



NGAO

Functional Requirements

Key	Name	Sect	Cat	Priority	WBS	Description	Rationale	Traceability	Status	Version	Verification	Originator	Last Modified
FR-61	Athermalization, performance at operating temperature	Optical	Performance	Essential	1.2	The optical relay shall satisfy its optical requirements at the operating temperature specified for the cooled enclosure (-15 ° C), allowing for a variation of plus or minus TBD° C.	Need to be able to operate the AO system when it is not at its operational temperature.	Engineering decision by Chris Neyman	Draft	1.0	Demonstration	Chris Neyman	Mar 5, 2009 12:38 PM
FR-62	Athermalization, performance at dome ambient temperature	Optical	Performance	Important	1.2	The optical relay shall satisfy its optical requirements at the operating temperature specified for the cooled enclosure (-15 ° C) and ambient temperature (0° C).	Need to be able to operate the AO system when it is not at its operational temperature. Specifically when the enclosure is at the ambient temperature of the Keck domes (0° C)	Engineering decision by Chris Neyman	Draft	1.0	Demonstration	Chris Neyman	Mar 5, 2009 12:37 PM
FR-63	Alignment	Optical	Functional	Essential	1.2	To the maximum extent possible, the alignment of the optical system shall be maintained by accurate machining and positioning of static fixtures.	The AO system should have as few adjustments as necessary, the bulk of the optical alignment tolerances should be maintained by static fixtures.	Engineering decision by Chris Neyman	Draft	1.0	Inspection	Chris Neyman	Mar 5, 2009 12:37 PM
FR-64	LGS background light in other sensors	Optical	Performance	Essential	1.2	Filters, baffles, and selection of dichroics shall be made so as to limit the background light from laser guide stars from entering into other detectors. The background shall be less than TBD mag/arcsec ² at the LOWFS and less than TBD mag/arcsec ² at the visible science instruments.	Increasing in the background above the natural limit set by the night sky, will degrade tracking and instrument performance. It is possible that the LOWFS detector will be insensitive to LGS light to such an extent that these measures are not needed, this analysis is TBD.	KAON 499 "NGAO System Architecture Definition"	Draft	1.0	Test	Chris Neyman	Mar 5, 2009 12:36 PM
FR-65	No mechanism vignetting of optical beam	Mechanical	Functional	Essential	1.2	Mechanical systems inside and around the AO enclosure shall not obscure the optical beam from a 202 arc second transferred field of view from the first relay and a 40 arc second transferred field from the second relay.	Needed to meet field of view optical requirement	Engineering decision made by Chris Neyman (August 2007)	Draft	1.0	Test	Chris Neyman	Mar 5, 2009 12:35 PM