

1. The DCT coefficient is

```
[[1017  215   -6  -27   28  -19  -12   8]
 [ 135   52  -93   -7   34  -19  -11  10]
 [ -46  -48   13   53   12  -26   1   7]
 [   9   37   48   15  -18  -10   3   4]
 [   0   -6   0   -4   0    7   3   0]
 [  -5   0    2    7    7    4   1   0]
 [  -3  -1    0   -1    0   -3   0  -1]
 [   0  -4    0   -1   -5    0   1   2]]
```

After quantization

```
[[63 19  0 -1  0  0  0  0]
 [11  4 -6  0  0  0  0  0]
 [-3 -3  0  2  0  0  0  0]
 [ 0  2  2  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0]]
```

2. zig-zag AC:

19,11,-3,4,0,-1,-6,-3,0,0,2,0,0,0,0,0,2,2,0,0, (43 0's)

3. <0,5><19>

<0,4><11>

<0,2><-3>

<0,3><4>

<1,1><-1>

<0,3><-6>

<0,2><-3>

<2,2><2>

<5,2><2>

<0,2><2>

4. 11010100111011101101001001001100010000101001111100110111111011  
1100110

5. original:512 bits

Compressed:70 bits

Ratio = 70/512 ~= 0.1367

(calculated without including DC in compressed bits)