

Soundwire

Soundwire is a hardware interface and transport protocol developed by MIPI. It provides an expandable, simple, low-power, low-latency, dual-lead (clock and data) bus that can be used to transfer multiple audio streams such as amplifiers and microphones and embedded control commands.

Max Clock Rate:12.288MHz

Soundwire Settings

CLK: Clock signal

Data: Data signal

Range: Analysis range

Startup Setting

Enable PayLoad Data

Show Packet Table

Delay: ns

Bank: Bank 0 Bank 1

Frame Shape

Bank 0		Bank 1	
Column	Row	Column	Row
<input type="text" value="2"/>	<input type="text" value="48"/>	<input type="text" value="2"/>	<input type="text" value="48"/>

Enable Payload Data: Enable to import Payload settings

Show Packet Table: Show the Frame Data in report.

Delay: Set up time value

Bank: Select Bank for parameter

Frame Shape: Input Column & Row (Bank 0 & 1)

Play & Draw Audio

Type: Bank:

Device: DPn:

PDM Sample Rate: kHz

Audio Frequency: kHz

Display Audio Playback

<input type="radio"/> Full Scale <input checked="" type="radio"/> Original	<input checked="" type="radio"/> All <input type="radio"/> 5 sec <input type="radio"/> 3 sec
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Type: Select audio format

Bank: Select bank

Device: Select Device

DPn: Select Data Port

PDM Sample Rate: PDM data sample rate per bit

Audio Frequency: PCM audio frequency

Display: Draw the audio wave

Playback: Play the selected audio

A Data Port is a subset of a Device that is either a source or sink of one Payload Stream on the SoundWire bus. Data Ports provide an abstraction of a Payload Stream being divided into one or more channels which, in the audio application space will correspond to individual audio channels.

Import Payload Settings

Soundwire Data Port Settings(.csv):

Bank 0	Bank 1
Device: 00 DP: 00 HStart: 01 HStop: 01 WordLength: 08 SampleInter Device: 00 DP: 01 HStart: 01 HStop: 01 WordLength: 10 SampleInter Device: 00 DP: 02 HStart: 01 HStop: 01 WordLength: 10 SampleInter	Device: 00 DP: 00 HStart: 01 HStop: 01 WordLength: 10 SampleInter Device: 00 DP: 01 HStart: 01 HStop: 01 WordLength: 10 SampleInter

Save as .wav

Full Scale Original

CSV File:

//Bank	Device	DP	HStart	HStop	WordLength	SampleInte	Offset_1	Offset_2	CH	PackageBlockMode	PortFlowMode	SaveAsWav	AudioType	AudioSampleRate	PDMSampleRate
[Payload]															
0	0	0	1	1	8	96	0	0	15	0	0	0	1 PCM	32000	
0	0	1	1	1	10	96	0	0	1	0	0	0	0 PCM		
0	0	2	1	1	10	96	0	0	1	0	0	0	0 PCM		
1	0	0	1	1	10	96	0	0	1	0	0	0	0 PCM		
1	0	1	1	1	10	96	0	0	1	0	0	0	0 PCM		
;															

* **[Payload]** is the keyword to start reading settings and **;** is the end of the settings

* **The sample file (Soundwire_DP.csv) will be stored in your working directory**

1. Bank: 0~1
2. Device Number: 0~11
3. Data Port: DP0~DP15
4. HStart: HStart is a 4-bit number identifying the lowest numbered column in the SoundWire Frame that contains BitSlots for this Payload Stream.
5. HStop: HStop is a 4-bit number identifying the highest numbered column in the SoundWire Frame that might contain BitSlots for this Payload Stream.
6. Word Length: WordLength is a 6-bit number that controls the size of a Payload Channel Sample.
7. Sample Interval: Sample Interval is an integer in the range 2 to 65535 that controls the spacing from one Sample Event to the next, and the size of a Sample Window.
8. Block Package Mode:
 - Block per port: $\text{Block Offset} = \text{Offset1} + (256 * \text{Offset2})$
 - Block per channel: $\text{Block Offset} = \text{Offset1}$, $\text{Sub-Block Offset} = \text{Offset2}$.
 - *Block Offset is an integer in the range 0 ~ 65535
 - *Sub-Block Offset is an integer in the range 0 to 255
 - *Offset1 is an integer in the range 0~65535
 - *Offset2 is an integer in the range 0~255
9. Channel: Divide a Data Port into different parts, which are often used for data distribution of left and right audio channel etc. It can select up to 8 channels, and can be

selected without order.

10. Port Flow Mode: Isochronous, Tx-Controlled, Rx-Controlled and Full-Asynchronous modes

*Isochronous: ‘Normal’ mode No Valid data is transported in every Payload Data Block.

*Tx-Controlled: ‘Push’ mode , A flow-control bit driven by the Source Data Port controls whether or not valid data is transported in the Payload Data Block.

*Rx-Controlled: ‘Pull’ mode , A flow-control bit driven by the Sink Data Port controls whether or not valid data is transported in the Payload Data Block.

*Full-Asynchronous: Flow-control bits driven by both the Source and Sink Data Ports control whether or not valid data is transported in the Payload Data Block.

11. Audio settings:

A. Save as Wav:

Save the audio data to .wav format. (It will be saved in your working directory.)

1: Save audio data in wav format

0: Only display data in hex in the report.

B. Audio Type:

PDM & PCM format supported.

C. Audio Sample Rate:

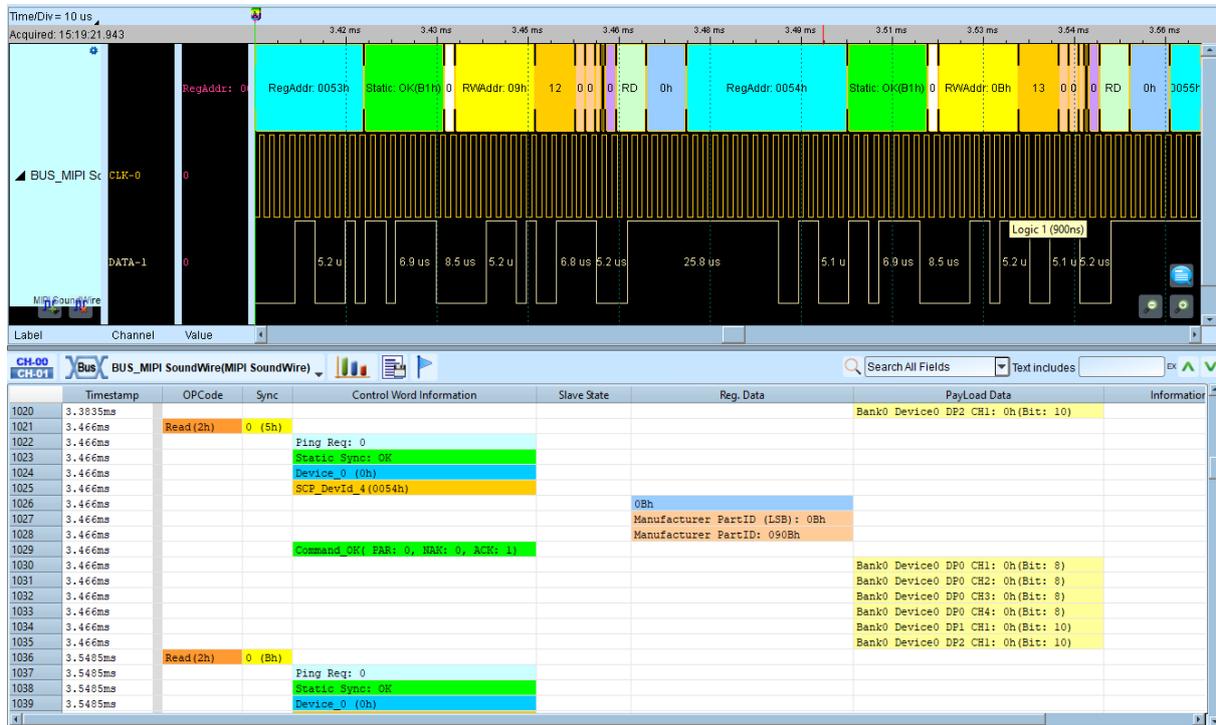
This is the audio sample rate for the PCM. (Unit: Hz)

D. PDM Sample Rate:

This is the parameter for PDM to PCM calculation. (Unit: Hz)

Result:

Control Word + Report (Control Word & Payload):



Audio Display + Report (Control Word & Payload)

