

Simplemachines Sim.One v1.3 Test Procedure

See <http://simplemachines.it> -> Sim.One

Everything should become “Y” for a machine to be working and up to date

Updates

uBoot = 16-bit-u-boot programmed

env = set bootargs and other u-boot environment variables and saveenv

kernel = program ulmage-2.6.36-debian into flash at 60080000

Reset = 1K resistor added between pins 3 and 5 of U3

RAM

- 64: U9 replaced with 64MB chip
- 32: one 32MB chip on U9
- 32+32: two 32MB chips on U9, U1 (original version)
- 32=32: two 32MB chips on U9 piggybacked

#	uBoot	env	Kernel	Reset	RAM	Notes
0.2(*)				Y	32=32 Only 1st 32M seen	
24		N (USB)	Y	Y	64 OK	
25		Y	Y	Y	Before: 64 U-boot sees 8x8M then hangs	U9&10 replaced by 64M. Dead.
26		Y	Y	Y	N	
32					64 "No SDRAM"	
33	Y	Y	Y		32+32 OK	OK55555555555555555555ttttttttt

						tttttttt
34	Y	Y	Y	N	32+32 OK	
35	Y	Y	Y		32=32 OK	Needs u-boot modifying to see 2nd 32MB RAM.
36						No lights
37						No lights
38						No lights
39						No lights
40						No lights
41	Y	Y	Y		32+32 OK	
42						No lights
43						
44						
45						
46						
47						
48						
49						

50						
51						
52						
53						
54						
55						
56	Y	Y	Y	Y	32+32 OK OK	
57					32+32 uBoot sees 2x32M DRAM Flash & hangs with LED on New u-Boot: no output download: Erase failed at 21400	

(*) The second green prototype of the first two produced.

(USB) The machine is set to boot from USB storage, so does not have the standard bootargs

Test results

#	Boot	UART	VGA	SD	Eth	USB	Notes
0.2(*)	Y	Y	Y		Y	Y	

24	Y	Y	Y	Y	Y	Y	
25	Y	Y	Y	Y	Y	Y	
26	Y	Y	Y	Y		Y	
32							
33	Y	Y	Y	Y	Y	Y	
34	Y	Y	Y	Y	Y	Y	
35							
36							
37							
38							
39							
40							Removed U10
41							Ethernet lights light up
42							
43							
44							

45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							Boots linux
57							

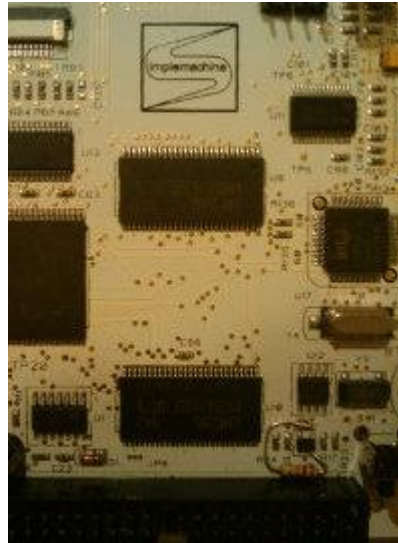
Hardware modifications

RAM HW mod

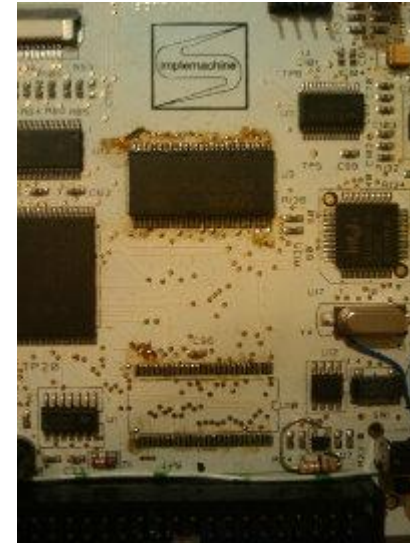
If your board has one SDRAM chip as U9 but U10 is vacant, then your sim.one has been modded.

Without this mod, you cannot only have either 64MB RAM without working USB storage or 32MB with.

With the mod you can have both, albeit at a 10% CPU speed penalty (due to doing two 16-bit RAM accesses instead of one 32-bit).



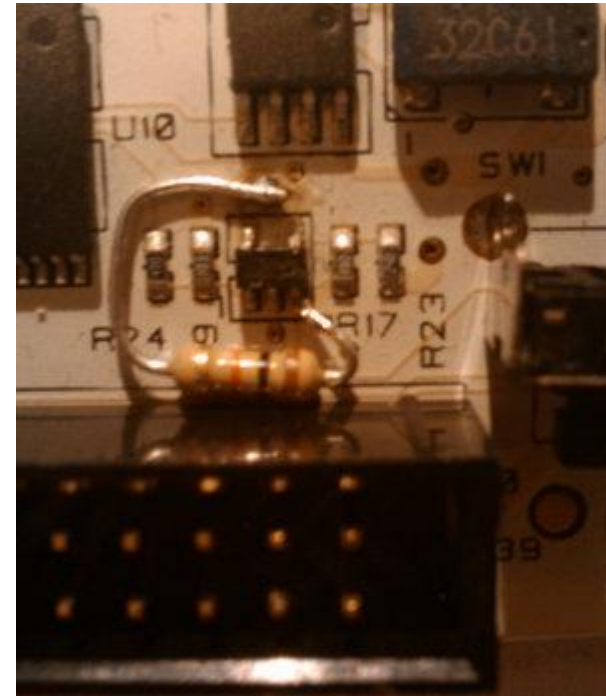
Sim.One v1.3 without RAM mod



Sim.One v1.3 with RAM mod

Reset

All of the first batch of 100 betas have hyper-sensitive reset buttons which will reset the machine even if you brush against the switch. A resistor, say 1K, needs fitting between pins 3 and 5 of U3 to pull the reset line high. Pin five's track passes through the gold-plated hole just above U3.



Reset over-sensitivity hardware fix

Test procedure

1. Good USB

Does it have either a 16-bit U-Boot or a single RAM chip, to make USB reliable?

How to test: if it has two RAM chips, U9 and U10, and when it boots Linux gets 64MB RAM, then No. Otherwise Yes.

2. UART

This tests both the transmit and the receive lines of the UART. Hardware flow control and modem signals are not tested.

Power on. You should see something like this coming out of the serial port at 57600 N 8 1 with no flow control:

```
U-Boot 1.1.6-cirrus-edb93xx-platform (Mar 29 2011 - 14:43:03)
```

```
DRAM total 8 banks:
```

bank	base-address	size
0	c0000000	00800000
1	c1000000	00800000
2	c2000000	00800000
3	c3000000	00800000
4	c4000000	00800000
5	c5000000	00800000
6	c6000000	00800000
7	c7000000	00800000

```
DRAM: 64 MB
```

```
Flash: 8 MB,16-bits
```

```
In: serial
```

```
Out: serial
```

```
Err: serial
```

```
Hit any key to stop autoboot: 0
```

Hit a key.

```
SIM.ONE>
```

If it stops booting at this point and waits for commands, we know that serial input also works.

3. bootargs

Having pressed a key on the serial terminal during the 2-second delay, then type:

```
print [Enter]
```

It should output some garply including a line

```
bootargs=root=/dev/mmcblk0p1 rootwait mmc_core.use_spi_crc=0
```

which sets the default Linux boot mode as console on VGA output and USB keyboard and root filesystem on an SD card.

If it's not that, type:

```
set bootargs root=/dev/mmcblk0p1 rootwait mmc_core.use_spi_crc=0
set bootcmd bootm 60080000
set ipaddr 192.168.0.51
set netmask 255.255.255.0
set serverip 192.168.0.1
saveenv
```

It should say:

```
Un-Protected 1 sectors
Erasing Flash...
. done
Erased 1 sectors
Writing to Flash... done
Protected 1 sectors
```

SHDC SD cards do not work with our current Linux kernel, so dig out some old-school ones: MMC, plain SD and SD MLC are known to work.

See [Mizar32 Google code project. Issue #24.](#)

Now boot linux

```
SIMONE> boot [Enter]
```

4. Kernel

Is the linux kernel in flash version 2.6.36-debian?

Alternatives are 2.6.24.7, as shipped in the first batch of beta test boards. You may see this whizz by as Linux boots. If you miss it, then once you have logged in as root, you can say:

```
uname -r
```

If that answers 2.6.36, it's almost certainly the Debian kernel. There is another 2.6.36 kernel, the all-purpose one with all drivers built-in, but you'll only have that if you programmed it yourself.

To fix this use the procedure in http://code.google.com/p/sim1/wiki/BootLoader#Programming_the_kernel_image_into_flash_memory

```
erase 60080000 602bffff
tftp 60080000 uImage
boot
```

5. VGA

As linux boots, within a second of the serial port receiving its final

```
Starting kernel ...
```

```
Uncompressing Linx. done, booting th enl
```

your VGA screen should come on with lines of white-on-black scrolling kernel garbage pouring up it.

The writing should be write, not yellow or cyan... well, assuming your VGA monitor is not like mine.

6. SD card

If you see:

```
Freeing init memory: 136K
```

```
INIT: version 2.88 booting
```

This means it has succeeded in mounting the root filesystem from the SD card.

“Freeing init memory” is the last line that the kernel prints, and “INIT:” the greeting from the first program to be launched.

If the SD card slot does not work, the kernel will stick saying

```
Waiting for root device /dev/mmcblk0p1...
```

maybe with some USB garbage following that.

Note that SHDC cards may not work, while MMC, plain SD and SD MLC do.

7. Ether

During the boot sequence, if you have a network cable attached and a DHCP server on the local network, it should say something like:

```
Configuring network interfaces...
```

```
...
```

```
Listening on LPF/eth0/02:00:92:0f:69:da
```

```
Sending on   LPF/eth0/02:00:92:0f:69:da
```

```
Sending on   Socket/fallback
```

```
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 7
```

```
DHCPOFFER from 192.168.0.254
```

```
DHCPREQUEST on eth0 to 255.255.255.255 port 67
```

```
DHCPACK from 192.168.0.254
```

```
bound to 192.168.0.125 -- renewal in 831704175 seconds.
```

```
done.
```

This indicates that the ethernet works in both send and receive.

If the ethernet is not working, it will most likely continue trying for 60 seconds then give up and continue to boot.

8. USB

Can you log in as root on the console using a USB keyboard? If so, one USB port is working.

Now move the keyboard's USB plug to the other USB connector and see if hitting [Enter] gives you another prompt.

If it does, the other USB port is working too!