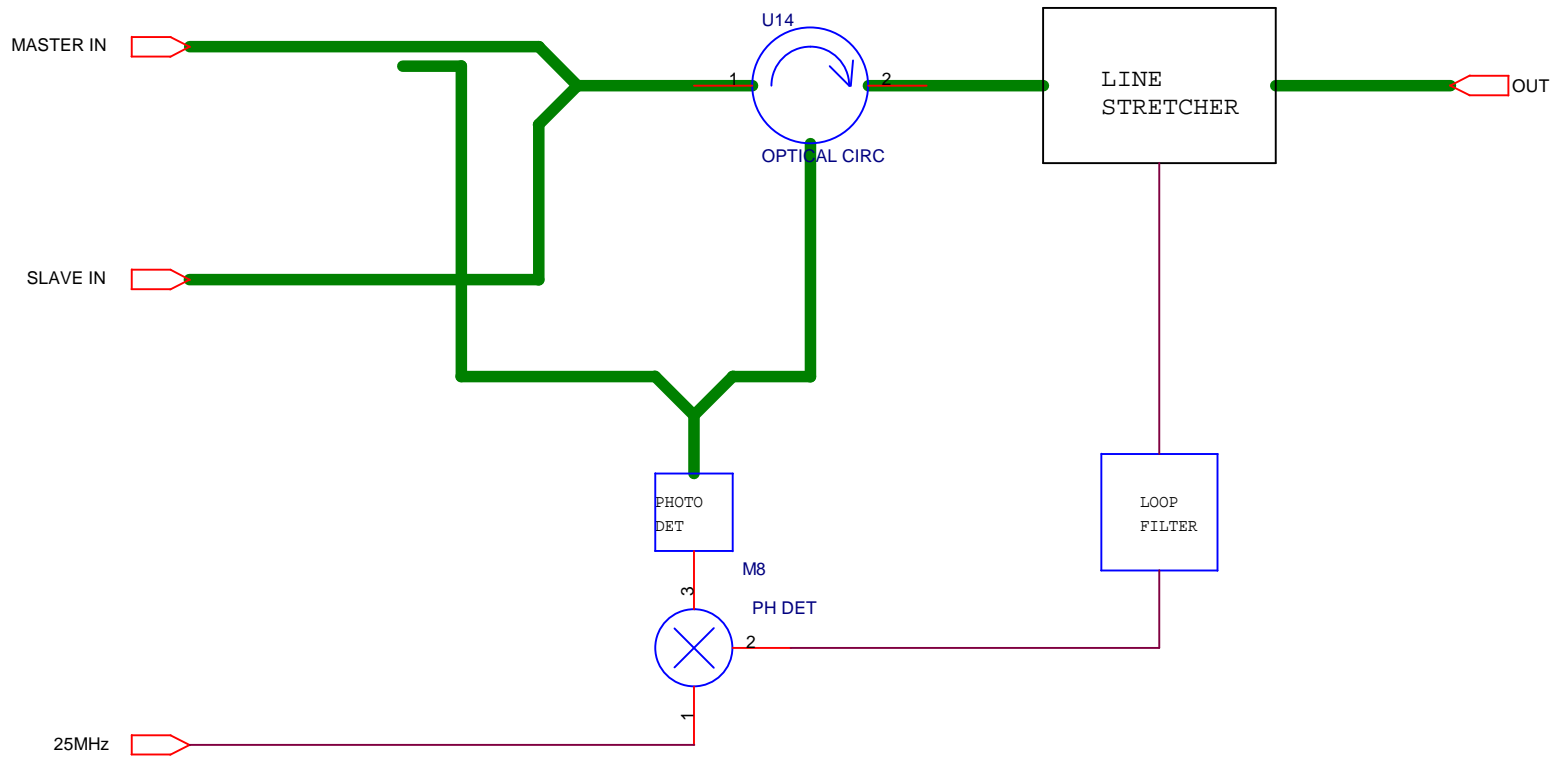


Test system: N=3 to 11, output  
26-110 GHz, step 15-55 MHz.

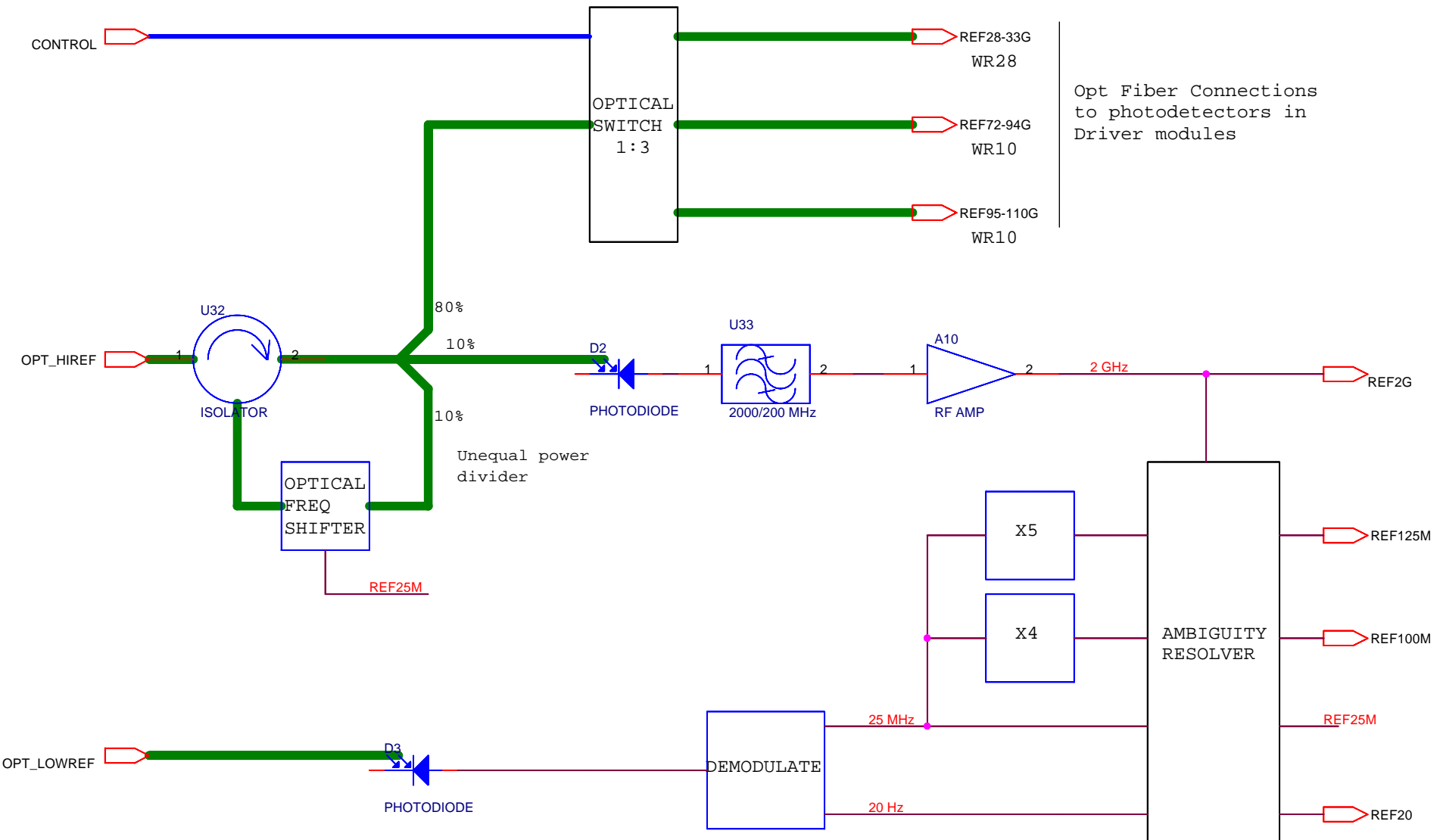
Array, Opt II: N=3 to 12, output  
26-122 GHz, step 15-60 MHz.

Array, Opt III: N=3 to 90, output  
26-938 GHz, step 15-450 MHz.

Title		
ALMA Test System: Laser Synthesizer Block		
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A		
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Title		
ALMA Test System: Line Corrector block		
Size	Document Number	Rev
A	{Doc}	
Date:	Friday, February 11, 2000	Sheet 3 of 8



Opt Fiber Connections  
to photodetectors in  
Driver modules

Ambiguity resolution is accomplished by capturing each signal on the next positive zero crossing of the next faster signal, using fast flip-flops. This transfers the phase stability of the fastest signal to the others. It requires an initial timing adjustment and then stability better than about 20% of the period of the next faster signal.

Title		
ALMA Test System: Reference Receiver Block		
Size	Document Number	Rev
A		
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Control bits from  
1st LO Controller

M&C 3b

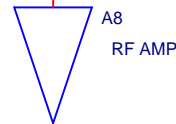
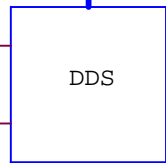
2b

Phase command from  
1st LO Controller  
(may be serial or  
parallel data)

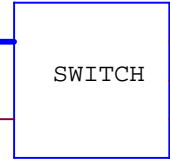
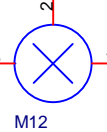
FR

REF125M

REF20



31.25 MHz + FF

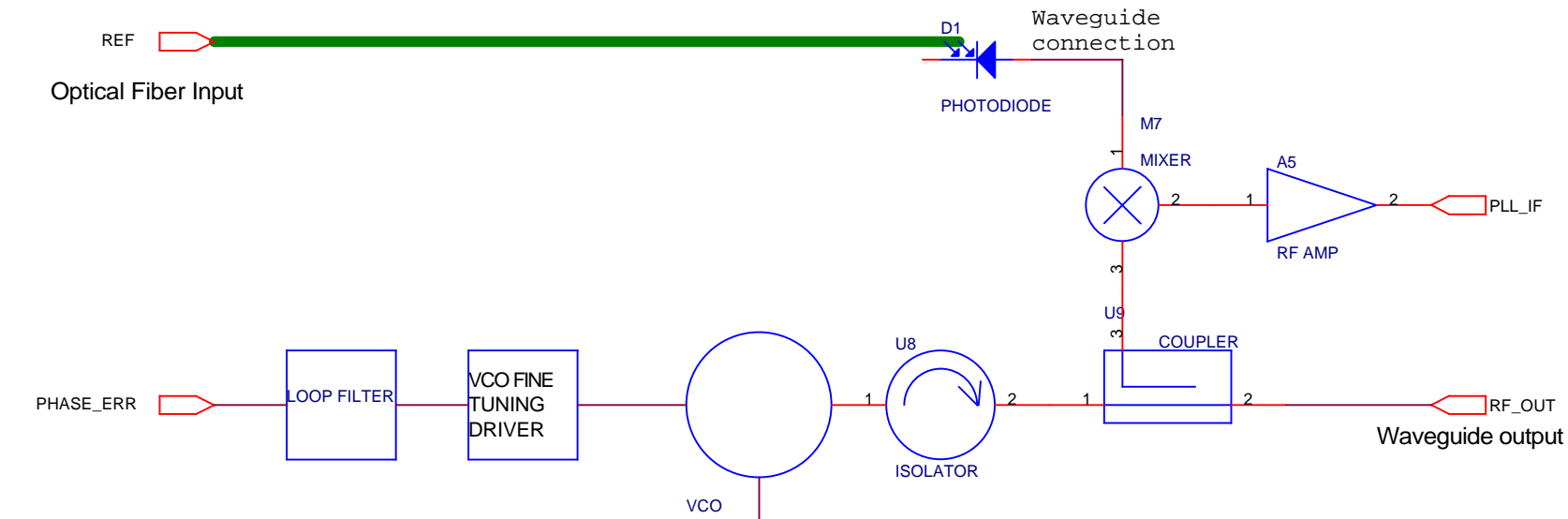


PLL IF from Driver Modules  
31.25 MHz nominal



Out to loop integrator  
in Driver modules

Title		
ALMA Test System: PLL1 block		
Size	Document Number	Rev
A		
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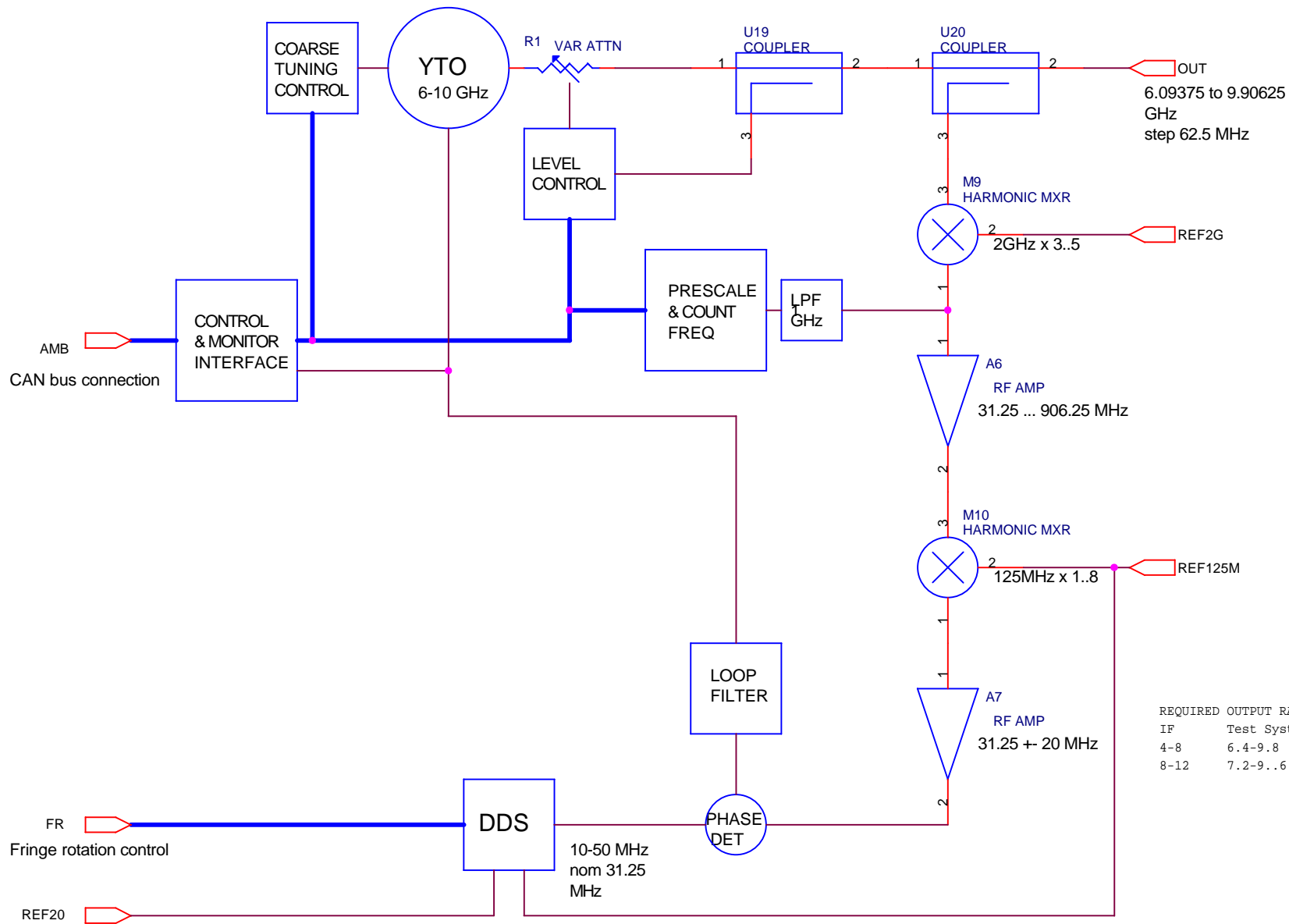
**SPECIFICATIONS TABLE**

Driver	PN	Test system		Array	
		Freq range	min power	Freq range	min power
A	-1	27.3-33 G	30 mW	27.3-33 G	30 mW
B	-2	72-94 G	80 mW	75-96 G	100 mW
C	-3	95-110 G	10 mW	99-148 G	100 mW

**NOTES**

1. VCO may include power amplifier(s) and frequency multiplier(s) if needed to meet specifications.
2. For ALMA test interferometer, VCOs are expected to be: A:YTO, B:GDO, C:GDO.
3. Coarse tuning driver interfaces to external digital controller, not directly to AMB.
4. Coarse tuning driver may include both mechanical and electrical controls, depending on type of VCO.

Title		
ALMA Test System: LO Driver block		
Size	Document Number	Rev
A	{Doc}	
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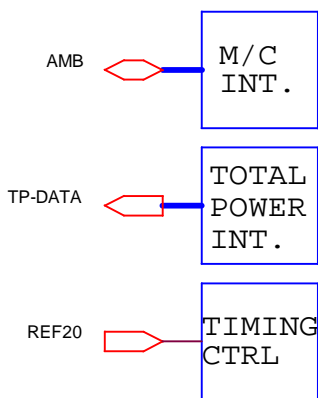


REQUIRED OUTPUT RANGE:

IF	Test System	Prototype
4-8	6.4-9.8	8.0-10.0
8-12	7.2-9.6	6.0-8.0

Title		
SECOND LOCAL OSCILLATOR BLOCK		
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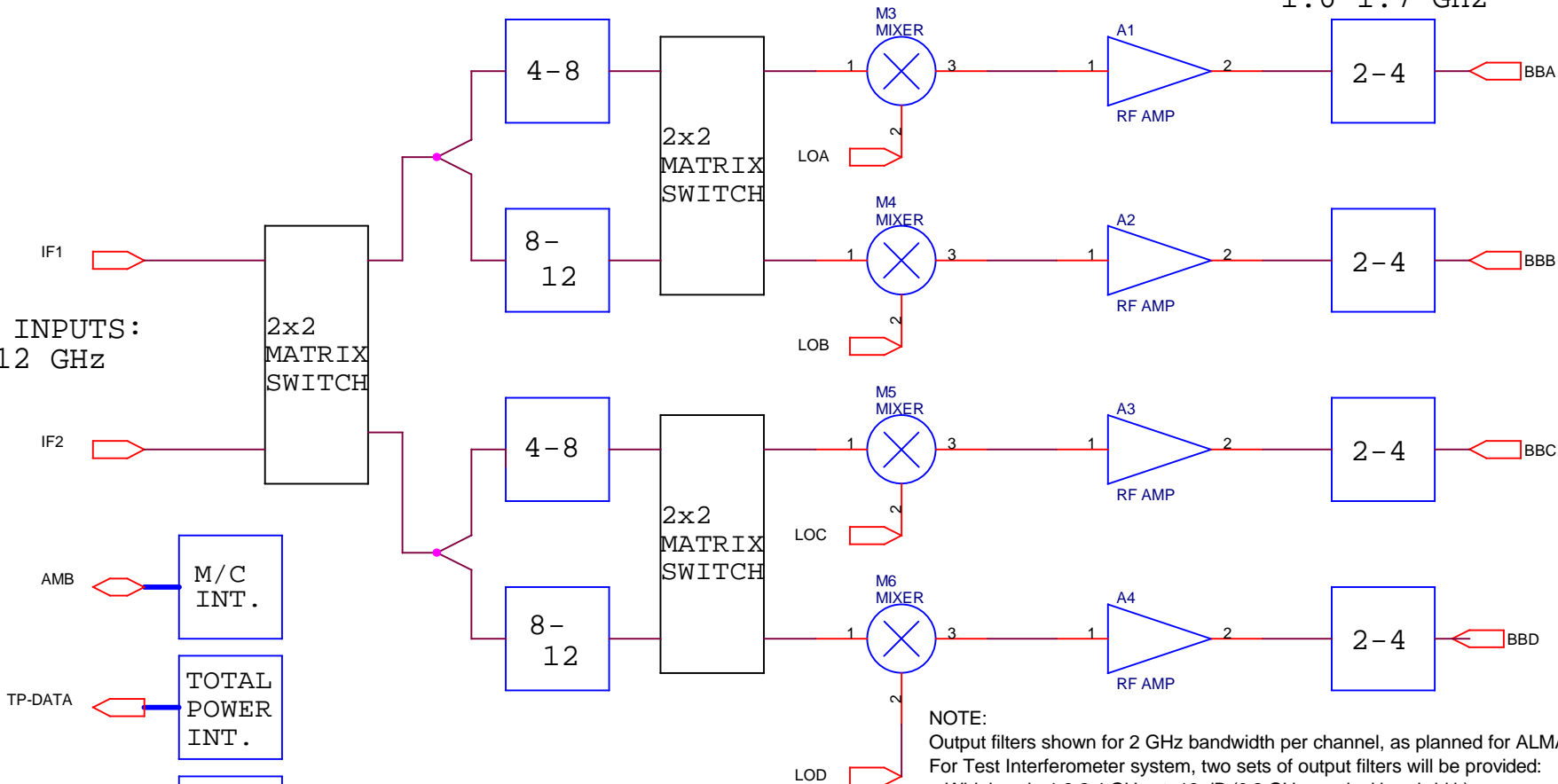
IF INPUTS:  
4-12 GHz



BPF's

BPF's

BASEBAND OUTPUTS:  
2-4 or 1.6-2.4 or  
1.6-1.7 GHz



NOTE:  
Output filters shown for 2 GHz bandwidth per channel, as planned for ALMA array.  
For Test Interferometer system, two sets of output filters will be provided:  
Wideband: 1.6-2.4 GHz at -10 dB (0.8 GHz nominal bandwidth).  
Narrowband: 1.6-1.7 GHz at -10 dB (100 MHz nominal bandwidth).

IMPORTANT DETAILS NOT YET SHOWN:

1. Square law detectors required for each IF input signal (4-12 GHz) and each BB output signal (2-4 GHz).
2. Gain must be adjustable via command from computer, resolution 1dB or less.

Title		
DOWNCONVERTER BLOCK		
Size	Document Number	Rev
A		
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