Specification of Muhammad mahameed's cipher

The cipher is a block cipher with 64-bit key and 64-bit plaintext, and AES like cipher.
The cipher computes the cipher text from the plain text in 8 rounds.

given some test vectors:

Plaintext	Key	ciphertext
0	0	0x83D2BC89B79D2E25
0x0123456789ABCDEF	0	0x09A184A84569DBF1
0	0x0123456789ABCDEF	0x2F3DA681C94B0B81

Round function:

The round function is very similar to the round function of AES.
1) SubCells (apply SBOX).
2) Shift Rows.
3) Mix Columns.
4) Add Round Key.

- SubCells :
  by applying the following substitution box (sbox) to every nibble of the iternal state.
  SBOX = { 0 3 5 8 6 9 C 7 D A E 4 1 F B 2 }

0	1	2	3
4	5	6	7
8	9	A	B
C	D	E	F

0	3	5	8
6	9	C	7
D	A	E	4
1	F	B	2

This sbox was taken from : https://eprint.iacr.org/2011/218.pdf
Cryptographic Analysis of all 4x4-bit sboxes by Markku-juhani O.Saarinen
one of the "Golden sboxed" (G9)

- Shift Rows:
  rotate the nibbles in the rows by 0, 1, 2 and 3 places to the left.

0	1	2	3
0	1	2	3
0	1	2	3
0	1	2	3

0	1	2	3
1	2	3	0
2	3	0	1
3	0	1	2

- Mix Columns :
  mix the nibbles in every column according to a given matrix

$$\begin{pmatrix} 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

6	B	5	9
E	A	3	C
8	0	D	F
2	1	4	7

2	0	F	D
C	B	7	B
A	1	9	8
8	0	D	F

I chose this matrix by trying some matrices while enforcing the algebraic aspects of a good mixcolumns matrices (similar to the AES matrix)

- Add Round Key:
  for round i, we calculate round key Ki and use it as follow
  word = word $\oplus$ (Ki & 0Xffffffff);

Key schedule algorithm :

given a master key K:
K0 = K
Ki = (K(i-1) $\oplus$ 3) <<< 16

Encryption Algorithm :

Input : word , key

1) add round key K(0) to word

2) FOR i from 1 to 8
    2.1) apply sbox to word
    2.2) apply shift rows to word
    2.3) apply mix columns to word
    2.4) add round key k(i) to word

3) return word