IFF SDK benchmarks for Orin NX

<u>Streaming images from the camera to the remote computer</u>

Transmitting side:

NVIDIA Jetson Orin NX 16GB
(emulation using AGX Orin devkit)
- Jetpack 5.1.2 [L4T 35.4.1]
  - Image processing: <u>IFF SDK v1.6</u>
                              <u>SDK `farsight` sample *</u>

Receiving side:

MSI Raider GE77HX
- NVIDIA GeForce RTX 3070 Ti
- Windows 11 OS
- DragonNest demo application

XIMEA CB120-CM-X8G3 camera
12 MP 4096 x 3072 pixel

input image	demosaic algorithm	enc. bitrate, Mbps	processing latency, ms	avg. Orin CPU load,%	avg. Orin GPU load,%	Orin power, W	render latency, ms	G2G latency, ms
4K UHD (3840 x 2160) @ 60 FPS								
RAW8 @ 60 FPS	HQLI	50	27,5	5%	28%	17,5	8,8	50-60
RAW8 @ 60 FPS	DFPD	50	28,5	5%	38%	17,9	8,8	
RAW16 @ 60 FPS	HQLI	50	29,9	6%	45%	19,7	8,8	
RAW16 @ 60 FPS	L7	50	30,4	7%	56%	20,1	8,8	
RAW16 @ 60 FPS	DFPD	50	31,6	7%	58%	20,8	8,8	
RAW16 @ 60 FPS	MG	50	36,2	7%	78%	24,3	8,8	60-70
Full frame (4096 x 3072) @ 40 FPS								
RAW8 @ 40 FPS	HQLI	50	40,8	6%	24%	17,5	11,0	
RAW8 @ 40 FPS	DFPD	50	42,5	6%	30%	17,9	11,0	
RAW16 @ 40 FPS	HQLI	50	45,0	6%	37%	19,7	11,0	
RAW16 @ 40 FPS	MG	50	54,5	6%	68%	23,9	11,0	
Full HD (1920 x 1080) @ 180 FPS								
RAW8 @ 180 FPS	HQLI	50	8,5	6%	33%	16,0	4,5	20-30
RAW8 @ 180 FPS	DFPD	50	8,9	7%	36%	16,6	4,5	
RAW16 @ 180 FPS	HQLI	50	9,2	7%	37%	18,1	4,5	
RAW16 @ 180 FPS	MG	50	10,8	7%	64%	21,1	4,5	30-40

* `farsight`is a sample IFF SDK application with the following functionality:
- acquisition from XIMEA camera
- writing of raw data to DNG files
- color pre-processing on GPU:
  - black level subtraction
  - histogram calculation
  - white balance
  - demosaicing
  - color correction
  - gamma
  - image format conversion
- automatic control of exposure time and white balance
- H.264/H.265 encoding
- RTSP streaming
- HTTP control interface