

Selected Answers to Project #2

The first ten samples in the ASCII file containing the *uncompressed* signal should be:

74
73
72
72
73
73
74
74
75

Samples 2815 through 2824 of the *uncompressed* signal should be:

37
3B
41
40
36
2E
30
3D
52
60

For the *uncompressed* signal, mean squared amplitude = 0.0221 and SQNR = 36.4 dB.

The first ten samples in the ASCII file containing the *compressed* signal should be:

37
34
33
33
34
35
36
37
38
3A

Samples 2815 through 2824 of the *compressed* signal should be:

0D
0E
10
10
0C
0A
0A
0F
17
1F

For the *compressed* signal, mean squared amplitude = 0.273 and SQNR = 38.1 dB.

Note that compression has not improved the SQNR significantly in this case. That is because the signal level is high relative to the size of the quantization range. Nevertheless, the compression is working. The mean squared amplitude of the compressed signal is about an order of magnitude greater than that of the uncompressed signal. With compression, the effective size of the quantization intervals at the upper amplitude levels are much larger than those at the lower levels, so the quantization noise associated with the upper levels is higher. The increase in quantization noise roughly equals the increase in the mean squared amplitude; that is why the SQNR with compression is relatively constant at high signal amplitude levels.