



SoundWire

**Protocol Analyzer
Traffic Generator**

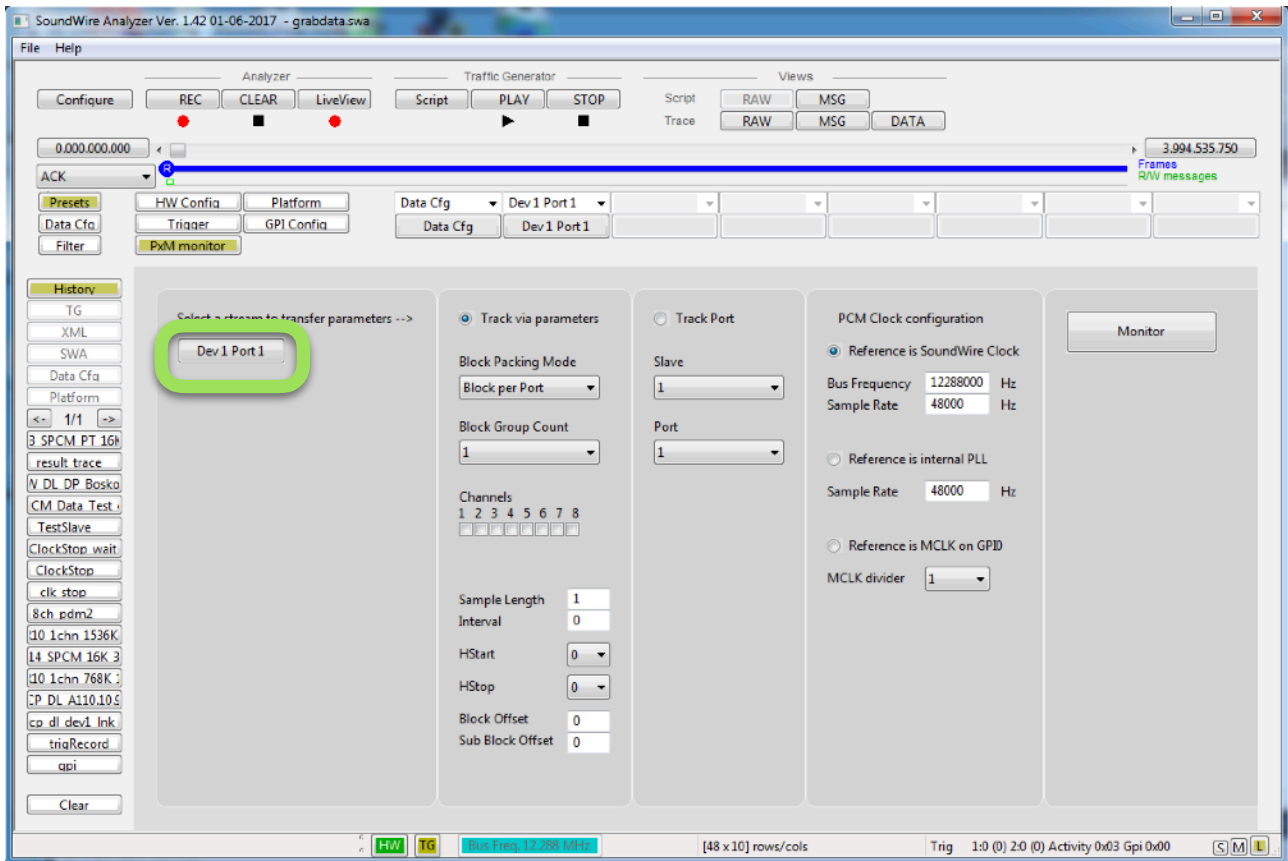
swimmy Release notes V1.42

LnK Tools
44, rue des Combattants
B-4624 Romsée
Belgium
www.lnk-tools.com

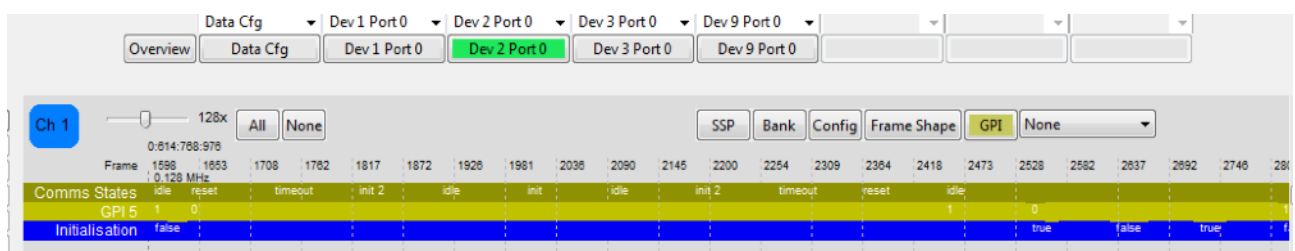
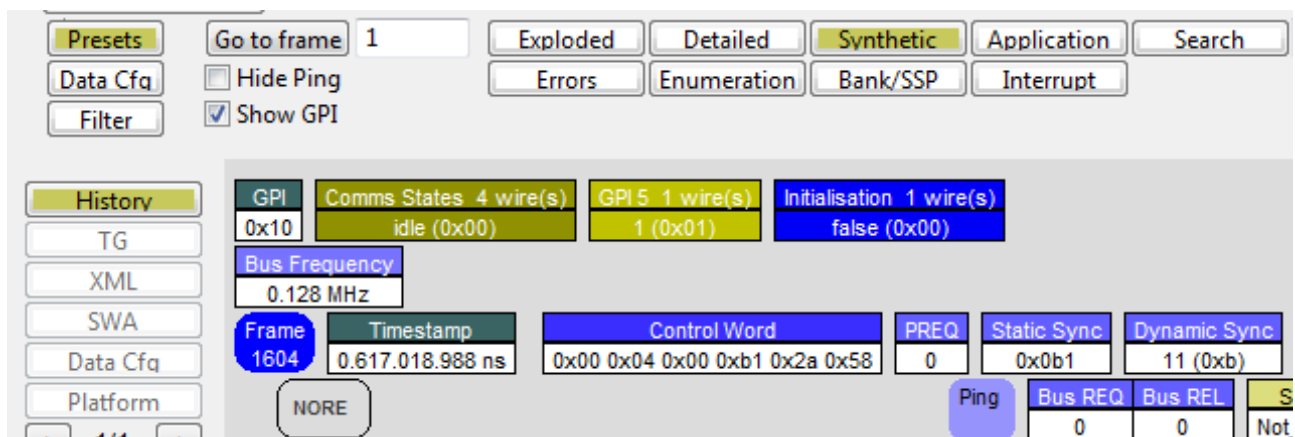
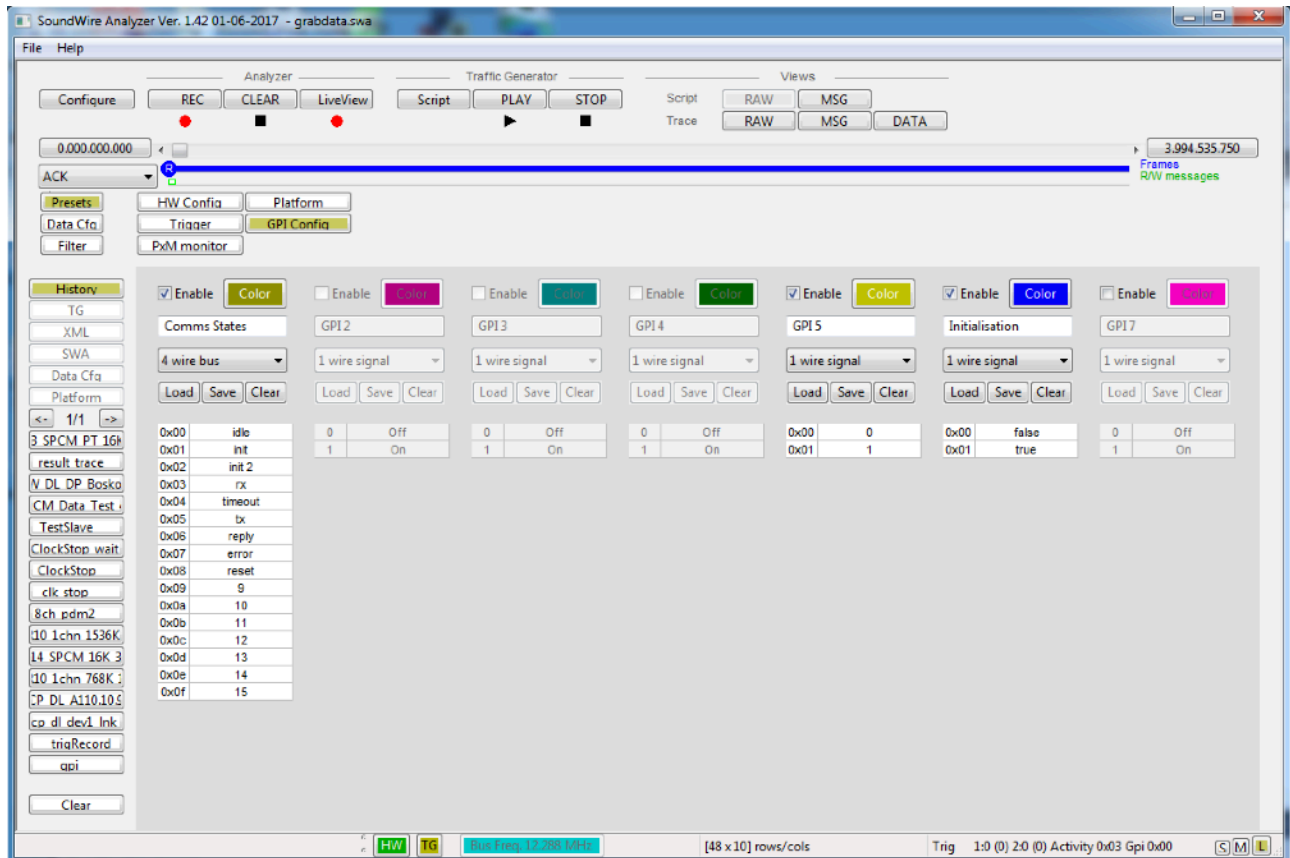
release notes
7 June 2017

New items (1.42)

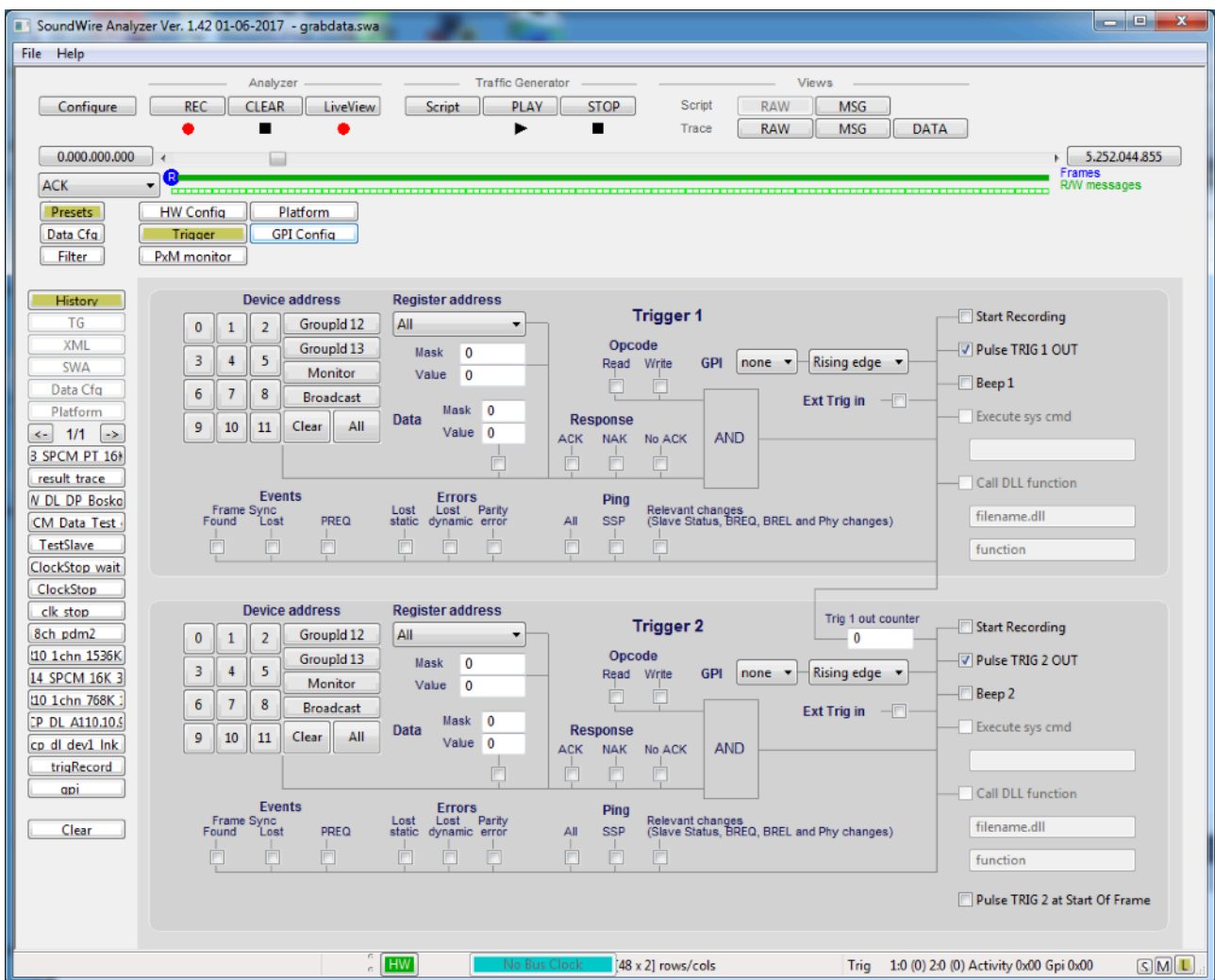
- Implemented clock stop (clock and data line low + restart from external device or bit set by Swimmy), init gear divider at start of TG.
- Implemented PDM and PCM monitoring.
Detected valid streams will be shown so they can be used directly. No need to know all the data port parameters.



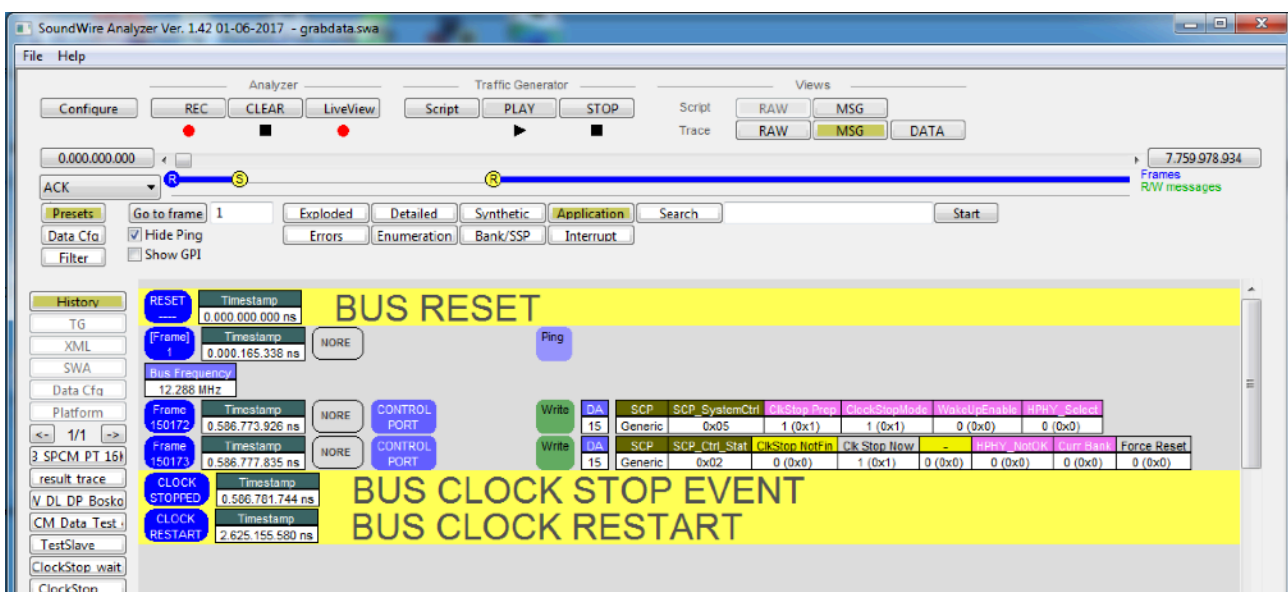
- Implemented GPI labels and busses via config. Preset files can be saved and loaded.



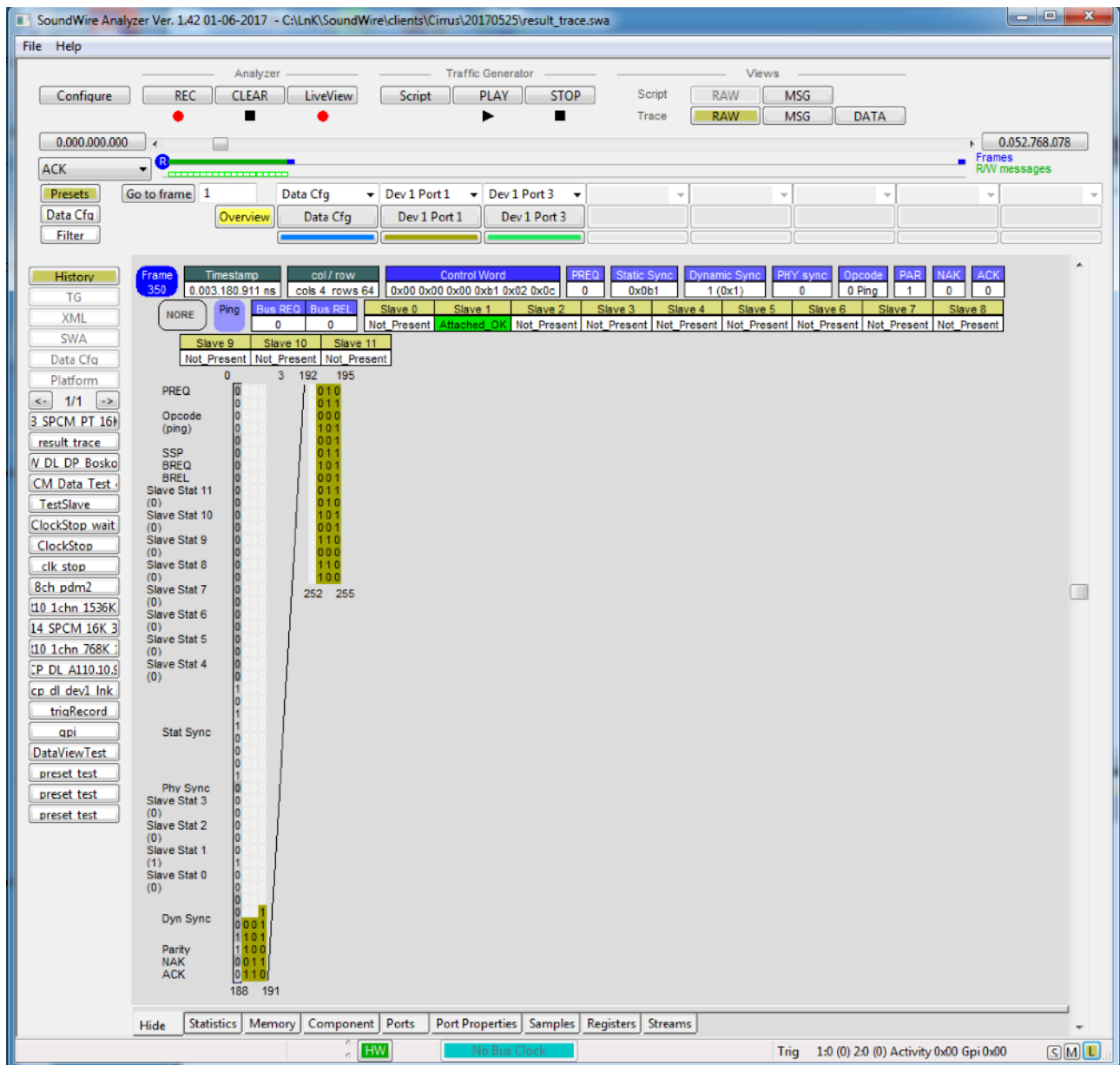
- Implemented trigger functions.



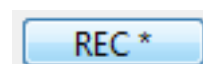
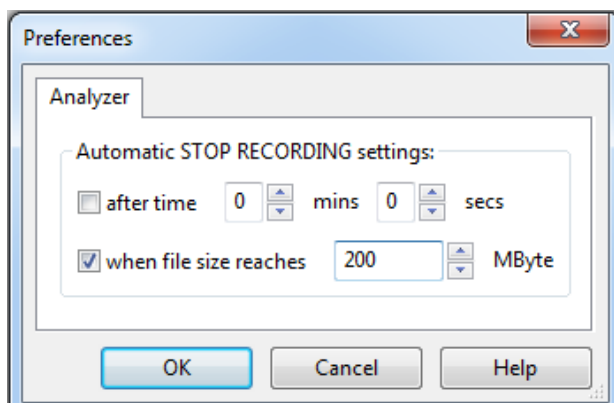
- View have now a Stopping frame and Bus Restart.



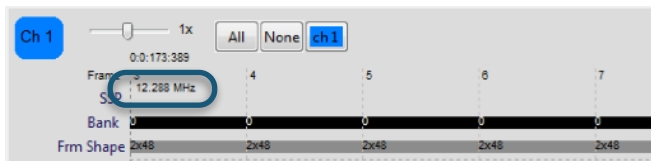
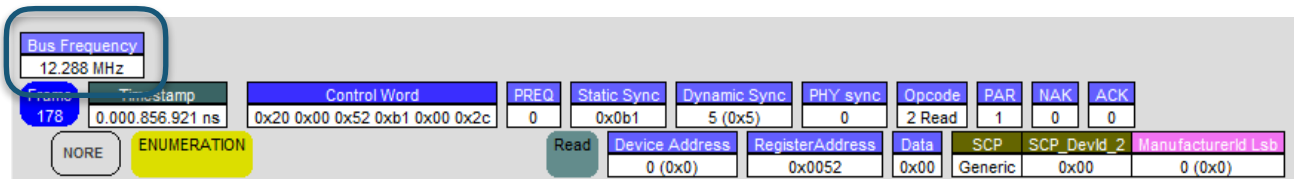
- RAW view has now a clearer view on the used bit slot in the payload.



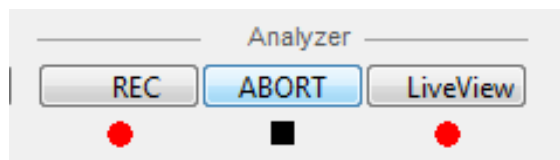
- HiDPI update.
- Stop recording at max size to avoid too big bin file.
- Added configurable size or configurable period recording.
When a recording size or recording period is defined, the REC button will get an “*”



- Changed the filter for LiveView (is not displaying useless Pings)
- Added frequency information the views



- Added possibility to abort loading and decoding.



Solved bugs:

- Once PxM monitoring was enabled the SYS_TEST_REG is not reset again when no PxM is used
- Clear data port registers after a BUS_RESET.
- Solved bug that had the TG button on for always even if the TG had finished.
- Data view: added more resolution in the viewing of the samples when zooming in. In some cases the lower 8 bits were lost in the drawing of the wave when having a sample size of 16 bit and more.
- Data port registers where not swapped to another bank if only a bank switch occurred.
- NextInvertBank located in the DP_PortCtrl register became active immediately and not at the next bank switch, is now ok.

Previous items version 1.41

This was a test release.

Previous items version 1.40

- solved bug that sometimes caused that the analyser software was crashing after 10 to 20 times performing a record/play scenario.
- Soundwire 1.1 add port direction in analyzer memory map
- NAK cell was coloured red on the position of the ACK in the RAW view

- PDM enable was not cleared, so once a pdm/pxm script has read, the flag kept set.
- Indicating Parity error in the script view
- Bug solved that Script running at low clock frequency could have been stopped before the end.
- Added feature to change the SoundWire bus clock frequency at frame boundary. Divider 1 and 2 are operational.

Previous items version 1.39

- solved bug about PCM/PDM interface (see 1.38)
- solved bug that sometimes generated extra data in the TG at the end of a script in case the previous script was larger than the current script.

Previous items version 1.38

- A recently introduced bug in the IP of the analyzer has the effect that some hardware boxes are failing on doing PDM/PCM I/O via the port on the connector. Therefor this release is mainly the swimmy version 1.37 but the IP (bit file) of version 1.34. As soon as this issue is solved there will be another release.

Previous items version 1.37

- solved some issues in the navigation through the views
- added more info in the script view
- added a new Scriptbuilder in the installation package

Previous items version 1.36

- Solved bug with PHY_Sync set in script

The screenshot shows a software interface with a script view. It includes a 'Frame' section with a timestamp of 0.000 312 047 ns and a 'Frame' section with a timestamp of 0.000 317 837 ns. Below these, there are sections for 'Control Word' and 'Data'. The 'Data' section contains a table with columns for 'Slave 0' through 'Slave 11'. The table has two rows of data, one for 'Slave 0' and one for 'Slave 11'. The 'Slave 0' row shows 'Not Present' for all slaves, while the 'Slave 11' row shows 'Not Present' for all slaves except 'Slave 11', which is 'Present'.

| Slave 0 | Slave 1 | Slave 2 | Slave 3 | Slave 4 | Slave 5 | Slave 6 | Slave 7 | Slave 8 | Slave 9 | Slave 10 | Slave 11 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present |
| Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Present |

- Implemented the corruption of Dyn sync in the script so the user can choose for a 1 bit or 2 bits corruption of the Dynamic Sync.

Scriptbuilder:

| | | | |
|----|---|-------------------------------|--|
| 9 | E | Frame Start | 1, ROW=0, COL=0, PREQ=0, SS=0xB1, PHY=0, DS=Invalid... |
| | | Repeat | 1 |
| | | Row Control (ROW) | 0 - 48 Rows |
| | | Column Control (COL) | 0 - 2 Columns |
| | | Ping Request (PREQ) | 0 - No |
| | | Static Sync (SS) | 0xB1 |
| | | Select PHY (PHY) | 0 - Basic PHY |
| | | Dynamic Sync (DS) | Invalid - 1 bit error |
| | | Parity (P) | Valid |
| | | Negative Acknowledgment (NAK) | 0 - No |
| | | Positive Acknowledgment (ACK) | 0 - No |
| 10 | | PING | SSP=0, BREQ=0, BREL=0 |
| 11 | | Frame Start | 1, ROW=0, COL=0, PREQ=0, SS=0xB1, PHY=0, DS=Valid, ... |
| 12 | | PING | SSP=0, BREQ=0, BREL=0 |
| 13 | E | Frame Start | 1, ROW=0, COL=0, PREQ=0, SS=0xB1, PHY=0, DS=Invalid... |
| | | Repeat | 1 |
| | | Row Control (ROW) | 0 - 48 Rows |
| | | Column Control (COL) | 0 - 2 Columns |
| | | Ping Request (PREQ) | 0 - No |
| | | Static Sync (SS) | 0xB1 |
| | | Select PHY (PHY) | 0 - Basic PHY |
| | | Dynamic Sync (DS) | Invalid - 2 bit errors |
| | | Parity (P) | Valid |
| | | Negative Acknowledgment (NAK) | 0 - No |
| | | Positive Acknowledgment (ACK) | 0 - No |
| 14 | | PING | SSP=0, BREQ=0, BREL=0 |

Script view:

| Frame | Timestamp | Frame shape | Dynamic Sync | Static Sync | PHY sync | Slave 0 | Slave 1 | Slave 2 | Slave 3 | Slave 4 | Slave 5 | Slave 6 | Slave 7 | Slave 8 | Slave 9 | Slave 10 | Slave 11 |
|-------|------------------|------------------|--------------------------|-------------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 22 | 0.001 956 000 ns | 48 rows x 2 cols | Dynamic Sync 1 Not error | 0 | 0 | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present |
| 23 | 0.001 104 000 ns | 48 rows x 2 cols | Dynamic Sync 1 Not error | 0 | 0 | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present |
| 24 | 0.001 152 000 ns | 48 rows x 2 cols | Dynamic Sync 1 Not error | 0 | 0 | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present |
| 25 | 0.001 200 000 ns | 48 rows x 2 cols | Dynamic Sync 2 Not error | 0 | 0 | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present | Not Present |

Synthetic view of a capture:

| | | | | | | | | | | | | | | | | |
|----------|-------------------------------|----------------------|---------------------------------|---|------------------------|------------------------|------------------------|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|
| Frame 23 | Timestamp 0.000 322 637 ns | Debug status 0x30 | Frame shape 48 rows x 2 cols | Control Word 0x00 0x00 0x00 0xb1 0x00 0x48 | | PREQ 0 | Static Sync 0x0b1 | Dynamic Sync 9 (0x9) | PHY sync 0 | Opposite 0 Ping | PAR 0 | NAK 0 | ACK 0 | | | |
| NORE | Ping | SSA 0 | BW REQ 0 | BW REL 0 | Slave 0 Not Present | Slave 1 Not Present | Slave 2 Not Present | Slave 3 Not Present | Slave 4 Not Present | Slave 5 Not Present | Slave 6 Not Present | Slave 7 Not Present | Slave 8 Not Present | Slave 9 Not Present | Slave 10 Not Present | Slave 11 Not Present |
| Frame 24 | Timestamp 0.000 327 627 ns | Debug status 0x30 | Frame shape 48 rows x 2 cols | Control Word 0x00 0x00 0x00 0xb1 0x00 0x14 | | PREQ 0 | Static Sync 0x0b1 | Dynamic Sync 2 (0x2) | PHY sync 0 | Opposite 0 Ping | PAR 1 | NAK 0 | ACK 0 | | | |
| NORE | Ping | SSA 0 | BW REQ 0 | BW REL 0 | Slave 0 Not Present | Slave 1 Not Present | Slave 2 Not Present | Slave 3 Not Present | Slave 4 Not Present | Slave 5 Not Present | Slave 6 Not Present | Slave 7 Not Present | Slave 8 Not Present | Slave 9 Not Present | Slave 10 Not Present | Slave 11 Not Present |
| Frame 25 | Timestamp 0.000 332 647 ns | Debug status 0x30 | Frame shape 48 rows x 2 cols | Control Word 0x00 0x00 0x00 0xb1 0x00 0x14 | | PREQ 0 | Static Sync 0x0b1 | Dynamic Sync 8 (0x8) | PHY sync 0 | Opposite 0 Ping | PAR 1 | NAK 0 | ACK 0 | | | |
| NORE | Ping | SSA 0 | BW REQ 0 | BW REL 0 | Slave 0 Not Present | Slave 1 Not Present | Slave 2 Not Present | Slave 3 Not Present | Slave 4 Not Present | Slave 5 Not Present | Slave 6 Not Present | Slave 7 Not Present | Slave 8 Not Present | Slave 9 Not Present | Slave 10 Not Present | Slave 11 Not Present |
| Frame 26 | Timestamp 0.000 337 637 ns | Debug status 0x30 | Frame shape 48 rows x 2 cols | Control Word 0x00 0x00 0x00 0xb1 0x00 0x70 | | PREQ 0 | Static Sync 0x0b1 | Dynamic Sync 14 (0xe) | PHY sync 0 | Opposite 0 Ping | PAR 1 | NAK 0 | ACK 0 | | | |
| NORE | Ping | SSA 0 | BW REQ 0 | BW REL 0 | Slave 0 Not Present | Slave 1 Not Present | Slave 2 Not Present | Slave 3 Not Present | Slave 4 Not Present | Slave 5 Not Present | Slave 6 Not Present | Slave 7 Not Present | Slave 8 Not Present | Slave 9 Not Present | Slave 10 Not Present | Slave 11 Not Present |
| Frame 27 | Timestamp 0.000 342 627 ns | Debug status 0x30 | Frame shape 48 rows x 2 cols | Control Word 0x00 0x00 0x00 0xb1 0x00 0x50 | | PREQ 0 | Static Sync 0x0b1 | Dynamic Sync 10 (0xa) | PHY sync 0 | Opposite 0 Ping | PAR 1 | NAK 0 | ACK 0 | | | |
| NORE | Ping | SSA 0 | BW REQ 0 | BW REL 0 | Slave 0 Not Present | Slave 1 Not Present | Slave 2 Not Present | Slave 3 Not Present | Slave 4 Not Present | Slave 5 Not Present | Slave 6 Not Present | Slave 7 Not Present | Slave 8 Not Present | Slave 9 Not Present | Slave 10 Not Present | Slave 11 Not Present |

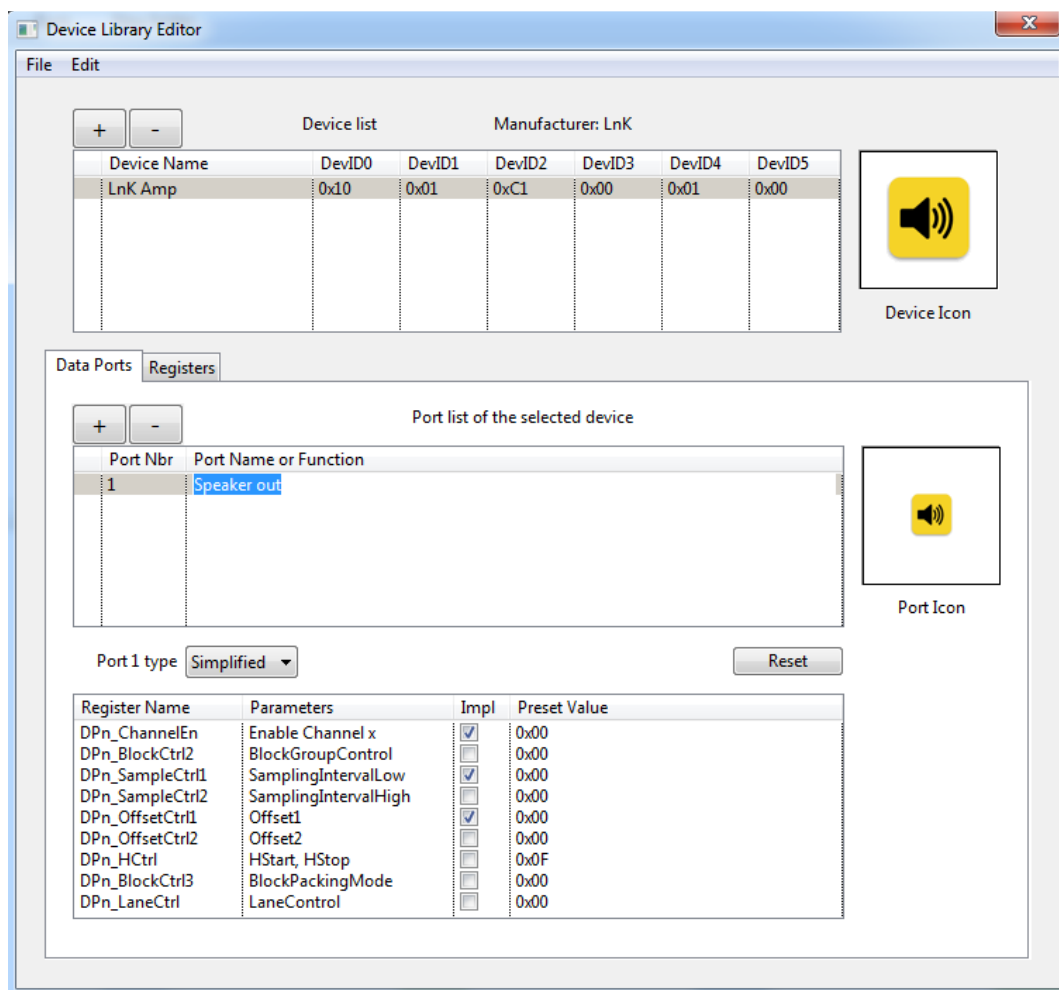
Previous items version 1.35

- solved loss of sync bug after a frame shape change message in the analyzer.

Previous items version 1.34

- Added binary data export.
- Solved bug while looping in the TG.
- Implemented sample decoding according to SSP
- Solved problem showing sample values in the notebook pages
- Solved magnifying problem in the data view.
- Solved the fact that the history was not initialised when reading a .swa file or stopped recording. So it could be that already at the start of the trace some active data channels were shown while they were configured later in the trace.
- Added preset value in the analyzer which are entered by the device library editor in scriptbuilder. (Dev_ xxxx_ yyyy.xml)

Now it is possible to define preset values for a number of registers in data ports of a device. When a Full, Simplified or Reduced port is defined, the default values will be transferred to the analyzer registers when the device is detected at enumeration. This way the analyzer is aware of the default or preset values so it can decode the samples and show data streams.



```
<!-- Device/Product Description -->
<!-- Creation date : 26-9-2016 -->
<!-- Creator : ScriptBuilder 1.2.10 -->
```

- Added USER DEFINED opcode + parameters
scriptbuilder

script view

detailed view

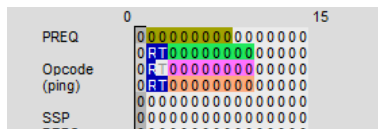
| | | | | | | | | | | |
|----------|-------------------------------|---|-----------|----------------------|-------------------------|---------------|----------------------------|----------|----------|----------|
| Frame 19 | Timestamp 0.000.236.288 ns | Control Word 0x1a 0x5a 0x37 0xb1 0xad 0x40 | PREQ 0 | Static Sync 0x0b1 | Dynamic Sync 8 (0x8) | PHY sync 1 | Opcode 1 (0x1) Reserved | PAR 0 | NAK 0 | ACK 0 |
|----------|-------------------------------|---|-----------|----------------------|-------------------------|---------------|----------------------------|----------|----------|----------|

| | | | |
|------|----------|----------------------|-------------------|
| NORE | Reserved | Reserved1 0xa5a37 | Reserved2 0x5a |
|------|----------|----------------------|-------------------|

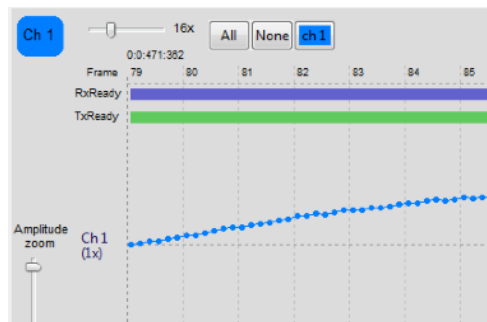
| | | | | |
|-----------|---------------|----------------------------------|--------------------------|----------------------|
| PREQ 0 | Opcode 001 | Reserved 10100101101000110111 | Static Sync 101100011 | Reserved 01011010 |
|-----------|---------------|----------------------------------|--------------------------|----------------------|

Previous items version 1.32

- Solved bug in data sample extracting that was introduced in version 1.31
- Solved a bug that showed already a channel configuration in the RAW view at the start of the captured trace.
- Added flow control indication in RAW and DATA view



| Data samples | | | | | 1. Device 1 |
|--------------|------------|---------------|-----------------|------------|-------------|
| Frame | Bit Offset | Sample Length | Flow Control | Chan 1 | |
| 79 | 58 | 8 | RxReady TxReady | 0x00000006 | |
| 80 | 58 | 8 | RxReady TxReady | 0x0000000e | |
| 81 | 58 | 8 | RxReady TxReady | 0x00000015 | |
| 82 | 58 | 8 | RxReady TxReady | 0x0000001c | |
| 83 | 58 | 8 | RxReady TxReady | 0x00000020 | |



Previous items version 1.31

- Added dithering on sine wave in TG PCM streams
- Solved instabilities while recording in full Rec / Liveview
- Solved bugs in data view
- Solved bugs in Time stamp indication in LiveView recording
- Status information updated when recording / decoding grabbed data

Previous items version 1.29 - 1.30

- Added support to host the remote control dll + release of DLL + test app 1.3
- Implemented Clock Stop for the TG
- Correct bug in data decoding. (was seen as a glitch in the data view)
- improved the connection phase in software when connecting the hardware

Previous items version 1.28

- Solved newly introduced Data decoding bug since version 1.27

Previous items version 1.27

- Added PRBS generation in the TG
- Fixed some items in the Block Group Count decoding

Previous items version 1.26

- All views have now the extra info panel
 - Memory viewer has now Component defined registers and areas.
 - Bug solved in showing parity error
- Traffic generator
 - capable to generate a Clock Pause with auto restart
 - has now a 64 MB memory footprint compared to 8MB before
 - a definable number of bits in the source data file.
 - Solved a bug using data files. (Sample size)

- Able to include BRA data

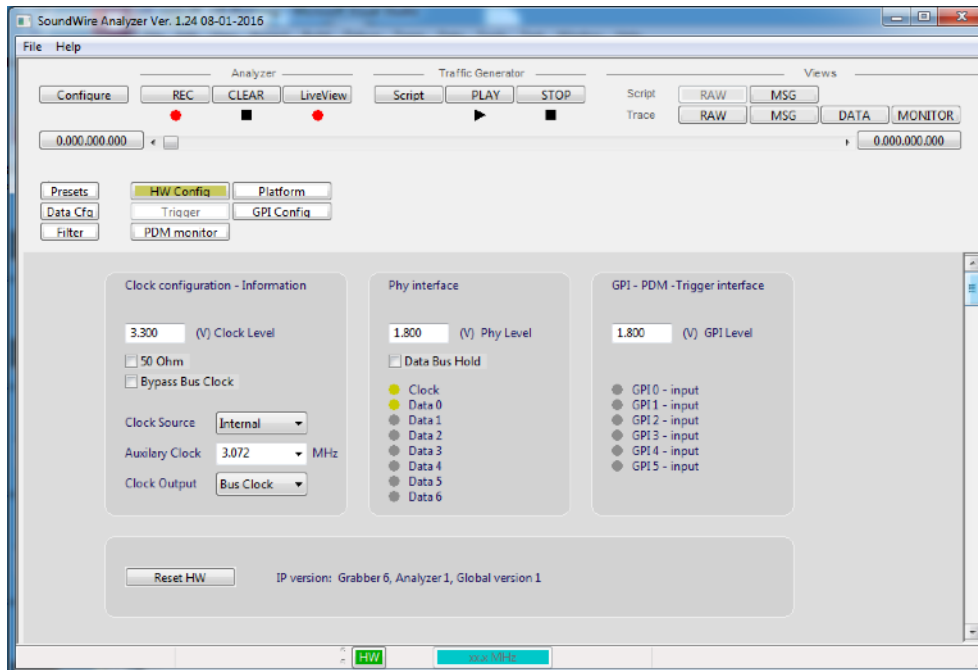
Previous items version 1.24

- Config:
 - updated HW config panel
 - added PDM monitor
- Traffic Generator:
 - hardware looping in script files
 - extra info in script files
- Analyzer capture: new grabber is implemented
 - time stamp
 - parity check
 - long recordings
 - Live View is available.
 - Full recording has also Live View enabled with only Read/Write messages
- Analyzer views:
 - corrected false synchronisation when swapping between views
 - corrected misalignment of SSP counters
 - added Hide Ping check box to remove uninteresting pings
 - added Go To frame functionality
 - improved Search
 - Filter is operational
 - Data Cfg for manual data stream config
- RAW view:
 - corrected the coloured area for each stream
 - added info on the different fields in the Control Word
- Data view:
 - overview of all streams detected
 - improved visualisations
 - easy zoom
 - easy channel selection
 - SSP indication in the trace
 - Bank indication in the trace
 - Config register access in the trace
 - Frame shape indication in the trace
 - Monitoring of data port registers/parameters in the trace
 - configurable data stream parameters for custom data channel monitoring
 - added extra info panels. Showing actual data at the cursor position. (except Bus)
 - Bus panel: statistics (overview of the complete trace)
 - Memory panel: viewer (soon to be functional, now it is in the Monitor view)
 - Component panel: visualisation of detected components and data connections
 - Ports panel: visualisation of detected ports and showing data connections
 - Port Properties panel: showing all actual data port parameters
 - Samples panel: showing all actual data sample values
 - Registers panel: showing all actual registers of the selected device/data port
 - Streams panel: gives an overview of used ports for all devices
 - Scope panel: has an 8 channel analog oscilloscope to show the audio data
 - FFT panel: contains an 8 channel FFT analysis

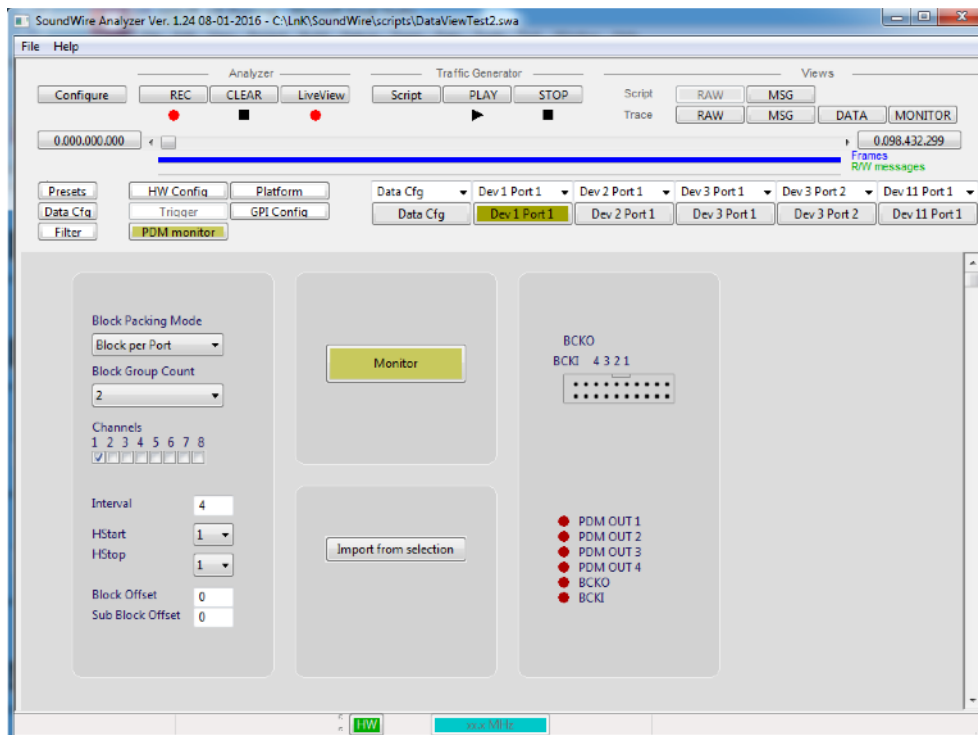
- Export:
 - Message export
 - Frame selection
 - Device selection
 - Opcode selection
 - Detailed message export to CSV file
 - Control Word export to CSV file
 - Synthetic view export to HTML file. (browser and printing)
- Data export
 - Frame selection
 - Stream selection (for all active data ports on each device)
 - Channel selection
 - Frame, bit slot offset, channel, Sample value (hex); to CSV file
 - Frame, bit slot offset, channel, Sample value (decimal); to CSV file
 - Sample value (hex); to CSV file
 - Sample value (decimal); to CSV file

Config

updated HW config panel



added PDM monitor



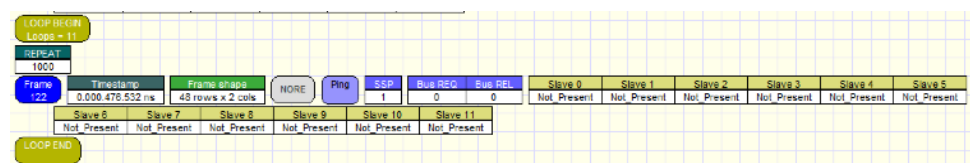
Traffic Generator

hardware looping in script files

Definition in Scriptbuilder

| | | |
|----|--------------------|--|
| 31 | CONFIGURE CHANNELS | DA=1, DP=1, BSEL=0, CH1=0, CH2=0, CH3=0, CH4=0, C... |
| 32 | Loop Begin | CNT=10 |
| | Repeat (CNT) | 10 |
| 33 | Frame Start | 1000, ROW=0, COL=0, PREQ=0, SS=0xB1, PHY=0, DS=... |
| 34 | PING | BREQ=0, SSP=1, BREL=0 |
| 35 | Loop End | |
| 36 | Comment | Stop the TG stream |
| 37 | Frame Start | 1, ROW=0, COL=0, PREQ=0, SS=0xB1, PHY=0, DS=Vali... |

Appearance in the script view



extra info in script files

```
Script filename : C:\LnK\SoundWire\scripts\test6.xml
Creator : Johan klewals
Creation date : 18/11/2015
Modification date : 18/11/2015
Test6. A simple test for the Message and frame grabber
One Bus_reset at the start and no frame shape changes.
SyncLoss Ignore= 2
frame shape 96x2 One Write message to test grabber live view part
```

| Initialization | Frequency | BusLevel | BusMode | VCO output |
|----------------|-------------|----------|---------|------------|
| | 12288000 Hz | 1.800 V | On | test6.vcd |

RESET
Timestamp: 0.000000.000 ns

Device enumeration (SlvStat not reflecting any devices)
Begin Macro DEVICE ENUMERATION(DA=1, GID=0, 0x11, 0x01, 0xc1, 0x00, 0x01, 0x66)

REPEAT
20

Frame 0
Timestamp: 0.000000.000 ns
Frame shape: 60 rows x 2 cols
NORE Ping Bus REQ Bus REL
Slave 0 Slave 1 Slave 2 Slave 3 Slave 4 Slave 5 Slave 6
Not_Present Not_Present Not_Present Not_Present Not_Present Not_Present Not_Present
Slave 7 Slave 8 Slave 9 Slave 10 Slave 11
Not_Present Not_Present Not_Present Not_Present Not_Present

LOOP BEGIN
Loops = 50001

End of Macro DEVICE ENUMERATION
Begin Macro DEVICE ENUMERATION(DA=2, GID=0, 0x12, 0x02, 0xba, 0x12, 0x34, 0x6C)

Frame 20
Timestamp: 0.000097.649 ns
Frame shape: 60 rows x 2 cols
ACK ENUMERATION Write Device Address RegisterAddress Data SCID SCID_DevNumber Device Number Group Id
0 (0x0) 0x0046 0x01 Generic 0x01 1 (0x1) 0 (0x0)

Device enumeration (SlvStat not reflecting any devices)
Begin Macro DEVICE ENUMERATION(DA=1, GID=0, 0x11, 0x01, 0xc1, 0x00, 0x01, 0x66)

REPEAT
14

Frame 21
Timestamp: 0.000102.522 ns
Frame shape: 60 rows x 2 cols
NORE Ping Bus REQ Bus REL
Slave 0 Slave 1 Slave 2 Slave 3 Slave 4 Slave 5 Slave 6
Not_Present Not_Present Not_Present Not_Present Not_Present Not_Present Not_Present
Slave 7 Slave 8 Slave 9 Slave 10 Slave 11
Not_Present Not_Present Not_Present Not_Present Not_Present

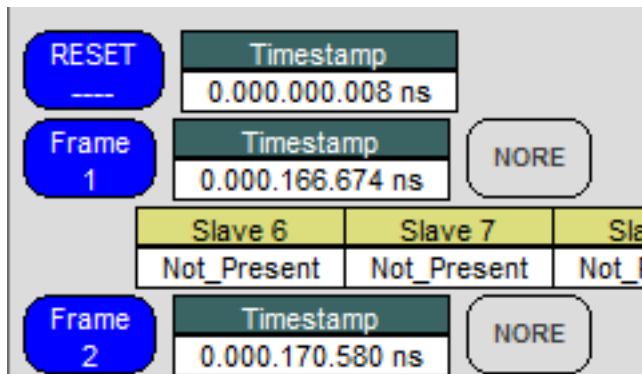
LOOP END

END

Analyzer capture

new grabber is implemented

time stamp



parity check

long recordings

Live View is available.

Full recording

has also Live View enabled with only Read/Write messages

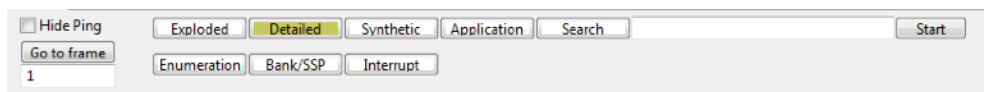
Analyzer views

corrected false synchronisation when swapping between views

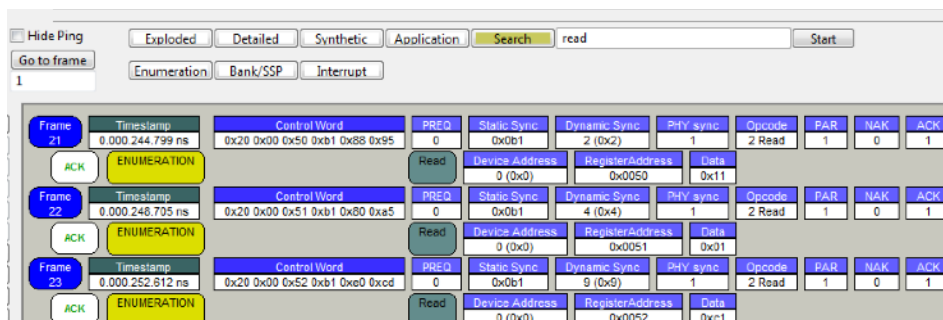
corrected misalignment of SSP counters

added Hide Ping check box to remove uninteresting pings

added Go To frame functionality



Improved Search



Filter is operational

Presets ☐ Hide Ping Exploded Detailed Synthetic Application Search read Start

Data Cfg Go to frame Enumeration Bank/SSP Interrupt

Filter 1

Ping ☐
SSP ☐
Status Change ☐

Write ☐
Read ☒

Devices
0 1 2
3 4 5
6 7 8
9 10 11
GroupId 12
GroupId 13
Monitor
Broadcast

Register Area
All

Data port 0

NAK ☐
No ACK ☐
ACK ☐
PREQ ☐

Include
Exclude
Off

| Frame | Timestamp | ACK | ENUMERATION | Read | Device Address | RegisterAddress | Data |
|-------|------------------|-----|-------------|------|----------------|-----------------|------|
| 26 | 0.000.264.330 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0055 | 0x66 |
| 28 | 0.000.272.143 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0050 | 0x12 |
| 29 | 0.000.276.049 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0051 | 0x02 |
| 30 | 0.000.279.955 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0052 | 0xba |
| 31 | 0.000.283.862 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0053 | 0x12 |
| 32 | 0.000.287.768 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0054 | 0x34 |
| 33 | 0.000.291.674 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0055 | 0xbc |
| 35 | 0.000.299.487 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0050 | 0xab |
| 36 | 0.000.303.393 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0051 | 0xcd |
| 37 | 0.000.307.299 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0052 | 0xef |
| 38 | 0.000.311.205 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0053 | 0x98 |
| 39 | 0.000.315.112 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0054 | 0x76 |
| 40 | 0.000.319.018 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0055 | 0x54 |
| 42 | 0.000.326.830 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0050 | 0xa1 |
| 43 | 0.000.330.737 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0051 | 0xb2 |
| 44 | 0.000.334.643 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0052 | 0xc3 |
| 45 | 0.000.338.549 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0053 | 0xd4 |
| 46 | 0.000.342.455 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0054 | 0xe5 |
| 47 | 0.000.346.362 ns | ACK | ENUMERATION | Read | 0 (0x0) | 0x0055 | 0xf6 |

Presets

Data Cfg

Go to frame

Overview

Data Cfg

Dev 1 Port 1

Dev 2 Port 1

Dev 3 Port 1

Dev 3 Port 2

Dev 11 Port 1

Filter

1

Data Cfg

Dev 1 Port 1

Dev 2 Port 1

Dev 3 Port 1

Dev 3 Port 2

Dev 11 Port 1

Block Packing Mode

Block per Port

Block Group Count

Port Flow Mode

Isynchronous

Channels

1 2 3 4 5 6 7 8

Sample Len

Interval

HStart

HStop

Block Offset

Sub Block

Enable

Begin frm

End frm

Apply

Frame

161

timestamp

0.000791674 ns

col / row

cols 2 rows 48

Control Word

0x04 0x00 0x00 0xb1 0x00 0xb0

HzBQ

0

Static Sync

0 0xb1

Dynamic Sync

13 (0xd)

Hrv sync

1

Opcode

0 Ping

PAI

1

NAK

0

ACK

0

NOPE

Ping

SSP

1

Bus REQ

0

Bus REL

0

Slave 0

Not Present

Slave 1

Not Present

Slave 2

Not Present

Slave 3

Not Present

Slave 4

Not Present

Slave 5

Not Present

Slave 6

Not Present

Slave 7

Not Present

Slave 8

Not Present

Slave 9

Not Present

Slave 10

Not Present

Slave 11

Not Present

PREQ

0

Opcode (ping)

0

SSP

1

BREQ

0

BREL

0

Slave Stat 11 (0)

0

Slave Stat 10 (0)

0

Slave Stat 9 (0)

0

Slave Stat 8 (0)

0

Slave Stat 7 (0)

0

Slave Stat 6 (0)

0

Slave Stat 5 (0)

0

Slave Stat 4 (0)

0

Stat Sync

0

Hrv Sync

1

Slave Stat 3 (0)

0

Slave Stat 2 (0)

0

Slave Stat 1 (0)

0

Slave Stat 0 (0)

0

Dyn Sync

1

Parity

0

NAK

0

ACK

0

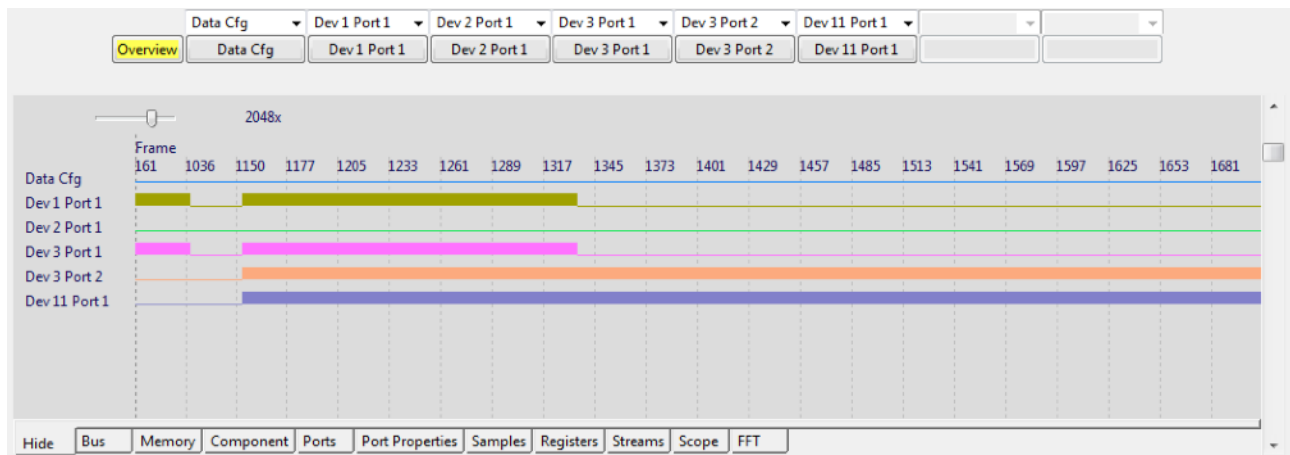
RAW view

corrected the coloured area for each stream
added info on the different fields in the Control Word

[illegible]

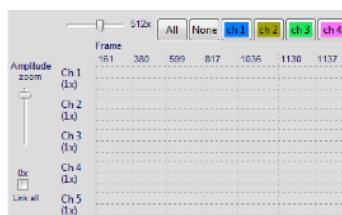
Data view

overview of all streams detected

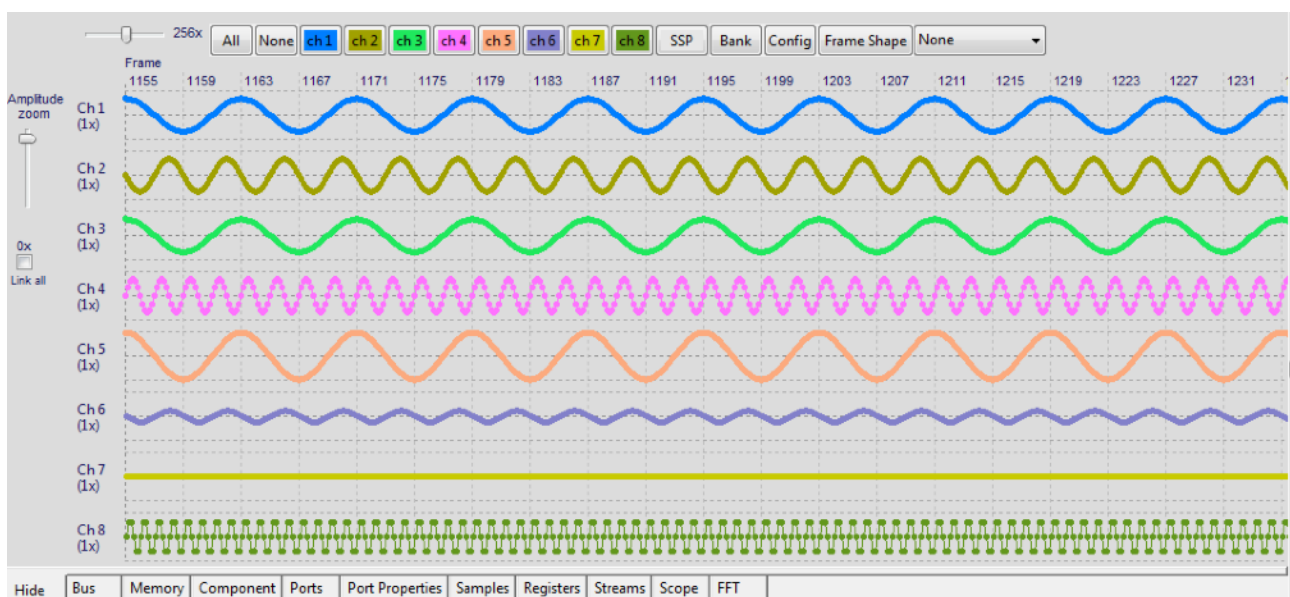


improved visualisations

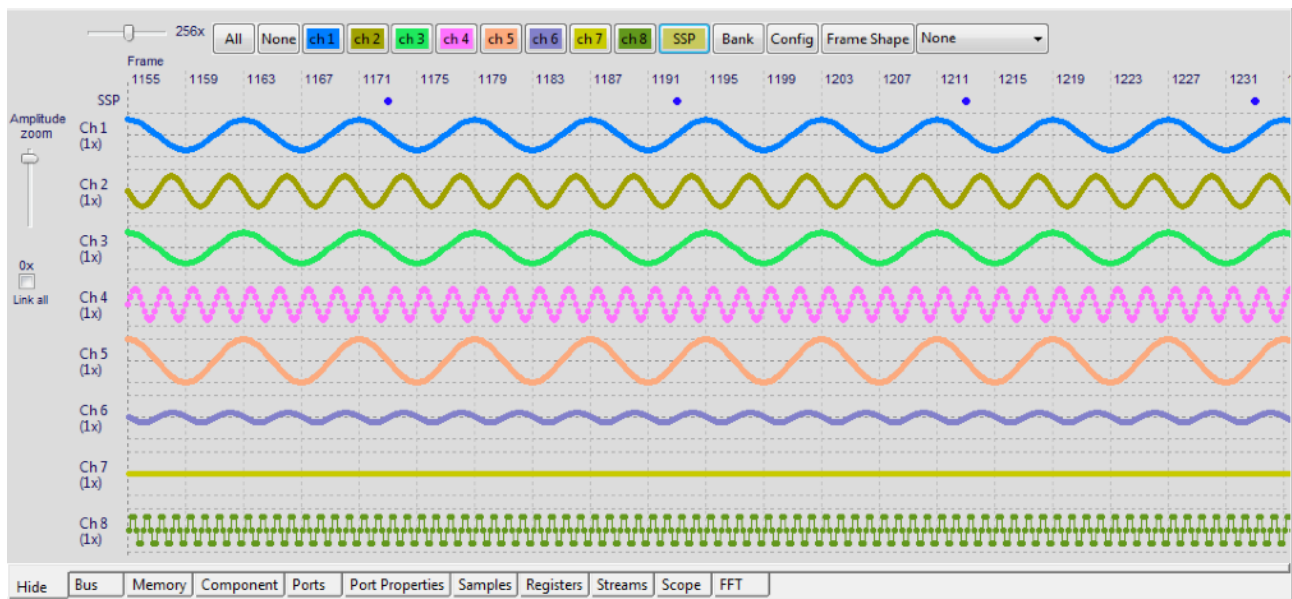
easy zoom



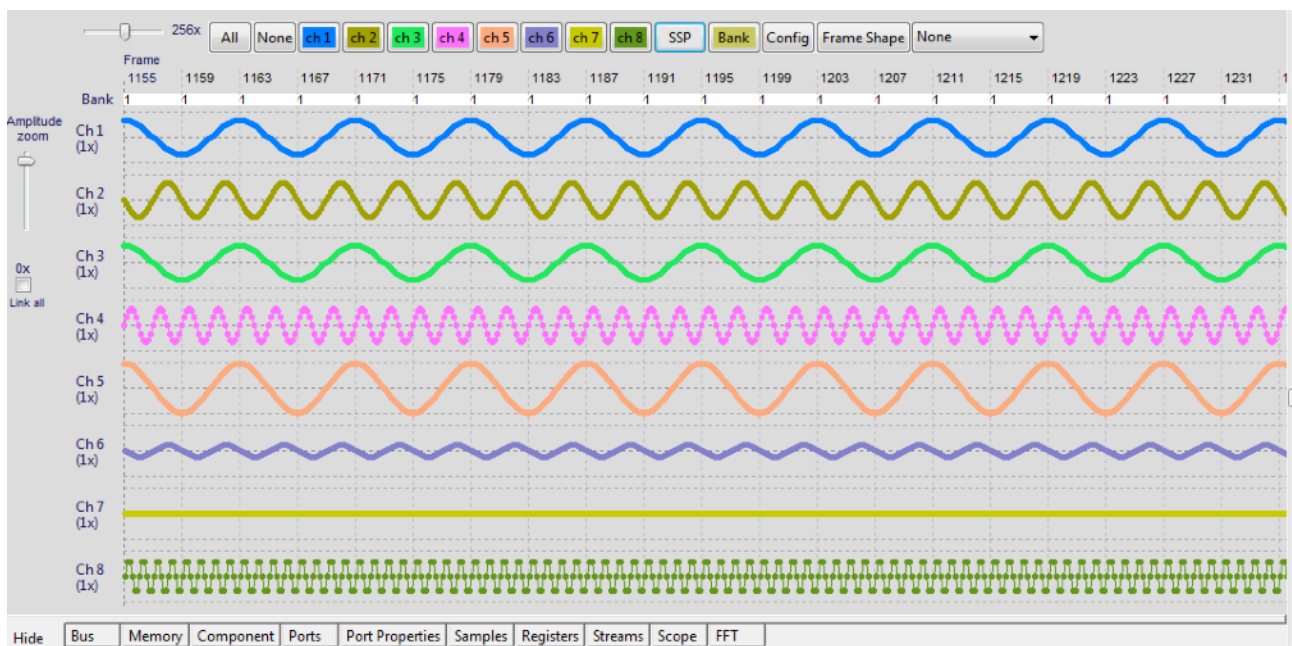
easy channel selection



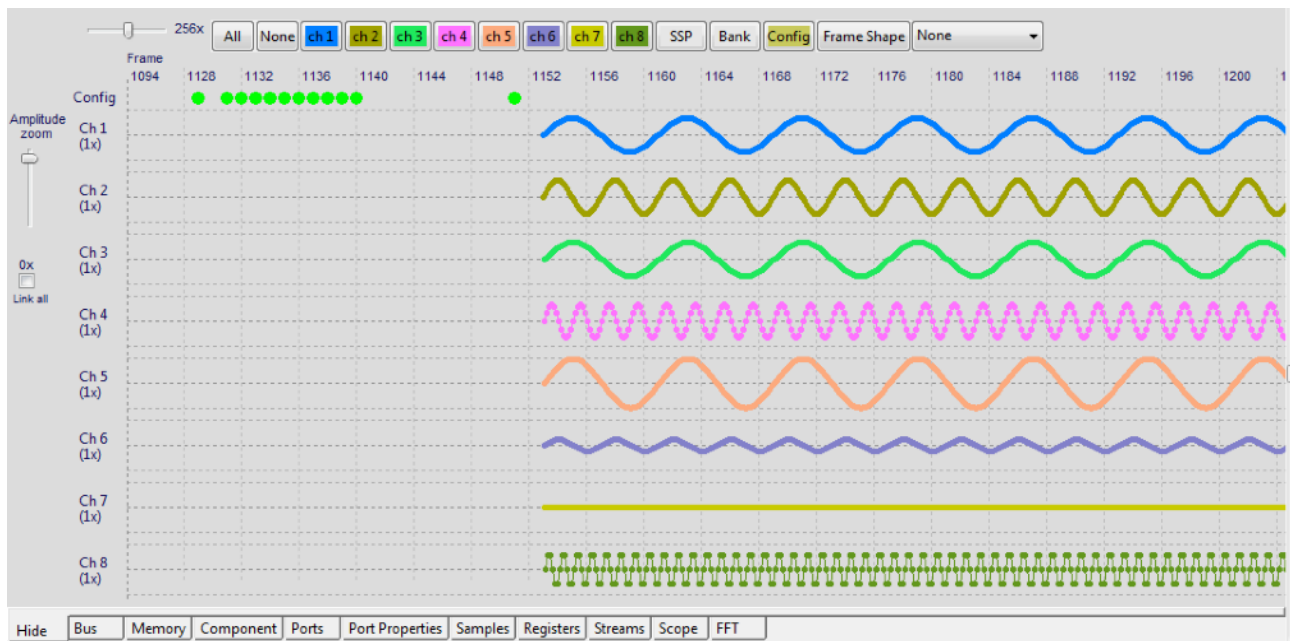
SSP indication in the trace



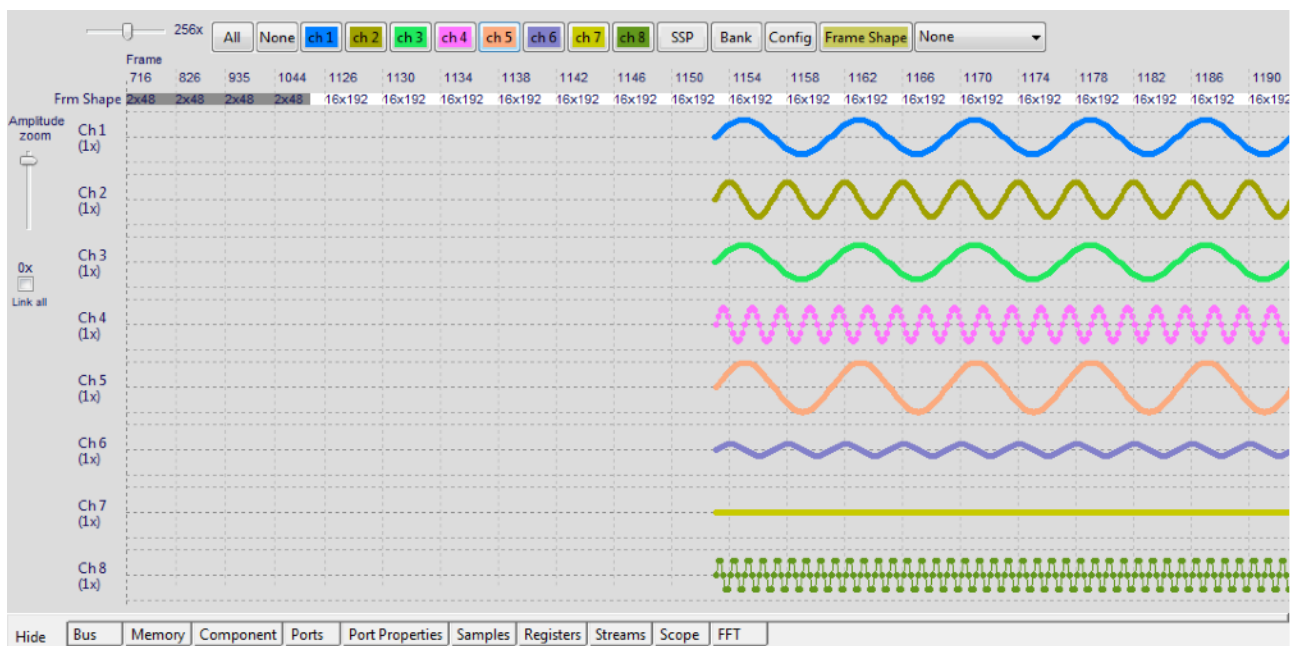
Bank indication in the trace



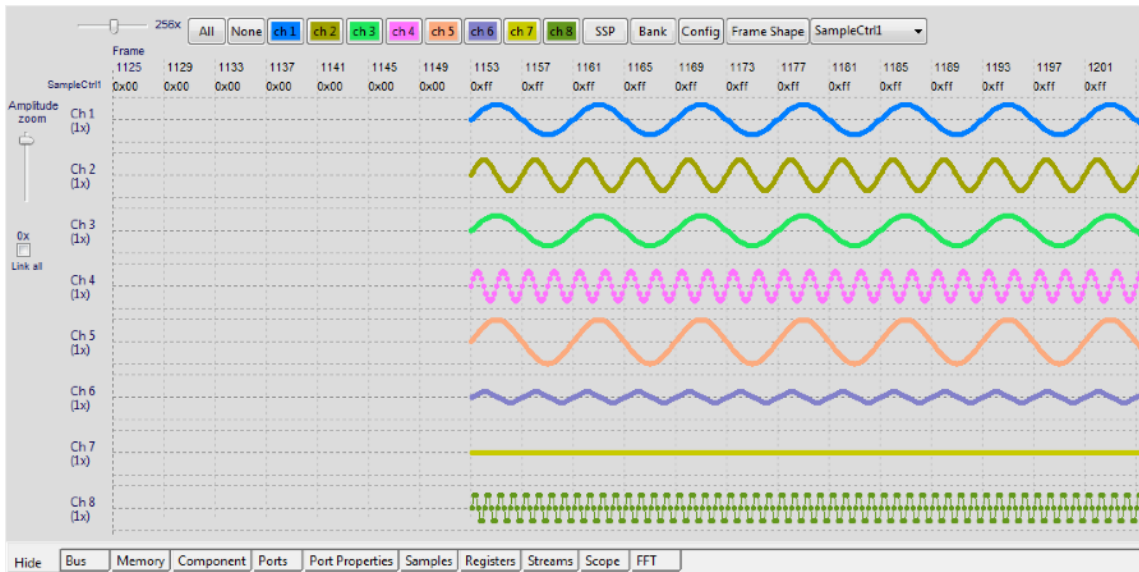
Config register access in the trace



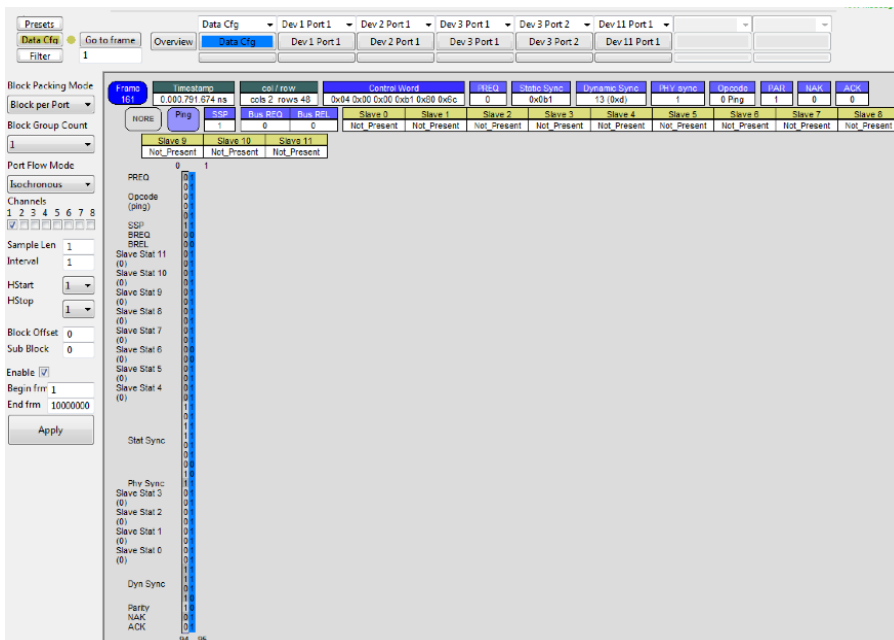
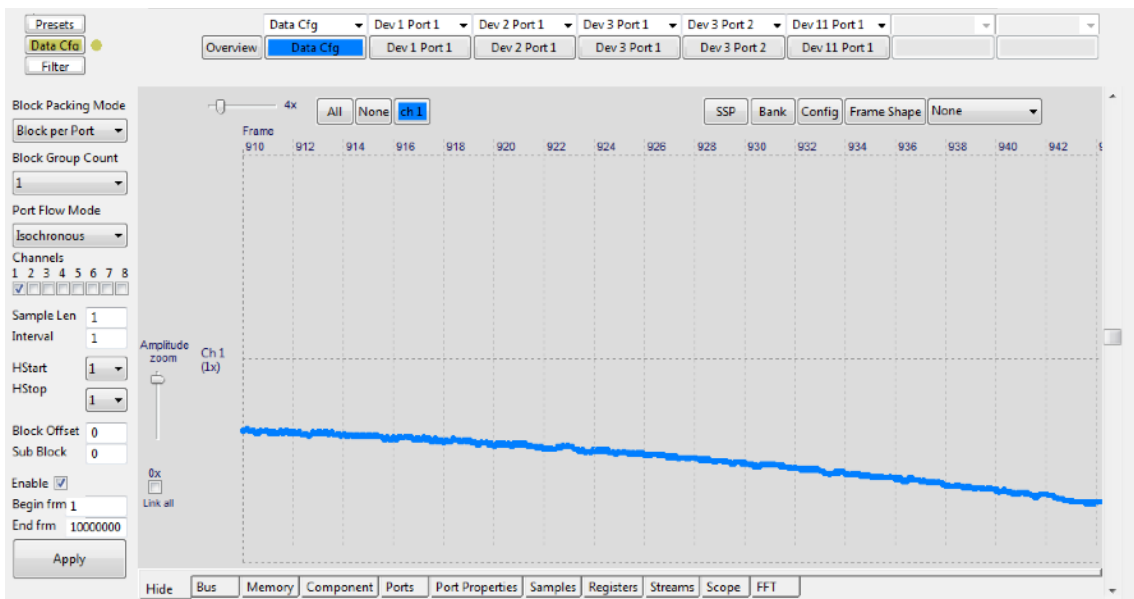
Frame shape indication in the trace



Monitoring of data port registers/parameters in the trace



configurable data stream parameters for custom data channel monitoring



Added extra info panels.

Showing actual data at the cursor position. (except Bus)

Bus panel: statistics (overview of the complete trace)

| | Lost Frames | Frames | Sync lost | Parity error | NAK | ACK | No Response | Ping | Write | Read | Invalid Opcode |
|-------------|-------------|--------|-----------|--------------|-----|-----|-------------|------|-------|------|----------------|
| Total | 0 | 1876 | | | 0 | 153 | 1723 | 1728 | 128 | 24 | 0 |
| Device 0 | | | | | 0 | 28 | 28 | | 4 | 24 | |
| Device 1 | | | | | 0 | 28 | 28 | | 28 | 0 | |
| Device 2 | | | | | 0 | 22 | 22 | | 22 | 0 | |
| Device 3 | | | | | 0 | 47 | 47 | | 47 | 0 | |
| Device 4 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 5 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 6 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 7 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 8 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 9 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 10 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Device 11 | | | | | 0 | 23 | 23 | | 23 | 0 | |
| Group ID 12 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Group ID 13 | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Monitor | | | | | 0 | 0 | 0 | | 0 | 0 | |
| Broadcast | | | | | 0 | 7 | 7 | | 4 | 0 | |

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

Memory panel: viewer (soon to be functional, now it is in the Monitor view)

Component panel: visualisation of detected components and data connections

Memory Viewer is not yet available in this release
Go to the Monitor View -> Registers

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

MASTER

LnK 1

LnK Amp

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

02ba 2

Test Microphone

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

cdef 3

Bluetooth IF

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

4 Not Touched

5 Not Touched

6 Not Touched

7 Not Touched

8 Not Touched

9 Not Touched

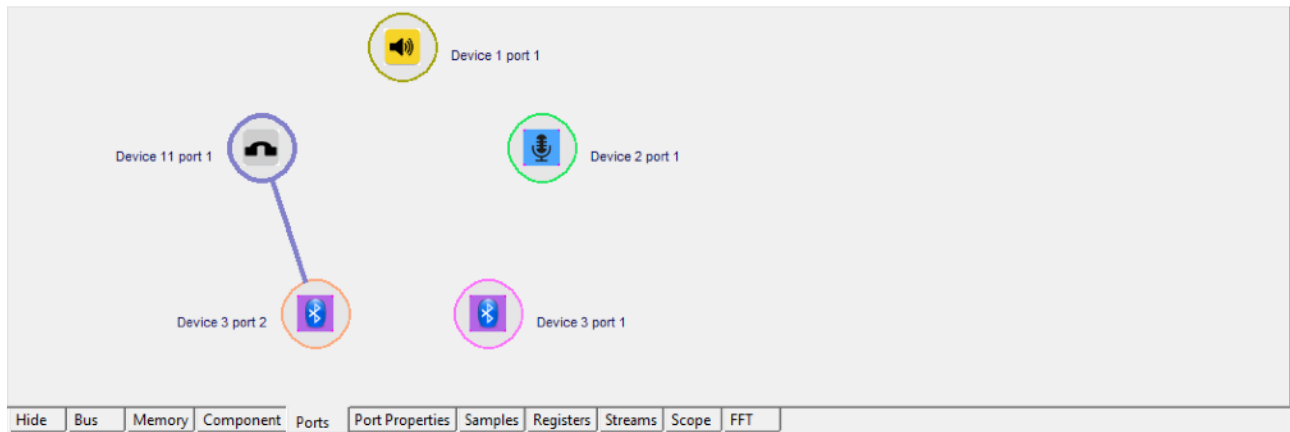
10 Not Touched

Audio Codec

11

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

Ports panel: visualisation of detected ports and showing data connections



Port Properties panel: showing all actual data port parameters

| | Common | Bank 0 | Bank 1 | Comment |
|------------------------|------------|--------------|--------|--|
| Used Bank | 1 | | | Indicated Bank (1) ^ Inverted Bank (0) = Used Bank (1) |
| Inverted Bank | 0 | | | |
| Port Data Mode | 0 | | | Normal operation |
| Port Flow Mode | 0 | | | Normal |
| BPT Payload Type | | | | Only available on data port 0 |
| Word Length | 24 bit(s) | | | |
| Block Packing Mode | 0 | 0 | | Block per Port |
| Block Grouping Control | 1 | 1 | | Used BlockGroupCount = 1 |
| Sampling Interval | 1 (0x0001) | 512 (0x0200) | | |
| Offset | 0x0000 | 0x0000 | | Offset = 0 (0x0000) |
| HStart | 0 | 3 | | |
| HStop | 0 | 10 | | |
| HWidth | 1 | 8 | | |
| Sample Rate | - | - | - | Info not available |
| Channel Enable | ----- | 87654321 | | Chan 8 --> Chan 1 |
| Channel Prepare | 87654321 | | | Chan 8 --> Chan 1 |
| Channel Ready | ----- | | | Chan 8 --> Chan 1 |
| Lane | 0 | 0 | | |

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

Samples panel: showing all actual data sample values

| Frame | Channel | Bit Offset | Sample Length | Sample Value |
|-------|---------|------------|---------------|--------------|
| 1292 | 1 | 42 | 24 | 0x00401370 |
| 1292 | 2 | 90 | 24 | 0x00a56209 |
| 1292 | 3 | 138 | 24 | 0x00401370 |
| 1292 | 4 | 186 | 24 | 0x00000000 |
| 1292 | 5 | 234 | 24 | 0x005a8279 |
| 1292 | 6 | 282 | 24 | 0x00df990e |
| 1292 | 7 | 330 | 24 | 0x00000000 |
| 1292 | 8 | 378 | 24 | 0x00000000 |
| 1292 | 1 | 554 | 24 | 0x00372a06 |
| 1292 | 2 | 602 | 24 | 0x00a8787d |
| 1292 | 3 | 650 | 24 | 0x00372a06 |
| 1292 | 4 | 698 | 24 | 0x00d2b105 |
| 1292 | 5 | 746 | 24 | 0x004debe4 |
| 1292 | 6 | 794 | 24 | 0x00e0f184 |
| 1292 | 7 | 842 | 24 | 0x00fe6474 |
| 1292 | 8 | 890 | 24 | 0x004e7a06 |
| 1292 | 1 | 1066 | 24 | 0x002d4efb |
| 1292 | 2 | 1114 | 24 | 0x00b185fa |

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

Registers panel: showing all actual registers of the selected device/data port

| | Common | Bank 0 | Bank 1 | Comment |
|-----------------|-------------------------|-----------------------|-------------------------|---------|
| IntStat | 0 - 0x00 - 0b00000000 | | | |
| IntClear | 0 - 0x00 - 0b00000000 | | | |
| IntLastAccessed | 0 - 0x00 - 0b00000000 | | | |
| IntMask | 0 - 0x00 - 0b00000000 | | | |
| PortCtrl | 0 - 0x00 - 0b00000000 | | | |
| BlockCtrl1 | 23 - 0x17 - 0b00010111 | | | |
| Prepare_Status | 0 - 0x00 - 0b00000000 | | | |
| Prepare_Ctrl | 255 - 0xff - 0b11111111 | | | |
| ChannelEn | | 0 - 0x00 - 0b00000000 | 255 - 0xff - 0b11111111 | |
| BlockCtrl2 | | 0 - 0x00 - 0b00000000 | 0 - 0x00 - 0b00000000 | |
| SampleCtrl1 | | 0 - 0x00 - 0b00000000 | 255 - 0xff - 0b11111111 | |
| SampleCtrl2 | | 0 - 0x00 - 0b00000000 | 1 - 0x01 - 0b00000001 | |
| OffsetCtrl1 | | 0 - 0x00 - 0b00000000 | 0 - 0x00 - 0b00000000 | |
| OffsetCtrl2 | | 0 - 0x00 - 0b00000000 | 0 - 0x00 - 0b00000000 | |
| HCtrl | | 0 - 0x00 - 0b00000000 | 58 - 0x3a - 0b00111010 | |
| BlockCtrl3 | | 0 - 0x00 - 0b00000000 | 0 - 0x00 - 0b00000000 | |
| LaneCtrl | | 0 - 0x00 - 0b00000000 | 0 - 0x00 - 0b00000000 | |

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

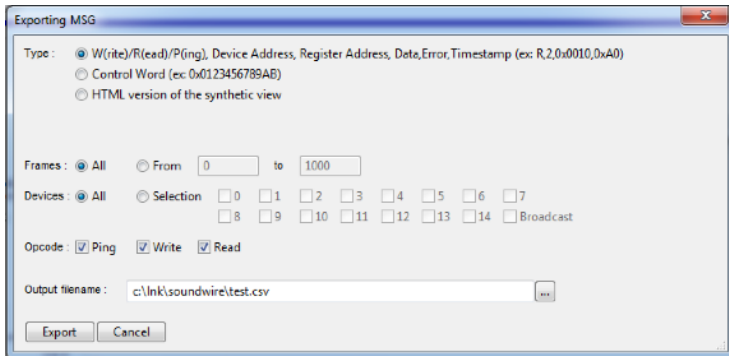
Streams panel: gives an overview of used ports for all devices

| | Device Alias | DP 0 | DP 1 | DP 2 | DP 3 | DP 4 | DP 5 | DP 6 | DP 7 | DP 8 | DP 9 | DP 10 | DP 11 | DP 12 | DP 13 | DP 14 |
|----|-----------------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| 1 | | | 1 | | | | | | | | | | | | | |
| 2 | LnK Amp | | | | | | | | | | | | | | | |
| 3 | Test Microphone | | 3 | 4 | | | | | | | | | | | | |
| 4 | Bluetooth IF | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | 4 | | | | | | | | | | | | | |

Hide Bus Memory Component Ports Port Properties Samples Registers Streams Scope FFT

Export

Message export



Frame selection

Device selection

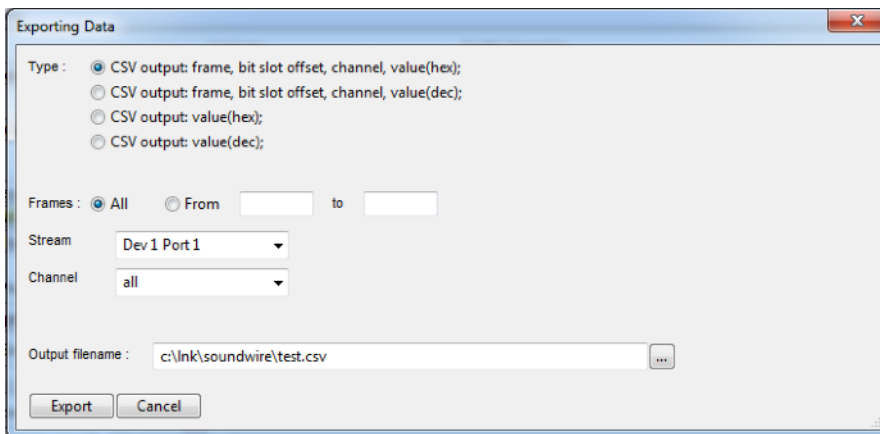
Opcode selection

Detailed message export to CSV file

Control Word export to CSV file

Synthetic view export to HTML file. (browser and printing)

Data export



Frame selection

Stream selection (for all active data ports on each device)

Channel selection

Frame, bit slot offset, channel, Sample value (hex); to CSV file

Frame, bit slot offset, channel, Sample value (decimal); to CSV file

Sample value (hex); to CSV file

Sample value (decimal); to CSV file