

Lossless Waveform Compression Ratios

- A waveform with s 16-bit samples whose range is within 2^n can be compressed by storing the minimum value, compressing the samples to be n -bit. The compression ratio is:

$$(3 + n * s * / 8) / (s * 2)$$

- This comes from using 1 byte to store the compression mode, n , 2 bytes to store the minimum value of the waveform, and $n * s * / 8$ bytes to store the compressed samples.

Table of Compression Ratios

- Here is a quick lookup table of compression ratios for waveform ranges where the number of samples is 64.

Range	Uncompressed Bytes	Compressed Bytes	Compression Ratio
(n = 0) 0	128	3	0.023
(n = 1) 1	128	11	0.086
(n = 2) 2-3	128	19	0.148
(n = 3) 4-7	128	27	0.211
(n = 4) 8-15	128	35	0.273
(n = 5) 16-31	128	43	0.328
(n = 6) 32-63	128	51	0.398
(n = 7) 64-127	128	59	0.461
(n = 8) 128-255	128	67	0.523
(n = 16) 256-65535	128	131	1.023