BENEFITS OF REDCODE RAW

As RED's proprietary file format, REDCODE® RAW (R3D®) efficiently encodes image data in a way that maximizes the post production flexibility of RAW files. When the RED ONE® launched in 2007, REDCODE RAW was the key advancement that made digital 4K video capture a practical reality. Today, with cameras capable of capturing 8K resolution, REDCODE is even more relevant in managing the massive amounts of information contained in ultra-detailed imagery.

On RED® cameras, REDCODE compression ratios are based on the comparison in size between an uncompressed file and the compressed file. As an example, an image shot at 5:1 is compressed five times to one and the new file is effectively one-fifth the size of an uncompressed file. Typically, people equate compression with smaller file sizes and potential image degradation. In reality, REDCODE is an enabling technology that generates a litany of benefits including lower data rates, quicker transfer times, extended recording times, reduced recording costs, and less intensive IT solutions for off-loading data.

Ultimately, REDCODE allows content creators to achieve smaller RAW file sizes while maintaining image quality when capturing data rich, high-resolution images. To demonstrate REDCODE's efficiency, below is a chart of various file types and the associated data rates based on 24 frames per second.

File Format	Data Rate (MB/s)[1]
8K Uncompressed 16BIT (TIFF/DPX/EXR)	5,096
8K ProRes 4444	849
6.5K ARRIRAW	732
4.5K ARRIRAW	501
3.4K ARRIRAW	277
4K ProRes 4444	212
8K R3D (8:1)	**162**
2k ProRes 4444	57
4K R3D (6:1)	**54**

While content creators will naturally gravitate to lower compression options, at a certain point, the visual gains achieved at lower compression ratios are negligible. In fact, those negligible gains may be outweighed by the incremental storage necessary for the additional data as well as the increased time necessary to transfer data. Based on these factors, a common approach is to start at REDCODE 5:1 for 6K capture of high-end cinema or stills. The starting point for 8K capture is 8:1 for similar high-end output. In both cases, the ratio may be increased (e.g. 9:1, 10:1, etc) when final delivery has less stringent requirements. It should be noted that frame rate is an additional consideration when selecting a REDCODE setting for a production. Due to a technical ceiling that limits how quickly data may be written to storage, higher frame rates may require lower resolutions and/or higher compression ratios.

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[1] Data rates are based on http://www.red.com/tools/recording-time and information from competitor websites.