

MMA Personnel requests

Planning as of 25-Sep-98

Filename projplan980901.wb1

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09:00 AM

Function	Name, or Title	Category	FTE	Start	Stop	Site	Comments	Posted?
1 Administration	Brown,R	S	-	-	-	-	CV	
	Napier,PJ*	S	50%	03/01/98	-01/01/2001	-	SO	
	Hardy,EJ	S	100%	01/01/98	-01/01/2001	-	CH	
	Simon,RS	S	100%	05/01/98	-01/01/2001	-	CV	
	Porter,WH	A	50%	10/01/98	-01/01/2001	-	CV	
	Wooten,A*	S	-	-	-	-	-	
	White,CL	A	50%	05/01/98	-01/01/2001	-	CV	
	Weatherall,M	T	50%	01/01/98	-01/01/2001	-	SO	
	Purchasing Agent	A	50%	~11/01/98	-01/01/2001	-	CV	needs req, & approval
2 Site Development	Gordon,MA*	S	75%	01/01/98	05/01/98	-	TU	
	Gordon,MA*	S	50%	05/01/98	-01/01/2001	-	TU	
3 Antenna	Napier,PJ*	S	50%	03/01/98	-01/01/2001	-	SO	
	Kingsley,J	E	100%	03/01/98	-01/01/2001	-	TU	
	Cheng,J	E	100%	01/01/98	-01/01/2001	-	TU	
	Lugten,JB	E	80%	01/01/98	-01/01/2001	-	TU	
	Gasho,V	E	50%	07/06/98	-01/01/2001	-	TU	
4 Receiver Systems	Emerson,D*	S	50%	03/01/98	-01/01/2001	-	TU	
	Clarke, J	E	100%	01/01/98	-01/01/2001	-	TU	
	D'Addario,L*	E	50%	09/01/98	-01/01/2001	-	TU	
	Receiver Engineer 1	E	100%	~01/01/99	-01/01/2001	-	TU	TU 2017 (offered) 06/11
	Technician (Cryo)	T	100%	~01/01/99	-01/01/2001	-	TU	TU 2022 (Strong cand) 06/11
	Metcalfe,M	T	100%	07/07/98	-01/01/2001	-	TU	
	Gasho,V	E	25%	07/06/98	-01/01/2001	-	TU	
Requested Technician 1	T	100%	~02/01/99	-01/01/2001	-	TU		
4.1 SIS Mixer	Kerr,AR	E	100%	03/01/98	-01/01/2001	-	CV	
	Pan,SK	E	100%	03/01/98	-01/01/2001	-	CV	
	SIS Receiver Eng.	E	100%	~01/01/99	-01/01/2001	-	CV	CV 2098 (candidate) 06/11
	Effland,J	E	100%	07/25/98	-01/01/2001	-	CV	
	SIS Integrated Amplifier Eng.	E	100%	~12/01/98	-01/01/2001	-	CV	CV 2052 released 8/98
	Horner,N	T	50%	03/01/98	-01/01/2001	-	CV	
	Crady,WK	T	50%	03/01/98	-01/01/2001	-	CV	
	Boyd, DE	T	100%	03/01/98	11/01/98	-	CV	(moved to Mult Chain LO)
	Marshall,AA	T	100%	07/01/98	-01/01/2001	-	CV	
	SIS Mixer Tech	T	100%	12/01/98	01/01/01	-	CV	needs req. (Boyd repl)
Requested Technician 3	T	100%	~07/01/99	-01/01/2001	-	CV		
5.3 LO: Mult. Chain	Bradley,RF	E	50%	03/01/98	-01/01/2001	-	CV	
	Thacker,DL	E	50%	12/01/98	-01/01/2001	-	CV	
	LO Multiplier Engineer	E	100%	~01/01/99	-01/01/2001	-	CV	CV 2053 released
	Boyd, DE	T	100%	11/01/98	-01/01/2001	-	CV	
	Requested Technician 2	T	100%	~07/01/99	-01/01/2001	-	CV	
5.4 LO: Photonic	Payne,JM	E	50%	01/01/98	-01/01/2001	-	TU	
	Shillue,W	E	100%	06/01/98	-01/01/2001	-	TU	
	Gasho,V	E	25%	07/06/98	-01/01/2001	-	TU	
	Technician	T	100%	~12/01/98	-01/01/2001	-	TU	TU 2024 06/11
6 IF System	Sramek,R*	E	-	-	-	-	SO	
	Brundage,W	E	100%	08/01/98	-01/01/2001	-	SO	
	EE LO/IF System 2	E	100%	~12/01/98	-01/01/2001	-	SO	SO 2198 interviewing 06/11
	CAD / Drafter	T	100%	~01/01/99	-01/01/2001	-	SO	SO 2200 (hold til ~10/1)
Requested Technician 9	T	100%	01/01/2000	-01/01/2001	-	SO		
7 FO System	Sramek,R*	E	-	-	-	-	SO	
	EE Fiber Optic	E	100%	~12/01/98	-01/01/2001	-	SO	SO 2199 interviewing 06/11
	Requested Technician 6	T	100%	~07/01/99	-01/01/2001	-	SO	
8 Correlator	Webber,J	E	-	-	-	-	SO	
	Escoffier,RP	E	100%	03/01/98	-01/01/2001	-	CV	
	Brown,WA	T	100%	07/01/98	-01/01/2001	-	CV	
	Broadwell,C	E	100%	09/01/98	-01/01/2001	-	CV	
	Correlator Eng 2	E	100%	~01/01/99	-01/01/2001	-	CV	CV 2094 (hold til ~10/1) not yet
9 Computing	Glendenning,B	S	100%	07/01/98	-01/01/2001	-	SO	
	Programmer Correlator	E	100%	~02/01/99	-01/01/2001	-	CV	CV 2067 released ~7/18/98
	Programmer System Design	E	100%	~12/01/98	-01/01/2001	-	SO	SO 2150 06/11
	Heald,R	E	100%	02/01/99	-01/01/2001	-	SO	SO 2151 (wop thru 2/1/99)
	M&C Engineer	E	100%	~01/01/99	-01/01/2001	-	TU	TU 2034 released 09/09/98
	Programmer	E	100%	~12/01/98	-01/01/2001	-	SO	SO 2202 06/11
10 System Integration	Emerson,D*	S	50%	03/01/98	-01/01/2001	-	TU	(other half in Rcvr)
	D'Addario,L*	E	-	-	-	-	TU	(other half VSOP)
11 Cal & Imaging	Wooten,A*	S	-	-	-	-	-	
	Radford,SJ	S	100%	01/01/98	-01/01/2001	-	TU	
	Helfer,TT	S	50%	01/01/98	-01/01/2001	-	TU	
	Yun,M	S	50%	07/01/98	07/01/99	-	SO	(1 year only)
	Butler,B	S	100%	07/01/98	-01/01/2001	-	SO	
	Schroeder,JC	T	50%	03/02/98	-01/01/2001	-	TU	

Current Plan Summary		09:00 AM	09/28/98				
Filename: projplan980901.wb1		CY1998	1999	2000	2001	SUBTOTAL	TOTAL
1 ADMINISTRATION							
Labor		285	407	428	0	1,120	
Materials & Services		25	25	25	25	100	
Facilities/Rent		127	310	221	88	745	
Communications		25	50	50	25	150	
Travel		150	200	200	100	650	
							2,765
2 SITE DEVELOPMENT							
Labor						154	
Mining Rights/EIS		0	100	0	0	100	
Freight, Trans., & Comm.		16	11	11	0	38	
							292
3 ANTENNA							
Labor		297	368	387	0	1,052	
MDC Contracts		75	150	150	75	450	
Materials & Services		0	54	21	0	74	
Prototype Antenna		0	2,100	2,200	0	4,300	
							5,876
4 RECEIVER SYSTEMS							
Receiver Labor		191	422	449	0	1,062	
SIS Labor		369	697	762	0	1,827	
Receiver Materials		267	48	48	0	363	
Cryogenics		81	87	87	0	255	
Rcv Lab/Test Equipment		55	525	0	0	580	
SIS Materials and Equipment		461	374	81	0	916	
HFET Materials		0	0	50	0	50	
Contract Fabrication		288	575	125	0	988	
							6,040
5 LOCAL OSCILLATOR							
MUL LO Labor		93	233	0	0	326	
PH LO Labor		128	199	209	0	537	
MUL LO Materials		120	89 *		0	209	
MUL LO Lab/Test Equipment		139	15 *		0	154	
PH LO Lasers		10	50	0	0	60	
MDC Contract		50	100	100	50	300	
PH LO Lab/Test Equipment		70	97	0	0	167	
PH LO 230 GHz UCLA Contract		0	100	50	0	150	
							1,902
6 IF SYSTEM							
Labor		73	255	330	0	658	
Lab/Test Equipment		0	148	65	0	213	
Materials & Services		7	236	162	0	405	
							1,276
7 FO SYSTEM							
Labor		21	118	154	0	294	
Materials		5	150	53	0	208	
							502
8 CORRELATOR							
Labor		149	356	373	0	878	
Materials		15	15	65	0	95	
Chip Devel Contract		0	67	133	0	200	
Test (GBT) Correlator		40	10	0	0	50	
							1,223
9 COMPUTING							
Labor		127	452	474	0	1,054	
MDC Contract		25	50	50	25	150	
Materials		61	20	15	10	106	
Software		50	8	8	4	70	
							1,380
10 SYSTEM INTEGRATION							
Labor		50	107	112	0	269	
Materials & Contracts		0	50	50	0	100	
Holography System		0	15	98	0	113	
							482
11 CAL & IMAGING							
Labor		242	189	186	0	616	
MDC Contracts		150	300	300	150	900	
Materials & Contracts		51	25	25	0	101	
Freight, Trans., & Comm.		24	24	24	0	72	
							1,689
NSF MMAOC							
Committee functions		5	50	50	0	105	
							105
SUBTOTAL LABOR		2,379	4,452	4,514	300	11,645	
SUBTOTAL EQUIPMENT		1,719	4,857	3,336	14	9,927	
SUBTOTAL OTHER		372	770	581	238	1,960	
SUBTOTAL							23,532
CONTINGENCY (10.5%)							2,468
GRAND TOTAL		4,470	10,079	8,432	552	23,532	26,000

4 Receiver Systems

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Summary

		1998	1999	2000	2001	Subtotal	
4	12004.3060	Receiver Labor	191	422	449	0	1,062
		Receiver Travel	0	0	0	0	0
		SIS Labor	369	697	762	0	1,827
		SIS Travel	0	0	0	0	0
4.1	12004.3060.01	Receiver Materials	267	48	48	0	363
		Cryogenics	81	87	87	0	255
		Rcv Lab/Test Equipment	55	525	0	0	580
		SIS Materials and Equipment	461	374	81	0	916
		HFET Materials			50	0	50
		Contract Fabrication	288	575	125	0	988
		Totals					6,040

Breakdown

WBS	Acct No.	Category	Subcategory	Item	Vendor	1998	1999	2000	2001	Subtotals	
SIS Labor											
4.1	12004.3010.01				Payroll	284	536	586	0	1,405	
4.1	12004.3020.01				Benefits	85	161	176	0	422	
		Subtotals, SIS Labor					369	697	762	0	1,827
SIS Materials and Equipment											
4.1.2	12004.3030.0102			Sideband source plates --- 2 sets							
				YIG Oscillator	Omniyig	1.3	1.3			2.5	
				YIG power supplies		1.2	1.2			2.4	
				Tripler	Pacific Millimeter	0.4	0.4			0.8	
				Amplifiers	Miteq	4.1	4.1			8.1	
				Level-set attenuator	Aerowave	0.6	0.6			1.2	
				Harmonic Genreator		10.0	10.0			20.0	
				Horn	Aerowave	0.9	0.9			1.7	
				Power meter	HP	6.0	6.0			12.0	
				Source-locking counter	EIP578B + Opts: 6 + 590 + 93	15.9	15.9			31.8	
				Harm mixers for above	Pacific Millimeter	0.8	0.8			1.6	
4.1.3	12004.3030.0103			IF plate --- 2 sets							
				LP Filter		0.6	0.6			1.2	
				LN Amplifiers	Miteq	1.5	1.5			3.0	
				Step Attenuator	HP	2.9	2.9			5.7	
				Transfer switch	HP	0.7	0.7			1.3	
				Power Divider		0.3	0.3			0.6	
				SPDT Switch	HP	0.6	0.6			1.2	
				Amplifiers	Miteq	0.9	0.9			1.8	
				Pad		0.2	0.2			0.3	
				YIG Filter	Omniyig	1.3	1.3			2.5	
				YIG power supplies		1.2	1.2			2.4	
				Tunnel Diode Detector		0.3	0.3			0.6	
				Noise source		1.0	1.0			2.0	
				Power Supplies		0.4	0.4			0.8	
.5	12004.3030.0105			Dewar instrumentation							
				Temperature Gauge	Lakeshore						
				Temp Sensors	Lakeshore	1.4				1.4	
				LP feedthrough filters	Spectrum Control	0.5				0.5	
				LP feedthrough filters	Spectrum Control	1.0				1.0	
				Connectors	Deutsch	1.0				1.0	
				Superconducting Magnet		2.0				2.0	
				Vacuum Valve		0.9				0.9	
				Vacuum accessories		1.2				1.2	
				Turbo pump	Pfizer	10.0				10.0	
4.1.4	12004.3030.0104			4K IF Plate 4-12 GHz --- 2 sets							
				SP4T Coax Switch	Dynatech		4.0			4.0	
				Loads	EMC		0.5			0.5	
				Pad	HP		0.6			0.6	
				Directional Coupler	-					0.0	
				Amplifier	NRAO					0.0	
				Quad Hybrid	HP or Merrimac		2.5			2.5	
4.1.8	12004.3030.0108			Mixers							
				Mask sets	Diamon	30.0	60.0			90.0	
4.1.6	12004.3030.0106			LO Plates							
4.1.6	12004.3030.0106			LO Plate: 170-245 GHz --- Year 1							
				Gunn Oscillator	Carlstrom	8.0				8.0	
				Isolator	Millitech	2.0				2.0	
				Level-set attenuator	Aerowave	0.7				0.7	
				W/G switch	Aerowave	2.3				2.3	
				Wavemeter	Millitech	3.0				3.0	
				Power Meter	Anritsu ML83A & MP 717A	9.7				9.7	
				H-plane bends	Aerowave	0.3				0.3	
				Tripler	Millitech		20.0			20.0	
				E-plane bends	Aerowave	0.7				0.7	
				H-plane bends	Aerowave	0.7				0.7	
				90 deg twist	Aerowave	0.3				0.3	
				GDO power supply	Lambda LQ521	0.8				0.8	
				Tripler bias supply	NRAO	0.4				0.4	
				Lab-Jack	Cole-Parmer	0.2				0.2	
6	12004.3030.0106			LO PLate 602-720 GHz --- Year 2							
				Gunn Oscillator	Carlstrom		9.0			9.0	
				Isolator	Millitech	3.0				3.0	
				Level-set attenuator	Aerowave		0.9			0.9	
				W/G switch	Aerowave		3.0			3.0	

		Wavemeter	Millitech	5.0			5.0
		Power Meter	Anritsu ML83A & MP82B	13.2			13.2
		H-plane bends	Aerowave	0.4			0.4
		E-plane bends	Aerowave	0.4			0.4
		90-deg twist	Aerowave	0.2			0.2
		x2x3 multiplier	Pariometer Physics	22.6			22.6
		E-plane bends	NRAO	0.0			0.0
		H-plane bends	NRAO	0.0			0.0
		Scalar horn	Radiometer Physics	3.6			3.6
		GDO power supply	Lambda LQ521	0.8			0.8
		Multiplier bias supply	NRAO	0.4			0.4
		Lab-Jack	Cole-Parmer	0.2			0.2
.6	12004.3030.0106	Common LO components to support two mixer test stations	--- Years 1 & 2				
		Source-locking counter	EIP578B + Opts: 6 + 590 + 93	31.8			31.8
		Harm mixers for above	Pacific Millimeter	1.6			1.6
4.1.7	12004.3030.0107	SIS equipment rack					
		SIS bias supplies (need 2)		0.2	0.2		0.3
		IF Bias supply		0.2	0.2		0.3
		Magnet Bias supply		0.2	0.2		0.3
		LO Bias supply		0.2	0.2		0.3
		LO Phase-Lock		0.2	0.2		0.3
		IF Switching		0.2	0.2		0.3
		Heater controller		0.2	0.2		0.3
		Temperature Monitors		0.2	0.2		0.3
		Graphics plotter		2.0	2.0		4.0
		RF Spectrum Analyzer	Tektronix 2784	27.9	27.9		55.9
		IF Spectrum Analyzer	Tektronix R3272	24.4	24.4		48.8
		Storage scope	Tektronix 7633	2.0	2.0		4.0
		Power supplies	Acopian VA20MT400	0.6	0.6		1.2
		Line filter		0.2	0.2		0.3
		Distribution strips		0.2	0.2		0.3
		Rack		0.2	0.2		0.3
		Control PC	Pentium	1.5	1.5		3.0
		PC interface cards		1.3	1.3		2.5
4.1.10	12004.3030.0110	Wafer Evaluation Test Set					
		LHe test dewar	IR Labs HD3-8	10.0			10.0
		Capacitance bridge	HP4278A	11.6			11.6
		Network Analyzer	HP8719D	24.7			24.7
		SIS bias supply		0.3			0.3
		Control PC	Pentium	3.0			3.0
		PC interface cards		0.6			0.6
		Power supplies	Acopian VA20MT400	1.2			1.2
4.1.13	12004.3030.0113	Fourier-Transform Spectrometer			15.0	15.0	30.0
4.1.11	12004.3030.0111	In-Block IF development					
		Amp bias circuit		0.3			0.3
		Variable-temp cold load	-	0.0			0.0
		Network Analyzer	HP8719D		12.3	12.4	24.7
.14	12004.3030.0114	Noise test plate					
		LP Filter		1.2			1.2
		LN Amplifiers	Miteq		1.6	1.4	3.0
		Step Attenuator	HP	5.7			5.7
		Transfer switch	HP	1.3			1.3
		Power Divider		0.6			0.6
		SPDT Switch	HP	1.2			1.2
		Amplifiers	Miteq	1.8			1.8
		Pad		0.3			0.3
		YIG Filter	Omniyig	2.5			2.5
		Tunnel Diode Detector		0.6			0.6
		Noise source		2.0			2.0
		Power Supplies		0.8			0.8
4.1.12	12004.3030.0112	Vacuum window development					
4.1.15	12004.3030.0115	Miscellaneous					
		Xtal-Quartz Plates	Boston Piezo Optics	6.0	6.0	8.0	20.0
		Oven	ATL	4.0			4.0
		Measuring Microscope	Olympus or Nikon	0.0			0.0
		Lab scope	Tektronix TDS 460A	7.7			7.7
		Additional 1020 compressor		5.0			5.0
		Low-loss cables	Gore	2.0			2.0
		Misc. hardware		6.0			6.0
		Dedicated fast PC for QuickWave		6.0			6.0
		Millimeter power meter	Anritsu ML83A		3.2		3.2
4.1.15	12004.3030.0115	Waveguide components — for general test & measurement					
4.1.15	12004.3030.0115	WR-12 waveguide components					
		Wavemeter	Millitech	3.0			3.0
		Precision attenuator	Millitech	3.0			3.0
		Coupler 10/40 dB	Aerowave	2.1			2.1
		E-bend	Aerowave	0.3			0.3
		H-bend	Aerowave	0.3			0.3
		90-deg twist	Aerowave	0.1			0.1
4.1.15	12004.3030.0115	WR-8 waveguide components					
		Wavemeter	Millitech	4.0			4.0
		Precision attenuator	Millitech	4.0			4.0
		Coupler 10/40 dB	Aerowave	3.0			3.0
		E-bend	Aerowave	0.4			0.4
		H-bend	Aerowave	0.4			0.4
		90-deg twist	Aerowave	0.2			0.2
		Std. gain horn	Aerowave	0.6			0.6
.15	12004.3030.0115	WR-4 waveguide components					
		Coupler 10/40 dB	Aerowave	7.0			7.0
		E-bend	Aerowave	0.7			0.7

		H-bend	Aerowave	0.7				0.7
		90-deg twist	Aerowave	0.3				0.3
		Std. gain horn	Aerowave	0.8				0.8
4.1.16	12004.3030.0116	Expendables						
		Cryogenics		10.0	10.0	5.0		25.0
		Materials & Supplies		50.0	50.0	25.0		125.0
4.1.17	12004.3030.0117	Software & Maintenance						
		EM simulator	QuickWave	21.5				21.5
		Software maintenance	Sonnet	3.6	3.6	3.6		10.8
			HP	1.2	1.2	1.2		3.6
			QuickWave	3.6	3.6	3.6		10.8
		System maintenance	HP	4.0	4.7	4.7		13.4
		Electronic Workbench		0.5				0.5
		Upgrades	Various	1.5	1.5	1.5		4.5
Subtotals, SIS Materials and Equipment				460.689	374.15	81.4	0	
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HFET Materials								
4.2	12004.3030.02	Amplifier components				50.0		50.0
Subtotals, HFET Materials				0	0	50	0	
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Contract Fabrication								
4.1.8	12004.3030.0108	Superconducting Circuit s	JPL	125.0	250.0	62.5	0.0	437.5
4.1.8	12004.3030.0108	Superconducting Circuit s	UVA	125.0	250.0	62.5	0.0	437.5
4.1.11	12004.3030.0111	MMIC IF amplifier development	S. Weinreb	37.5	75.0	0.0		112.5
Subtotals, Contract Fabrication				287.5	575	125	0	
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5 LO System

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Summary

5 12005.3060

	1998	1999	2000	2001	Subtotal
LO Ref Labor	0	0	0	0	0
MUL LO Labor	93	233	0	0	326
PH LO Labor	128	199	209	0	537
LOS Travel	0	0	0	0	0
MDC Contract	50	100	100	50	300
MUL LO Materials	120	89	*	0	209
MUL LO Lab/Test Equipment	139	15	*	0	154
PH LO Lasers	10	50	0	0	60
PH LO Lab/Test Equipment	70	97	0	0	167
PH LO 230 GHz UCLA Contra	0	100	50	0	150
Totals					1,902

Breakdown

WBS	Acct No.	Category	Subcategory	Item	Vendor	1998	1999	2000	2001	Subtotals
MUL LO Labor										
5.3	12005.3010.03				Payroll	71	179	*	0	251
5.3	12005.3020.03				Benefits	21	54	0	0	75
Subtotals, MUL LO Labor						93	233	0	0	326

WBS	Acct No.	Category	Subcategory	Item	Vendor	1998	1999	2000	2001	Subtotals
MUL LO Materials										
5.3.2	12005.3030.0302		MUL LO Phase-Lock Loop Components							
				Oddset Oscillator (2)		2.0				2
				Reference Oscillator and distribution		3.0				3
				Frequency Synthesizer (to 20 GHz)		25.0				25
				Harmonic mixer (2)		2.0				2
				Miscellaneous PLL Components		4.0				4
5.3.3	12005.3030.0303		MUL LO RF Sections							
			Sources							
				90 GHz Gunn-Effect Oscillator		10.0				10
				55 GHz Gunn-Effect Oscillator (2)		5.0				5
				8-18 GHz YIG-Tuned Oscillator (2)		8.0				8
			Frequency Multipliers							
				20-30 GHz Output x2		5.0				5
				22-34 GHz Output x2			5.0			5
				45-68 GHz Output x2		8.0				8
				60-90 GHz Output x2			10.0			10
				110 GHz Output x2			5.0			5
			Power Amplifiers							
				20-30 GHz Amplifier		5.0				5
				22-34 GHz Amplifier			5.0			5
				45-68 GHz Amplifier			8.0			8
				60-90 GHz Amplifier		10.0				10
			Directional Couplers							
				60-90 GHz -20 dB(2)		6.0				6
				80-120 GHz -20 dB (2)			6.0			6
			Fixed Tuned Bandpass Filters							
				20-30 GHz		2.0				2
				22-34 GHz			2.0			2
				45-68 GHz			3.0			3
				60-90 GHz		3.0				3
			Mechanical Filter							
				Development			15.0			15
			Isolators							
				10-20 GHz		2.0				2
			Higher Frequency Multipliers							
				Development for 230 GHz and 660 GHz		20.0	30.0			50
			MUL LO Third year development							
				Misc Components				50?		0
Subtotals, MUL LO Materials						120	89	0	0	209

WBS	Acct No.	Category	Subcategory	Item	Vendor	1998	1999	2000	2001	Subtotals
MUL LO Lab/Test Equipment										
5.3	12005.3030.03		MUL LO Lab Test & Measurement Equipment							
				Phase Noise Test Set	HP	85.0				85
				Amplitude noise test set		20.0				20
				Frequency Counter (40 GHz)			15.0			15
				Oscilloscope		3.0				3
				Power Supplies		4.0				4
				Misc. waveguide components		20.0				20
				Coax cables & connectors to 50 GHz		5.0				5
				Workbench		0.8				0.8
				Lab furniture		1.2				1.2
Subtotals, MUL LO Lab/Test Equipment						139	15	0	0	154

8 Correlator

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Summary

	1998	1999	2000	2001	Subtotal
Labor	149	356	373	0	878
Travel	0	0	0	0	0
Materials	15	15	65	0	95
Chip Devel Contract	0	67	133	0	200
Test (GBT) Correlator	40	10	0	0	50
					0
					0
					0
					0
					0
					0
Totals					1,223

Breakdown

WBS	Acct No.	Category	Subcategory	Item	Vendor	1998	1999	2000	2001	Subtotals
Labor										
8	12008.3010				Payroll	115	273	287	0	675
8	12008.3020				Benefits	34	82	86	0	203
Subtotals, Labor						149	356	373	0	878
Materials										
8.3	12008.3030.03		MMA Correlator							
				Computers and Software	Several	15	15			30
				Test Equipment Parts & Supplies	Several			15		15
				Logic Analyzer				50		50
Subtotals, Materials						15	15	65	0	95
Chip Devel Contract										
8.7	12008.3030.07			Chip Development Contract (est)	LSI Logic		67	133		200
Subtotals, Chip Devel Contract						0	67	133	0	200
Test (GBT) Correlator										
8.2	12008.3030.02		Test Correlator (GBT Clone)							
				Parts and Supplies	Several	40	10			50
Subtotals, Test (GBT) Correlator						40	10	0	0	50