

12 April 2000

**Only 650 GHz components machined outside**

	86-116 GHz				211-275 GHz				602-720 GHz			
	Qty	NRE	Each	Total	Qty	NRE	Each	Total	Qty	NRE	Each	Total
Mixer components												
Horn	3			\$0	3			\$0	3	\$1,000	\$3,000	\$10,000
Mixer blocks – external IF												
Single-ended	4			\$0	--			\$0				
Balanced	--			\$0	--			\$0				
Balanced Sideband Separating	--			\$0	4			\$0				
Mixer blocks – internal IF												
Single-ended	4			\$0	4			\$0	3	\$1,000	\$5,000	\$16,000
Balanced	4			\$0	4			\$0	3	\$1,000	\$4,000	\$13,000
Balanced Sideband Separating	4			\$0	4			\$0	--	--	--	--
Mask sets	3	--	\$8,000	\$24,000	2	--	\$8,000	\$16,000	1	--	\$8,000	\$8,000
Bias circuitry	28	--	\$50	\$1,400	28	--	\$50	\$1,400	9	--	\$50	\$450
Magnetic circuits	1	--	\$1,500	\$1,500	1	--	\$1,500	\$1,500	1	--	\$1,500	\$1,500
Connectors												
SIS bias (Nanonics 25 pin)	16	--	\$150	\$2,400	16	--	\$150	\$2,400	9	--	\$150	\$1,350
Preamp bias (Nanonics 15 pin)	12	--	\$125	\$1,500	12	--	\$125	\$1,500	--	--	--	--
IF (K)	20	--	\$65	\$1,300	24	--	\$65	\$1,560	9	--	\$65	\$585
Mixer test components												
IF Hybrid	1	--	\$600	\$600	1		\$600	\$600	1		\$600	\$600
QO Mirrors	1	--	\$400	\$400	1		\$400	\$400	1		\$400	\$400
<b>TOTALS</b>				<b>\$33,100</b>				<b>\$25,360</b>				<b>\$51,885</b>

GRAND TOTAL

\$110,345

Homemade FTS cost estimate, 4/11/00.

Item	Est. Cost (\$K)	Source
Box	5	Greenbank
Bench (for interferometer)	2	Edmund Scientific, 23"x35"
Pump (for chamber)	3	
Hg source	3	
Power Supply	2	
Chiller system	2	
Optics	3	
Chopper wheel	2	
2 wire grids	10	
mylar beamsplitters	4	
2 flats	1	
2 corner cubes	1	
translation stage	17	Newport, 500mm, with controller
mirror mounts	1	
stepper and driver	1	
HeNe for alignment	1	Edmund, includes mount
phase modulator	1	PI 120micron disk translator, no controller
Sample bench/optics	7	
sample stage and motor	1	
chopper and motor	2	
vacuum windows	1	
He3 detector	35	
Large pump for det.	5	
Lock-in	4	
COMP — Computer	3	
A to D	1	PC systems, PCI bus, 16 bit
SW — Software (C++, Labview...)	3	
Misc. Hardware	3	
Vacuum flanges	2	
Vacuum gages	1	M2-hmmg 5K
TOTAL:	127	
cryogenic chamber	15	
piezo tilt stage	8	PI 1mRad PZT tilt stage, no controller
Full optical/isolation bench	8	
Alternative: Buy Bio-Rad w/det.:	109	
Alternative: Buy Specac w/det.	243	

	Price (incl. discount)	Still needed 2000		Needed 2001		Totals
ASM-3500 (GDS converter)	--		--		--	--
ASM-3500 maintenance	\$450	1	\$450	1	\$450	\$900
AutoCad 2000	--		--		--	--
AutoCad upgrade to 2000	\$395	2	\$790	2	\$790	\$1,580
AutoCad LT	--		--		--	--
AutoCad LT-2000 upgrade	\$150	2	\$300	2	\$300	\$600 guess
hfss			--		--	--
hfss maintenance	\$1,200	1	\$1,200	1	\$1,200	\$2,400
hpux			--		--	\$0
hpux maintenance	\$1,233	1	\$1,233	1	\$1,233	\$2,466
MasterCAM	\$3,250	1	\$3,250		--	\$3,250
MasterCam upgrade	\$1,000		--	1	\$1,000	\$1,000 guess
MathCad	\$400	1	\$400		--	\$400 guess
MathCad upgrade	\$150		--	1	\$150	\$150
MMICAD	\$2,900		--		--	--
MMICAD upgrade	\$700	4	\$2,800	4	\$2,800	\$5,600 guess
Origin	\$450		--		--	--
Origin upgrade	\$200	0	--	1	\$200	\$200
QuickWave (n/w ver)	\$18,000		--		--	--
QuickWave maint (local)	\$1,125	1	\$1,125	1	\$1,125	\$2,250
QuickWave maint (n/w)	\$2,700	1	\$2,700	1	\$2,700	\$5,400
SolidWorks	\$5,500	2	\$11,000		--	\$11,000
SolidWorks maintenance	\$1,100		--	2	\$2,200	\$2,200 guess
Sonnet	\$10,250		--		--	--
Sonnet maintenance	\$2,476	2	\$4,952	2	\$4,952	\$9,904
Visio	\$500		--		--	--
Visio upgrade	\$500	1	\$500		--	\$500 guess
Visual Studio	\$200	1	\$200		--	\$200
Visual Studio upgrade	\$200	1	\$200		--	\$200
Miscellaneous	est. \$5k/yr		\$5,000		\$5,000	\$10,000
TOTALS			\$36,100		\$24,100	\$60,200
GRAND TOTAL						\$60,200

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