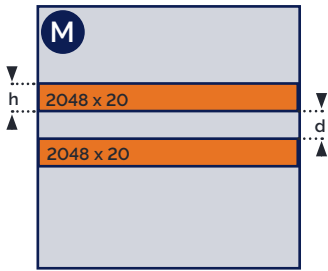


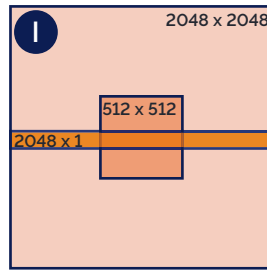
Modes for Marana

Multi-track Mode



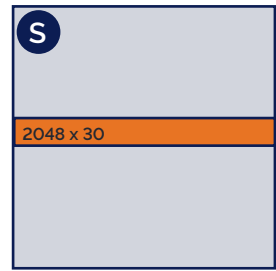
Up to 256 vertically binned tracks can be used for multi-track analysis without sacrificing speed.

Imaging Mode



The array size may be defined for either resolution or maximum speed.

Spectroscopy Mode



A vertically binned track is centred on the sensor enabling the maximum spectral rate to capture dynamic events.

M Multi-track Mode 4.2B-6

Vertically binned tracks (overlap ON)

Number of Tracks	Track height (h)		Track separation (d)		Max Acquisition Rate	
	Pixels	µm	Pixels	µm	16-bit	12-bit (Low Noise)
2	10	65	10	65	6887	4058
2	10	65	0	0	6887	4058
2	20	130	10	65	3608	2126
6	50	325	40	260	502	296
10	10	65	0	0	1485	875
10	20	130	0	0	750	442
10	30	195	30	195	502	296
50	20	130	0	0	151	89
60	20	130	0	0	126	74
100	20	130	0	0	76	45

I Imaging Mode 4.2B-6

Frame rate table

ROI Size (W x H)	Max Frame Rate (fps)				ROI area (of sensor)
	USB 3.0		CoaXPress		
	16-bit	12-bit (Low Noise)	16-bit	12-bit (Low Noise)	
2048x2048	40	43	74	44	13.3 mm x 13.3 mm
1400x1400	85	63	108	64	9.1 mm x 9.1 mm
1200x1200	116	74	126	74	7.8 mm x 7.8 mm
1024x1024	148	87	148	87	6.7 mm x 6.7 mm
512x512	295	174	295	174	3.3 mm x 3.3 mm
256x256	587	346	587	346	1.7 mm x 1.7 mm
128x128	1165	686	1166	687	0.8 mm x 0.8 mm

Modes for Marana Continued

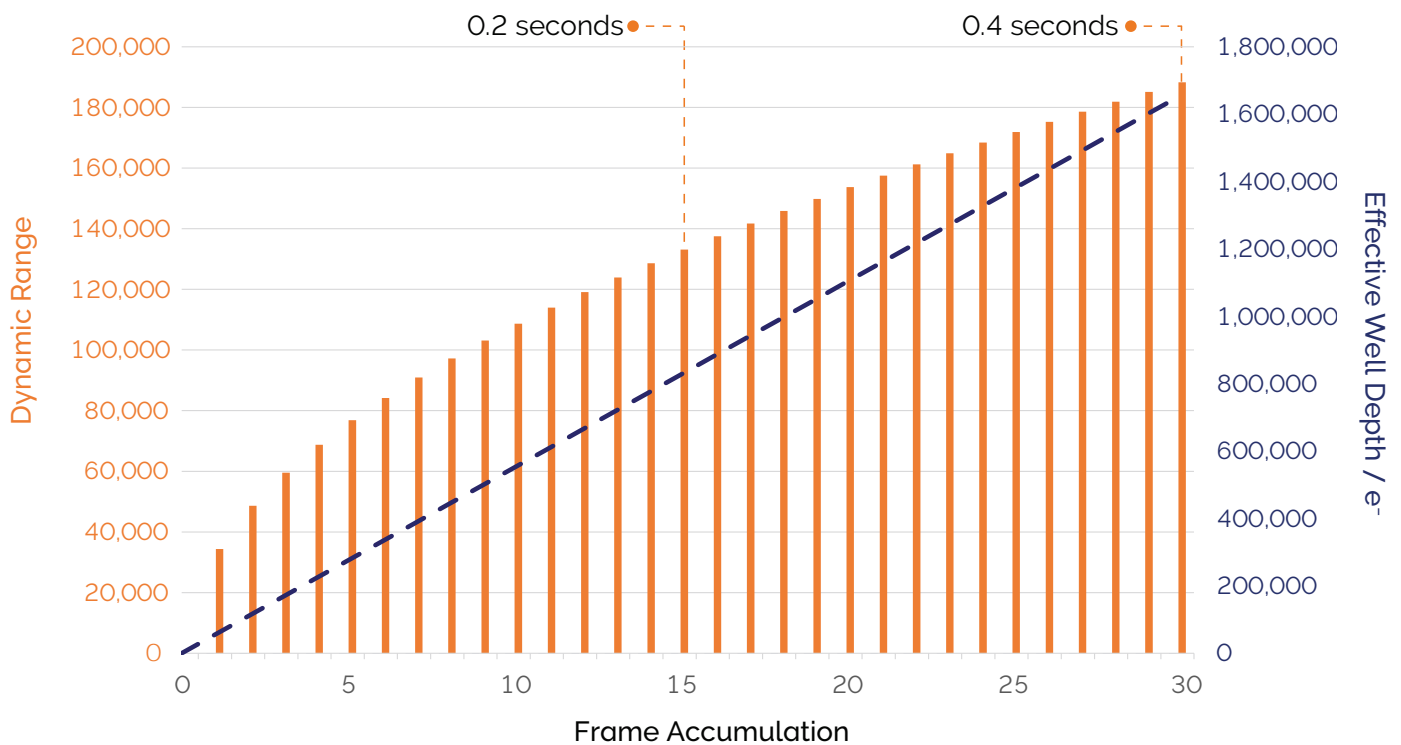
S Spectroscopy Mode 4.2B-6

Vertically binned tracks (overlap ON)

Array Size (W x H)	Max Spectra Rate	
	16-bit	12-bit (Low Noise)
any x 1	25253	14881
any x 2	25253	14881
any x 8	15152	8929
any x 1200	126	74
any x 2048	74	44

Note: Frame/spectral rates do not differ if partial or full rows are selected.

Extend Dynamic Range - Fast Image Stacking



Dynamic Range and Effective Well Depth as a function of the number of stacked (accumulated) frames, plotted for Marana-X 4.2B-6. A Dynamic Range of 188,280:1, and a corresponding Effective Well Depth of 1,650,000 electrons can be reached with only 30 stacked frames. At maximum frame rate, this number of accumulated frames takes only 0.4 secs to acquire, achieving > 2 fps. This capability is significant for a range of challenges across imaging and spectroscopic characterisations.