

## Associative Memory Board Power Supply Current Measurements

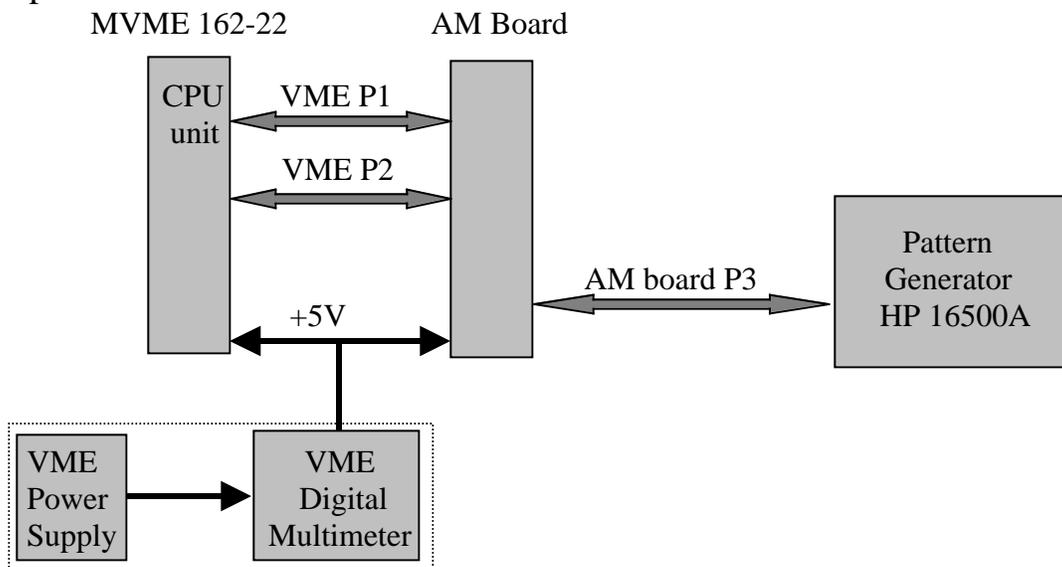
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### I. AM board total power supply current measurement.

Conditions:

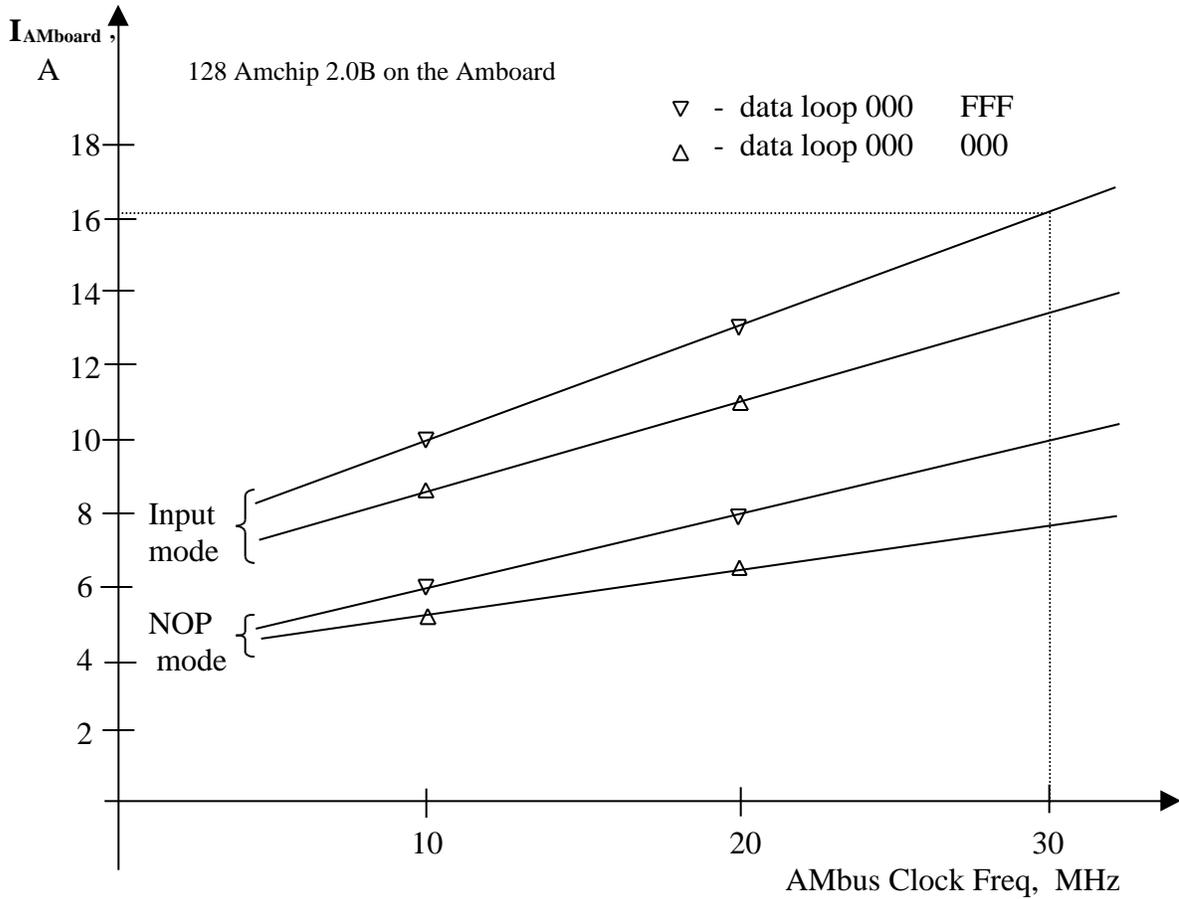
- 128 'old' chips (Amchip 2.0B) on the Amboard.
- $V_{cc}=5.0\pm 0.02V$ .
- Air room temperature  $T = 25^{\circ}C$

Setup:



Procedure of the current measurements:

1. CPU Unit power supply without AM board was measured.  $I_{CPU} = 5.5A$ .
2. The patterns loaded to Associative Memory chips.
3. AM bus switched from VME to P3 connector.
4. The data stream for AM chips (OPC code, Layer number, Input Data) and base clock were sent from Pattern Generator HP 16500.
5. Two OP codes of AM chip, Input (OPC=4) and No Operation (OPC=0), were used during measurements.
6. Input Data was changed for each clock from 000 to FFF and vice versa or does not changed. All other bits of Ambus are constant during the test.

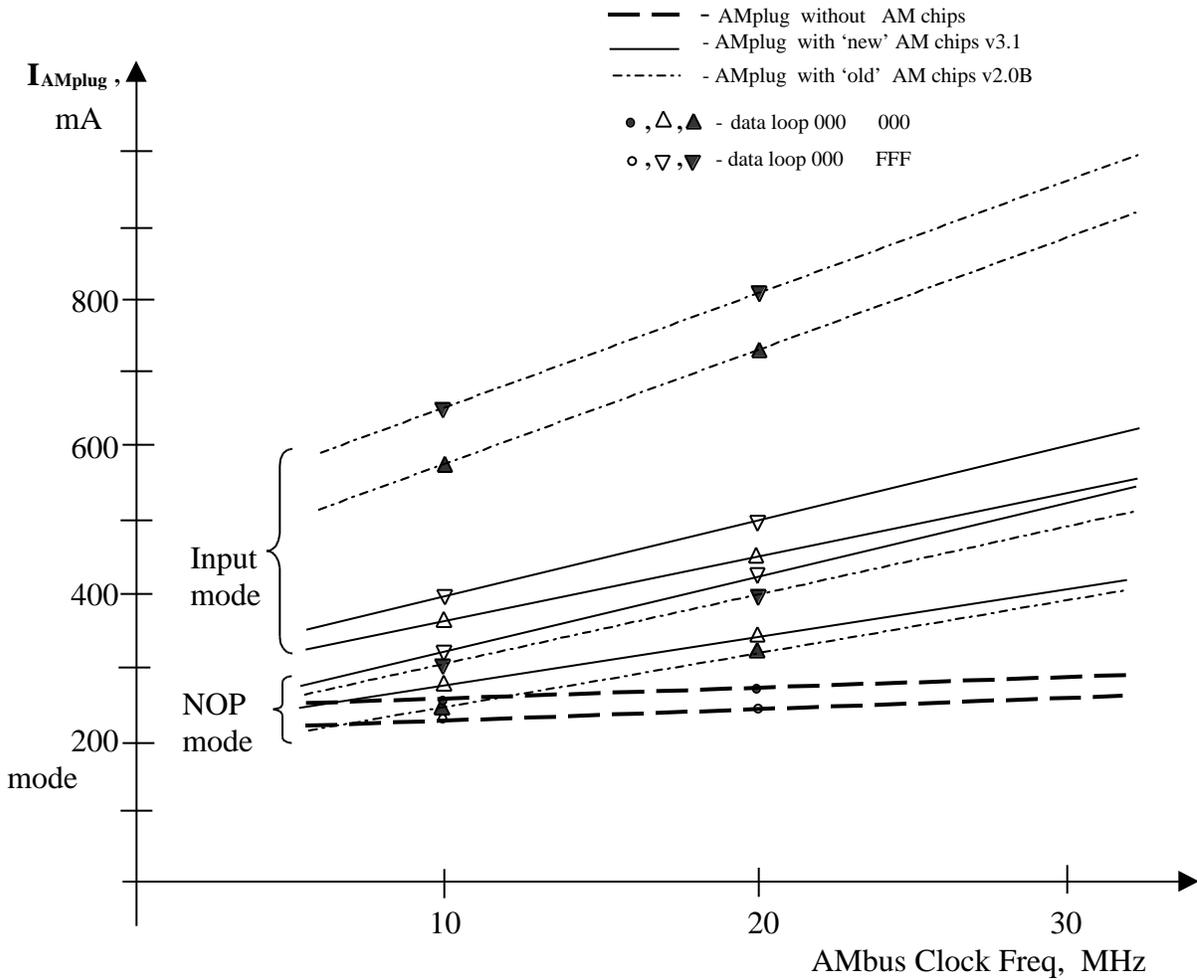


**Table1.** AM board total current measurement.

V<sub>cc</sub>=5.02V, T=25°C

	Am bus clock frequency, MHz	OPC code	Data loop	I <sub>AMboard</sub> , A	Remarks
1	10	Input (4)	000 FFF	10,0	V <sub>cc</sub> =5,02V
2	10	Input (4)	000 555	9,8	
3	10	Input (4)	000 000	8,5	
4	10	NOP (0)	000 FFF	6,1	
5	10	NOP (0)	000 555	5,8	
6	10	NOP (0)	000 000	5,2	
7	20	Input (4)	000 FFF	13,1	V <sub>cc</sub> drop to 4,94V
8	20	Input (4)	000 555	13,1	V <sub>cc</sub> =5,02V
9	20	Input (4)	000 000	11,0	
10	20	NOP (0)	000 FFF	7,9	
11	20	NOP (0)	000 555	7,2	
12	20	NOP (0)	000 000	6,3	





**Table2.** AMplug current measurement.  
 $V_{cc}=5.02V, T=25^{\circ}C$

	Am bus clock frequency, MHz	OPC code	Data loop	$I_{AMplug}$ , mA <i>with</i> Amchips V2.0B	$I_{AMplug}$ , mA <i>with</i> Amchips V3.1	$I_{AMplug}$ , mA <i>without</i> Amchips
1	10	Input (4)	000 FFF	599	405	249
3	10	Input (4)	000 000	570	368	233
4	10	NOP (0)	000 FFF	302	322	268
6	10	NOP (0)	000 000	267	273	247
7	20	Input (4)	000 FFF	747	495	244
9	20	Input (4)	000 000	735	452	234
10	20	NOP (0)	000 FFF	394	426	262
12	20	NOP (0)	000 000	326	331	247

Thus, expected power current of Amboard with new version (v3.1) of Amchips for Input mode at clock frequency 30MHz, must be :

$$I_{AMboard} = 0.58A \times 16(Amplug) + 2A(Amboard logic) \quad \mathbf{11.3A}$$