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# LOW POWER SOFTWARE HEVC DECODER DEMO FOR MOBILE DEVICES

Erwan Nogues, Morgan Lacour, Erwan Raffin, Maxime Pelcat, Daniel Menard

► **To cite this version:**

Erwan Nogues, Morgan Lacour, Erwan Raffin, Maxime Pelcat, Daniel Menard. LOW POWER SOFTWARE HEVC DECODER DEMO FOR MOBILE DEVICES. IEEE International Conference on Multimedia and Expo (ICME), Jun 2015, Torino, Italy. hal-01184523

**HAL Id: hal-01184523**

**<https://hal.science/hal-01184523v1>**

Submitted on 14 Aug 2015

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### 3. BENCH SET-UP

In this section, the demo test bench is depicted as well as the software set-up. The power consumption is measured with a ODR01D power meter device. It collects voltage, current and power of the system load. The measurements are performed at a sampling rate of 10 Hz. The Device Under Test (DUT) is directly connected to the power meter device supplying it as depicted in Fig. 2.



Fig. 2. Bench set-up

The HEVC decoder is taken from the legacy implementation of OpenHEVC [6]. The low power modifications of the reference implementation are performed as per described in our previous work [5]. The realtime management of video rendering is performed with the android version of GPAC [7]. The reference input HEVC bitstream RaceHorses [8] is used and is encapsulated in a MP4 file using the MP4Box executable as follows at 30 frames per second:

```
MP4Box -add RaceHorses.265:fps=30 RaceHorses.mp4
```

The power performances are measured on a on-the-market device : a Samsung GT-i9070. It embeds a General Purpose Processor (GPP) dual-core 1GHz Cortex-A9. The video decoder uses this GPP to perform its processing.

Table 1 shows how the power budget is split between the different elements of the DUT and the possible power saving over the complete device.

Table 1. Power consumption repartition

Elements	Legacy Decoder	Low Power decoder
idle (W)	0.9	0.9
screen	0.7	0.7
video decoder	0.6	0.45
Power saving	-	6.9 (%)

### 4. CONCLUSIONS

In this paper, a pure software HEVC decoder is demoed on a typical smartphone with no specific HEVC hardware decoder available. Even though hardwired decoder is not present, it shows that services and applications relying on HEVC standard can be performed. We also demo a low power version of HEVC decoder as per suggested within the MPEG Green Metadata working group. This version can achieve higher power savings with a limited impact on the QoE. Hence it can improve the stand-by-time of battery oriented devices. In a future work, our HEVC decoder will implement more power efficient schemes such as voltage and frequency control to make further savings.

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