Data Comm Mid Term Assignment 1

Name: Md Mustafizur Rahman
ID: 17-34272-1
Section- H

ID - 17-34272-1 ABCD into 7 bit ASCII
AB - CDEFGH characters.

Convert this 28-bit digital data into digital signal using the following line coding schemes

(a) Unipolar NRZ
(b) Polar NRZ-L
(c) Polar NRZ-I
(d) Polar Manchester
(e) Polar Different Manchester
(f) Bipolar AMI
(g) Bipolar Pseudoternary
(h) 2B1Q

? (2721 * 100)

If the bitrate is EFGH*100 what will be required average bandwidth in these schemes. Comment about the DC component and baseline wandering nature of these schemes.

ASCII value:

A → 1000001
B → 1000010
C → 1000011
D → 1000100
E → 1000101
F → 1000110
G → 1000111
H → 1001000

ID

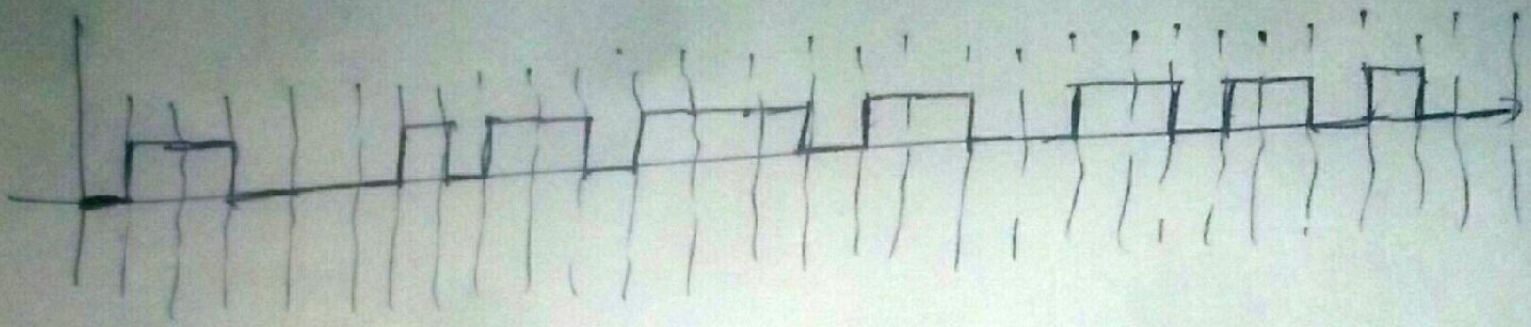
1 → 0110001
7 → 0110111
3 → 0110011
1 → 0110100
2 → 0110010
7 → 0110111
2 → 0110010
1 → 0110001

Tahl. TR.

Uni Polar NRZ

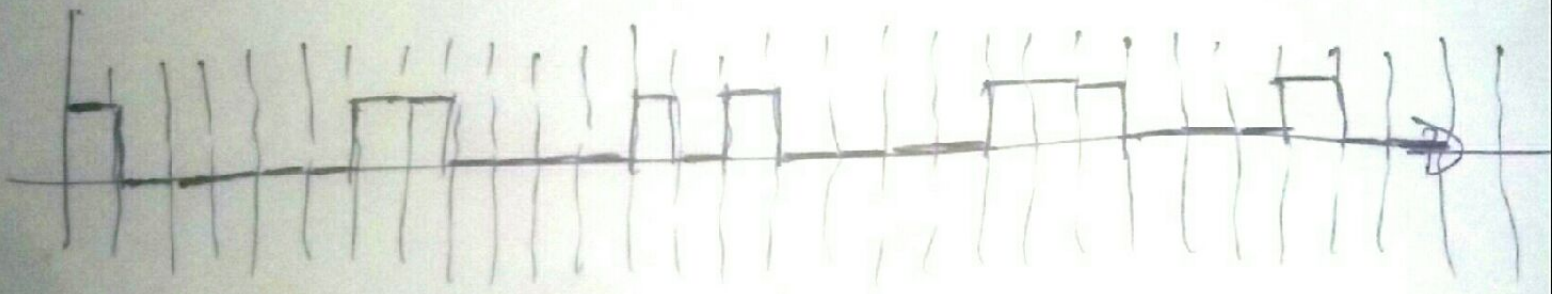
1734 → 28 bits

0 1 1 0 0 0 1 0 1 1 0 1 1 1 0 1 1 0 0 1 1 0 1 1 0 1 0 0



ABCD → 28 bits

1 0 0 0 0 0 1 1 0 0 0 0 1 0 1 0 0 0 0 1 1 1 0 0 0 1 0 0



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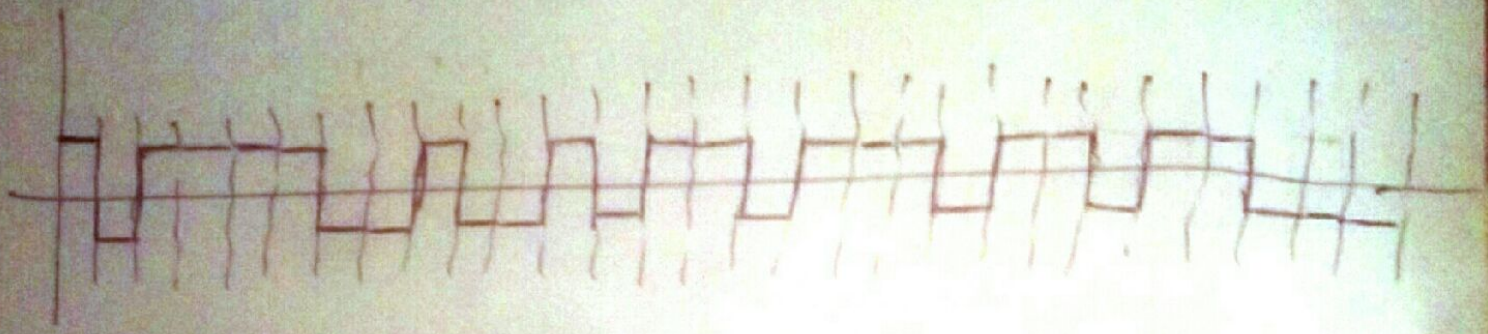
Polar NRZ-I

0 → No transition
1 → Transition opposite than before

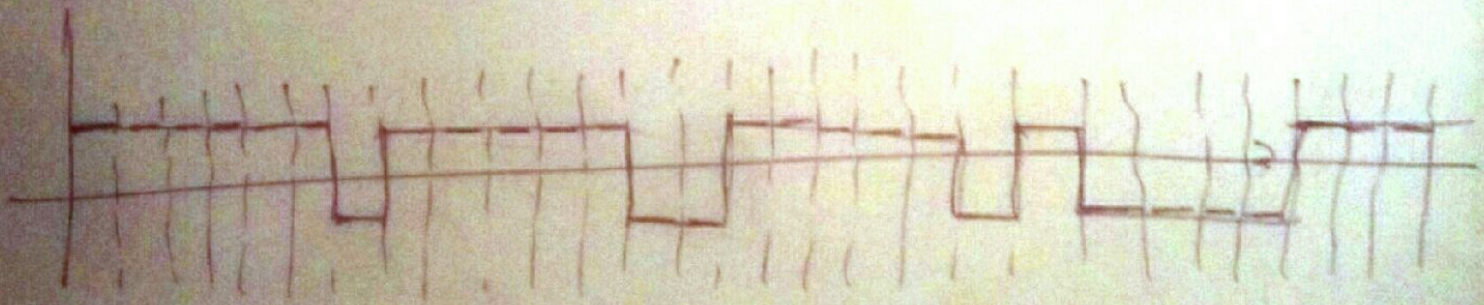
1739 →

01100010110111011001101100



ABCD →

1000011000010100011000100



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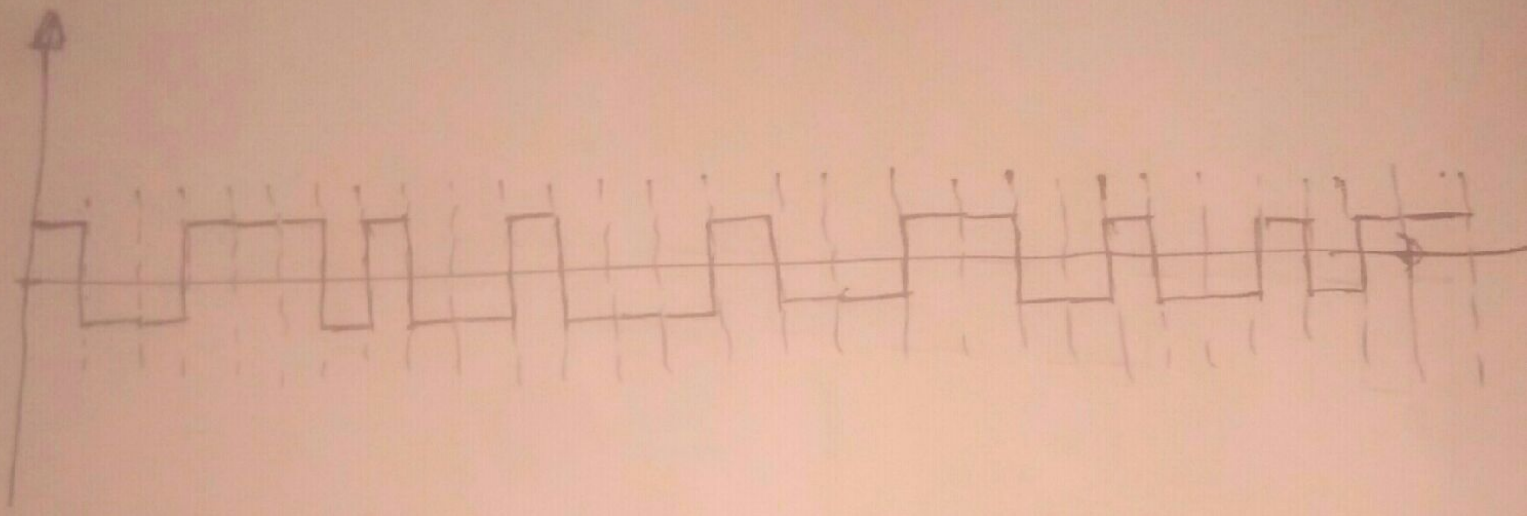
Polar NRZ-L

1 - Hero
1 - Zero

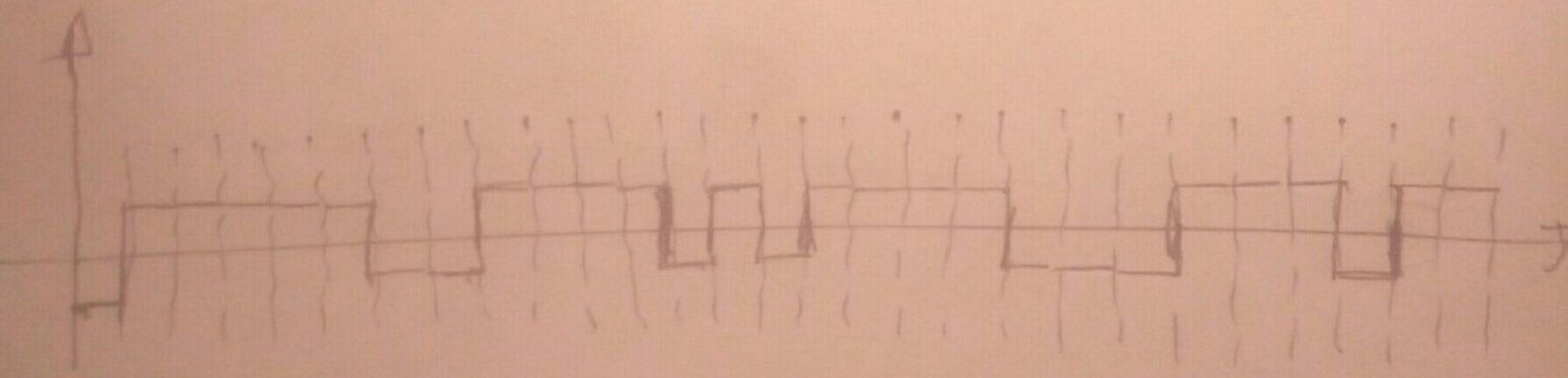
28 bit
ABCD - 1731 →

0110001 0110111 0110011 0110100



if ABCD →

1000011 1000010 1000011 1000100



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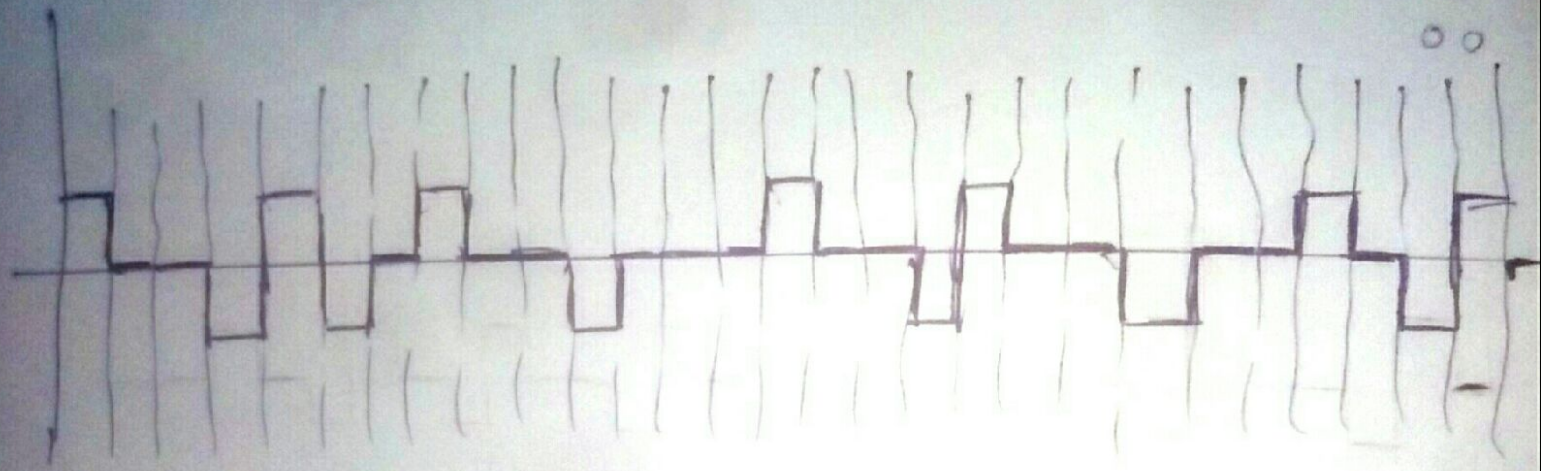
Bipolar Pseudoternary

1 → Netral
0 → Alternative than before

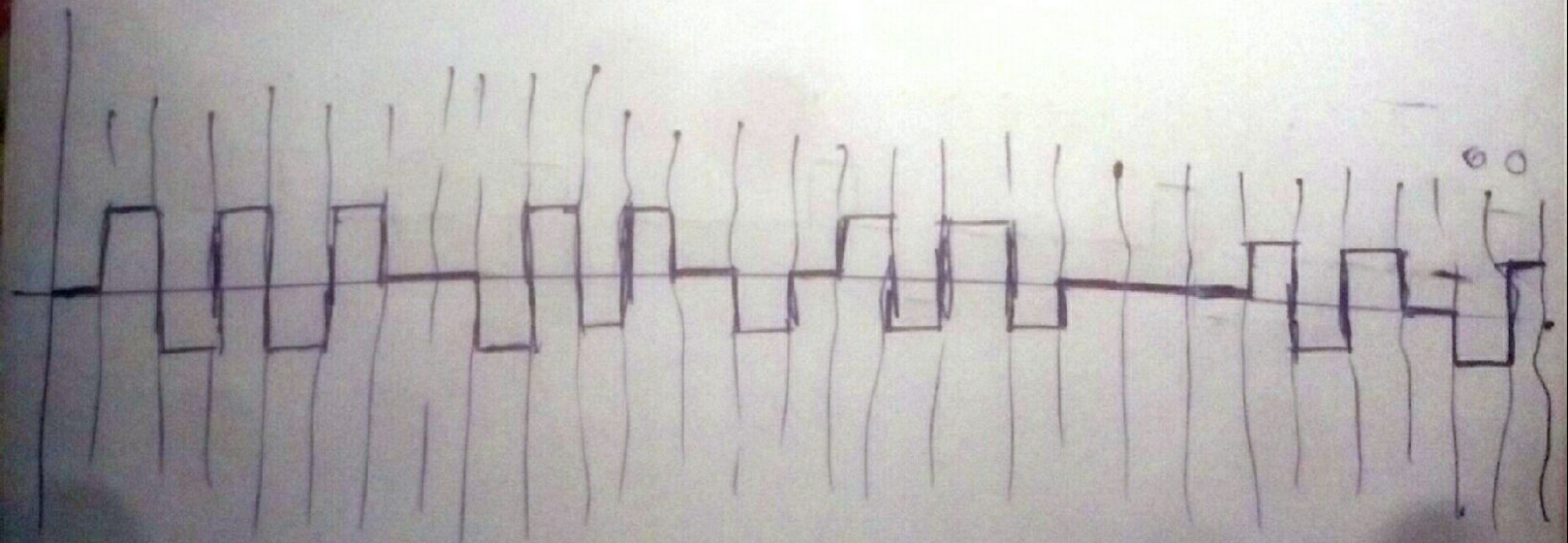
1734 →

0110001 0110111 0110011 0110100



ABCD →

100 0001 100 0010 100 0011 100 0100



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Bipolar AMI

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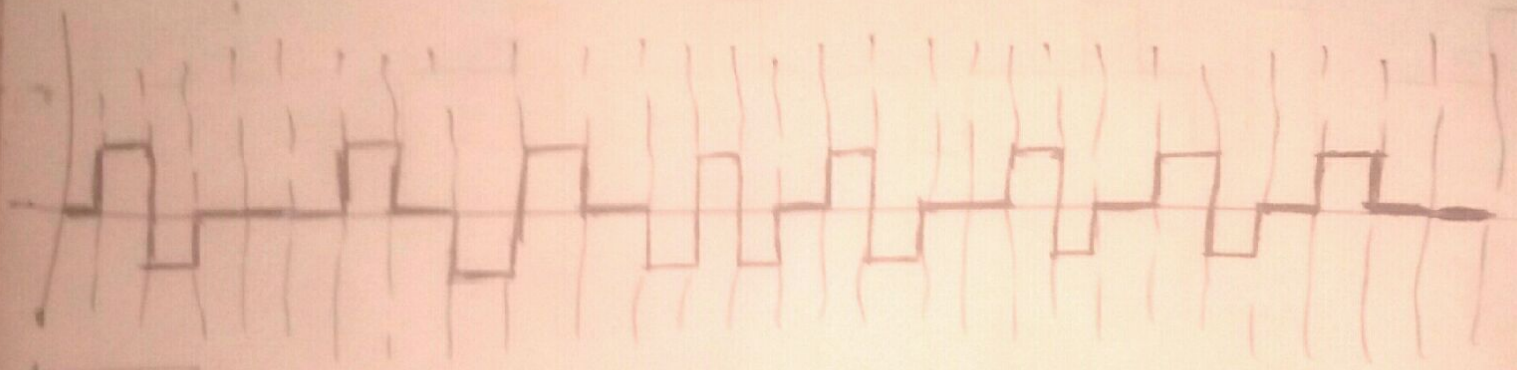
1731 →

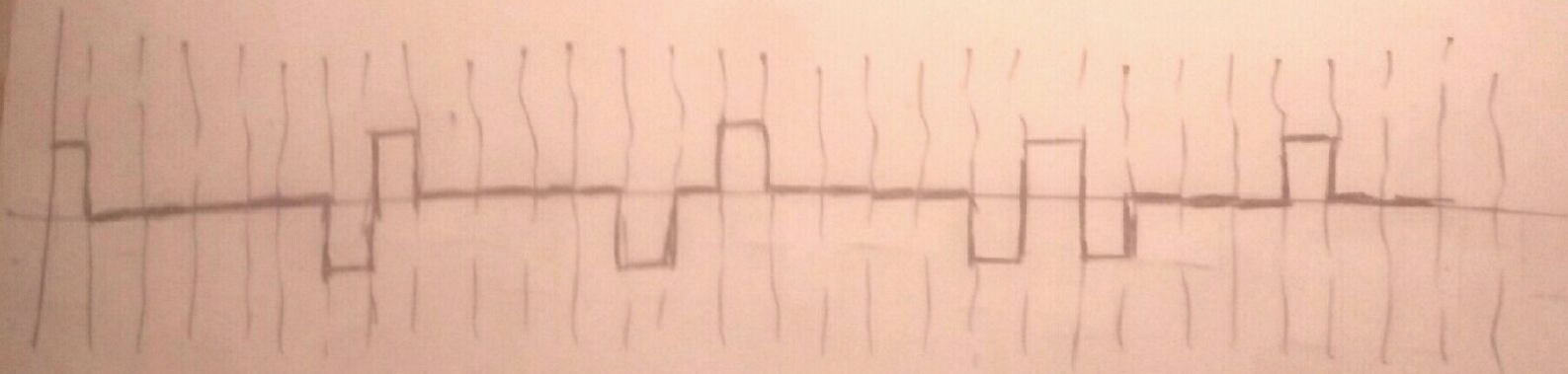
0 1 1 0 0 0 1 0 1 1 0 1 1 1 0 1 1 0 0 1 1 0 1 1 0 1 0 0

0 → Netural Zero
1 → Transition Alternative than before



ABCD →

1 0 0 0 0 1 1 0 0 0 0 1 0 1 0 0 0 1 1 1 0 0 0 1 0 0

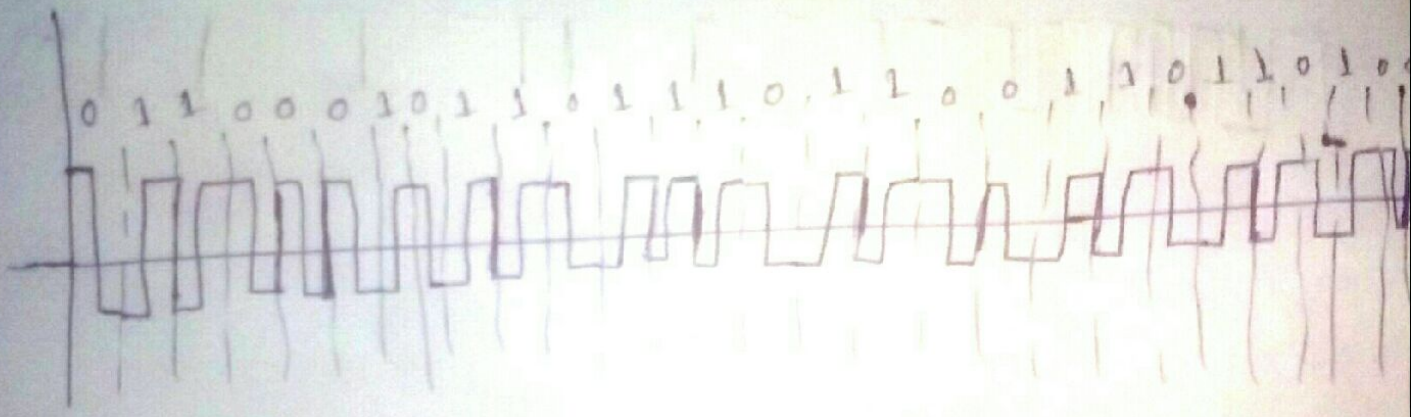


Polar Manchester

1734 → 28 bit ASCI

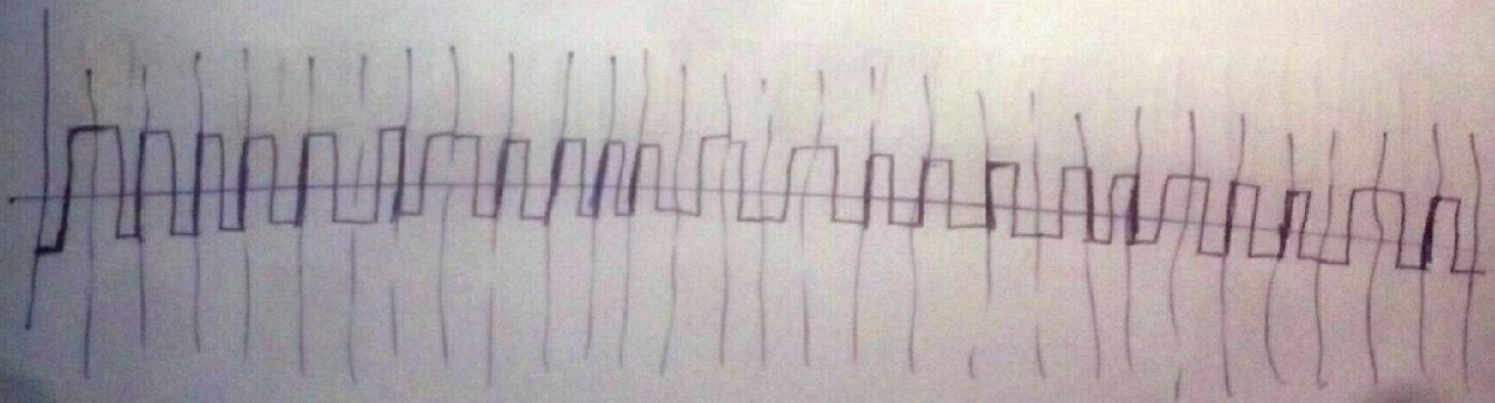
01100010111011001101100

1 - low to high (-ve to +ve)
0 - high to low (+ve to -ve)



ABCD →

1000011000010100001110000100



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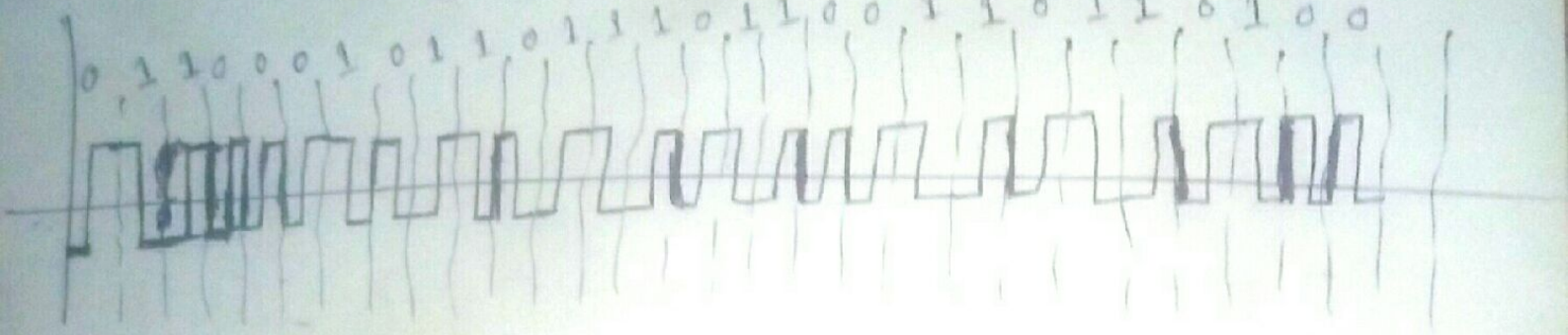
Polar Different Manchester

28 bit ASCI

1739 → 01100010110111011001101101 00

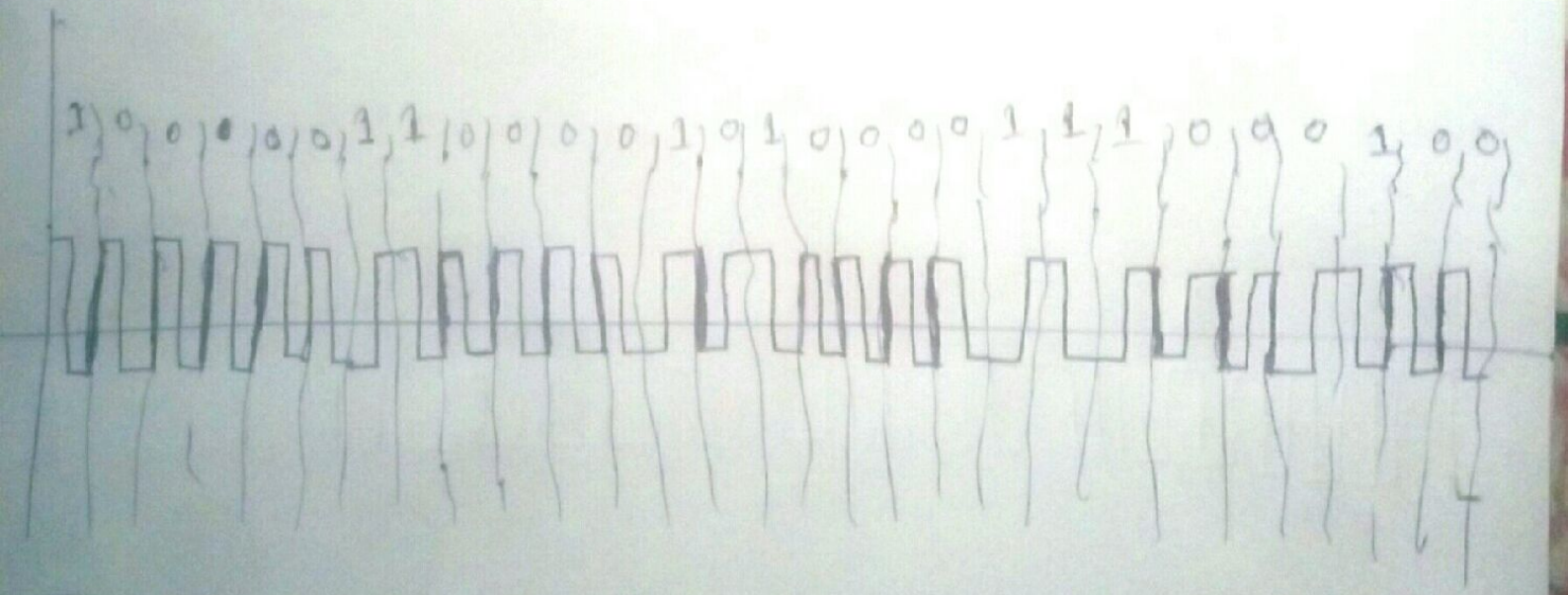
1 - transition

0 - No transition



ABCD →

10000011000010 1000011 1000100



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2B1Q

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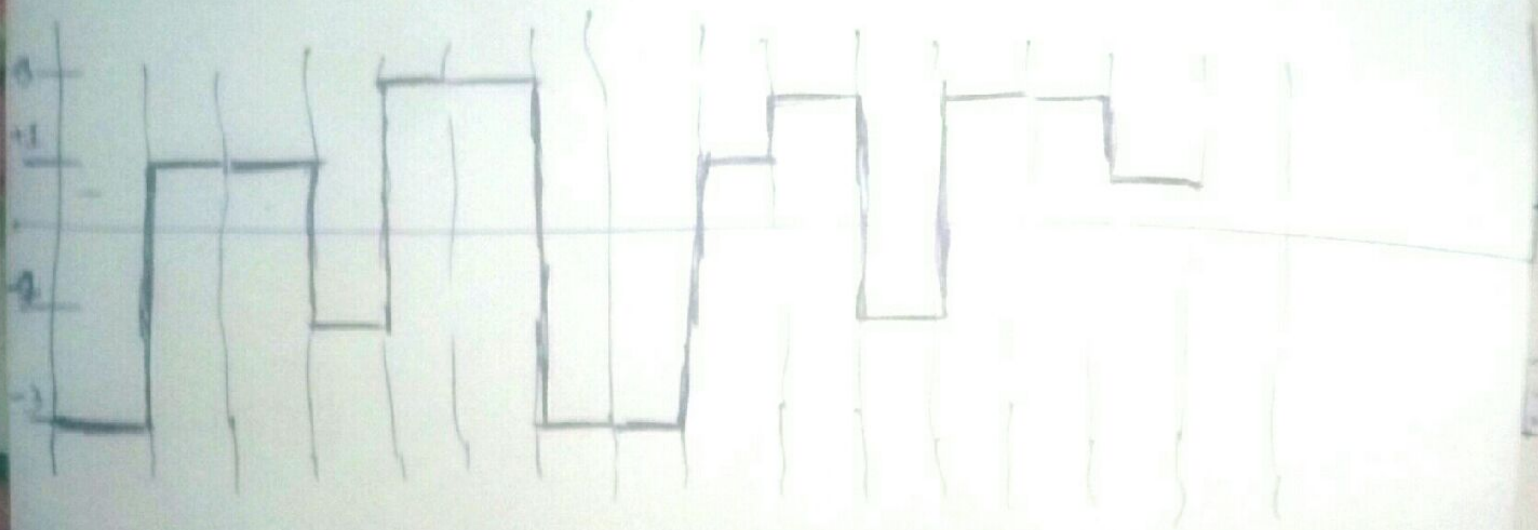
Table

Next Bit	Previous level +ve Next level	Previous level -ve Next level
00	+1	-1
01	+3	-3
10	-1	+1
11	-3	+3

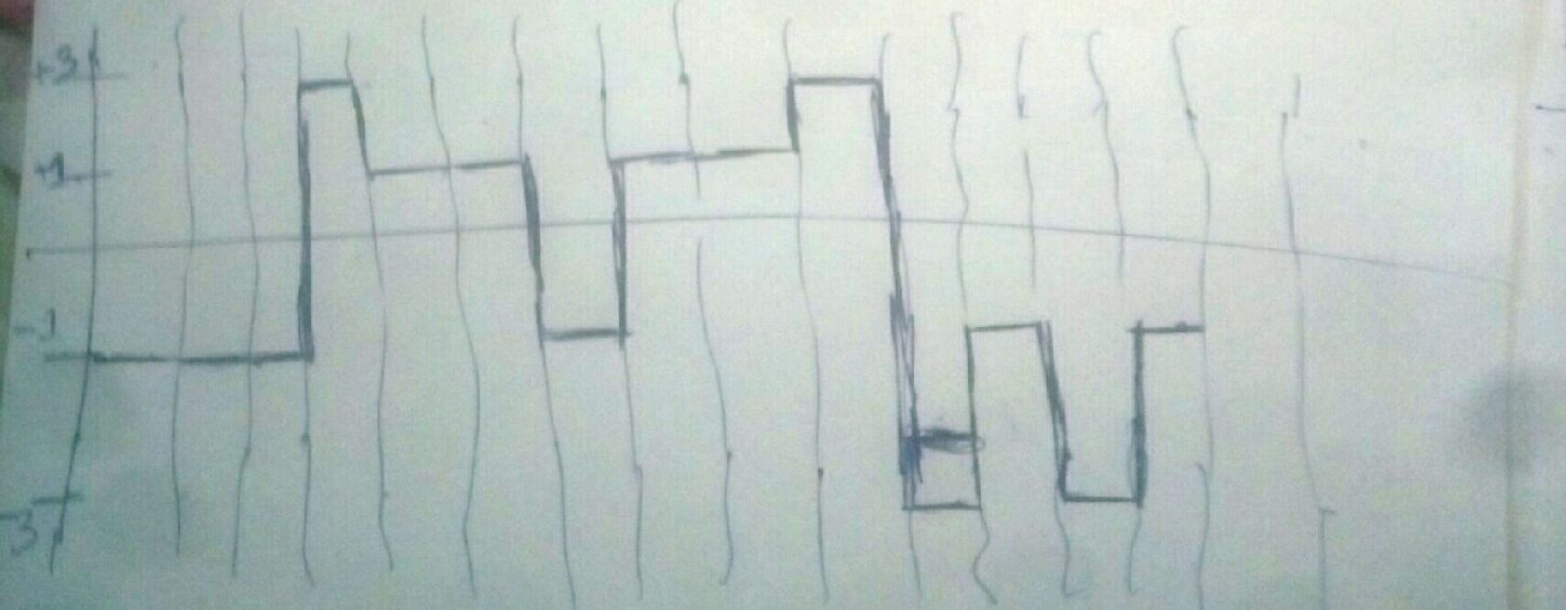
1791 →

01100101101110110011011100



ABCD →

100000110000101000011000100



Bitrate = EFGH * 100

Bitrate = 2721 * 100

Bitrate = 272100

N = 272100

$\therefore BW = N/2 = 272100/2 = 136050$

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Category	Baseline Wondering	DC Component	Scheme
Unipolar	Synchronization Problem	Have Problem	NRZ
Polar	Synchronization Problem	Have Problem	NRZ-L
Polar	Synchronization Problem	Have Problem	NRZ-I
Polar	Overcome this problem	Have No Problem	Manchester
Polar	Overcome this problem	Have No Problem	Different Manchester
Bipolar	Overcome this problem	Have No Problem	AMI
Bipolar	Overcome this Problem	Have No Problem	Pseudoternary
2B1Q	Overcomes this problem	Have No Problem	