

Fig. 1 Encoder/decoder of AN Codes

For a b-bit received codeword W', assume , where *i* and *j* are in (0, 1, .., *b-1*), and and in (-1, 0, +1). W' is correct if both and are zeros and with a single error if only one of them is zero. The double-error correction algorithm is proposed as Figure 2.

1 Given: A, W', b # b = bit length

2 R = W' % A

3 if R == 0:

4 output W'

5 else:

6 for *i* in range(b):

7 lookup h-table to find r1

8 for s1 in (-1, +1):

9 lookup r-table and find *i* and s1

10 r2 = R – r1

11 if r2 == 0: output (W' – s1\*2*i*) % A

12 else if r2 < 0: r2 += A

13 else: lookup r-table and find *j* and s2

14 if found: break

15 if found: break

16 if found: output (W' – s1\*2*i* – s2\*2*j*) % A

17 else: (multiple AW errors are seldom occurred)

Fig. 2 Algorithm for DEC of AN Codes