

Linux na tablecie

Asus Transformer Book T100TA

Jacek Danecki

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Wstęp

- ▶ Model T100ta b1
- ▶ Cpu: Atom Z3740 BayTrail-T 4 cores 1,33 GHz
<http://ark.intel.com/products/76759>
- ▶ GPU: HD Gen 7 *<https://01.org/linuxgraphics>*
- ▶ HDD: 32GB EMMC
- ▶ HDD: 7GB USB DISK 2.0 (recovery)
- ▶ RAM: 2GB LPDDR3 1066 dual channel
- ▶ Wifi: 802.11agn
- ▶ Usb: 3.0
- ▶ Datasheet volume 1 strona 17

Problemy

- ▶ BIOS T100TA.223 (led)
- ▶ Ładowanie akumulatora
- ▶ Boot bez Biosu - problem z grubem
- ▶ Po reboocie zły EC Version
- ▶ Hasło w Biosie - problemy z bootem
- ▶ UEFI 32 bitowe

Co działa pod linuxem?

- ▶ Video z akceleracją sprzętową (OpenGL/libva)
- ▶ sieć bezprzewodowa
- ▶ ekran dotykowy
- ▶ USB
- ▶ dysk USB 7GB
- ▶ dysk mmc 29GB
- ▶ reboot
- ▶ poweroff
- ▶ pstates: CPU, GPU (Clocksource tsc unstable)

lspci

```
00:00.0 Host bridge: Intel Corporation Device 0f00 (rev 09)
00:02.0 VGA compatible controller: Intel Corporation Device 0f31 (rev 09)
    Kernel driver in use: i915
00:14.0 USB controller: Intel Corporation Device 0f35 (rev 09)
    Kernel driver in use: xhci_hcd
00:1a.0 Encryption controller: Intel Corporation Device 0f18 (rev 09)
00:1f.0 ISA bridge: Intel Corporation Device 0f1c (rev 09)
```

Datasheet Volume 2 strona 20

lspci -n

```
00:00.0 0600: 8086:0f00 (rev 09)
00:02.0 0300: 8086:0f31 (rev 09)
00:14.0 0c03: 8086:0f35 (rev 09)
00:1a.0 1080: 8086:0f18 (rev 09)
00:1f.0 0601: 8086:0f1c (rev 09)
```

/sys/bus/acpi/devices/

```
80860F09 \_SB_.PWM1
80860F0A BCM2E39 \_SB_.URT1.BTH0
80860F0E AUTH2750 \_SB_.SPI1
80860F14 \_SB_.SDHA mmc
80860F28 \_SB_.LPEA
80860F41:00 \_SB_.I2C1
80860F41:01/10EC5640:00 \_SB_.I2C2.RTEK dźwięk
80860F41:02 CPLM3218 \_SB_.I2C3
80860F41:03 INT33F0 \_SB_.I2C4.CAMO
80860F41:04 INVN6500 \_SB_.I2C5.SENS
80860F41:05 ATML1000 0018:03EB:8C0E.0004 hid-multitouch
80860F41:06 INT33FD
```

lsusb

```
Bus 001 Device 002: ID 0b05:17e4 ASUSTek Computer, Inc.  
Bus 001 Device 003: ID 0b05:17e0 ASUSTek Computer, Inc.  
Bus 001 Device 004: ID 13fe:3800 Kingston Technology Company Inc.  
    Rage XT Flash Drive  
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub  
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
```


Nie działa pod Linuksem

- ▶ jasność ekranu
- ▶ suspend to RAM (sleep)
- ▶ czytnik kart
- ▶ kamera
- ▶ status baterii (pinctrl driver)
- ▶ orientation sensor
- ▶ dźwięk (???)

Konfiguracja UEFI

- ▶ F2 - wejście do UEFI
- ▶ Wyłączyć „secure boot”
- ▶ Boot z pendrive'a

Przygotowanie grub-a

- ▶ kompilacja 32 bits
- ▶ binarka z forum XDA:
<http://forum.xda-developers.com/showthread.php?t=2500078>
- ▶ grub.cfg

```
menuentry "linux-asus" {  
    linux /asus video=VGA-1:1368x768@60 ignore_loglevel  
    initrd /initrd  
}
```

Konfiguracja kernela

- ▶ kernel 32/64 bit
- ▶ Linus ⇒ 3.12
- ▶ drm-intel-next ⇒ 3.13-rc8 (video=VGA-1:1368x768@60)
- ▶ linux-pm ⇒ 3.14-rc1 (problem z zegarami, pstates)
- ▶ drm-intel-nightly 3.13.0
- ▶ 3.14-rc3 + drm-intel-nightly + fixy + tip (tsc fixes)
- ▶ firmware wifi brcmfmac43241b4-sdio.bin
- ▶ nvramtool -b brcmfmac-sdio.txt
- ▶ firmware audio

https://chromium.googlesource.com/chromiumos/third_party/linux-firmware/+/refs/heads/stabilize-5412.B

Kernel workarounds - VGA

▶ vga workaround video=VGA-1:1368x768@60e

```
--- a/drivers/gpu/drm/i915/intel.crt.c
+++ b/drivers/gpu/drm/i915/intel.crt.c
@@ -376,6 +376,7 @@ static bool valleyview_crt_detect_hotplug(struct drm_connector *connector)
     ret = false;

    DRM_DEBUG_KMS("valleyview hotplug adpa=0x%x, result %d\n", adpa, ret);
+   ret = true;

    return ret;
}
```

Kernel fix - reboot

```
--- a/arch/x86/kernel/reboot.c
+++ b/arch/x86/kernel/reboot.c
@@ -190,6 +190,15 @@ static struct dmi_system_id __initdata reboot_dmi_table[] = {
         DMI_MATCH(DMI_BOARD_NAME, "P4S800"),
     },
+ },
+ /* ASUS */
+ { /* Handle problems with rebooting on ASUS T100TA */
+     .callback = set_pci_reboot,
+     .ident = "ASUS T100TA",
+     .matches = {
+         DMI_MATCH(DMI_BOARD_VENDOR, "ASUSTeK COMPUTER INC."),
+         DMI_MATCH(DMI_BOARD_NAME, "T100TA"),
+     },
+ },
+ /* Dell */
+ { /* Handle problems with rebooting on Dell DXP061 */
```

Kernel fix - poweroff

<https://github.com/AdamWill/baytrail-m>

<https://github.com/jdanecki/baytrail-m>

- ▶ Dell Venue 8 Pro Baytrail tablet

<https://plus.google.com/explore/fedlet>

Konfiguracja kernela - parametry

```
CONFIG_MATOM
CONFIG_EFI
CONFIG_EFI_STUB
CONFIG_BCMA
CONFIG_BRCMFMAC
CONFIG_BRCMFMAC_SDIO
CONFIG_I2C_DESIGNWARE_CORE
CONFIG_I2C_DESIGNWARE_PLATFORM
CONFIG_SPI
CONFIG_SPI_MASTER
CONFIG_DRM_I915
CONFIG_FB_EFI
CONFIG_USB_HID
CONFIG_MMC
CONFIG_MMC_SDHCI_ACPI
CONFIG_EFI_VARS
```


lsmod

Module	Size	Used by
brcmfmac	141806	0
brcmutil	3657	1 brcmfmac
cfg80211	176876	1 brcmfmac
sdhci_acpi	2665	0
sdhci	25489	1 sdhci_acpi
snd	43611	0
i2c_designware_platform	2330	0
i915	648783	1
i2c_designware_core	5561	1 i2c_designware_platform
joydev	7344	0

Pendrive startowy

- ▶ format vfat
- ▶ /EFI/BOOT/bootia32.efi
- ▶ /boot/grub/grub.cfg
- ▶ /kernel
- ▶ /initrd

Demo

Pytania