Amlogic Quad-core A55
RAM: 4GB
ROM: 64GB
WIFI: 2.4/5Ghz
2A@5V DC

F3X S905X3

t=0x8e401a80[0,0]

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internal photos:

https://fccid.io/2AVBM-A95XF3AIR/Internal-Photos/Internal-photos-4583382.pdf

armbian

https://www.armbian.com/amlogic-s9xx-tv-box/

boot from sd card doesn't work, button is hidden inside phone connector, and is very stiff.

scdard

```
dpavlin@nuc:~$ sudo fdisk -l /dev/mmcblk0
Disk /dev/mmcblk0: 14.88 GiB, 15978201088 bytes, 31207424 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x2a327079

Device         Boot   Start     End Sectors  Size Id Type
/dev/mmcblk0p1         8192 1056767 1048576  512M ea Linux extended boot
/dev/mmcblk0p2      1056768 4218879 3162112  1.5G 83 Linux


dpavlin@nuc:~$ sudo mount /dev/mmcblk0p1 /tmp/a95x-boot/
[Tue Sep  2 19:53:40 2025] mmc0: cannot verify signal voltage switch
dpavlin@nuc:~$ cd /tmp/a95x-boot/
dpavlin@nuc:/tmp/a95x-boot$ [Tue Sep  2 19:53:50 2025] mmc0: cannot verify signal voltage switch

dpavlin@nuc:/tmp/a95x-boot$ ls
[Tue Sep  2 19:53:54 2025] mmc0: cannot verify signal voltage switch
aml_autoscript                 dtb             initrd.img-6.12.43-current-meson64  u-boot-s905x
```

```
boot.bmp                        emmc_autoscript  s905_autoscript                     u-boot-s905x
build-u-boot                    extlinux         System.map-6.12.43-current-meson64  u-boot-s905x
config-6.12.43-current-meson64  Image            u-boot-s905                         u-boot-s905x

root@nuc:/tmp/a95x-boot/extlinux# ls -al ../dtb/amlogic/*x3*
-rwxr-xr-x 1 root root 40278 Aug 22 05:10 ../dtb/amlogic/meson-gxl-s905w-tx3-mini.dtb
-rwxr-xr-x 1 root root 77285 Aug 22 05:10 ../dtb/amlogic/meson-sm1-ugoos-x3.dtb

root@nuc:/tmp/a95x-boot/extlinux# vi extlinux.conf

root@nuc:/tmp/a95x-boot# cp  u-boot-s905x3-ugoosx3 u-boot.ext
```

dead

device draws only 70mA from 5.2V 2A power supply (verified using DPS5005).

https://photos.google.com/photo/AF1QipMGlbI49ukEsx0OgqaPwIROT3cjvUe-7qfEOt3-

LED display

this device has interesting DVD-like LED display with HT1628 DVD driver chip and some transistors (maybe level shifters since chip is 5V ?)

https://photos.google.com/photo/AF1QipOfJtafYiOvS0QW2uX-rFwruJ3wCz7pZtsZ6qNq

LED strip

https://photos.google.com/photo/AF1QipMqXN8R4eBN2uQCzwUvn2ZtoBKnsJgQAE1ctr9J

it has three wire led strip of 15 leds (ws2812 meybe?) with three wires and SOIC8 chip on it.

serial

4 pins on bottom of board

1. GND (pin marked with square on board)
2. TX
3. RX
4. 3V3 (?)

serial output:

```
SM1:BL:511f6b:81ca2f;FEAT:B2F839B2:202B2060;POC:F;RCY:0;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0
LOOP:1;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:20000;USB:8;
LOOP:2;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:20000;USB:8;
LOOP:3;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:20000;USB:8;
LOOP:4;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:20000;USB:8;
LOOP:5;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:20000;USB:8;
LOOP:6;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:20000;USB:8;
```

with sd card inserted

```
SM1:BL:511f6b:81ca2f;FEAT:B2F839B2:202B2060;POC:F;RCY:0;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0
LOOP:1;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:0;SD:0;READ:0;CHK:1F;USB:8;
LOOP:2;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:0;SD:0;READ:0;CHK:1F;USB:8;
LOOP:3;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:0;SD:0;READ:0;CHK:1F;USB:8;
LOOP:4;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0;CHK:1F;SD?:0;SD:0;READ:0;CHK:1F;USB:8;
SM1:BL:511f6b:81ca2f;FEAT:B2F839B2:202B2060;POC:F;RCY:0;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0
SM1:BL:511f6b:81ca2f;FEAT:B2F839B2:202B2060;POC:F;RCY:0;EMMC:0;READ:0;CHK:1F;READ:0;CHK:1F;READ:0
```

u-boot

https://github.com/hexdump0815/u-boot-misc/blob/master/readme.gxy

usb boot

https://github.com/superna9999/pyamlboot/tree/master

soc bypass

https://fredericb.info/2016/10/amlogic-s905-soc-bypassing-not-so.html

android image unpack in search for bootloader

```
dpavlin@nuc:/nuc/amlogic/utils$ git remote -v
origin  https://github.com/khadas/utils.git (fetch)
origin  https://github.com/khadas/utils.git (push)
```

```
dpavlin@nuc:/nuc/amlogic/utils$ ./aml_image_v2_packer -d ~/Downloads/a95x/A95X_F3_AIR_20191024sen
[Msg]Image package version 0x2
[Msg]Unpack item [USB         ,              DDR] to (A95X_F3_AIR_20191024senk/DDR.USB) size:1330
[Msg]Unpack item [USB         ,          DDR_ENC] to (A95X_F3_AIR_20191024senk/DDR_ENC.USB) size:
[Msg]Backup item [USB         ,            UBOOT] backItemId[0][USB, DDR]
[Msg]Unpack item [USB         ,        UBOOT_ENC] to (A95X_F3_AIR_20191024senk/UBOOT_ENC.USB) siz
[Msg]Unpack item [PARTITION   ,         _aml_dtb] to (A95X_F3_AIR_20191024senk/_aml_dtb.PARTITION
[Msg]Unpack item [UBOOT       ,     aml_sdc_burn] to (A95X_F3_AIR_20191024senk/aml_sdc_burn.UBOOT
[Msg]Unpack item [UBOOT.ENC   ,     aml_sdc_burn] to (A95X_F3_AIR_20191024senk/aml_sdc_burn.UBOOT
[Msg]Unpack item [ini         ,     aml_sdc_burn] to (A95X_F3_AIR_20191024senk/aml_sdc_burn.ini)
[Msg]Unpack item [PARTITION   ,             boot] to (A95X_F3_AIR_20191024senk/boot.PARTITION) si
[Msg]Unpack item [PARTITION   ,       bootloader] to (A95X_F3_AIR_20191024senk/bootloader.PARTITI
[Msg]Unpack item [PARTITION   ,             dtbo] to (A95X_F3_AIR_20191024senk/dtbo.PARTITION) si
[Msg]Unpack item [PARTITION   ,             logo] to (A95X_F3_AIR_20191024senk/logo.PARTITION) si
[Msg]Unpack item [dtb         ,           meson1] to (A95X_F3_AIR_20191024senk/meson1.dtb) size:7
[Msg]Backup item [dtb         ,       meson1_ENC] backItemId[4][PARTITION, _aml_dtb]
[Msg]Unpack item [PARTITION   ,              odm] to (A95X_F3_AIR_20191024senk/odm.PARTITION) siz
[Msg]Unpack item [conf        ,         platform] to (A95X_F3_AIR_20191024senk/platform.conf) siz
[Msg]Unpack item [PARTITION   ,          product] to (A95X_F3_AIR_20191024senk/product.PARTITION)
[Msg]Unpack item [PARTITION   ,         recovery] to (A95X_F3_AIR_20191024senk/recovery.PARTITION
[Msg]Unpack item [PARTITION   ,           system] to (A95X_F3_AIR_20191024senk/system.PARTITION)
[Msg]Unpack item [PARTITION   ,           vbmeta] to (A95X_F3_AIR_20191024senk/vbmeta.PARTITION)
[Msg]Unpack item [PARTITION   ,           vendor] to (A95X_F3_AIR_20191024senk/vendor.PARTITION)
[Msg]Write config file "A95X_F3_AIR_20191024senk/image.cfg" OK!
Image unpack OK!
```

let's write bootloader to sdcard

```
root@nuc:/nuc/amlogic/utils/A95X_F3_AIR_20191024senk# ~dpavlin/dd.sh aml_sdc_burn.UBOOT.ENC /dev/
+ dd iflag=fullblock oflag=direct conv=fsync status=progress bs=1M if=aml_sdc_burn.UBOOT.ENC of=/
1+1 records in
1+1 records out
1330688 bytes (1.3 MB, 1.3 MiB) copied, 0.491506 s, 2.7 MB/s
```

power up, 230-300 mA power draw, leds are cyan with blue vertical strip, passing from right to left, and LCD screen has boot on it.