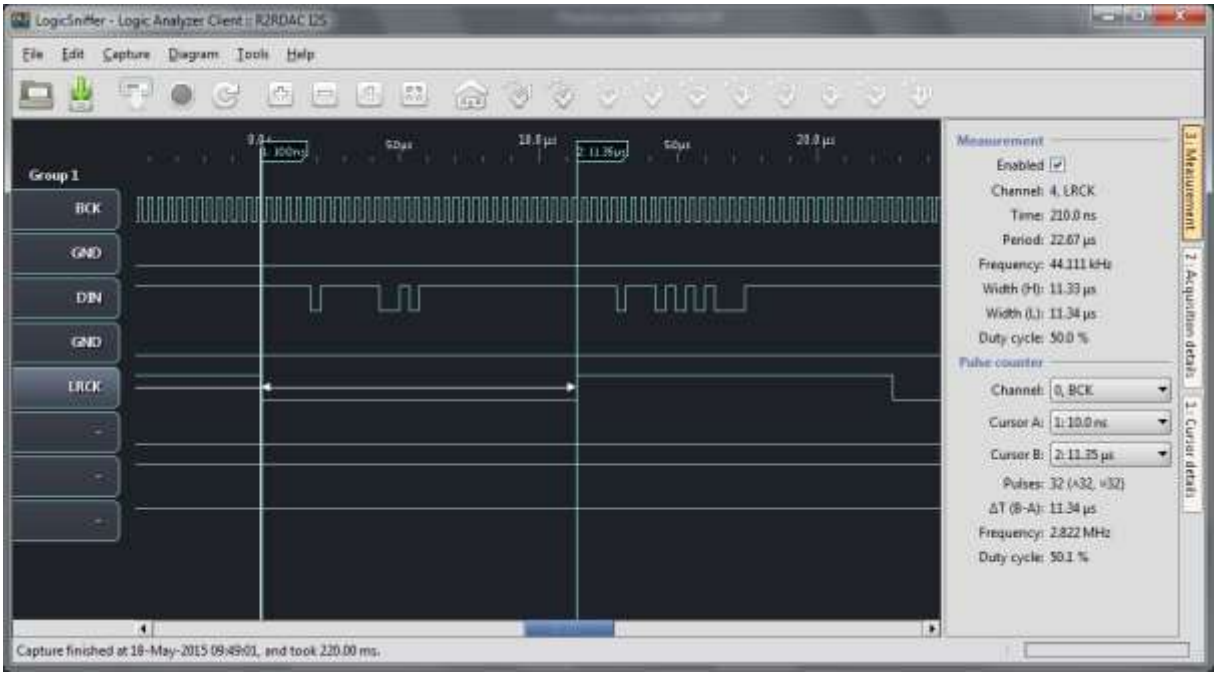
Analysis of I2S interface timing between Raspberry Pi running Volumio 1.5 and Soekris R2R DAC for two different I2S drivers: pcm1794a and pcm5102a

I. Pcm1794a

1. Pcm1794a: source 44.1KHz 16 bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 44100 (44100/1)
period_size: 4410

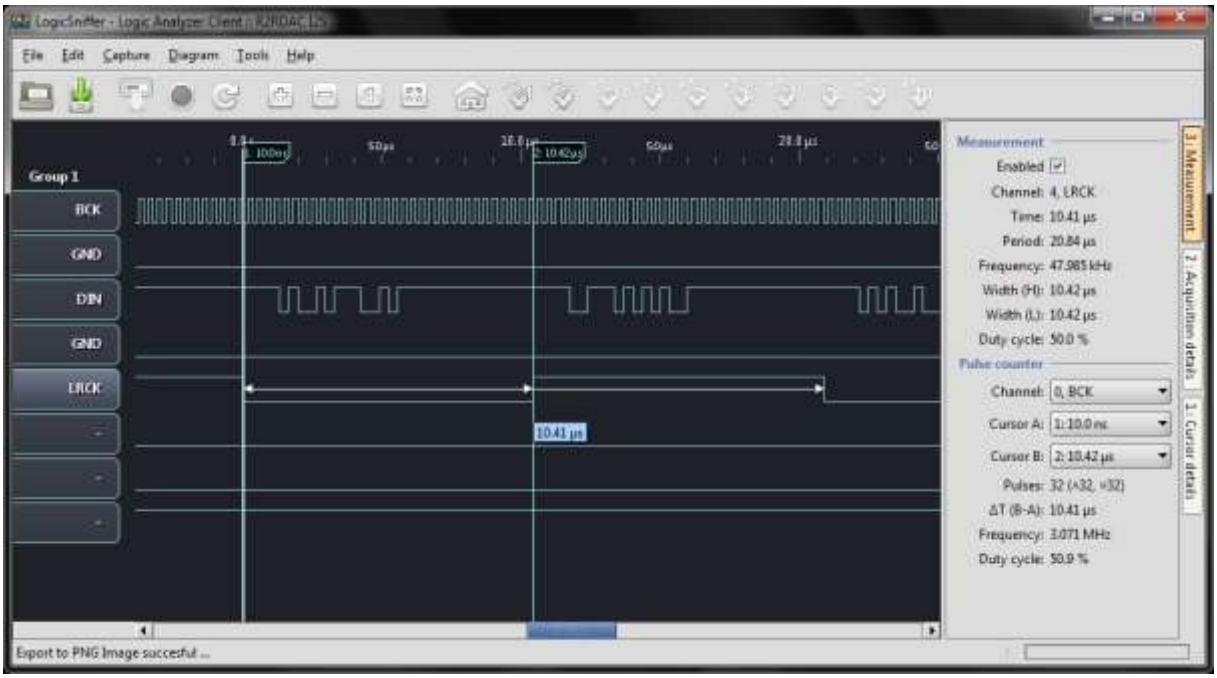
FS = 44.1KHz
BCK = ~ 2.8224 Mhz = 64 x FS



2. Pcm1794a: source 48KHz 16bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 48000 (48000/1)
period_size: 6000
buffer_size: 24000

FS = 48KHz
BCK = ~ 3.072 Mhz = 64 x FS

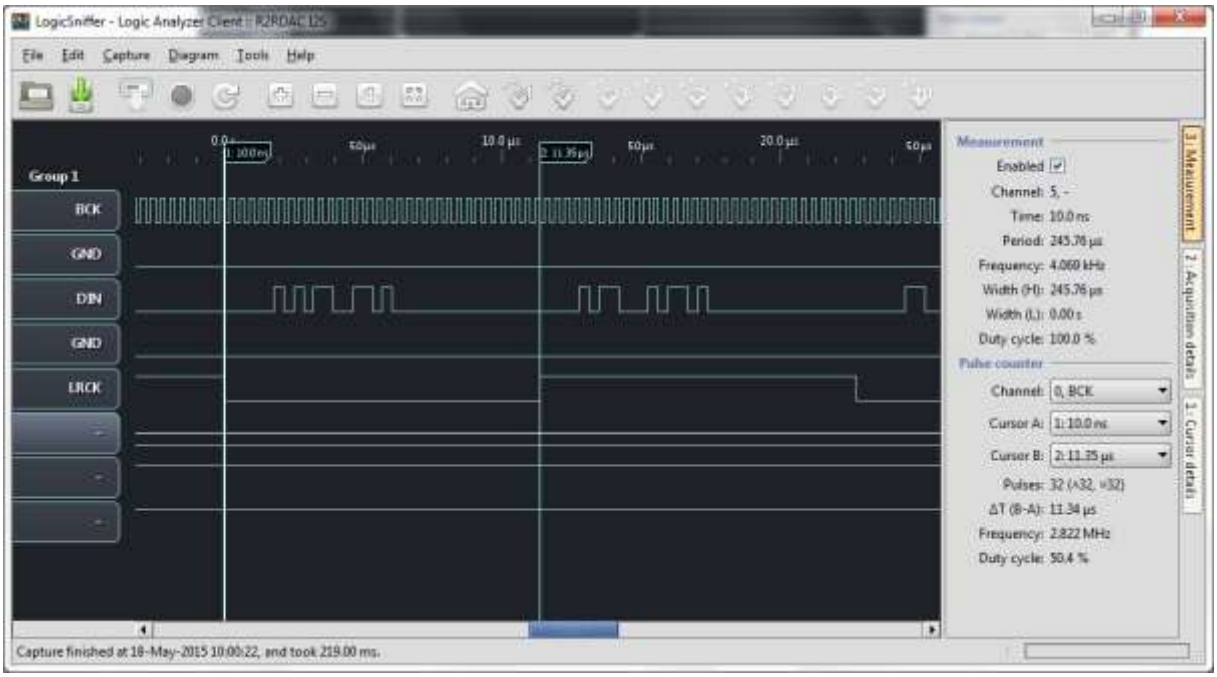


3. Pcm1794a: source 44.1KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 44100 (44100/1)
period_size: 4410
buffer_size: 22050

FS = 44.1KHz
BCK = ~ 2.8224 Mhz = 64 x FS

Note: does not output 24 bits.

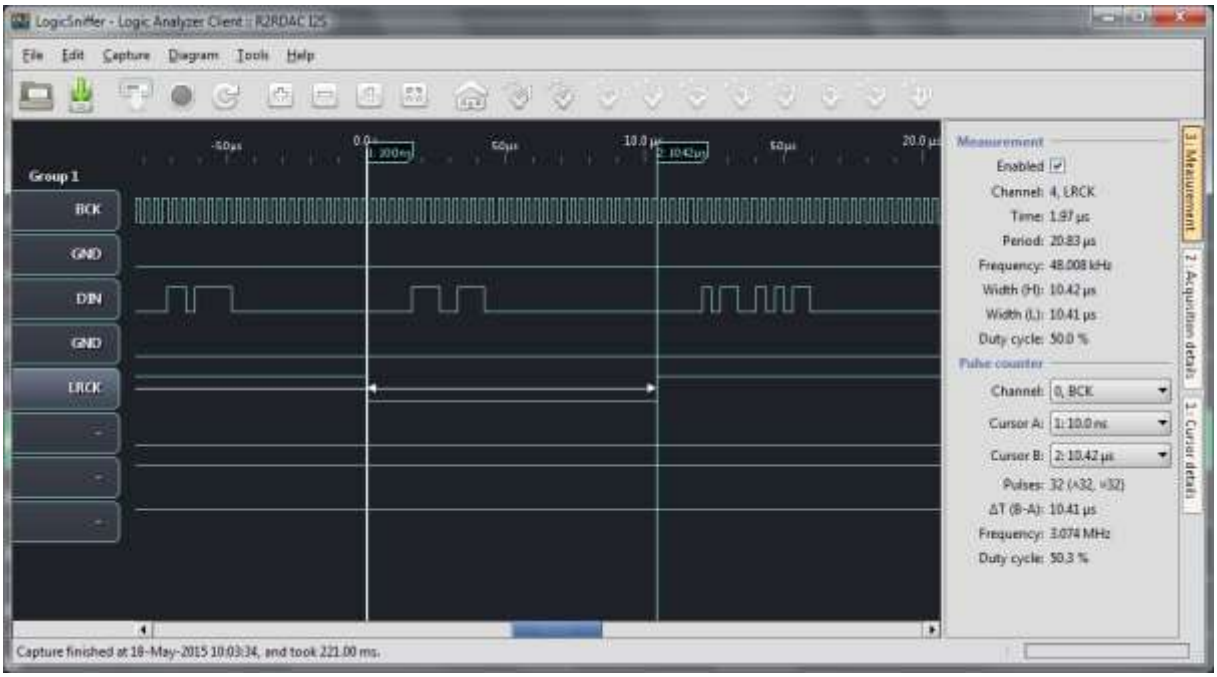


4. Pcm1794a: source 48KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 48000 (48000/1)
period_size: 6000
buffer_size: 24000

FS = 48KHz
BCK = ~ 3.072 Mhz = 64 x FS

Note: does not output 24 bits.

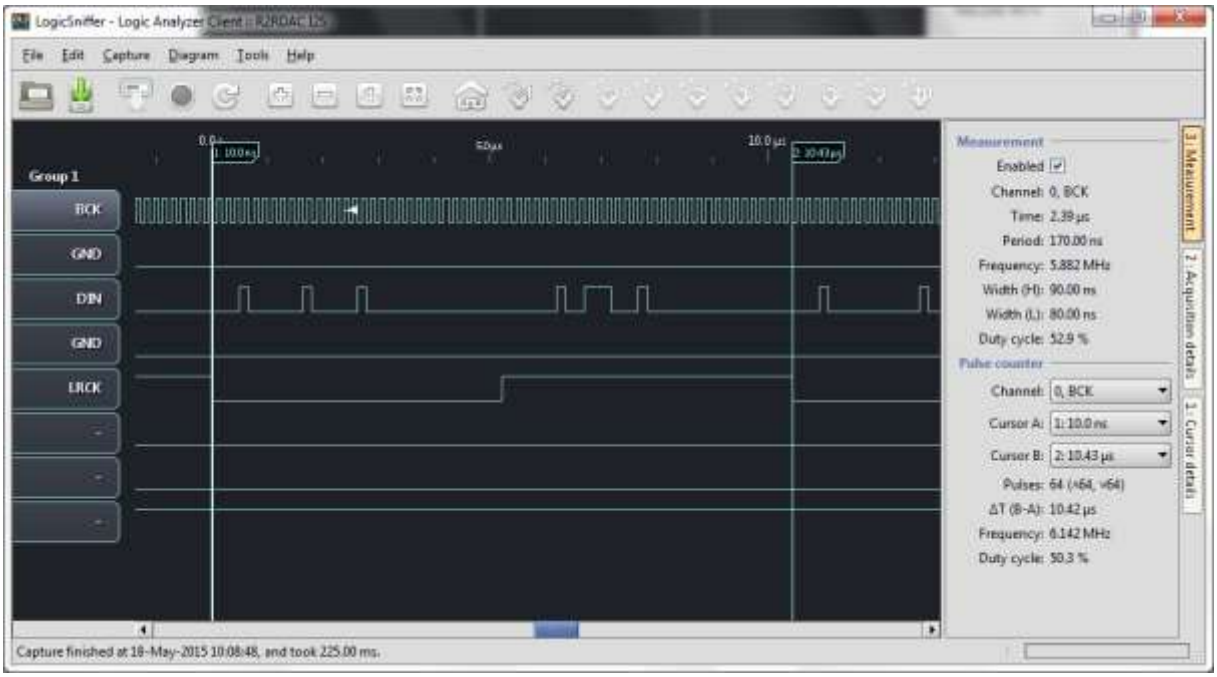


5. Pcm1794a: source 96KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 96000 (96000/1)
period_size: 12000
buffer_size: 48000

FS = 96KHz
BCK = ~ 6.144 Mhz = 64 x FS

Note: does not output 24 bits.

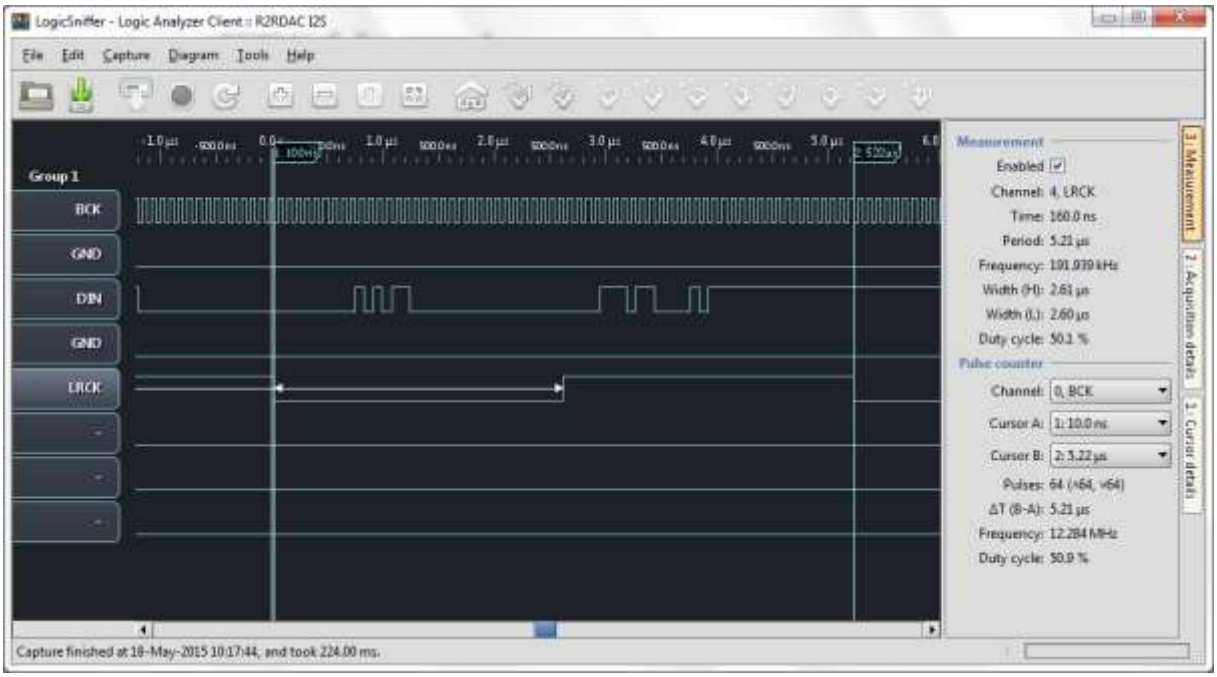


6. Pcm1794a: source 192KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 192000 (192000/1)
period_size: 24000
buffer_size: 96000

FS = 192KHz
BCK = ~ 12.288 Mhz = 64 x FS

Note: does not output 24 bits.

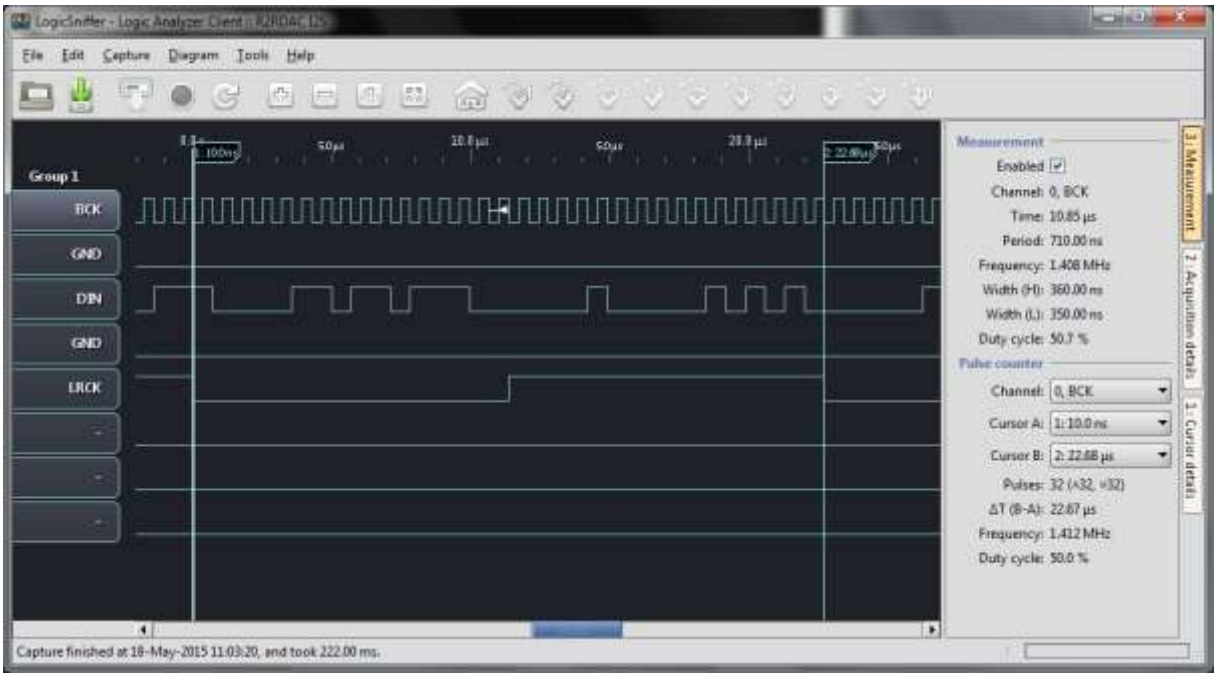


II. Pcm5102a

1. Pcm5102a: source 44.1KHz 16bit

pi@R2RDAC:~$ ./hw_params.sh
pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 44100 (44100/1)
period_size: 4410
buffer_size: 22050

FS = 44.1KHz
BCK = ~ 1.4112 Mhz = 32 x FS



Note: DAC displays: I0 and does not sync to the signal.

2. Pcm5102a: source 44.1KHz 24bit

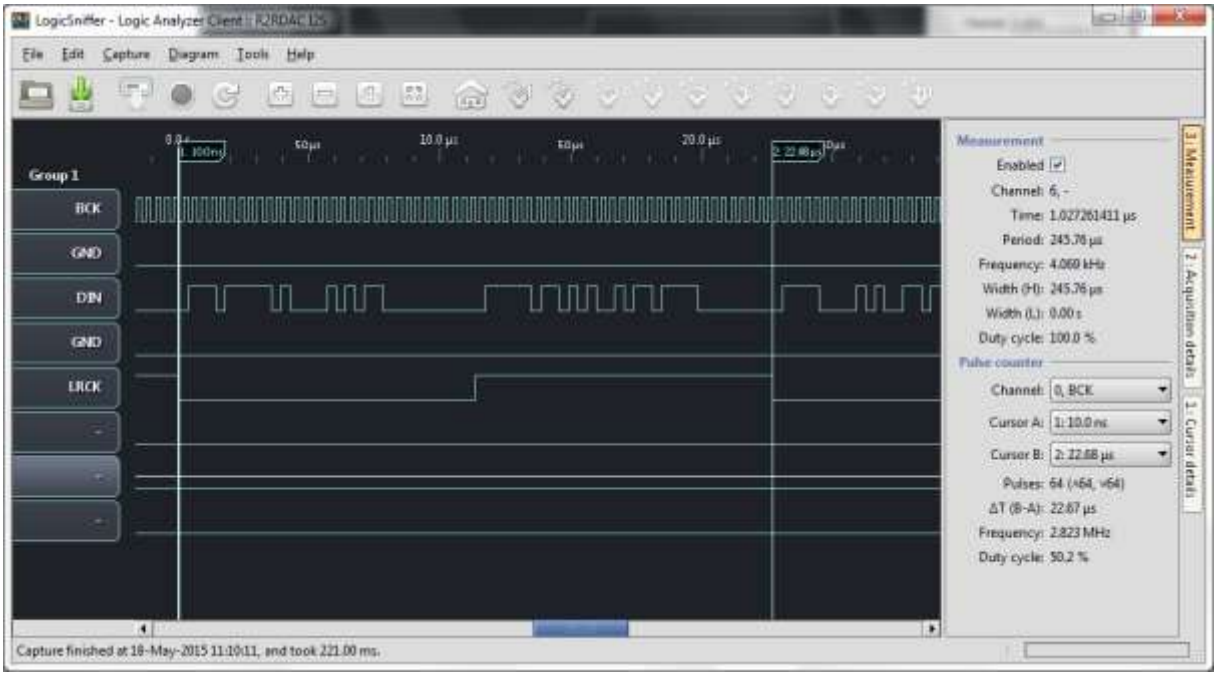
pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S32_LE
subformat: STD
channels: 2
rate: 44100 (44100/1)
period_size: 4410
buffer_size: 22050

FS = 44.1KHz
BCK = ~ 2.8224 Mhz = 64 x FS

Note:

DAC displays:

I0
L044
V+00



3. Pcm5102a: source 48KHz 16bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S16_LE
subformat: STD
channels: 2
rate: 48000 (48000/1)
period_size: 6000
buffer_size: 24000

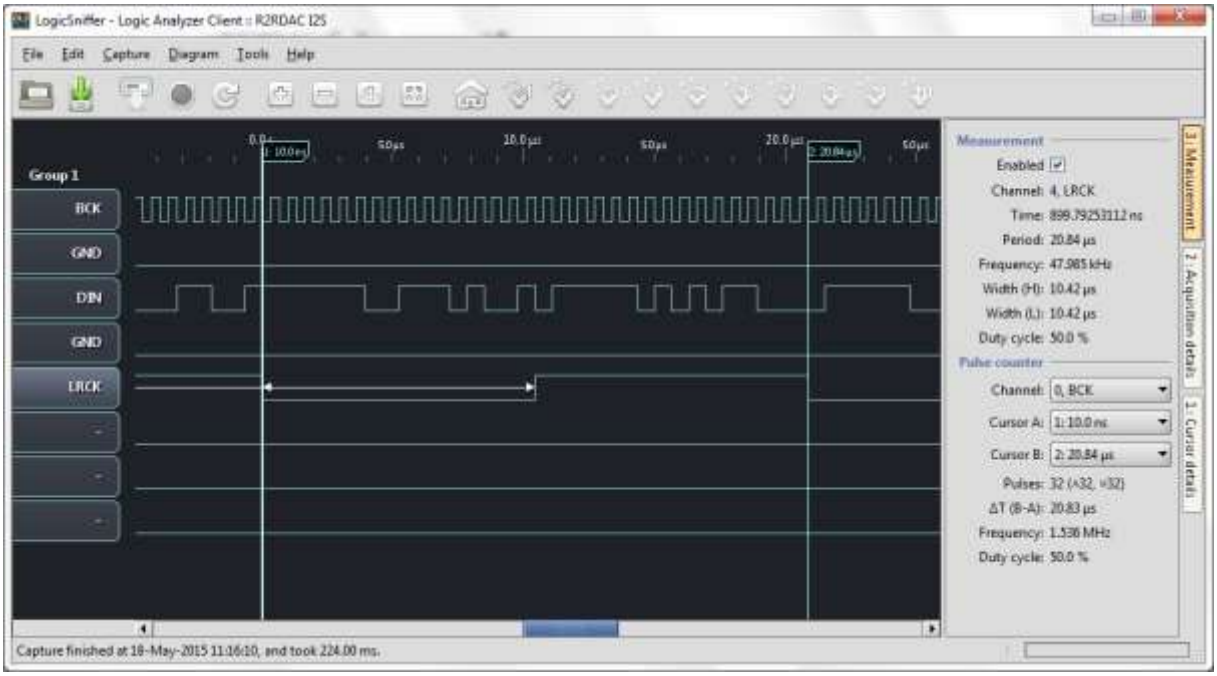
FS = 48KHz
BCK = ~1.536 Mhz = 32 x FS

Note:

DAC displays:

I0
V+00

and does not sync to the signal.



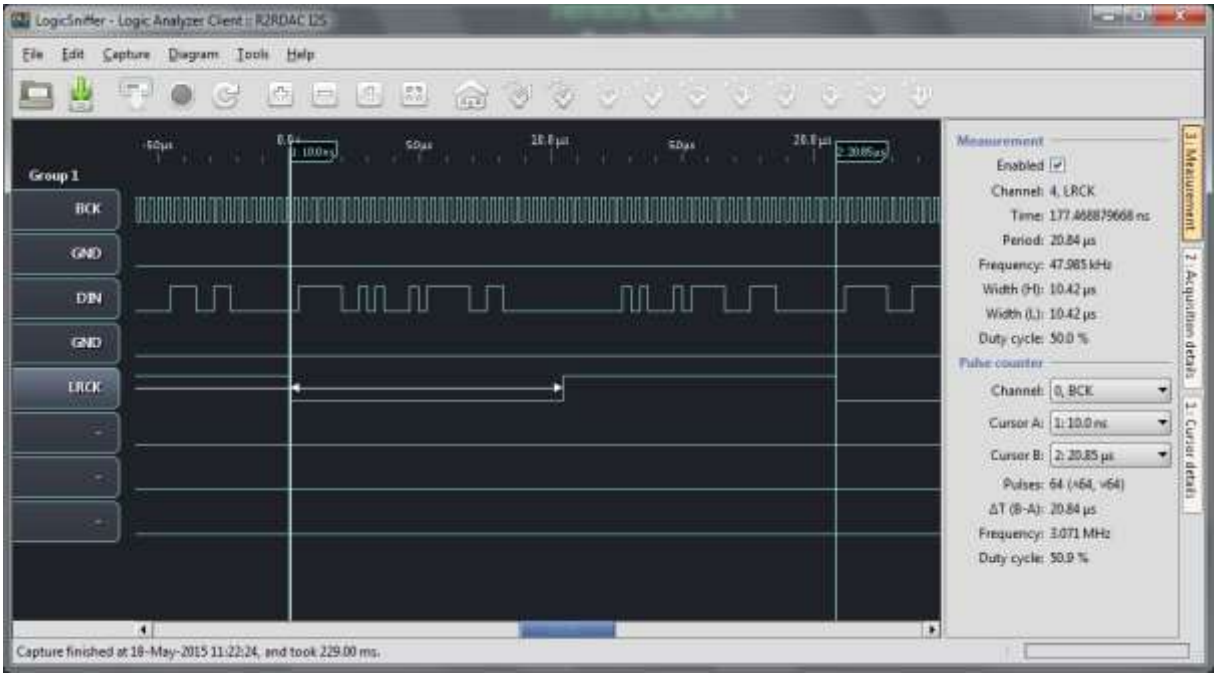
4. Pcm5102a: source 48KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S32_LE
subformat: STD
channels: 2
rate: 48000 (48000/1)
period_size: 6000
buffer_size: 24000

FS = 48KHz
BCK = ~ 3.072 Mhz = 64 x FS

DAC displays:

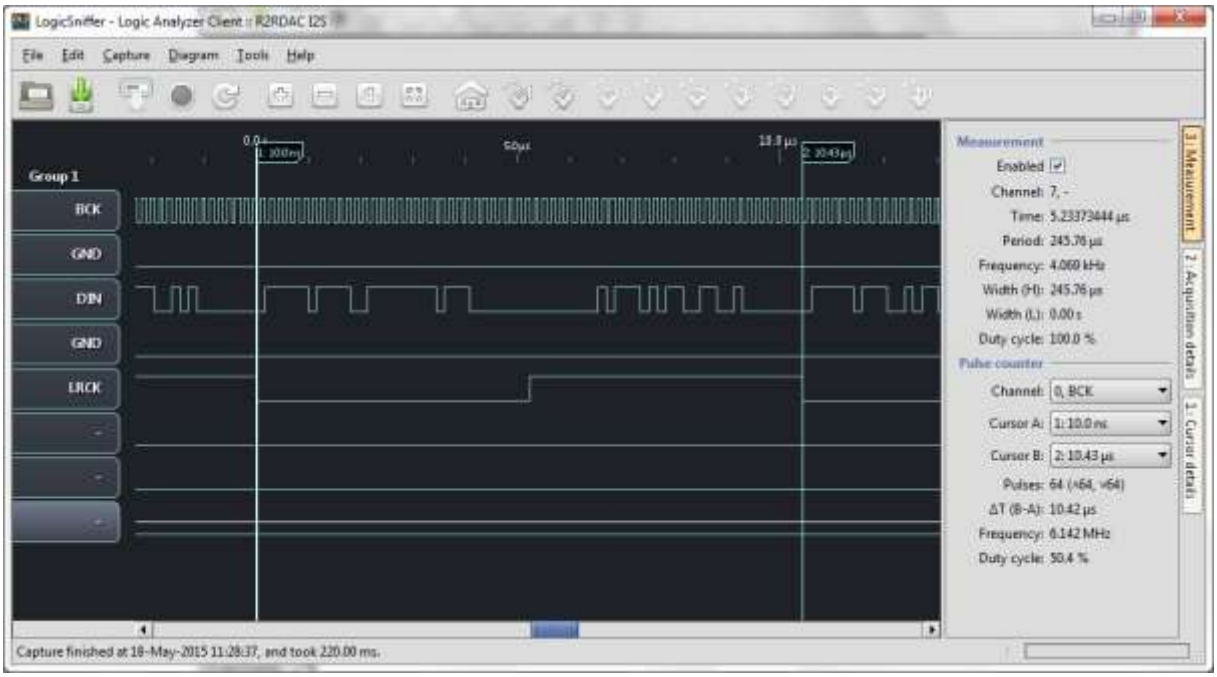
I0
L048
V+00



5. Pcm5102a: source 96KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S32_LE
subformat: STD
channels: 2
rate: 96000 (96000/1)
period_size: 12000
buffer_size: 48000

FS = 96KHz
BCK = ~ 6.144 Mhz = 64 x FS



6. Pcm5102a: source 192KHz 24bit

pi@R2RDAC:~$ ./hw_params.sh
access: RW_INTERLEAVED
format: S32_LE
subformat: STD
channels: 2
rate: 192000 (192000/1)
period_size: 16384
buffer_size: 65536

FS = 192KHz
BCK = ~ 12.288 Mhz = 64 x FS