



**Atacama
Large
Millimeter
Array**

ALMA Product Tree

ALMA-80.03.00.00-001-M-LIS

Version: M

Status: Released

2004-03-02

Prepared By:		
Name(s) and Signature(s)	Organization	Date
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Name and Signature	Organization	Date
	Joint ALMA Office Project Director	2004-03-03



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Change Record

Version	Date	Affected Section(s)	Change Request #	Reason/Initiation/Remarks
A	2002-03-22	All	None	First Draft
B	2002-03-29	Site, Antennas Front Ends	None	Changed Site with Radford's PT, added Prototype Antenna PT, added Evaluation Receiver
C	2002-04-18	Backend, Management, Correlator	None	Major revision to these areas, based on requests from Sramek, Gray, and Treacy respectively
D	2002-05-08	Operations, Management, Computing, Systems, Science	None	Major revision, changes to document structure (first column dropped), significant changes to sections (see affected sections column), updated sections from Gray, Gray, Glendenning, Gray, and Wooten (and Radford), respectively
E	2002-05-23	Front End and Systems	None	Update FE PT branch, mainly first local oscillator related products; Systems, added in Quality Assurance section
F	2002-05-28	Computing	None	Update Computing PT branch, based upon changes by Ralph Marsen
G	2002-06-07	Antennas, Front End, Site	None	Update Antenna PT branch, based upon changes by J.Kingsley and S.Stanghellini, Added holography to FrontEnd, as per P.Gray, Added ATF site area to Sites, as per P.Gray
H	2002-07-10	Site, Antennas	None	Changed document number and formatting to fit with revised template and numbering requirements, corrected numbering in nutator section of Antenna PT branch, to add in skipped sequential numbers
I			None	Issue letter not used. Skipped.
J	2002-07-10	Site	None	Site Changed document number and formatting to fit with revised template and numbering requirements, corrected numbering in nutator section of Antenna PT branch, to add in skipped sequential numbers
K	2002-07-22	Site	None	Added in 20.04.05.00 and 20.10.00.00, as per Simon Radford's request.
L	2002-11-01	Backend, overall row headers, computing	None	Added in ATF Evaluation Back End segment, Changed the computing monitor and control general from 05 to 00, deleted the names of the level categories.
M	2004-03-02	Site, Antenna, Frontend, Backend, Computing, and Systems	ALMA-80.03.00.00-002-A-CRE	Major updates to the product tree, within the sections stated. ATF and prototype items removed and relocated to separate ATF product tree document numbered ALMA-80.03.00.00-004-A-LIS



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1 Description

1.1 Purpose

This document defines the ALMA Product Tree and explains its use within the project. The traditional purpose of a product tree is to serve as a hierarchical breakdown of the systems, subsystems, assemblies and parts for a project. The ALMA Product tree loosely follows this pattern, however it does not follow a rigid “sub-systems / modules / units” component breakdown, and has been expanded to include items that are not technically configuration items. This flexibility allows the ALMA Product Tree to serve as the structure for a document numbering scheme for the project. The manner which document numbers are assigned is described in the ALMA Standards and Procedures (RD01).

1.2 Scope

This document serves to define all branches of the Product Tree, to a level adequate to enable its use as a structure for document numbering.

2 Related Documents and Drawings

2.1 Applicable Documents

The documents in the following list are either applicable to or referenced by this document to the extent specified. If not explicitly stated differently, the latest version of the document is valid.

Applicable Doc. #	Document Title	ALMA Document Number
RD01	ALMA Documentation Standards	ALMA-80.02.00.00-003-F-STD
RD02	ALMA Acronyms and Abbreviations	ALMA-80.02.00.00-004-A-LIS



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2.2 Abbreviations and Acronyms

The list of acronyms and abbreviations used within this document are given below. For a complete set of acronyms and abbreviations, please see ALMA Official Acronyms and Abbreviations (RD02).

Abbreviation or Acronym	Non-abbreviated Reference
ALMA	Atacama Large Millimeter Array
ATF	ALMA Test Facility
ICD	Interface Control Document
IPT	Integrated Product Team



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Level 1 Level 2 Level 3 Level 4

00 Operations

00.00 General
 00.00.00 General
 00.00.00.00 General

10 Management

10.00 General
 10.00.00 General
 10.00.00.00 General

10.01 ALMA Coordinating Committee/ALMA Board
 10.01.00 General
 10.01.00.00 General
 10.01.01 Memoranda
 10.01.01.00 General
 10.01.02 Reports
 10.01.02.00 General
 10.01.03 Meetings/Presentations
 10.01.03.00 General

10.02 ALMA Management Advisory Committee
 10.02.00 General
 10.02.00.00 General
 10.02.01 Memoranda
 10.02.01.00 General
 10.02.02 Reports
 10.02.02.00 General
 10.02.03 Meetings/Presentations
 10.02.03.00 General

10.03 ALMA Scientific Advisory Committee
 10.03.00 General
 10.03.00.00 General
 10.03.01 Memoranda
 10.03.01.00 General
 10.03.02 Reports
 10.03.02.00 General
 10.03.03 Meetings/Presentations
 10.03.03.00 General

10.04 Joint ALMA Office
 10.04.00 General
 10.04.00.00 General
 10.04.01 Memoranda



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- 10.04.01.00 General
- 10.04.02 Reports
 - 10.04.02.00 General
- 10.04.03 Meetings/Presentations
 - 10.04.03.00 General
- 10.04.04 WBS/WP/WE
 - 10.04.04.00 General
- 10.04.05 Budget
 - 10.04.05.00 General
- 10.04.06 Schedule
 - 10.04.06.00 General
- 10.04.07 Resources
 - 10.04.07.00 General
- 10.05 ALMA Executive Committee
 - 10.05.00 General
 - 10.05.00.00 General
 - 10.05.01 Memoranda
 - 10.05.01.00 General
 - 10.05.02 Reports
 - 10.05.02.00 General
 - 10.05.03 Meetings/Presentations
 - 10.05.03.00 General
 - 10.05.04 WBS/WP/WE
 - 10.05.04.00 General
 - 10.05.05 Budget
 - 10.05.05.00 General
 - 10.05.06 Schedule
 - 10.05.06.00 General
 - 10.05.07 Resources
 - 10.05.07.00 General
- 10.06 European Project Office
 - 10.06.00 General
 - 10.06.00.00 General
 - 10.06.01 Memoranda
 - 10.06.01.00 General
 - 10.06.02 Reports
 - 10.06.02.00 General
 - 10.06.03 Meetings/Presentations
 - 10.06.03.00 General



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		10.06.04	WBS/WP/WE
		10.06.04.00	General
		10.06.05	Budget
		10.06.05.00	General
		10.06.06	Schedule
		10.06.06.00	General
		10.06.07	Resources
		10.06.07.00	General
10.07	North American Project Office		
	10.07.00	General	
		10.07.00.00	General
	10.07.01	Memoranda	
		10.07.01.00	General
	10.07.02	Reports	
		10.07.02.00	General
	10.07.03	Meetings/Presentations	
		10.07.03.00	General
	10.07.04	WBS/WP/WE	
		10.07.04.00	General
	10.07.05	Budget	
		10.07.05.00	General
	10.07.06	Schedule	
		10.07.06.00	General
	10.07.07	Resources	
		10.07.07.00	General
10.08	Project Safety		
	10.08.00	General	
		10.08.00.00	General
	10.08.01	Project Safety - European	
		10.08.01.00	General
	10.08.02	Project Safety - North American	
		10.08.02.00	General
	10.08.03	Project Safety - Chile	
		10.08.03.00	General
20	ALMA Chile Infrastructure		
	20.00	General	
		20.00.00	General
		20.00.00.00	General
	20.01	Array Site Buildings	



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- 20.01.00 General
 - 20.01.00.00 General
- 20.01.01 Refuge
 - 20.01.01.00 General
- 20.01.02 Technical Building
 - 20.01.02.00 General
 - 20.01.02.01 Civil
 - 20.01.02.02 Structural
 - 20.01.02.03 Architectural
 - 20.01.02.04 Plumbing
 - 20.01.02.05 Mechanical
 - 20.01.02.06 Fire Protection
 - 20.01.02.07 Electrical
 - 20.01.02.08 Controls
 - 20.01.02.09 Communications and tele/data
 - 20.01.02.10 Lightning Protection and Grounding
 - 20.01.02.11 Furnishings and Equipment
- 20.01.03 Hangar
 - 20.01.03.00 General
 - 20.01.03.01 Civil
 - 20.01.03.02 Structural
 - 20.01.03.03 Architectural
 - 20.01.03.04 Plumbing
 - 20.01.03.05 Mechanical
 - 20.01.03.06 Fire Protection
 - 20.01.03.07 Electrical
 - 20.01.03.08 Controls
 - 20.01.03.09 Communications and tele/data
 - 20.01.03.10 Lightning Protection and Grounding
 - 20.01.03.11 Furnishings and Equipment
- 20.01.04 Meteorology Stations
 - 20.01.04.00 General
- 20.01.05 Utility Buildings
 - 20.01.05.00 General
- 20.02 Antenna Stations
 - 20.02.00 General
 - 20.02.00.00 General
 - 20.02.01 Foundation - Central Cluster
 - 20.02.01.00 General



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- 20.02.01.01 Civil
- 20.02.01.02 Structural
- 20.02.01.03 Architectural
- 20.02.01.04 Plumbing
- 20.02.01.05 Mechanical
- 20.02.01.06 Fire Protection
- 20.02.01.07 Electrical
- 20.02.01.08 Controls
- 20.02.01.09 Communications and tele/data
- 20.02.01.10 Lightning Protection and Grounding
- 20.02.01.11 Furnishings and Equipment
- 20.02.02 Foundation - Isolated Soft Soil
 - 20.02.02.00 General
- 20.02.03 Foundation - Isolated Hard Soil
 - 20.02.03.00 General
- 20.02.04 Station Equipment
 - 20.02.04.00 General
 - 20.02.04.01 Civil
 - 20.02.04.02 Structural
 - 20.02.04.03 Architectural
 - 20.02.04.04 Plumbing
 - 20.02.04.05 Mechanical
 - 20.02.04.06 Fire Protection
 - 20.02.04.07 Electrical
 - 20.02.04.08 Controls
 - 20.02.04.09 Communications and tele/data
 - 20.02.04.10 Lightning Protection and Grounding
 - 20.02.04.11 Furnishings and Equipment
- 20.03 Antenna Stations Interconnect Roads
 - 20.03.00 General
 - 20.03.00.00 General
 - 20.03.00.01 Civil
 - 20.03.00.02 Structural
 - 20.03.00.03 Architectural
 - 20.03.00.04 Plumbing
 - 20.03.00.05 Mechanical
 - 20.03.00.06 Fire Protection
 - 20.03.00.07 Electrical
 - 20.03.00.08 Controls



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- 20.03.00.09 Communications / Data Transfer
- 20.03.00.10 Lightning Protection and Grounding
- 20.03.00.11 Furnishings and Equipment
- 20.04 Array Site Utility Interconnects
 - 20.04.00 General
 - 20.04.00.00 General
 - 20.04.01 Fiber Optics
 - 20.04.01.00 General
 - 20.04.01.01 Civil
 - 20.04.01.02 Structural
 - 20.04.01.03 Architectural
 - 20.04.01.04 Plumbing
 - 20.04.01.05 Mechanical
 - 20.04.01.06 Fire Protection
 - 20.04.01.07 Electrical
 - 20.04.01.08 Controls
 - 20.04.01.09 Communications and tele/data
 - 20.04.01.10 Lightning Protection and Grounding
 - 20.04.01.11 Furnishings and Equipment
 - 20.04.02 Low Voltage (600V)
 - 20.04.02.00 General
 - 20.04.02.01 Civil
 - 20.04.02.02 Structural
 - 20.04.02.03 Architectural
 - 20.04.02.04 Plumbing
 - 20.04.02.05 Mechanical
 - 20.04.02.06 Fire Protection
 - 20.04.02.07 Electrical
 - 20.04.02.08 Controls
 - 20.04.02.09 Communications and tele/data
 - 20.04.02.10 Lightning Protection and Grounding
 - 20.04.02.11 Furnishings and Equipment
 - 20.04.03 Medium Voltage (12kV)
 - 20.04.03.00 General
 - 20.04.03.01 Civil
 - 20.04.03.02 Structural
 - 20.04.03.03 Architectural
 - 20.04.03.04 Plumbing
 - 20.04.03.05 Mechanical



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- 20.04.03.06 Fire Protection
- 20.04.03.07 Electrical
- 20.04.03.08 Controls
- 20.04.03.09 Communications and tele/data
- 20.04.03.10 Lightning Protection and Grounding
- 20.04.03.11 Furnishings and Equipment
- 20.04.04 Trenches
 - 20.04.04.00 General
 - 20.04.04.01 Civil
 - 20.04.04.02 Structural
 - 20.04.04.03 Architectural
 - 20.04.04.04 Plumbing
 - 20.04.04.05 Mechanical
 - 20.04.04.06 Fire Protection
 - 20.04.04.07 Electrical
 - 20.04.04.08 Controls
 - 20.04.04.09 Communications and tele/data
 - 20.04.04.10 Lightning Protection and Grounding
 - 20.04.04.11 Furnishings and Equipment
- 20.04.05 Water and Sewer System
 - 20.04.05.00 General
 - 20.04.05.01 Civil
 - 20.04.05.02 Structural
 - 20.04.05.03 Architectural
 - 20.04.05.04 Plumbing
 - 20.04.05.05 Mechanical
 - 20.04.05.06 Fire Protection
 - 20.04.05.07 Electrical
 - 20.04.05.08 Controls
 - 20.04.05.09 Communications and tele/data
 - 20.04.05.10 Lightning Protection and Grounding
 - 20.04.05.11 Furnishings and Equipment
- 20.05 Array Site Power Generation
 - 20.05.00 General
 - 20.05.00.00 General
- 20.06 Site Access Road (CH23 to AOS)
 - 20.06.00 General
 - 20.06.00.00 General
 - 20.06.00.01 Civil work



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- 20.06.00.02 Structural
- 20.06.00.03 Pavements
- 20.06.00.04 Road furnishings (protective and directive devices)
- 20.06.01 Road from CH23 to OSF
 - 20.06.01.00 General
 - 20.06.01.01 Civil work
 - 20.06.01.02 Structural
 - 20.06.01.03 Pavements
 - 20.06.01.04 Road furnishings (protective and directive devices)
 - 20.06.02 Road from OSF to AOS
 - 20.06.02.00 General
 - 20.06.02.01 Civil work
 - 20.06.02.02 Structural
 - 20.06.02.03 Pavements
 - 20.06.02.04 Road furnishings (protective and directive devices)
- 20.07 Link Communications (Array Site-OSF)
 - 20.07.00 General
 - 20.07.00.00 General
 - 20.07.01 Fiber Optics
 - 20.07.01.00 General
 - 20.07.02 Trenches
 - 20.07.02.00 General
- 20.08 Operations Support Facility (OSF) Buildings
 - 20.08.00 General
 - 20.08.00.00 General
 - 20.08.00.01 Civil
 - 20.08.00.02 Structural
 - 20.08.00.03 Architectural
 - 20.08.00.04 Plumbing
 - 20.08.00.05 Mechanical
 - 20.08.00.06 Fire Protection
 - 20.08.00.07 Electrical
 - 20.08.00.08 Controls
 - 20.08.00.09 Communications / Data Transfer
 - 20.08.00.10 Lightning Protection and Grounding
 - 20.08.00.11 Furnishings and Equipment
 - 20.08.01 Road, Site work and Landscaping
 - 20.08.01.00 General
 - 20.08.01.01 Civil



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- 20.08.01.02 Structural
- 20.08.01.03 Architectural
- 20.08.01.04 Plumbing
- 20.08.01.05 Mechanical
- 20.08.01.06 Fire Protection
- 20.08.01.07 Electrical
- 20.08.01.08 Controls
- 20.08.01.09 Communications / Data Transfer
- 20.08.01.10 Lightning Protection and Grounding
- 20.08.01.11 Furnishings and Equipment
- 20.08.02 Medium Voltage Power Generation and Distribution
 - 20.08.02.00 General
 - 20.08.02.01 Civil
 - 20.08.02.02 Structural
 - 20.08.02.03 Architectural
 - 20.08.02.04 Plumbing
 - 20.08.02.05 Mechanical
 - 20.08.02.06 Fire Protection
 - 20.08.02.07 Electrical
 - 20.08.02.08 Controls
 - 20.08.02.09 Communications / Data Transfer
 - 20.08.02.10 Lightning Protection and Grounding
 - 20.08.02.11 Furnishings and Equipment
- 20.08.03 Water Supply, Storage and Distribution Systems
 - 20.08.03.00 General
 - 20.08.03.01 Civil
 - 20.08.03.02 Structural
 - 20.08.03.03 Architectural
 - 20.08.03.04 Plumbing
 - 20.08.03.05 Mechanical
 - 20.08.03.06 Fire Protection
 - 20.08.03.07 Electrical
 - 20.08.03.08 Controls
 - 20.08.03.09 Communications / Data Transfer
 - 20.08.03.10 Lightning Protection and Grounding
 - 20.08.03.11 Furnishings and Equipment
- 20.08.04 Vehicle Fuel Supply
 - 20.08.04.00 General
 - 20.08.04.01 Civil



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- 20.08.04.02 Structural
- 20.08.04.03 Architectural
- 20.08.04.04 Plumbing
- 20.08.04.05 Mechanical
- 20.08.04.06 Fire Protection
- 20.08.04.07 Electrical
- 20.08.04.08 Controls
- 20.08.04.09 Communications / Data Transfer
- 20.08.04.10 Lightning Protection and Grounding
- 20.08.04.11 Furnishings and Equipment
- 20.08.05 Low Voltage power Distribution
 - 20.08.05.00 General
 - 20.08.05.01 Civil
 - 20.08.05.02 Structural
 - 20.08.05.03 Architectural
 - 20.08.05.04 Plumbing
 - 20.08.05.05 Mechanical
 - 20.08.05.06 Fire Protection
 - 20.08.05.07 Electrical
 - 20.08.05.08 Controls
 - 20.08.05.09 Communications / Data Transfer
 - 20.08.05.10 Lightning Protection and Grounding
 - 20.08.05.11 Furnishings and Equipment
- 20.08.06 ALMA and Contractors Camp
 - 20.08.06.00 General
 - 20.08.06.01 Civil
 - 20.08.06.02 Structural
 - 20.08.06.03 Architectural
 - 20.08.06.04 Plumbing
 - 20.08.06.05 Mechanical
 - 20.08.06.06 Fire Protection
 - 20.08.06.07 Electrical
 - 20.08.06.08 Controls
 - 20.08.06.09 Communications / Data Transfer
 - 20.08.06.10 Lightning Protection and Grounding
 - 20.08.06.11 Furnishings and Equipment
- 20.08.07 Transporter and Truck Shelters
 - 20.08.07.00 General
 - 20.08.07.01 Civil



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- 20.08.07.02 Structural
- 20.08.07.03 Architectural
- 20.08.07.04 Plumbing
- 20.08.07.05 Mechanical
- 20.08.07.06 Fire Protection
- 20.08.07.07 Electrical
- 20.08.07.08 Controls
- 20.08.07.09 Communications / Data Transfer
- 20.08.07.10 Lightning Protection and Grounding
- 20.08.07.11 Furnishings and Equipment
- 20.08.08 Antenna Assembly Complex (Hanger)
 - 20.08.08.00 General
 - 20.08.08.01 Civil
 - 20.08.08.02 Structural
 - 20.08.08.03 Architectural
 - 20.08.08.04 Plumbing
 - 20.08.08.05 Mechanical
 - 20.08.08.06 Fire Protection
 - 20.08.08.07 Electrical
 - 20.08.08.08 Controls
 - 20.08.08.09 Communications / Data Transfer
 - 20.08.08.10 Lightning Protection and Grounding
 - 20.08.08.11 Furnishings and Equipment
- 20.08.09 Warehouse and Workshop Complex
 - 20.08.09.00 General
 - 20.08.09.01 Civil
 - 20.08.09.02 Structural
 - 20.08.09.03 Architectural
 - 20.08.09.04 Plumbing
 - 20.08.09.05 Mechanical
 - 20.08.09.06 Fire Protection
 - 20.08.09.07 Electrical
 - 20.08.09.08 Controls
 - 20.08.09.09 Communications / Data Transfer
 - 20.08.09.10 Lightning Protection and Grounding
 - 20.08.09.11 Furnishings and Equipment
- 20.08.10 Technical Complex
 - 20.08.10.00 General
 - 20.08.10.01 Civil



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- 20.08.10.02 Structural
- 20.08.10.03 Architectural
- 20.08.10.04 Plumbing
- 20.08.10.05 Mechanical
- 20.08.10.06 Fire Protection
- 20.08.10.07 Electrical
- 20.08.10.08 Controls
- 20.08.10.09 Communications / Data Transfer
- 20.08.10.10 Lightning Protection and Grounding
- 20.08.10.11 Furnishings and Equipment
- 20.08.11 Management and Administration Complex
 - 20.08.11.00 General
 - 20.08.11.01 Civil
 - 20.08.11.02 Structural
 - 20.08.11.03 Architectural
 - 20.08.11.04 Plumbing
 - 20.08.11.05 Mechanical
 - 20.08.11.06 Fire Protection
 - 20.08.11.07 Electrical
 - 20.08.11.08 Controls
 - 20.08.11.09 Communications / Data Transfer
 - 20.08.11.10 Lightning Protection and Grounding
 - 20.08.11.11 Furnishings and Equipment
- 20.08.12 Gate House(s)
 - 20.08.12.00 General
 - 20.08.12.01 Civil
 - 20.08.12.02 Structural
 - 20.08.12.03 Architectural
 - 20.08.12.04 Plumbing
 - 20.08.12.05 Mechanical
 - 20.08.12.06 Fire Protection
 - 20.08.12.07 Electrical
 - 20.08.12.08 Controls
 - 20.08.12.09 Communications / Data Transfer
 - 20.08.12.10 Lightning Protection and Grounding
 - 20.08.12.11 Furnishings and Equipment
- 20.08.13 Visitor's Center
 - 20.08.13.00 General
 - 20.08.13.01 Civil



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- 20.08.13.03 Architectural
- 20.08.13.04 Plumbing
- 20.08.13.05 Mechanical
- 20.08.13.06 Fire Protection
- 20.08.13.07 Electrical
- 20.08.13.08 Controls
- 20.08.13.09 Communications / Data Transfer
- 20.08.13.10 Lightning Protection and Grounding
- 20.08.13.11 Furnishings and Equipment
- 20.08.14 Heliport
 - 20.08.14.00 General
 - 20.08.14.01 Civil
 - 20.08.14.02 Structural
 - 20.08.14.03 Architectural
 - 20.08.14.04 Plumbing
 - 20.08.14.05 Mechanical
 - 20.08.14.06 Fire Protection
 - 20.08.14.07 Electrical
 - 20.08.14.08 Controls
 - 20.08.14.09 Communications / Data Transfer
 - 20.08.14.10 Lightning Protection and Grounding
 - 20.08.14.11 Furnishings and Equipment
- 20.08.15 Residence
 - 20.08.15.00 General
 - 20.08.15.01 Civil
 - 20.08.15.02 Structural
 - 20.08.15.03 Architectural
 - 20.08.15.04 Plumbing
 - 20.08.15.05 Mechanical
 - 20.08.15.06 Fire Protection
 - 20.08.15.07 Electrical
 - 20.08.15.08 Controls
 - 20.08.15.09 Communications / Data Transfer
 - 20.08.15.10 Lightning Protection and Grounding
 - 20.08.15.11 Furnishings and Equipment
- 20.09 Array Site Access Roads
 - 20.09.00 General
 - 20.09.00.00 General



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20.10 Chilean Phase 2 Facilities
 20.10.00 General
 20.10.00.00 General
20.90 Site Development Design Reviews
 20.90.00 General
 20.90.00.00 General

30 Antenna Management

30.00 General
 30.00.00 General
 30.00.00.00 General

34 Production Antenna

34.00 General
 34.00.00 General
 34.00.00.00 General

35 Nutator

35.00 General
 35.00.90 Nutator Design Reviews
 35.00.90.00 General
35.01 Nutator Demonstrator
 35.01.00 General
 35.01.00.00 General
 35.01.01 Mechanics
 35.01.01.00 General
 35.01.02 Electronics
 35.01.02.00 General
 35.01.03 Controls
 35.01.03.00 General
35.02 Prototype Nutator
 35.02.00 General
 35.02.00.00 General
 35.02.01 Opt-mechanical structure
 35.02.01.00 General
 35.02.01.01 Optics
 35.02.02 Electronics
 35.02.02.00 General
 35.02.02.02 Mechanics
 35.02.03 Controls
 35.02.03.00 General
35.03 Production Nutator



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- 35.03.00 General
 - 35.03.00.00 General
 - 35.03.01 Opt-mechanical structure
 - 35.03.01.00 General
 - 35.03.01.01 Optics
 - 35.03.02 Electronics
 - 35.03.02.00 General
 - 35.03.02.02 Mechanics
 - 35.03.03 Controls
 - 35.03.03.00 General
-

36 Antenna Auxiliary Equipment

- 36.00 General
 - 36.00.00 General
 - 36.00.00.00 General
 - 36.01 Optical Pointing Telescope
 - 36.01.00 General
 - 36.01.00.00 General
 - 36.01.01 Opto-Mechanical Structure
 - 36.01.01.00 General
 - 36.01.02 Electronics
 - 36.01.02.00 General
 - 36.01.03 Controls
 - 36.01.03.00 General
 - 36.01.90 OPT Design Reviews
 - 36.01.90.00 General
 - 36.01.90.01 OPT PDR
 - 36.01.90.02 OPT CDR
 - 36.01.90.03 OPT CDD
 - 36.01.90.04 OPT acceptance test
-

37 Antenna Transporter

- 37.00 General
 - 37.00.00 General
 - 37.00.00.00 General
- 37.01 Antenna Transporter
 - 37.01.00 General
 - 37.01.00.00 General
- 37.02 Antenna Transporter Positioning System
 - 37.02.00 General
 - 37.02.00.00 General



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37.90 Antenna transporter design reviews
 37.90.00 General
 37.90.00.00 General

40 Front end

40.00 General
 40.00.00 General
 40.00.00.00 General

40.01 Common optics
 40.01.00 General
 40.01.00.00 General
 40.01.01 Band 1 common optics
 40.01.01.00 General
 40.01.02 Band 2 common optics
 40.01.02.00 General
 40.01.03 Band 3 common optics
 40.01.03.00 General
 40.01.04 Band 4 common optics
 40.01.04.00 General

40.02 Cartridges
 40.02.00 General
 40.02.00.00 General
 40.02.01 Frequency band 1 cartridge
 40.02.01.00 General
 40.02.01.07 Band 1 support structure
 40.02.02 Frequency band 2 cartridge
 40.02.02.00 General
 40.02.02.07 Band 2 support structure
 40.02.03 Frequency band 3 cartridge
 40.02.03.00 General
 40.02.03.01 Band 3 cold optics
 40.02.03.02 Band 3 LO injection
 40.02.03.03 Band 3 ortho mode transducer
 40.02.03.04 Band 3 SIS mixer/integrated IF amplifier
 40.02.03.05 Band 3 IF amplifiers
 40.02.03.06 Band 3 bias circuits
 40.02.03.07 Band 3 support structure
 40.02.03.08 Band 3 cartridge wiring
 40.02.03.09 Band 3 cartridge electrical feedthroughs
 40.02.03.10 Cancelled



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- 40.02.03.11 Band 3 temperature sensors
- 40.02.03.12 Band 3 bias electronics
- 40.02.03.13 Band 3 first local oscillator assembly
- 40.02.04 Frequency band 4 cartridge
 - 40.02.04.00 General
 - 40.02.04.07 Band 4 support structure
- 40.02.05 Frequency band 5 cartridge
 - 40.02.05.00 General
 - 40.02.05.07 Band 5 support structure
- 40.02.06 Frequency band 6 cartridge
 - 40.02.06.00 General
 - 40.02.06.01 Band 6 cold optics
 - 40.02.06.02 Band 6 LO injection
 - 40.02.06.03 Band 6 ortho mode transducer
 - 40.02.06.04 Band 6 SIS mixer/integrated IF amplifier
 - 40.02.06.05 Band 6 quadrature hybrids
 - 40.02.06.06 Band 6 IF amplifiers
 - 40.02.06.07 Band 6 bias circuits
 - 40.02.06.08 Band 6 support structure
 - 40.02.06.09 Band 6 cartridge wiring
 - 40.02.06.10 Band 6 cartridge electrical feedthroughs
 - 40.02.06.11 Band 6 cryo frequency multiplier
 - 40.02.06.12 Band 6 temperature sensors
 - 40.02.06.13 Band 6 bias electronics
 - 40.02.06.14 Band 6 first local oscillator assembly
- 40.02.07 Frequency band 7 cartridge
 - 40.02.07.00 General
 - 40.02.07.01 Band 7 cold optics
 - 40.02.07.02 Band 7 LO injection
 - 40.02.07.03 Band 7 SIS mixers
 - 40.02.07.04 Band 7 quadrature hybrids
 - 40.02.07.05 Band 7 IF amplifiers
 - 40.02.07.06 Band 7 bias circuits
 - 40.02.07.07 Band 7 support structure
 - 40.02.07.08 Band 7 cartridge wiring
 - 40.02.07.09 Band 7 cartridge electrical feedthroughs
 - 40.02.07.10 Band 7 cryo frequency multiplier
 - 40.02.07.11 Band 7 temperature sensors
 - 40.02.07.12 Band 7 bias electronics



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- 40.02.07.13 Band 7 first local oscillator assembly
- 40.02.08 Frequency band 8 cartridge
 - 40.02.08.00 General
 - 40.02.08.07 Band 8 support structure
- 40.02.09 Frequency band 9 cartridge
 - 40.02.09.00 General
 - 40.02.09.01 Band 9 cold optics
 - 40.02.09.02 Band 9 LO injection
 - 40.02.09.03 Band 9 SIS mixers
 - 40.02.09.04 Band 9 IF amplifiers
 - 40.02.09.05 Band 9 bias circuits
 - 40.02.09.06 Band 9 support structure
 - 40.02.09.07 Band 9 cartridge wiring
 - 40.02.09.08 Band 9 cartridge electrical feedthroughs
 - 40.02.09.09 Band 9 cryo frequency multiplier
 - 40.02.09.10 Band 9 temperature sensors
 - 40.02.09.11 Band 9 bias electronics
 - 40.02.09.12 Band 9 first local oscillator assembly
- 40.02.10 Frequency band 10 cartridge
 - 40.02.10.00 General
 - 40.02.10.07 Band 10 support structure
- 40.03 Cryostat
 - 40.03.00 General
 - 40.03.00.00 General
 - 40.03.01 Dewar
 - 40.03.01.00 General
 - 40.03.01.01 Outer vacuum container
 - 40.03.01.02 Radiation shields
 - 40.03.01.03 Mounting plates
 - 40.03.01.04 Windows & IR filters
 - 40.03.01.05 Evacuation valve
 - 40.03.02 Cryocooler
 - 40.03.02.00 General
 - 40.03.02.01 Cold head
 - 40.03.02.02 Cryo compressor
 - 40.03.02.03 Indoor control
 - 40.03.03 Vacuum unit
 - 40.03.03.00 General
 - 40.03.03.01 Turbo backing pump



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- 40.03.03.02 High vacuum pump
- 40.03.03.03 Vacuum meters
- 40.03.04 Cryostat instrumentation
 - 40.03.04.00 General
 - 40.03.04.01 Electrical feed-throughs
 - 40.03.04.02 Dewar wiring
 - 40.03.04.03 Cryostat temperature sensors
 - 40.03.04.04 Cancelled
- 40.04 Front end auxiliary modules
 - 40.04.00 General
 - 40.04.00.00 General
 - 40.04.01 Front end power supply unit
 - 40.04.01.00 General
 - 40.04.02 Bias electronics unit
 - 40.04.02.00 General
 - 40.04.02.01 Cancelled
 - 40.04.02.02 Cancelled
 - 40.04.02.03 Cancelled
 - 40.04.02.04 Cancelled
 - 40.04.02.05 Cancelled
 - 40.04.02.06 Temperature sensor bias circuits
 - 40.04.03 Front end M&C unit
 - 40.04.03.00 General
 - 40.04.03.01 Front end CAN bus interface
 - 40.04.03.02 Front end embedded processor
 - 40.04.03.03 Front end embedded software
- 40.05 Front end chassis
 - 40.05.00 General
 - 40.05.00.00 General
 - 40.05.01 Front end mechanical structure
 - 40.05.01.00 General
 - 40.05.01.01 Front end frame
 - 40.05.01.02 Front end support structure
 - 40.05.02 Front end cabling
 - 40.05.02.00 General
 - 40.05.02.01 Coaxial cabling
 - 40.05.02.02 Power supply cabling
 - 40.05.02.03 Monitor & control cabling
- 40.06 Front end integrated calibration & widgets



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- 40.06.00 General
 - 40.06.00.00 General
- 40.06.01 Semi-transparent vane calibration unit
 - 40.06.01.00 General
- 40.06.02 Solar protection
 - 40.06.02.00 General
- 40.06.03 Polarization widgets
 - 40.06.03.00 General
- 40.06.04 Dual-load calibration unit
 - 40.06.04.00 General
- 40.07 Water vapour radiometer
 - 40.07.00 General
 - 40.07.00.00 General
- 40.08 Front end IF
 - 40.08.00 General
 - 40.08.00.00 General
 - 40.08.01 IF switch sub-system
 - 40.08.01.00 General
- 40.09 Front end specific test, construction & service equipment
 - 40.09.00 General
 - 40.09.00.00 General
 - 40.09.01 SIS mixer fabrication equipment
 - 40.09.01.00 General
 - 40.09.02 SIS mixer test equipment
 - 40.09.02.00 General
 - 40.09.03 Front end test fixture
 - 40.09.03.00 General
 - 40.09.04 Cartridge test dewars
 - 40.09.04.00 General
 - 40.09.05 Cartridge RF test fixtures
 - 40.09.05.00 General
 - 40.09.06 Front end service vehicle
 - 40.09.06.00 General
- 40.10 First local oscillator
 - 40.10.00 General
 - 40.10.00.00 General
 - 40.10.01 Cancelled
 - 40.10.01.00 General
 - 40.10.02 Cancelled



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- 40.10.02.00 General
 - 40.10.03 Cancelled
 - 40.10.03.00 General
 - 40.10.04 Band selection
 - 40.10.04.00 General
 - 40.10.04.01 Optical reference switch
 - 40.10.04.02 RF source selection switch
 - 40.10.04.03 PLL IF selection switch
 - 40.10.05 First LO interconnects
 - 40.10.05.00 General
 - 40.90 Front end Design Reviews
 - 40.90.00 General
 - 40.90.00.00 General
-

50 Back End (BE)

- 50.00 General
 - 50.00.00 General
 - 50.00.00.00 General
-

52 BE IF Processor (IFP)

- 52.00 General
 - 52.00.00 General
 - 52.00.00.00 General
- 52.01 IF Downconverter (IFDC)
 - 52.01.00 General
 - 52.01.00.00 General
- 52.02 IF Baseband Processor (IFBB)
 - 52.02.00 General
 - 52.02.00.00 General
 - 52.02.01 IF Baseband Processor (IFBB) Surface Mount
 - 52.02.01.01 IFP002 Circuit Board
 - 52.02.01.02 Wire Harness (Front Panel)
 - 52.02.01.03 Wire Harness (Back Panel)
 - 52.02.01.04 IFBB Firmware
 - 52.02.02 IF Baseband Processor (IFBB) Connectorized
 - 52.02.02.01 Vertical Riser Plate ¼
 - 52.02.02.02 Vertical Riser Plate 2/4
 - 52.02.02.03 Vertical Riser Plate ¾
 - 52.02.02.04 Vertical Riser Plate 4/4
 - 52.02.02.05 Wire Harness (Front Panel)
 - 52.02.02.06 Wire Harness (Back Panel) DPX2 Connector



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- 52.02.02.07 Firmware
 - 52.03 IF Monitor & Control (IFMC)
 - 52.03.00 General
 - 52.03.00.00 General
 - 52.04 Total Power Processor (IFTP)
 - 52.04.00 General
 - 52.04.00.00 General
 - 52.05 IF Downconverter and Baseband integrated plug-in
 - 52.05.00 General
 - 52.05.00.00 General
-

53 BE Data Transmission System (IFDTS)

- 53.00 General
 - 53.00.00 General
 - 53.00.00.00 General
- 53.01 Digitizer (DG)
 - 53.01.00 General (Harnesses and Transmitter Module Back Plane Board)
 - 53.01.00.00 General
 - 53.01.00.01 Power Harness
 - 53.01.00.02 MS/PS-DTX Harness
 - 53.01.00.03 MS/PS-FOX C Harness
 - 53.01.00.04 Transmitter Module Back Plane Board
 - 53.01.01 Service board
 - 53.01.01.00 General
 - 53.01.01.01 Service Board Circuit Board
 - 53.01.01.02 Service Board Firmware
 - 53.01.02 Sampler (DGS)
 - 53.01.02.00 General
 - 53.01.02.01 Sampler (DGS) Circuit Board
 - 53.01.02.02 Sampler (DGS) Firmware
 - 53.01.03 Sampler Demux (DGD)
 - 53.01.03.00 General
 - 53.01.03.01 Sampler (DGD) Circuit Board
 - 53.01.03.02 Sampler (DGD) Firmware
- 53.04 Digitizer Clock (DGCK)
 - 53.04.00 General (boards, firmware, power supplies, harnesses)
 - 53.04.00.00 General
 - 53.04.00.01 DGCK Clock Circuit Board
 - 53.04.00.02 DGCK Firmware
 - 53.04.00.03 Antenna Clock Distribution Power Supply



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- 53.04.00.04 Power Harness
 - 53.05 Formatter (DTX)
 - 53.05.00 General (Circuit Board and Firmware)
 - 53.05.00.00 General
 - 53.05.00.01 Formatter (DTX) Circuit Board
 - 53.05.00.02 Formatter (DTX) Firmware
 - 53.06 Deformatter (DTR)
 - 53.06.00 General (boards, firmware, heatsink)
 - 53.06.00.00 General
 - 53.06.00.01 Deformatter Circuit Board
 - 53.06.00.02 Deformatter Firmware
 - 53.06.00.03 Deformatter Heatsink
 - 53.07 Transmitter MC/PS
 - 53.07.00 General (boards and firmware)
 - 53.07.00.00 General
 - 53.07.00.01 Transmitter MC/PS Circuit Board
 - 53.07.00.02 Transmitter MC/PS Firmware
 - 53.08 XMTR module (sampler/demux/formatter/FO xmtr)
 - 53.08.00 General
 - 53.08.00.00 General
 - 53.09 Receiver module (deformatter/FO receiver)
 - 53.09.00 General
 - 53.09.00.00 General
-

54 BE DTS fiber optic

- 54.00 General
 - 54.00.00 General
 - 54.00.00.00 General
- 54.01 Fiber Optic Transmitter (FOX)
 - 54.01.00 General
 - 54.01.00.00 General
 - 54.01.01 Assembled Circuit Board FOX-C
 - 54.01.01.00 General
 - 54.01.01.01 Firmware for FOX-C
 - 54.01.02 Assembled circuit board FOX-T
 - 54.01.02.00 General
 - 54.01.02.01 Transit Plate
 - 54.01.02.02 Ribbon Cable
- 54.02 DWDM mux (FOM)
 - 54.02.00 General



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- 54.02.00.00 General
- 54.02.01 Assembled Circuit Board FOM
 - 54.02.01.00 General
 - 54.02.01.01 Tap Monitor Subassembly
 - 54.02.01.02 Firmware
- 54.02.02 Enclosure (with unitors and fiber management)
 - 54.02.02.00 General
- 54.02.03 Enclosure (with unitors and fibre management)
 - 54.02.03.00 General
- 54.03 Splice Joint
 - 54.03.00 General
 - 54.03.00.00 General
- 54.04 Patch panel
 - 54.04.00 General
 - 54.04.00.00 General
- 54.05 EDFA/demux/ module (FOA and FOD are in one module)
 - 54.05.00 General
 - 54.05.00.00 General
 - 54.05.01 Crate assembly
 - 54.05.01.00 General
 - 54.05.01.01 Crate hardware
 - 54.05.01.02 Assembled backplane FOA-B
 - 54.05.02 Plug in Module assembly
 - 54.05.02.00 General
 - 54.05.02.01 Module metal work
 - 54.05.02.02 Temperature Sensor (with cable and connector
 - 54.05.02.03 Temperature Sensor Circuit Board
 - 54.05.02.04 Assembled Controller Circuit Board FOA-C
 - 54.05.02.05 Ribbon Cable
 - 54.05.02.06 Firmware
 - 54.05.02.07 Heatsink
- 54.06 Optical Switch
 - 54.06.00 General
 - 54.06.00.00 General
- 54.07 Op spec analyser and switch
 - 54.07.00 General
 - 54.07.00.00 General
- 54.08 Fiber Optic receiver (FOR)
 - 54.08.00 General



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- 54.08.00.00 General
 - 54.08.01 FOR Assembled circuit board
 - 54.08.01.00 FOR Assembled Circuit Board
 - 54.08.01.01 Firmware
 - 54.08.01.02 Heatsink
 - 54.09 Fibre optic cable spec (cable, connectors, layout for array and TB)
 - 54.09.00 General
 - 54.09.00.00 General
-

55 BE & Time Reference (2 GHz and below)

- 55.00 General
 - 55.00.00 General
 - 55.00.00.00 General
- 55.01 H-maser frequency standard
 - 55.01.00 General
 - 55.01.00.00 General
- 55.02 Central reference distributor (CRD)
 - 55.02.00 General (board and firmware)
 - 55.02.00.00 General
 - 55.02.00.01 Central Reference Distributor (CRD) Circuit Board
 - 55.02.00.02 Firmware
- 55.03 Central reference generator (CRG)
 - 55.03.00 General (board and firmware)
 - 55.03.00.00 General
 - 55.03.00.01 Central Reference Generator (CRG) Circuit Board
 - 55.03.00.02 Firmware
- 55.04 LO reference receiver (LORR)
 - 55.04.00 General
 - 55.04.00.00 General
 - 55.04.01 Monitor and Control/125MHz Twelve Way Splitter
 - 55.04.01.00 General
 - 55.04.01.01 LORR Monitor and Control PCB
 - 55.04.01.02 125MHz Twelve Way Splitter PCB
 - 55.04.01.03 LORR Firmware
 - 55.04.01.04 Mounting Plate
 - 55.04.02 Comb Generator
 - 55.04.02.00 General
 - 55.04.04 2GHz PLL
 - 55.04.04.00 General
 - 55.04.04.01 Mounting Plate



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- 55.04.05 25 Oscillator
 - 55.04.05.00 General
 - 55.04.05.01 Mounting Plate
- 55.04.06 125 Oscillator
 - 55.04.06.00 General
 - 55.04.06.01 Mounting Plate
- 55.05 Second local oscillator (LO2)
 - 55.05.00 General (harness and firmware)
 - 55.05.00.00 General
 - 55.05.00.01 Wire Harness
 - 55.05.00.02 Firmware
 - 55.05.01 Monitor and Control Subassembly
 - 55.05.01.00 General
 - 55.05.01.01 Monitor and Control Circuit Board
 - 55.05.02 Regulator
 - 55.05.02.00 General
 - 55.05.02.01 Regulator Circuit Board
 - 55.05.02.02 Regulator PCB Supports
 - 55.05.03 PLL/FTS
 - 55.05.03.00 General
 - 55.05.03.01 PLL Circuit Board
 - 55.05.03.02 FTS Circuit Board
 - 55.05.03.03 Housing
 - 55.05.03.04 Housing Supports
 - 55.05.04 IF subassembly
 - 55.05.04.00 General
 - 55.05.04.01 Mounting Plate
 - 55.05.05 ISO/CPD Subassembly
 - 55.05.05.00 General
 - 55.05.05.01 Mounting Plate
 - 55.05.06 AMP/LPF Subassembly
 - 55.05.06.00 General
 - 55.05.06.01 Mounting Plate
 - 55.05.07 DYTO subassembly
 - 55.05.07.00 General
- 55.07 First LO Synthesizer Offset Generator (FLOOG)
 - 55.07.00 General (FTS and Firmware)
 - 55.07.00.00 General
 - 55.07.00.01 FLOOG FTS



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55.07.00.02 FLOOG Firmware

56 LO & Time Reference (Above 2 GHz)

- 56.00 General
 - 56.00.00 General
 - 56.00.00.00 General
- 56.01 Master laser (ML)
 - 56.01.00 General
 - 56.01.00.00 General
- 56.02 Laser Synthesizer
 - 56.02.00 General
 - 56.02.00.00 General
 - 56.02.01 Slave Laser
 - 56.02.01.00 General
 - 56.02.02 Photomixers
 - 56.02.02.00 General
 - 56.02.03 Phase Lock Assembly
 - 56.02.03.00 General
 - 56.02.04 Fiber Frequency Shifter
 - 56.02.04.00 General
 - 56.02.05 Harmonic mixers
 - 56.02.05.00 General
- 56.03 Line length corrector (LLC)
 - 56.03.00 General
 - 56.03.00.00 General
 - 56.03.01 fiber piezo stretcher
 - 56.03.01.00 General
 - 56.03.02 Optical amplifier Assemblies
 - 56.03.02.00 General
 - 56.03.03 Passive splitter assemblies
 - 56.03.03.00 General
- 56.04 Laser synthesizer microwave reference (DMR)
 - 56.04.00 General
 - 56.04.00.00 General
- 56.05 LO photonic receiver
 - 56.05.00 General
 - 56.05.00.00 General
 - 56.05.01 coupler
 - 56.05.01.00 General
 - 56.05.02 Optical switch



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- 56.05.02.00 General
- 56.05.03 Photomixer
 - 56.05.03.00 General
- 56.05.04 optical amplifier
 - 56.05.04.00 General
- 56.05.05 Round Trip Assembly
 - 56.05.05.00 General
- 56.06 Low frequency LO Reference Photonic Distributor
 - 56.06.00 General
 - 56.06.00.00 General
 - 56.06.01 EDFA 64-way optical splitter
 - 56.06.01.00 General
- 56.07 Master Laser Distribution
 - 56.07.00 General
 - 56.07.00.00 General
 - 56.07.01 Optical Amplifier
 - 56.07.01.00 General
 - 56.07.02 Passive splitter assemblies
 - 56.07.02.00 General
- 56.08 Photonic Reference Distribution
 - 56.08.00 General
 - 56.08.00.00 General
 - 56.08.01 Optical amplifier Assemblies
 - 56.08.01.00 General
 - 56.08.02 Passive splitter assemblies
 - 56.08.02.00 General

57 BE Miscellaneous Equipment

- 57.00 General
 - 57.00.00 General
 - 57.00.00.00 General
- 57.01 Test & Fabrication Equipment
 - 57.01.00 General
 - 57.01.00.00 General
 - 57.01.01 Digitizer Sampler Test Equipment (DTE)
 - 57.01.01.00 General
 - 57.01.02 Racks, Bins & Interconnections Rack, bins, feedthrough panels, interconn
 - 57.01.02.00 General
- 57.02 Racks, Bins & Interconnections Rack, bins, feedthrough panels, interconnections, cable harne
 - 57.02.00 General



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- 57.02.00.00 General
- 57.02.01 Digital Rack
 - 57.02.01.00 General
 - 57.02.01.01 Cables
 - 57.02.01.02 Wire Harness
 - 57.02.01.03 Top Bulkhead
 - 57.02.01.04 Fans
- 57.02.02 Analog Rack
 - 57.02.02.00 General
 - 57.02.02.01 Cables
 - 57.02.02.02 Wire Harness
 - 57.02.02.03 Top Bulkhead
 - 57.02.02.04 Fans
- 57.02.03 Central LO racks & cabling
 - 57.02.03.00 General
- 57.02.04 Bins
 - 57.02.04.00 General
 - 57.02.04.01 Standard
 - 57.02.04.02 DTS
 - 57.02.04.04 Transmitter Module Backplane
- 57.02.05 Modules
 - 57.02.05.00 General
 - 57.02.05.01 Standard Double Wide
 - 57.02.05.02 Standard Triple Wide
 - 57.02.05.03 Double Wide Optical
 - 57.02.05.04 Triple Wide Optical
- 57.02.06 DTS Unified Transmit Package (Shielded hardware assembly)
 - 57.02.06.00 General
- 57.03 Power supplies (PS)
 - 57.03.00 General
 - 57.03.00.00 General
 - 57.03.01 AC-DC (PS-AC)
 - 57.03.01.00 General
 - 57.03.02 DC-DC (PS-DC)
 - 57.03.02.00 General
 - 57.03.02.01 Power Supply Monitor Circuit Board
 - 57.03.03 BE Sys UPS
 - 57.03.03.00 General
 - 57.03.04 Voltage Regulators



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57.03.04.00 General
57.03.04.01 +15 V 3A regulator (VREG+15)
57.03.04.02 +5V 3A regulator (VREG+5)
57.03.04.03 -15V 1A regulator (VREG-15)
57.03.04.04 +/-15V 1 A sequenced regulator (VREG15SEQ)

59 BE Reviews, documentation

59.00 General
 59.00.00 General
 59.00.00.00 General
59.01 BE PDR
 59.01.00 General
 59.01.00.00 General
59.02 BE CDR
 59.02.00 General
 59.02.00.00 General

60 64 antenna correlator

60.00 General
 60.00.00 General
 60.00.00.00 General
60.01 Station rack assembly
 60.01.00 General
 60.01.00.00 General
60.01.01 Station rack
 60.01.01.00 General
60.01.02 Station card
 60.01.02.00 General
60.01.03 FIR filter card
 60.01.03.00 General
60.01.04 6U-bin power supply card
 60.01.04.00 General
60.01.05 Station control card
 60.01.05.00 General
60.01.06 Distribution paddleboard type1
 60.01.06.00 General
60.01.07 Tunable Filter Bank Card
 60.01.07.00 General
60.02 Correlator rack assembly
 60.02.00 General
 60.02.00.00 General



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		60.02.01	Correlator rack
		60.02.01.00	General
		60.02.02	Correlator Card
		60.02.02.00	General
		60.02.03	Long term accumulator card
		60.02.03.00	General
		60.02.04	Final adder card
		60.02.04.00	General
		60.02.05	Quadrant control card
		60.02.05.00	General
		60.02.06	Distribution paddleboard type2
		60.02.06.00	General
		60.02.07	9U-bin powersupply card
		60.02.07.00	General
		60.02.08	Mezzanine power supply card
		60.02.08.00	General
60.03	Data Port Interface assembly		
	60.03.00	General	
		60.03.00.00	General
	60.03.01	DPI interface box	
		60.03.01.00	General
	60.03.02	DPI card	
		60.03.02.00	General
	60.03.03	DPI power supply	
		60.03.03.00	General
60.04	Power rack assembly		
	60.04.00	General	
		60.04.00.00	General
	60.04.01	Power rack	
		60.04.01.00	General
	60.04.02	Power supplies	
		60.04.02.00	General
60.05	Cables		
	60.05.00	General	
		60.05.00.00	General
	60.05.01	Data	
		60.05.01.00	General
	60.05.02	Communications	
		60.05.02.00	General



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- 60.05.03 Power
 - 60.05.03.00 General
 - 60.05.04 Clock and control
 - 60.05.04.00 General
 - 60.06 Test facility
 - 60.06.00 General
 - 60.06.00.00 General
 - 60.06.01 Station card test fixture
 - 60.06.01.00 General
 - 60.06.02 CC/LTA test fixture
 - 60.06.02.00 General
 - 60.06.03 SCC test fixture
 - 60.06.03.00 General
-

70 Computing

- 70.00 General
 - 70.00.00 General
 - 70.00.00.00 General
- 70.02 Computers, Communications
 - 70.02.00 General
 - 70.02.00.10 Computer hardware
 - 70.02.00.20 Communications equipment
 - 70.02.00.30 General software
- 70.05 Management
 - 70.05.00 General
 - 70.05.00.00 General
- 70.10 Science Software Requirements
 - 70.10.00 General
 - 70.10.00.00 General
- 70.15 High Level Analysis
 - 70.15.00 General
 - 70.15.00.00 General
- 70.20 Software Engineering
 - 70.20.00 General
 - 70.20.00.00 General
- 70.25 Common Software
 - 70.25.00 General
 - 70.25.00.00 General
- 70.30 Executive Software
 - 70.30.00 General



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- 70.30.00.00 General
- 70.35 Control Software
 - 70.35.05 General
 - 70.35.05.00 General
 - 70.35.10 Common Hardware
 - 70.35.10.00 General
 - 70.35.10.01 AMBSI-1
 - 70.35.10.02 AMBSI-2
 - 70.35.10.03 ALMA M&C Bus
 - 70.35.20 Antenna Hardware
 - 70.35.20.00 General
 - 70.35.25 Front End Hardware
 - 70.35.25.00 General
 - 70.35.30 Back End Hardware
 - 70.35.30.00 General
 - 70.35.35 Correlator Hardware
 - 70.35.35.00 General
 - 70.35.40 Misc. Hardware
 - 70.35.40.00 General
 - 70.35.50 Meetings
 - 70.35.50.00 General
 - 70.35.50.01 Weekly Coordination Meetings
 - 70.35.60 Software Packages
 - 70.35.60.00 General
 - 70.35.60.01 Master Controller
 - 70.35.60.02 Array Controller
 - 70.35.60.03 Manual Controller
 - 70.35.60.04 Device
 - 70.35.60.05 Monitor
 - 70.35.60.06 Operator
 - 70.35.60.07 State Model
 - 70.35.70 Technologies
 - 70.35.70.00 General
 - 70.35.70.01 CAN
 - 70.35.70.02 AMBSI
 - 70.35.70.10 CORBA
 - 70.35.70.11 XML
 - 70.35.70.20 C++
 - 70.35.70.21 Python



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70.35.70.22 Java
70.40 Correlator Software
 70.40.00 General
 70.40.00.00 General
70.45 Pipeline Software
 70.45.00 General
 70.45.00.00 General
70.50 Archiving
 70.50.00 General
 70.50.00.00 General
70.55 Scheduling
 70.55.00 General
 70.55.00.00 General
70.60 Observing Preparation and Support
 70.60.00 General
 70.60.00.00 General
70.65 Off-line Data Processing/Analysis
 70.65.00 General
 70.65.00.00 General
70.70 Data Reduction User Interface
 70.70.00 General
 70.70.00.00 General
70.75 Telescope Calibration
 70.75.00 General
 70.75.00.00 General
70.80 Integration, Test and Support
 70.80.00 General
 70.80.00.00 General

80 System Engineering

80.00 General
 80.00.00 General
 80.00.00.00 General
80.01 System Engineering Management
 80.01.00 General
 80.01.00.00 General
80.02 Configuration Management
 80.02.00 General
 80.02.00.00 General
80.03 Product Tree Structure



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- 80.03.00 General
 - 80.03.00.00 General
- 80.04 System Design
 - 80.04.00 General
 - 80.04.00.00 General
 - 80.04.01 Project Block Diagram
 - 80.04.01.00 General
 - 80.04.02 End-End Modeling
 - 80.04.02.00 General
 - 80.04.03 System Budgets
 - 80.04.03.00 General
- 80.05 Project Standards
 - 80.05.00 General
 - 80.05.00.00 General
 - 80.05.01 EMC Standards
 - 80.05.01.00 General
 - 80.05.02 Environmental Standards
 - 80.05.02.00 General
- 80.06 Change Request Procedures (void)
 - 80.06.00 General
 - 80.06.00.00 General
- 80.07 ICD Management
 - 80.07.00 General
 - 80.07.00.00 General
- 80.08 RAMS
 - 80.08.00 General
 - 80.08.00.00 General
- 80.09 Design Review Policies and Procedures
 - 80.09.00 General
 - 80.09.00.00 General
- 80.10 Requirements
 - 80.10.00 General
 - 80.10.00.00 General
- 80.11 Product Assurance
 - 80.11.00 General
 - 80.11.00.00 General
 - 80.11.01 Product Assurance Process Descriptions
 - 80.11.01.00 General
- 80.90 System Engineering Design Reviews



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80.90.00 General

80.90.00.00 General

80.95 System Engineering Meetings

80.95.00 General

80.95.00.00 General

85 System Integration

85.90 System Integration Design Reviews

85.90.00 General

85.90.00.00 General

90 Science

90.00 General

90.00.00 General

90.00.00.00 General

90.01 ASAC Documents

90.01.00 General

90.01.00.00 General

90.02 Configuration

90.02.00 General

90.02.00.00 General

90.03 Calibration

90.03.00 General

90.03.00.00 General

90.03.01 Amplitude

90.03.01.00 General

90.03.02 Phase

90.03.02.00 General

90.03.03 Total Power

90.03.03.00 General

90.03.04 Other

90.03.04.00 General

90.04 Imaging

90.04.00 General

90.04.00.00 General

90.04.01 Simulation

90.04.01.00 General

90.04.02 Techniques

90.04.02.00 General

90.05 Site Characterization

90.05.00 General



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- 90.05.00.00 General
- 90.05.01 NRAO container
 - 90.05.01.00 General
 - 90.05.01.01 Photovoltaic system
- 90.05.02 ESO container 1
 - 90.05.02.00 General
 - 90.05.02.01 Photovoltaic system
- 90.05.03 ESO container 2
 - 90.05.03.00 General
 - 90.05.03.01 Photovoltaic system
- 90.05.04 Radiosonde container
 - 90.05.04.00 General
 - 90.05.04.01 Photovoltaic system
- 90.05.05 Container Network Systems
 - 90.05.05.00 General
 - 90.05.05.01 Computer Network
 - 90.05.05.02 Communications Network
- 90.05.06 225 GHz tipping radiometer
 - 90.05.06.00 General
- 90.05.07 11.2 GHz interferometer
 - 90.05.07.00 General
- 90.05.08 183 GHz radiometers
 - 90.05.08.00 General
- 90.05.09 Submm tipping radiometer
 - 90.05.09.00 General
- 90.05.10 Frost point hygrometer
 - 90.05.10.00 General
- 90.05.11 Weather stations
 - 90.05.11.00 General
 - 90.05.11.01 Davis
 - 90.05.11.02 Monitor Sensors
 - 90.05.11.03 Other weather instruments
- 90.05.12 Radiosonde equipment
 - 90.05.12.00 General
- 90.05.13 Other instruments
 - 90.05.13.00 General
 - 90.05.13.01 Lightning detector
 - 90.05.13.02 Surveillance camera
 - 90.05.13.03 GPS receivers