



**Atacama  
Large  
Millimeter  
Array**

*Draft only*

***Subsystem***  
**Product tree ALMA Band 4 Cartridge**


FEND-40.02.04.00-011-A-DWG

Version: A-

Status: *Draft, Pending, Approved, Released, or Obsolete*

2004-09-17

<b>Prepared By:</b>		
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xxx	xxx	yyyy-mm-dd
<b>Released By:</b>		
<b>Name and Signature</b>	<b>Organization</b>	<b>Date</b>
xxx	xxx	yyyy-mm-dd

	<b>ALMA Project</b>	Doc # : FEND-40.02.04.00-011-A-DWG Date: 2004-09-08 Status: Draft ( <i>Draft, Pending, Approved, Released, Obsolete</i> ) Page: 2 of 13
	<b>Subsystem</b> <b>Product tree ALMA Band 9 cartridge</b>	

### Change Record

Version	Date	Affected Section(s)	Change Request #	Reason/Initiation/Remarks
A-	2004-09-17	All		First issue



**ALMA Project**

***Subsystem***

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Page: 3 of 13

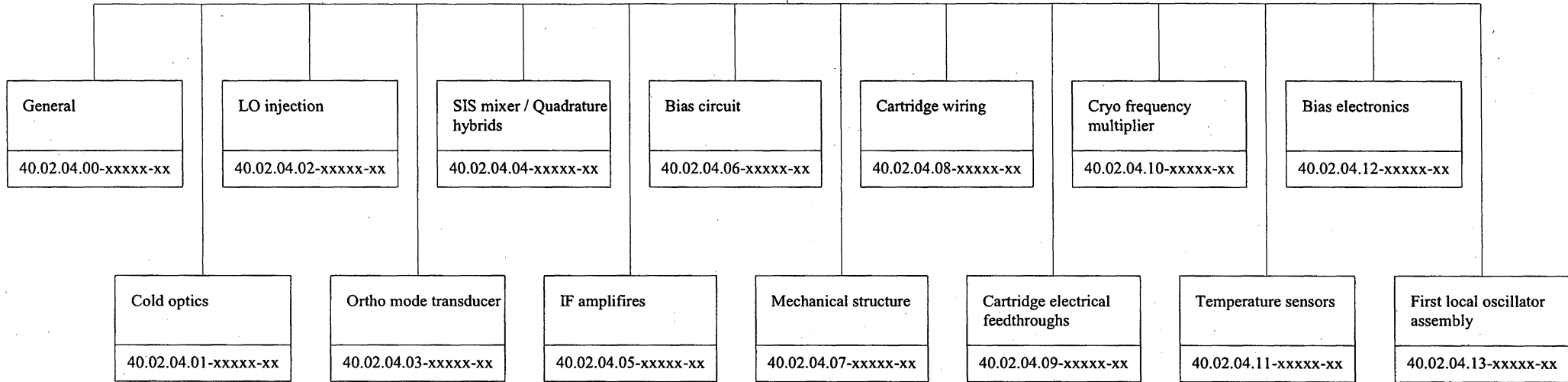
## Table of Contents

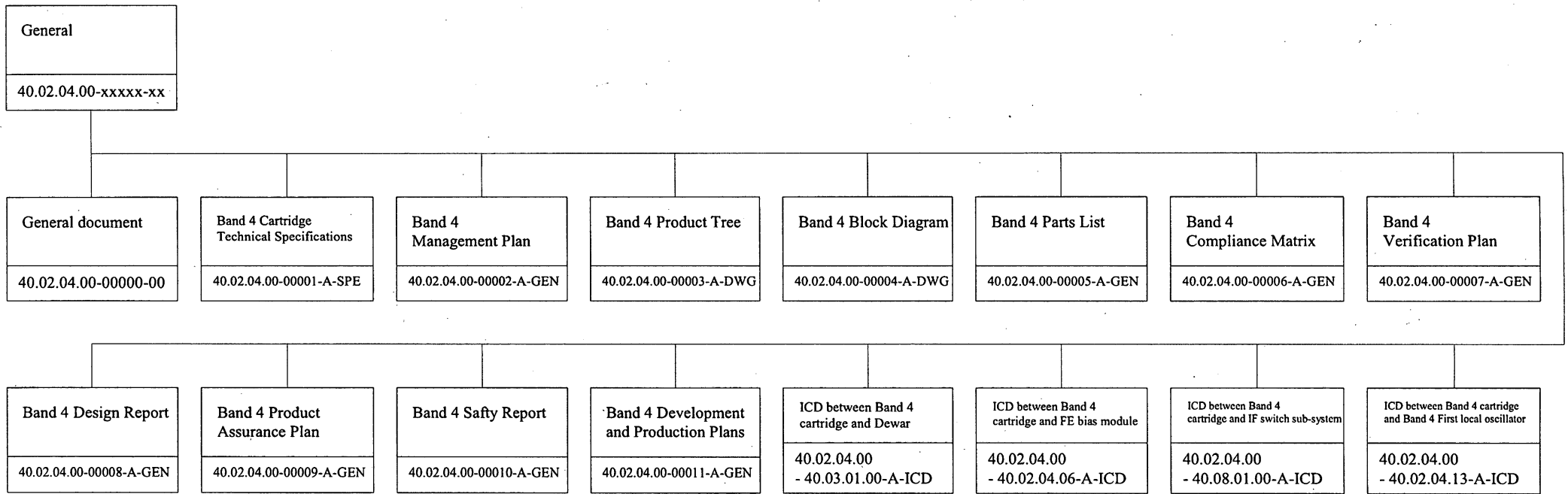
1	Parts list.....	4
2	product tree.....	6

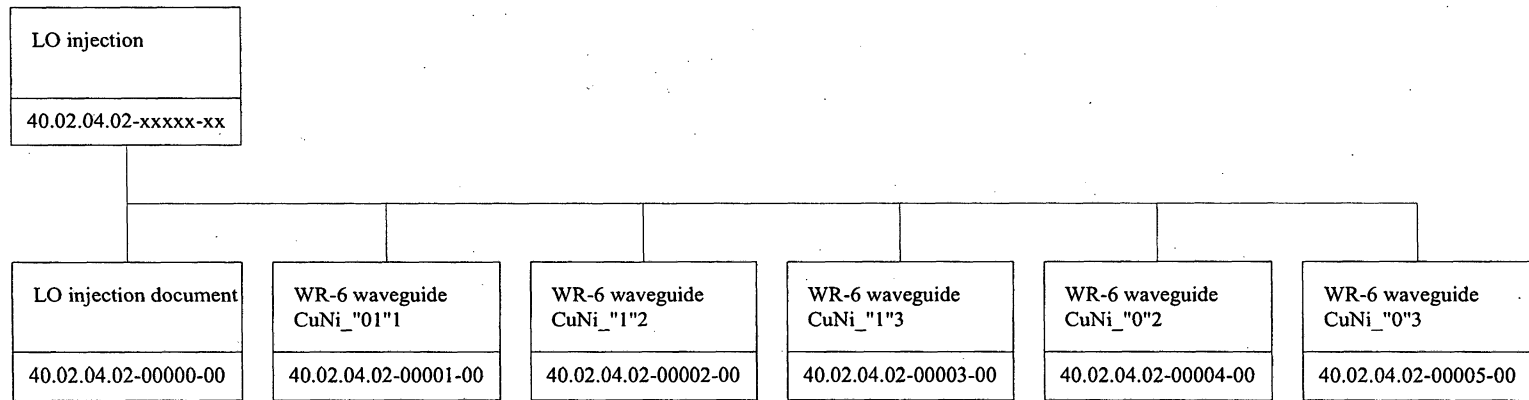
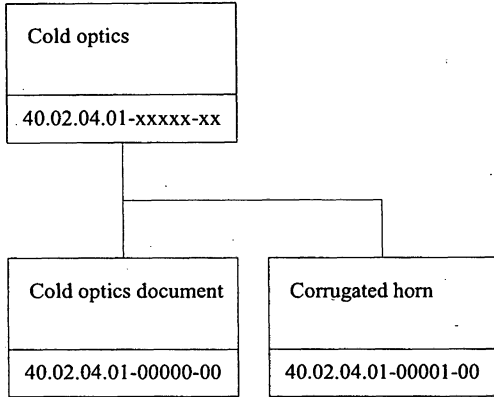
Band4				2004/09/17	
Product Tree					
	ID	Parts	change	name	Product No.
0 General					
	00	00000	A	General document	40.02.04.00-00000-A
	00	00001	A	Band 4 Cartridge Technical Specifications	40.02.04.00-00001-A-SPE
	00	00002	A	Band 4 Management Plan	40.02.04.00-00002-A-GEN
	00	00003	A	Band 4 Product Tree	40.02.04.00-00003-A-DWG
	00		A	ICD between Band 4 cartridge and Dewar	40.02.04.00-40.03.01.00-A-ICD
	00		A	ICD between Band 4 cartridge and FE bias module	40.02.04.00-40.02.04.06-A-ICD
	00		A	ICD between Band 4 cartridge and IF switch sub-system	40.02.04.00-40.08.01.00-A-ICD
	00		A	ICD between Band 4 cartridge and Band 4 First Local Oscillator	40.02.04.00-40.02.04.13-A-ICD
	00	00004	A	Band 4 Block Diagram	40.02.04.00-00004-A-DWG
	00	00005	A	Band 4 Parts List	40.02.04.00-00005-A-GEN
	00	00006	A	Band 4 Compliance Matrix	40.02.04.00-00006-A-GEN
	00	00007	A	Band 4 Verification Plan	40.02.04.00-00007-A-GEN
	00	00008	A	Band 4 Design Report	40.02.04.00-00008-A-GEN
	00	00009	A	Band 4 Product Assurance Plan	40.02.04.00-00009-A-GEN
	00	00010	A	Band 4 Safty Report	40.02.04.00-00010-A-GEN
	00	00011	A	Band 4 Development and Production Plans	40.02.04.00-00011-A-GEN
1 Cold optics					
	01	00000	00	Cold optics document	40.02.04.01-00000-00
	01	00001	00	Corrugated horn	40.02.04.01-00001-00
2 LO injection					
	02	00000	00	LO injection document	40.02.04.02-00000-00
	02	00001	00	WR-6 waveguide CuNi "01"1	40.02.04.02-00001-00
	02	00002	00	WR-6 waveguide CuNi "1"2	40.02.04.02-00002-00
	02	00003	00	WR-6 waveguide CuNi "1"3	40.02.04.02-00003-00
	02	00004	00	WR-6 waveguide CuNi "0"2	40.02.04.02-00004-00
	02	00005	00	WR-6 waveguide CuNi "0"3	40.02.04.02-00005-00
3 Ortho mode transducer					
	03	00000	00	OMT document	40.02.04.03-00000-00
	03	00001	00	OMT(Mitubishi)	40.02.04.03-00001-00
4 SIS mixer/Quadrature hybrids					
	04	00000	00	2SB mixer document	40.02.04.04-00000-00
	04	00001	00	Mixer block (RF 90° hybrid/LO coupler/SISmixer)	40.02.04.04-00001-00
	04	00003	00	IF 90° hybrid	40.02.04.04-00003-00
	04	00004	00	SMA Cable from DSB to IF hybrid (OFC)	40.02.04.04-00004-00
5 IF amplifires					
	05	00000	00	IF amplifires document	40.02.04.05-00000-00
	05	00001	00	CLNA & ISO unit (Nitsuki)	40.02.04.05-00001-00
	05	00002	00	Warm amp(WCA)	40.02.04.05-00002-00
6 Bias circuit					
	06	00000	00	Bias circuit document	40.02.04.06-00000-00
	06	00001	00	Mixer BIAS circuit	40.02.04.06-00001-00
	06	00002	00	Bias module(WCA)	40.02.04.06-00002-00
7 Mecanical structure					
	07	00000	00	Mecanical structure document	40.02.04.07-00000-00
	07	00001	00	4K stage	40.02.04.07-00001-00
	07	00002	00	12K stage	40.02.04.07-00002-00
	07	00003	00	80K stage	40.02.04.07-00003-00
	07	00004	00	Base plate	40.02.04.07-00004-00
	07	00005	00	4-12 GFRP pipe	40.02.04.07-00005-00
	07	00006	00	12-80 GFRP pipe	40.02.04.07-00006-00
	07	00007	00	80-300 GFRP pipe	40.02.04.07-00007-00
	07	00008	00	GFRP ring	40.02.04.07-00008-00
	07	00009	00	Base plate O-ring	40.02.04.07-00009-00
	07	00010	00	horn holder A	40.02.04.07-00010-00
	07	00011	00	horn holder B	40.02.04.07-00011-00
	07	00012	00	LO waveguide holder@80K	40.02.04.07-00012-00
	07	00013	00	LO waveguide holder@12K	40.02.04.07-00013-00
	07	00014	00	OMT holder(yagura)	40.02.04.07-00014-00
	07	00015	00	OMT holder pillar	40.02.04.07-00015-00
	07	00016	00	holder thermal anchor	40.02.04.07-00016-00
	07	00017	00	OMT holder cover	40.02.04.07-00017-00
	07	00018	00	mixer holder base	40.02.04.07-00018-00
	07	00019	00	mixer holder L angle A	40.02.04.07-00019-00
	07	00020	00	mixer holder L angle B	40.02.04.07-00020-00
	07	00021	00	mixer thermal anchor	40.02.04.07-00021-00
	07	00022	00	support (for Nitsuki CLNA)	40.02.04.07-00022-00
	07	00023	00	IF cable thermal anchor L	40.02.04.07-00023-00
	07	00024	00	IF cable thermal anchor plate	40.02.04.07-00024-00
	07	00025	00	Cable fixer@12K	40.02.04.07-00025-00
	07	00026	00	Cable fixer@80K	40.02.04.07-00026-00
	07	00027	00	Cable fixer@300K	40.02.04.07-00027-00

	07	00028	00	WCA structure	40.02.04.07-00028-00
	07	00029	00	Cartridge carriage	40.02.04.07-00029-00
	07	00030	00	cartridge fixation plate (cartridge stand)	40.02.04.07-00030-00
	07	00031	00	bottom plate (cartridge stand)	40.02.04.07-00031-00
	07	00032	00	pillar (cartridge stand)	40.02.04.07-00032-00
	07	00033	00	cartridge fixation nail (cartridge stand)	40.02.04.07-00033-00
8	Cartridge wiring				
	08	00000	00	Cartridge wiring document	40.02.04.08-00000-00
	08	00001	00	separation cable "1"	40.02.04.08-00001-00
	08	00002	00	separation cable "0"	40.02.04.08-00002-00
	08	00003	00	SIS bias cable (separation cable to SIS bias circuit)	40.02.04.08-00003-00
	08	00004	00	HEMT bias cable (separation cable to SIS bias circuit)	40.02.04.08-00004-00
	08	00005	00	Temp. sensor cable	
	08	00006	00	mixer heater cable	40.02.04.08-00006-00
	08	00007	00	twist W.G. "1"	40.02.04.08-00007-00
	08	00008	00	twist W.G. "0"	40.02.04.08-00008-00
	08	00009	00	IF(BP-CLNA) cable "1"U (Cu-Ni)	40.02.04.08-00009-00
	08	00010	00	IF(BP-CLNA) cable "1"L (Cu-Ni)	40.02.04.08-00010-00
	08	00011	00	IF(BP-CLNA) cable "0"U(Cu-Ni)	40.02.04.08-00011-00
	08	00012	00	IF(BP-CLNA) cable "0"L (Cu-Ni)	40.02.04.08-00012-00
	08	00013	00	IF(BP-CLNA) cable "1"U (Cu-Ni) 2	40.02.04.08-00013-00
	08	00014	00	IF(BP-CLNA) cable "1"L (Cu-Ni) 2	40.02.04.08-00014-00
	08	00015	00	IF(BP-CLNA) cable "0"U(Cu-Ni) 2	40.02.04.08-00015-00
	08	00016	00	IF(BP-CLNA) cable "0"L (Cu-Ni) 2	40.02.04.08-00016-00
	08	00017	00	IF(IFhybrid-CLNA) cable "1"U (SUS)	40.02.04.08-00017-00
	08	00018	00	IF(IFhybrid-CLNA) cable "1"L (SUS)	40.02.04.08-00018-00
	08	00019	00	IF(IFhybrid-CLNA) cable "0"U (SUS)	40.02.04.08-00019-00
	08	00020	00	IF(IFhybrid-CLNA) cable "0"L (SUS)	40.02.04.08-00020-00
9	Cartridge electrical feedthroughs				
	09	00000	00	Cartridge wiring document	40.02.04.09-00000-00
	09	00001	00	Vacuum LO flange 1	40.02.04.09-00001-00
	09	00002	00	Vacuum LO flange 2	40.02.04.09-00002-00
	09	00003	00	Vacuum LO flange Kapton	40.02.04.09-00003-00
	09	00004	00	Vacuum LO flange O-ring	40.02.04.09-00004-00
	09	00005	00	Vacuum IF flange	40.02.04.09-00005-00
	09	00006	00	Vacuum BIAS flange	40.02.04.09-00006-00
	09	00007	00	Vacuum BIAS flange O-ring	40.02.04.09-00007-00
10	Cryo frequency multiplier				
	10	00000	00	Cryo frequency multiplier document	40.02.04.10-00000-00
	10	00001	00	doubler	40.02.04.10-00001-00
11	Temperature sensors				
	11	00000	00	Temperature sensors document	40.02.04.11-00000-00
	11	00001	00	Temp. sensor (mixer)	40.02.04.11-00001-00
	11	00002	00	Temp. sensor (4K)	40.02.04.11-00002-00
	11	00003	00	Temp. sensor (12K)	40.02.04.11-00003-00
	11	00004	00	Temp. sensor (80K)	40.02.04.11-00004-00
	11	00005	00	SIS heater	40.02.04.11-00005-00
12	Bias electronics				
	12	00000	00	Biaselectronics document	40.02.04.12-00000-00
13	First local oscillator assembly				
	13	00000	00	First local oscillator assembly document	40.02.04.13-00000-00
	13	00001	00	YIG(WCA)	40.02.04.13-00001-00
	13	00002	00	PLL(WCA)	40.02.04.13-00002-00

Frequency Band 4 cartridge  
40.02.04.xx-xxxxx-xx









Ortho mode transducer  
40.02.04.03-xxxxx-xx

OMT document  
40.02.04.03-00000-00

OMT(Mitubishi)  
40.02.04.03-00001-00

SIS mixer / Quadrature hybrids  
40.02.04.04-xxxxx-xx

SIS mixer / Quadrature hybrids document  
40.02.04.04-00000-00

Mixer block(RF90°hybrid/  
LO coupler/SIS mixers)  
40.02.04.04-00001-00

IF 90° hybrid  
40.02.04.04-00002-00

SMA cable from DSB  
to IF hybrid (OFC)  
40.02.04.04-00003-00

IF amplifiers  
40.02.04.05-xxxxx-xx

IF amplifiers document  
40.02.04.05-00000-00

CLNA and Isolator  
unit (Nitsuki)  
40.02.04.05-00001-00

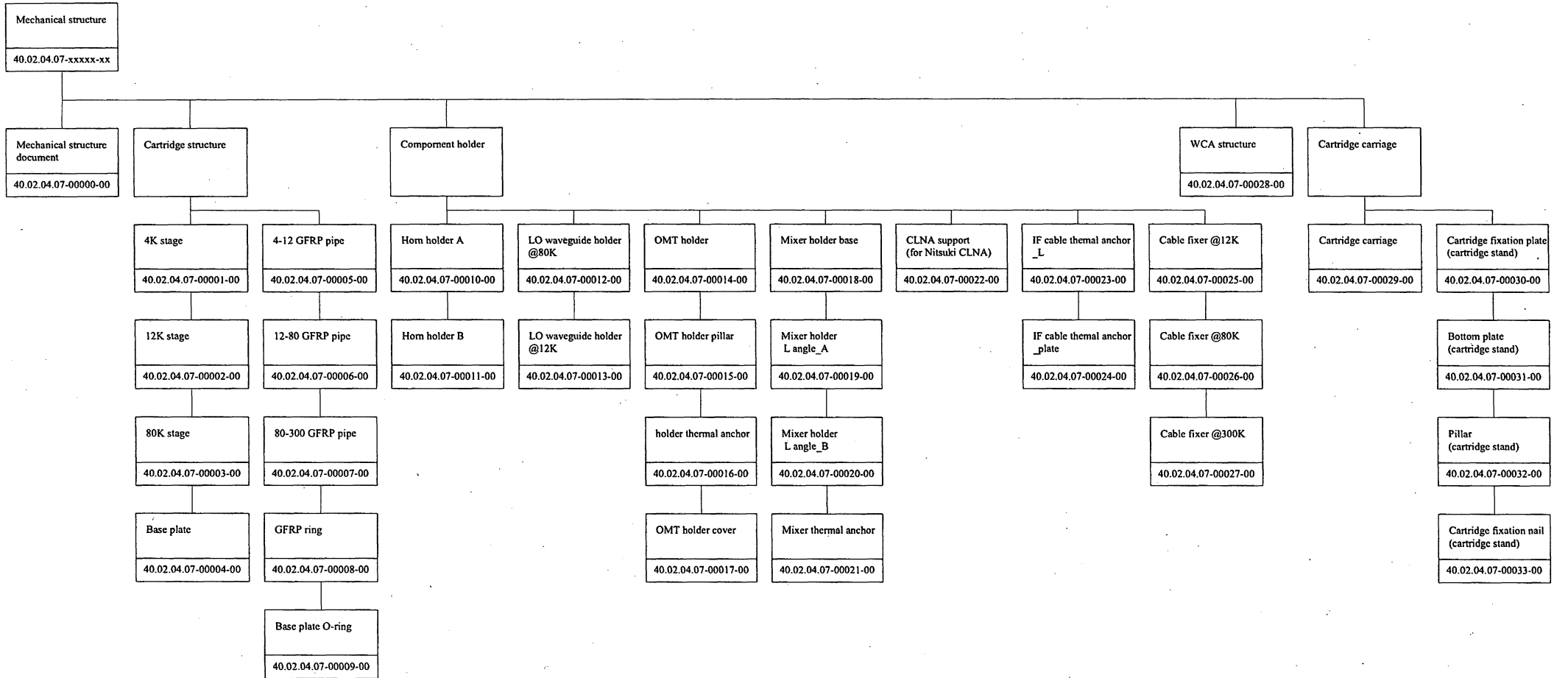
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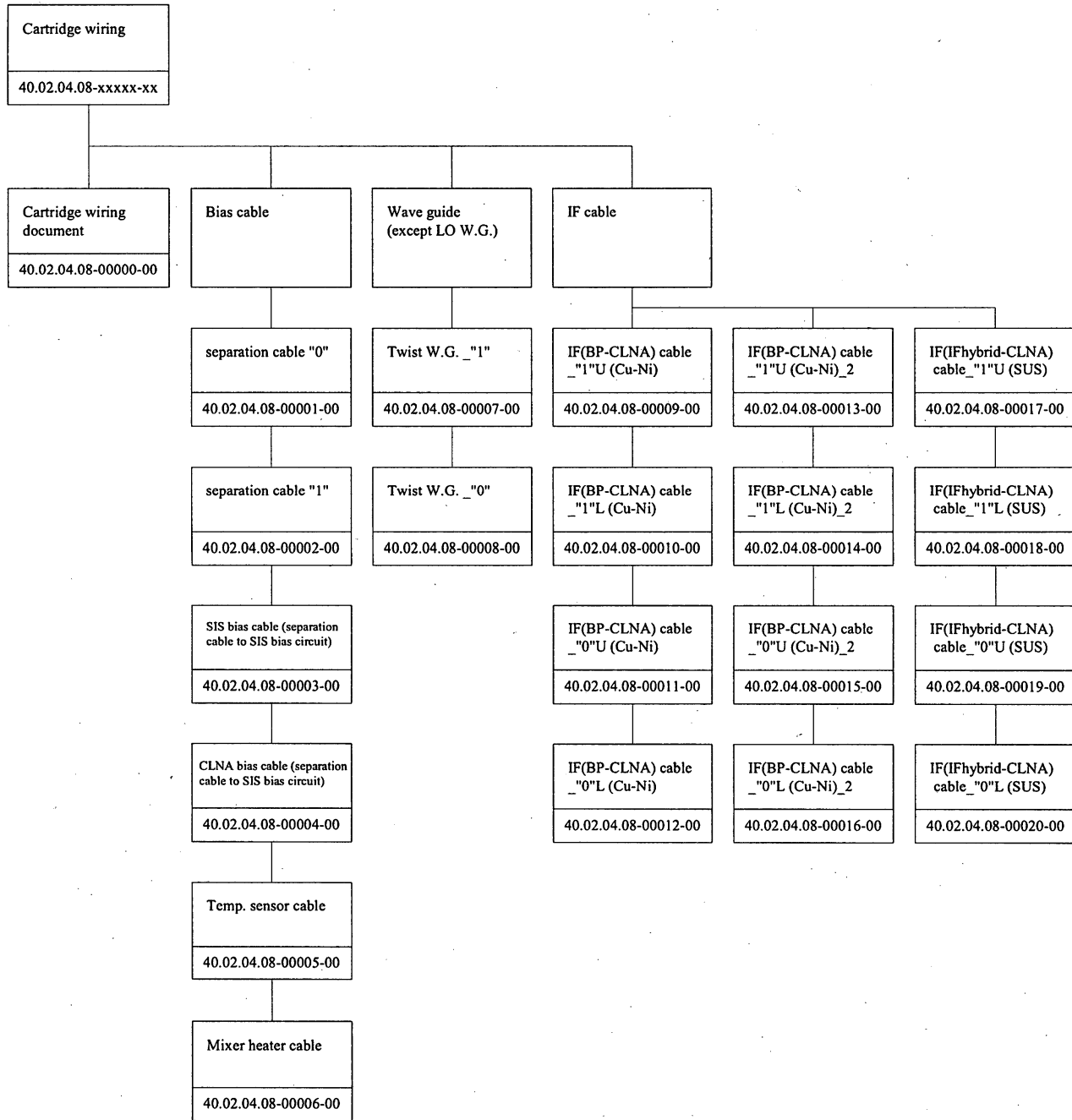
Bias circuit  
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Bias circuit document  
40.02.04.06-00000-00

Mixer Bias circuit  
40.02.04.06-00001-00

Bias module (WCA)  
40.02.04.05-00002-00





Cartridge electrical feedthroughs  
40.02.04.09-xxxxx-xx

Cartridge electrical feedthroughs document  
40.02.04.09-00000-00

Vacuum LO flange

Vacuum LO flange\_1  
40.02.04.09-00001-00

Vacuum LO flange\_2  
40.02.04.09-00002-00

Vacuum LO flange\_Kapton  
40.02.04.09-00003-00

Vacuum LO flange\_O-ring  
40.02.04.09-00004-00

Vacuum IF flange  
40.02.04.09-00005-00

Vacuum Bias flange

Vacuum Bias flange  
40.02.04.09-00006-00

Vacuum Bias flange  
40.02.04.09-00007-00

Cryo frequency multiplier  
40.02.04.10-xxxxx-xx

Cryo frequency multiplier document  
40.02.04.10-00000-00

Doubler  
40.02.04.10-00001-00

