

ambsh commands

Brief

command			command with options	description
reboot			reboot yes	reboot
poweroff			poweroff yes	poweroff
corefreq			corefreq	SoC frequencies
dramfreq			dramfreq	Memory frequency
ver			ver	version info
cardmgr		info	cardmgr d info	disk a,d,z info (type, fs, size)
date			date -s 2016/10/04 01:41:00	see/set date and time
drives			drives	present drives
format			format d FAT32	format SD card
hal				get SoC type
sleep			sleep 3	3 sec pause
time			time ls	measure time that cammond execution take
vol			vol d SD16GB	change disk label
romfs	ls		romfs ls	list files from romfs
dmesg			dmesg rtos -200	see 200 last lines of OS logs
t	app			APPLICATION
t	app	key	t app key record	press REC key to start/stop recording
			t app key shutter	press SHUTTER key to make photo
			t app key mode	switch between camera modes photo/video/play
			t app key power	poweroff
			t app key menu	Show menu
t	app	mempool	t app mempool	memory info
t	app	test	t app test vin_rotate 180	rotate video
			t app test disp_rotate 2	rotate display 180 deg.
			t app test debug_dump	enable/disable debu dumps
			t app test csc_vin	test video sensor
			t app test jack_switch_pb	switch AV in/out mode
t	app	dzoom	t app dzoom jump -1	Switch to maximum digital zoom
			t app dzoom jump 0	No digital zoom
			t app dzoom jump 140	Set level of digital zoom [0-486]
t	cal			CALIBRATION
t	cal	-3a	t cal -3a on	Auto ON (AE, AF, Auto WB)
			t cal -3a off	Auto OFF (AE, AF, Auto WB)
t	cal	-sc	t cal -sc 0	Select Scene mode 0 .. N
t	cal	-de	t cal -de 2	Select digital effect (2-Sepia, 4 -B/W)
t	cal	-ae	t cal -ae info	Get Auto Exposure status
t	cal	-me	t cal -me 0 0 978 0 4096	Manual Exposure setup
t	cal	-vnc	t cal -vnc info	Vignette calibration

t	cal	-fpn	t cal -fpn info	Fixed pattern noise calibration
t	ia2	-warp	t ia2 -warp 1	dewarp on
			t ia2 -warp 0	dewarp off
t	ia2	-exp	t ia2 -exp info	Exposure info
t	ia2	-dzoom	t ia2 -dzoom info	Get digital zoom info
			t ia2 -dzoom jump 0	Digital zoom out
t	ia2	-warp	t ia2 -warp info	dewarp info
t	ia2	-eis	t ia2 -eis status	Electronic Image Stabilization
t	ia2	-sof		?
t	ia2	-ae	t ia2 -ae on	enable autoexposure
			t ia2 -ae off	disable autoexposure
t	ia2	-awb	t ia2 -awb on	enable auto witebalance
			t ia2 -awb off	disable auto witebalance
t	is2			
t	is2	-aa	t is2 -aa 3	set maximum antialiasing (0 .. 3)
t	is2	-lk	t is2 -lk 1 0 0 0 0 16383	set leakage filter settings
t	is2	-cnf	t is2 -cnf 0 0	disable color filter array noise filter
			t is2 -cnf 1 1	enable color filter array noise filter
t	is2	-cmf	t is2 -cmf 0 0 0	disable chroma median filter
			t is2 -cmf 1 253 252	enable chroma median filter
t	is2	-shp		sharpening filter settings
t	is2	-mctf		Motion Compensated Temporal Filtering (MCTF)
t	is2	-filter_sw	t is2 -filter_sw 0x7fff	enable all kind of filters
			t is2 -filter_sw 0x0	disable all kind of filters
t	is2	-resampler	t is2 -resampler 0	set resampler strenght 0 .. 5
t	is2	-adv_mode	t is2 -adv_mode 1	switch between dual_chanel and hdr adv modes
t	sr	crc	t sr crc	count kernel CRC32
t	pwc	battery_detect	t pwc battery_detect	Check battery
t	adc	sense	t adc sense	sense current voltages
t	sensor	-brief	t sensor -brief	Get image sensor info
t	sensor	-detail	t sensor -detail	Get detailed sensor info
t	sensor	-minfo	t sensor -minfo all	Get sensor modes
t	sd	erase	t sd erase all sd1	erase data on SD card (w/o format)
t	audio	beep	t audio beep 0 64	set maximum sound volume
			t audio beep 0 0	set sound off

help

```
a:\> help
supported built-in commands:
    addr2func    bp        cardmgr    cat
    cd           chmod     config     cp
    cpu          date      deletedir  dmesg
    dramcfg      drives   dsputil    echo
    eeprom       eval     false      ffuc
    format       hal      help       history
    hotboot      ioerr    jobs       kill
    ls           md5      msg        mkboot
    mkdir        morph    mv         flashdb
    nice         poweroff pref       ps
    pwd          ramdisk  readb      readl
    readw        reboot   reset      resume
    rm           rmdir   savebin    sleep
    suspend      sysmon  t          test
    time         touch   trap       true
    vol          writeb  writel     writew
    yyinfo       usbclass ver        vin
    sm           corefreq dramfreq   idspfreq
    dll          cleandir volcfg     firmfl
    nvd          nftl    bbt        romfs
```

date

```
a:\> date
Sat Jan 01 02:45:56 2028
a:\> date help
Usage: date [-s YYYY/MM/DD HH:MM:SS]
Usage: date [-set_alarm YYYY/MM/DD HH:MM:SS]
Usage: date [-get_alarm]
Usage: date [-clr_alarm]
a:\> date -s 2016/04/08 04:00:00
a:\> date
Fri Apr 08 04:00:02 2016
```

t

```
a:\> t
supported test commands:
    help
    app
    amba_md
    plyr
    rec
    cal
    ia2
    is2
    audio
    disp
    dspinfo
    sr
    ddr
    hdmi
    msc
    aucodec
    spi_ahb
    pwc
    idc
    spi
    hw_tmr
    wdt
    uart
    stepper_motor
    pwm
    gpio
    adc
    vout
    sensor
    fast_ecn
    chk_low_spd
    paccess_time
    fioffs_thruput
    fioffs_uc
    fioffs_randvrfy
    fioprflgfvrfy
    fioprfrandvrfy
    fioprfrthruput
    sd
    nand_op
    nand
```

t dspinfo

```

a:\> t dspinfo
Usage: t dspinfo
DSP Information -----
t dspinfo dsp_info          - dsp init data
t dspinfo dsp_ver           - dsp ucode version
t dspinfo dsp_msg           - dsp returned message
Show DSP Command -----
t dspinfo def_cmd           - Show default commands
t dspinfo dsp_cmd [on/off]  - Enable/disable ALL dsp command
t dspinfo idsp_cmd [on/off] - Enable/disable idsp command
t dspinfo show_cmd help     - Detail info of cmd_code
t dspinfo show_cmd list_ena - List out show enabled cmd_code
t dspinfo show_cmd list_dis - List out show disabled cmd_code
t dspinfo show_cmd [on/off] - Turn on/off ALL dsp cmd info
t dspinfo show_cmd [cmd_code][1/0] - Show single command
                                [cmd_code] - The code of command to show on
                                [1/0] - turn on/off to show cmd info
DSP Command utility-----
t dspinfo drvmsg [on/off]   - enable/disable dsp driver debug message.
t dspinfo drvmsg dump [file_name] - dump dsp driver debug message to file
t dspinfo drvmsg show [irq#][val] - set dsp driver debug message SHOW mode.
                                [irq#] - 0, direct apply.
                                [irq#] - x, Keep showing x VDSP sync.
                                [val] - show mode val.
t dspinfo drvmsg log [irq#][val] - set dsp driver debug message SHOW mode.
                                [irq#] - 0, direct apply.
                                [irq#] - x, Keep showing x VDSP sync.
                                [val] - show mode val.
t dspinfo pcdump           - show DSP PC debug info.
t dspinfo waitvdsp [irq#][timeout(ms)] - wait vdsp interrupt with timeout
IAV Information -----
t dspinfo vid_proc         - video preprocessing information
t dspinfo vout0_info       - LCD out dsp data
t dspinfo vout1_info       - TV out dsp data
t dspinfo vid_enc          - video encode object info
t dspinfo vid_dec          - video decode object info
t dspinfo aud_enc          - audio encode object info
t dspinfo aud_dec          - audio decode object info
t dspinfo pic_enc          - picture encode object info
t dspinfo pic_dec          - picture decode object info
t dspinfo raw_enc          - raw encode object info

```

t cal

```
a:\> t cal
Usage: t cal [OPTION] VALUE...
Supported options:
  -3a: AAA control
  -3a_test: AAA stat regression test
  -sc: Scene mode control
  -de: Digital effect control
  -ae: AE info
  -me: Manual exposure
  -raw: raw capture
  -rawenc: raw encode with manual main window width/heigh
  -ituner: ituner tool
  -mgr: Calibration manager CLI tool
  -fpn: FPN tool
  -vnc: Vignette tool
  -vnc_spec: for warp by spec
  -task: WARP decay ratio en/disable
  -warp: WARP tool
  -warp_spec: for warp by spec
  -ca: CA tool
  -gen_ca: Gen CA tool
  -jq1t: Set capture jpg quality
  -bmp: Set dump bmp enalbe
  -usb: Set remove/insert sdcard
```

ps

```

a:\> ps
ID  PRI      STAT ACT WUP  SUS  NAME
 3  120  WAIT_FLG   0   0   0  print_daemon_task
 4   16  WAIT_RDTQ   0   0   0  peri_task
 5   57  WAIT_RDTQ   0   0   0  button_task
 6   56  WAIT_RDTQ   0   0   0  scardmgr_task
 7   50  WAIT_RDTQ   0   0   0  stktask_func
 8   37  WAIT_RDTQ   0   0   0  debou_task
 9   17  WAIT_RDTQ   0   0   0  audio_init_task
10  45  WAIT_FLG   0   0   0  Message Manager
11  16  WAIT_FLG   0   0   0  adc
12 110    READY   0   0   0  ambsh
13  43  SUSPEND   0   0   1  Player thumb motion task
14  51  WAIT_FLG   0   0   0  Host Control Manager
15  15  WAIT_FLG   0   0   0  dsp_vdsp
16  36    SLEEP   0   0   0  udf_class_mng_tsk
18  31  WAIT_RDTQ   0   0   0  audio_timer_task
19  40  WAIT_RDTQ   0   0   0  audio_main_task
20  34  WAIT_RDTQ   0   0   0  audio_beep_task
21  32  WAIT_RDTQ   0   0   0  audio_input_process_task
22  32  WAIT_RDTQ   0   0   0  audio_output_process_task
23  78  WAIT_FLG   0   0   0  Graphics2 Command Handler
23  78  WAIT_FLG   0   0   0  Graphics2 Command Handler
25  17  WAIT_FLG   0   0   0  Image VIN Task
26  63  WAIT_FLG   0   0   0  Image Adjust
27  41  WAIT_FLG   0   0   0  Recorder State Transition Manager
28  60  SUSPEND   0   0   1  Preview YUV Processor
29  23  WAIT_FLG   0   0   0  Recorder Snapshot Shutter Controller
30  14  DELAYED   0   0   0  GSensor detect
31  92  DELAYED   0   0   0  Monitor By TimerBase
32  26  WAIT_FLG   0   0   0  Framerate monitor (VDSP)
33  50  WAIT_MBX   0   0   0  prfile2
34  48  WAIT_FLG   0   0   0  Graphics2 switch FCHAN vout task
35  47  WAIT_FLG   0   0   0  Graphics2 switch DCHAN vout task
36  81  WAIT_FLG   0   0   0  Recorder Mux Manager
37  66  WAIT_RDTQ   0   0   0  audio_encode_task_0
38  42  WAIT_FLG   0   0   0  Player FLOW CTRL Manager
39  82  WAIT_FLG   0   0   0  Player DeMux Manager
40  79  WAIT_FLG   0   0   0  AMBA Editor2 Command Manager
41  83  WAIT_FLG   0   0   0  AMBA Editor2 Mux/Demux Manager
42  66  WAIT_RDTQ   0   0   0  audio_decode_task_1
43  88  WAIT_FLG   0   0   0  App Async Operation Manager
44  58  DELAYED   0   0   0  App Button Manager
45  35  WAIT_FLG   0   0   0  udc_drv_tsk
46  34  WAIT_FLG   0   0   0  UTMAlarmtsk
47 110  RUNNING   0   0   0  ps

```

corefreq

```

a:\> corefreq
core freq: 156000000
ahb freq: 156000000
apb freq: 78000000
arm freq: 504000000
a:\> dramfreq
dram freq: 396000000
a:\> idspfreq
idsp freq: 252000000

```

romfs ls

```

a:\> romfs ls
Permium.jpg      22125
zhenhui.jpg      30520
BLACKBOX.jpg     12705
vbd_logo.jpg     10705
LINGHANG.jpg     18047
logo.jpg         44534
Bluesonic.jpg    19770
eltrinex.jpg     15359
Nano_logo.jpg    17487
ORLLO_LOGO.jpg   44589
ARMIX.jpg        12134
NEOLINE.jpg      14935
tongmai_logo.jpg 87592
SHOME_LOGO.jpg   12499
C6000A_ON.jpg    89091
C6000A_OFF.jpg   57127
CASKA.jpg        54972
YILUAN.jpg       30692
DASH_CAMERAS.jpg 94489
BLACKVIEW.jpg    24028
BLACKVIEW_0.jpg  24217
PROLOGY.jpg      20987
LINGDU_OFF.jpg   12430
LINGDU_ON.jpg    17389
DRIVERCAM.jpg    17631
G90_PREST_OFF.jpg 98691
G90_PREST_ON.jpg 96280
FALCON.jpg       22394
SCREEN_OFF.jpg   126855
SCREEN_ON.jpg    126855
FLEXITI.jpg      93515
JASET.jpg        59195
WELKOM.jpg       72033
WELKOM_OFF.jpg   60122
start10.jpg      44534
invalid.jpg      14281
GATOR.jpg        32956
MANH_OFF.jpg     67830
MANH_ON.jpg      71106
CARSCAM.jpg      73733
CARSCAM_1.jpg    22737
UNIDEN.jpg       9657
DIGMA.jpg        33609
UNIDEN_W.jpg     55218
DANEW.jpg        12312
ASTO_ON.jpg      32130
ASTO_OFF.jpg     38427
NGA_ON.jpg       28883
NGA_OFF.jpg      33768
IVM.jpg          16785
icn_logo.a       32768
icn_logo.y       32768
icn_logo.uv      32768
plist_effect_cut.jpg 2624
plist_effect_fade_black.jpg 1622
plist_effect_fade_gray.jpg 1625
Gps_Recv1.wav    32052
Gps_Recv2.wav    33396
Gps_Arecv.wav    29032
Gps_Reto.wav     28252
poweron_12k.pcm  45600
poweroff_12k.pcm 28800
shutter_12k.pcm  6176
short_shutter_12k.pcm 1086
optone_12k.pcm   9300
error_12k.pcm    13920
poweron_11k.pcm  41896
poweroff_11k.pcm 26460
shutter_11k.pcm  5676

```

short_shutter_11k.pcm	1000	
optone_11k.pcm	8546	
error_11k.pcm	12790	
poweron_8k.pcm	30402	
poweroff_8k.pcm	19200	
shutter_8k.pcm	4120	
short_shutter_8k.pcm	724	
optone_8k.pcm	6202	
error_8k.pcm	9282	
overspeed_warning.wav	17738	
Danger_LDWS.pcm	58482	
Danger_LDWS_B.wav	32226	
Danger_FCWS.wav	54886	
Speed_Cam.wav	38800	
Avg_Spd_Cam.wav	43442	
Red_Light_Cam.wav	43764	
Red_Light_Speed_Cam.wav	58684	
emergency.wav	40748	
GPS_Con.wav	120894	
menu.wav	30928	
no_sd.wav	42888	
photo_mode.wav	35474	
play_mode.wav	38748	
record_mode.wav	40954	
poweroff.wav	69400	
poweron.wav	61494	
poweroff_15s.wav	52274	
poweroff_30s.wav	52006	
poweroff_60s.wav	53236	
start_rec.wav	34318	
stop_rec.wav	35370	
no_power.wav	52006	
1_48k.aac	171	
1_44k.aac	185	
1_32k.aac	256	
2_48k.aac	342	
2_44k.aac	372	
2_32k.aac	512	
2_48k.ac3	768	
2_44k.ac3	768	
2_32k.ac3	768	
6_48k.ac3	1536	
6_44k.ac3	1536	
6_32k.ac3	1536	
dec_cc_3D	16384	
dec_cc_in	2304	
cour.ttf	4627488	
bitmaps.bin	8929804	
strings.bin	380908	
A7L_CC_reg_1_1.bin	18752	
calib6.bin	65536	
calib16.bin	65536	
A5S_CC_reg_ver_1_1.bin	18752	
A5S_default_cc_3d_video.bin	17536	
A5S_default_cc_3d_still.bin	17536	
A5S_default_cc_3d_hiiso.bin	17536	
param_image_param_release.bin	0	
param_aaa_param_release.bin	0	
param_adj_photo_preview_param_release.bin	0	
param_adj_video_tv_param_release.bin	0	
param_adj_video_pc_param_release.bin	0	
param_de_still_param_release.bin	0	
param_de_video_param_release.bin	0	
param_de_still_multi_param_release.bin	0	
param_de_video_multi_param_release.bin	0	
param_adj_still_fast_param_release.bin	0	
param_adj_still_low_iso_param_release.bin	0	
param_adj_still_high_iso_param_release.bin	0	
param_adj_still_mf_hiso_param_release.bin	0	
param_adj_piv_low_iso_param_release.bin	0	
param_adj_still_mid_iso_param_release.bin	0	

param_adj_still_hdr_hiso_param_release.bin	0
param_adj_still_hdr_miso_param_release.bin	0
param_adj_still_sr_param_release.bin	0
param_set01_param_release.bin	0
param_set02_param_release.bin	0
param_set03_param_release.bin	0
param_set04_param_release.bin	0
param_set05_param_release.bin	0
A5S_CC_3d_color_0_video_0.bin	17536
A5S_CC_3d_color_0_video_1.bin	17536
A5S_CC_3d_color_0_video_2.bin	17536
A5S_CC_3d_color_0_video_3.bin	17536
A5S_CC_3d_color_0_video_4.bin	17536
A5S_CC_3d_color_0_still_0.bin	17536
A5S_CC_3d_color_0_still_1.bin	17536
A5S_CC_3d_color_0_still_2.bin	17536
A5S_CC_3d_color_0_still_3.bin	17536
A5S_CC_3d_color_0_still_4.bin	17536
A5S_CC_3d_color_1_video_0.bin	17536
A5S_CC_3d_color_1_video_1.bin	17536
A5S_CC_3d_color_1_video_2.bin	17536
A5S_CC_3d_color_1_video_3.bin	17536
A5S_CC_3d_color_1_video_4.bin	17536
A5S_CC_3d_color_1_still_0.bin	17536
A5S_CC_3d_color_1_still_1.bin	17536
A5S_CC_3d_color_1_still_2.bin	17536
A5S_CC_3d_color_1_still_3.bin	17536
A5S_CC_3d_color_1_still_4.bin	17536
A7L_high_iso/08_cc_reg_l4c_edge.bin	2304
A7L_high_iso/09_cc_3d_l4c_edge.bin	16384
A7L_high_iso/17_fir1_mix_4x.bin	256
A7L_high_iso/18_fir1_mix_2x.bin	256
A7L_high_iso/31_fir1_l4c_edge.bin	256
A7L_high_iso/32_coring_l4c_edge.bin	256
A7L_high_iso/35_alpha_unity.bin	512
TWDZG.txt	202746
TWDZG_data.txt	800744
file count	177

Sensor modes

```

a:\> t sensor -minfo all
=====a:\> ===== Window mode Info =====
* Effective pixels: [ 2688x1520 ]
* The view angle percentage is related to each aspect ratio.
  100% view angle of 16:9 is [ 2688x1512 ]
  100% view angle of  4:3 is [ 2026x1520 ]
  100% view angle of  3:2 is [ 2280x1520 ]
* Code definition of the following table.
  ID: window id      VA: view angle: capture pixel size/sensor effective pixel size
  CW: width of capture window  CH: height of capture window
  BP: pixel bit depth
  DH: horizontal downsampling ratio    DV: vertical downsampling ratio
  AS: aspect ratio      FPS: frame rate
  tR: row time (in ns)  tVB: vb time (in us)
  DmW: width of dummy window  DmH: height of dummy window

```

ID	VA	CW	CH	DmW	DmH	BP	DH	DV	AS	FPS	tR	tVB
1	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	60000/1001	10735	450.870000
2	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	45/1	14300	600.600000
3	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	30000/1001	21471	901.782000
4	95%(2560x1080)	2560	1080	2560	1080	10	1	1	21:9	60000/1001	10735	5088.390000
5	95%(2560x1080)	2560	1080	2560	1080	10	1	1	21:9	45/1	14300	6778.200000
6	95%(2560x1080)	2560	1080	2560	1080	10	1	1	21:9	30000/1001	21471	10177.254000
7	75%(2016x1512)	2016	1512	2016	1512	10	1	1	4:3	90000/1001	7157	300.594000
8	78%(2112x1188)	2112	1188	2112	1188	10	1	1	16:9	120000/1001	6781	284.802000
9	100%(2688x1512)	1344	756	1344	756	10	2	2	16:9	180000/1001	6977	286.057000
10	100%(2688x1512)	672	378	672	378	10	4	4	16:9	330000/1001	7205	309.815000
11	100%(2688x3640)	2688	3640	2688	3640	10	1	1	16:9	30000/1001	8689	1737.800000
12	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	50/1	10735	3767.985000
13	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	25/1	21470	7535.970000
14	95%(2560x1080)	2560	1080	2560	1080	10	1	1	21:9	50/1	10735	8405.505000
15	95%(2560x1080)	2560	1080	2560	1080	10	1	1	21:9	25/1	21470	16811.010000
16	75%(2016x1512)	2016	1512	2016	1512	10	1	1	4:3	75/1	7156	2511.756000
17	78%(2112x1188)	2112	1188	2112	1188	10	1	1	16:9	100/1	6779	1945.573000
18	100%(2688x1512)	1344	756	1344	756	10	2	2	16:9	150/1	6980	1389.020000
19	100%(2688x1512)	672	378	672	378	10	4	4	16:9	275/1	7200	914.400000
20	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	30000/1001	10735	17133.060000
21	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	25/1	10735	23767.290000
22	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	40/1	14302	3375.272000
23	95%(2560x1080)	2560	1080	2560	1080	10	1	1	21:9	40/1	14302	9553.736000
24	100%(2688x3640)	2688	3640	2688	3640	10	1	1	16:9	25/1	8688	8375.232000
25	100%(2688x1512)	2688	1512	2688	1512	10	1	1	16:9	275/10	21466	3906.812000
26	100%(2688x1512)	1344	756	1344	756	10	2	2	16:9	120000/1001	6968	3072.888000
27	100%(2688x1512)	1344	756	1344	756	10	2	2	16:9	100/1	6978	4724.106000
28	100%(2688x1512)	1344	756	1344	756	10	2	2	16:9	30000/1001	41865	1716.465000
29	100%(2688x1512)	1344	756	1344	756	10	2	2	16:9	25/1	41797	8401.197000
30	64%(1728x 972)	864	486	864	486	10	2	2	16:9	240000/1001	7178	681.910000
31	64%(1728x 972)	864	486	864	486	10	2	2	16:9	200/1	7173	1513.503000

Disk info

```
a:\> drives --help
3 drives present in system
drive 'A' - NFTL Media
drive 'D' - SD/MMC
drive 'Z' - ROMFS

a:\> cardmgr d info
slot 'd' info
present:      yes
type:         SDHC memory
name:         SD16G0
bus width:    4
total sectors: 30318592
sector size:  512
write-protect: no
format:       FAT32
speed:        480000000 Hz

a:\> cardmgr a info
slot 'a' info
present:      yes
type:         memory
name:         SAMSUNG K9F2G08_256MB_PG2K
bus width:    8
total sectors: 425984
sector size:  512
write-protect: no
format:       FAT16
speed:        N/A

a:\> cardmgr z info
slot 'z' info
present:      yes
type:         memory
name:         ROMFS
bus width:    0
total sectors: 0
sector size:  0
write-protect: yes
format:       ROMFS
speed:        N/A
```

BAckup firmware

```
d:\> firmfl gen 5 bst bld pri rom dsp d:\backup.bin
0m[00329995] --- bst ---
[00329995] crc32:                0x214844ba
[00329995] ver_num:             1.3
[00329995] ver_date:           2016/4/9
[00329995] img_len:            2048
[00329995] mem_addr:           0x00000000
[00329995] flag:                0x00000001
[00329997]
    loading done.
[00330007] --- bld ---
[00330007] crc32:                0x0d0a7b9d
[00330007] ver_num:             1.3
[00330007] ver_date:           2016/4/9
[00330007] img_len:           132216
[00330007] mem_addr:           0xc0000000
[00330007] flag:                0x00000000
[00330511] 00%
    loading done.
[00330528] --- pri ---
[00330528] crc32:                0x5138bfe8
[00330528] ver_num:             0.1
[00330528] ver_date:           2016/4/9
[00330528] img_len:           8441860
[00330528] mem_addr:           0xc0100000
[00330528] flag:                0x00000000
[00365504] 00%
    loading done.
[00365508] --- rom ---
[00365508] crc32:                0x3e38f331
[00365508] ver_num:             2.0
[00365508] ver_date:           2016/4/9
[00365509] img_len:           12795904
[00365509] mem_addr:           0x00000000
[00365509] flag:                0x00000001
[00417251] 00%
    loading done.
[00417256] --- dsp ---
[00417256] crc32:                0x3b810e6f
[00417256] ver_num:             0.1
[00417256] ver_date:           2016/4/9
[00417257] img_len:           4196352
[00417257] mem_addr:           0xc82fffb0
[00417257] flag:                0x00000000
[00435835] 00%
    loading done.
```