Output of my Audio DK is noisy/clipping when coming via i2s

I am quite new to the nRF5340 Audio DK and used ace.johnny 's project on https://github.com/ace-johnny/nrfadk-hello_codec to get me started.

The overall project goal is to process audio data coming via line-in on the nRF5340 to add filters, effects, etc. and output again via the headphone.

In order to achieve this I transmit the data from the codec via i2s to the MCU, process it there and send it back. However, something in this chain is introducing a lot of noise/clipping and I can't find the reason for this. Right now my processing of the received data is just copying it 1:1 to the transmit buffer - no change whatsoever.

When I directly route the line-in input to the output and not going via i2s to the MCU and back everything is crystal clear.

This is the code I use:

```
Fullscreen
1   /**
2    * @file        main.c
3    *
4    * @brief       Audio DK HW_CODEC test using I2S loop and tone/noise generators.
5    */
6
7   #include <zephyr/kernel.h>
8   #include <nrf.h>
9   #include <nrfx_clock.h>
10
11  #include "cs47l63_comm.h"
12
13  ////////////////////////////////////////////////////////////////////////////
14  // NRFX_CLOCKS
15
16  #define HFCLKAUDIO_12_288_MHZ 0x9BA6
17  #define ENABLE_LINEIN
18  #undef ENABLE_MIC
19
20
21
```

process_audio() is the simple function which just sets the TX buffer to the RX buffer's values.

(Here I want eventually to add my processing)
nrfadk_i2s_reg_init() initializes the i2s on the nRF5340 side. I've added here also the reception of the data from the codec
i2s_polling_loop() constantly checks if i2s data is present, then copies it over and starts the back transmission
cs47l63_cfg() configures the line-in input, the i2s in the ASP1 and the output channel coming from i2s

assumption is that the error is in one of those regions:

i2s_polling_loop() - maybe done completely wrong at all?

cs47l63_cfg() - I am confused - do I have a stereo input with line-in or only mono? Will I need ASP1RX1,2 and ASP1TX1,2 then or just ASP1RX1 and ASP1TX1?

Is it OK to use int16_t as the values in the buffer but uint32_t to address the elements? Does the i2s config in the codec match?

Is the noise maybe just a result of the MCU not being able to keep up?
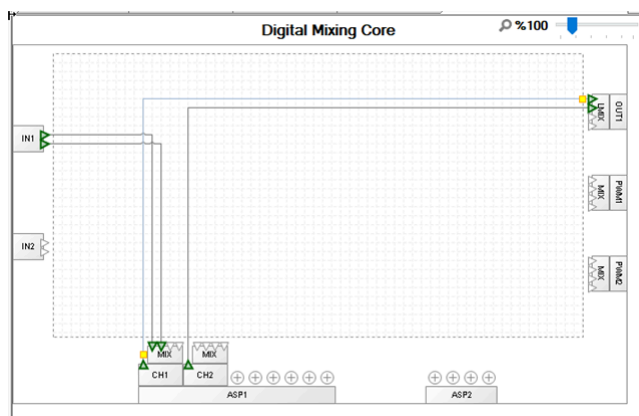
The audio is properly played back in genereal but there is noise/clipping present all the time - not only during loud parts of the music.

daubsi
25 days ago

I also tried playing around with the WISCE tool, because it allows me to play with the codec's config in realtime and change settings/outputs, etc. It seems the IN2RP/IN2RPN has no part at all in the processing, so that means the input from line-in is just mono as well on the DK?

Also when I visually disconnect the signal from CH2 at ASP1 going to OUT1Port2 there is no change. All the audio data seems to be sent via CH1 to OUT1Port1.

daubsi
25 days ago

Hello Nordic, where have all those replies in this chat gone to? It correctly reads 23 replies, but all I can see are 2?

All the interaction with the other forum members like @ace.johnny seems to be invisible all of a sudden?

daubsi
7 hours ago in reply to daubsi

Hi,

> daubsi said:
>
> Hello Nordic, where have all those replies in this chat gone to? It correctly 23 replies, but all I can see are 2?

> *All the interaction with the other forum members like @ace.johnny seems to be invisible all of a sudden?*

I do not think that anything changed on our side. I can see all previous replies. Which browser application do you use? Have you tried using different browser?

Best regards,
Dejan

dejans
16 minutes ago in reply to daubsi

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