrier bag, etc.) shall have the ID code of the mirror printed on it.	D
D-SST-OPT-3706		Packaging closure	The shipping box shall be opened easily. In particular, the use of nails is forbidden.	D
D-SST-OPT-3707		Handling	The mirrors shall guarantee a safe handling for the operators.	D
D-SST-OPT-3708		Mirror Access	The shipping box shall allow the safe access/handling of mirrors considering the required operations.	D
D-SST-OPT-3709		Packaging	The final layer used for the packaging of the single mirrors shall be a barrier bag.	I

2.7 Documentation Requirement

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	
D-SST-OPT-0508	C-SST-TEL-0508	Maintenance Plans	Maintenance planning and procedures for covering access to, and repair / replacement of, any LRU shall be provided.	D
D-SST-OPT-0522	C-SST-TEL-0522	Spare parts	The level of spare parts needed for the Telescope system maintenance shall be documented.	D
D-SST-OPT-0532	C-SST-TEL-0532	Documentation	The Telescope and its subsystems shall be fully documented in terms of operational use and composition/design.	D
D-SST-OPT-3801		Validation evidence	Test evidence shall be reported whenever a Test (T) is explicitly requested by specification.	D
D-SST-OPT-3802		Verification matrix	A verification matrix document (VCD) that shows the full compliancy to customer needs shall trace all specifications.	D
D-SST-OPT-3803		Test plan	Test plan and procedures shall be provided as part of mirror delivery.	D
D-SST-OPT-3804		Verification method	Finite Element Models and Analyses (if applicable) shall be preferred when an Analysis (A) verification method is requested.	D
D-SST-OPT-3805		ID card	All mirrors shall come with a unique personal identification card.	D
D-SST-OPT-3811		Content of ID card	The ID card shall contain information on the manufacturing process and, when available, the results of the characterization tests	I
D-SST-OPT-3806		Mechanical drawings	The mirrors shall come with a congruent set of mechanical drawings.	D
D-SST-OPT-3807		ID code	Each mirror shall have its ID code containing the COR1, COR2, COR3, naming convention printed on it.	D

D-SST-OPT-3808		FMECA	FMECA analysis shall be provided as part of mirror delivery.	D
D-SST-OPT-3809		MTBF	MTBF of replaceable components shall be part of the mirror delivery.	D
D-SST-OPT-3810		Quality Assurance	The SST project quality assurance plan shall be applied.	D

3 M1 requirements

This section describes all the requirements that apply to all the M1 segments of the SST telescope.

In the following tables for each requirement are listed the requirement ID, the requirement source if existing, the requirement name and statement, and the verification method.

3.1 Design Requirement

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	TM
D-SST-OPT-4001		M1 radial profile	The SST primary mirror is described by the following mathematical representation: $$z = \frac{cr^2}{1+\sqrt{1-(1+k)c^2r^2}} + \sum \alpha_i r^{2i}$$ where: z is the surface profile, r the surface radial coordinate, ($0 < r < 2154.5$ mm) c the curvature (the reciprocal of the radius of curvature, radius of curvature = -8223 mm), k the conical constant ($k = 0$), α_i the coefficients of the asphere. M1 COEFFICIENTS α_1 0.00 α_2 $9.61060 \cdot 10^{-013}$ α_3 $-5.65501 \cdot 10^{-020}$ α_4 $6.77984 \cdot 10^{-027}$ α_5 $3.89558 \cdot 10^{-033}$ α_6 $5.28038 \cdot 10^{-040}$ α_7 $-2.99107 \cdot 10^{-047}$ α_8 $-4.39153 \cdot 10^{-053}$ α_9 $-6.17433 \cdot 10^{-060}$ α_{10} $2.73586 \cdot 10^{-066}$	D
D-SST-OPT-4002		M1 segmentation	The mirror segments of the SST-STR primary shall be of three (3) different kinds (three different optical surface profiles). The three different kinds of segments are identified as COR1 for the inner corona, COR2 for the middle corona and COR3 for the outer corona.	D

D-SST-OPT-4003		M1 manufacturing process	The technology to be used for manufacturing the mirrors shall be based on the forming of glass foils into a sandwich structure through glass cold-shaping technology.	D
D-SST-OPT-4004		M1 interface	M1 segments shall interface with M1 supports part of the SST telescope structure	D

3.2 Physical requirements

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	VM
D-SST-OPT-4201		M1 mirror dimension	The mirror shall have a dimension non larger than 846 +0/- 2 mm side-by-side	D, T
D-SST-OPT-4203		M1 thickness	The substrates section, in the direction normal to the surface, shall not be larger than 25 +/- 0.25 mm in any point of the surface itself.	D
D-SST-OPT-4204		M1 vertex position	The position of the vertex of each substrate shall be known with a precision better than 2 mm.	T
D-SST-OPT-4205		M1 weight	The substrates shall have a maximum areal density of 15 kg/m^2, excluding the mechanical interfaces toward the telescope.	D, T
D-SST-OPT-4206		M1 optical side	The reflecting coating shall be deposited on the Air side (Tin side on the back)	D
D-SST-OPT-4207		M1 surface spherical shape error	The substrates shall have a spherical component in the range 8198 mm-8298 mm.	T, A
D-SST-OPT-4208		M1 surface aspherical shape error	The substrates shall have aspherical component shape error (residuals after spherical component removal) less than 20µm rms forCOR1 and less than 25µm rms for COR2 and COR3 (spatial range > 50 mm).	T, A
D-SST-OPT-4209		M1 surface roughness	The substrates surface shall have a micro-roughness less than 2 nm rms in the spatial wavelength range 0.005-1 mm	T, A
D-SST-OPT-4211		M1 coating adhesion	The mirrors coating shall guarantee adhesion to the substrate when subject to a pulling force of at least 16 N.	T

3.3 Interface requirements

Requirement ID	Requirement Source	Requirement Name	Requirement Statement	VM
D-SST-OPT-4301		Telescope Interface	The mechanical interface of the mirrors with the telescope shall be three (3) pads.	D
D-SST-OPT-4302		Interface pad drawings	The drawings of the interface mechanical pad are those given in [AD4]	D
D-SST-OPT-4303		COR1 pad position	The positions of the interface pads of the COR1 panels are specified in [AD5]	D

D-SST-OPT-4303		COR2 pad position	The positions of the interface pads of the COR2 panels are specified in [AD6]	D
D-SST-OPT-4303		COR3 pad position	The positions of the interface pads of the COR3 panels are specified in [AD7]	D
D-SST-OPT-4305		Interface induced deformation	The mechanical interfaces with the telescope shall not introduce deformations larger than the mirror shape errors	T, A
D-SST-OPT-4306		Interface material	The mechanical interfaces of the mirrors (pads) with the telescope shall be made in stainless steel AISI 304.	D
D-SST-OPT-4307		Interface survival load	The attachment between mechanical interfaces with the telescope and the mirror shall withstand all the survival loads.	A
D-SST-OPT-4308		Interface detachment/ mirror brakeage	The mechanical interfaces with the telescope shall not cause partial or total detachment, or breakage of the mirror when survival loads are applied. These can be thermal, wind, snow and ice accumulation.	A

End of the document