QR CODES

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The Barcode

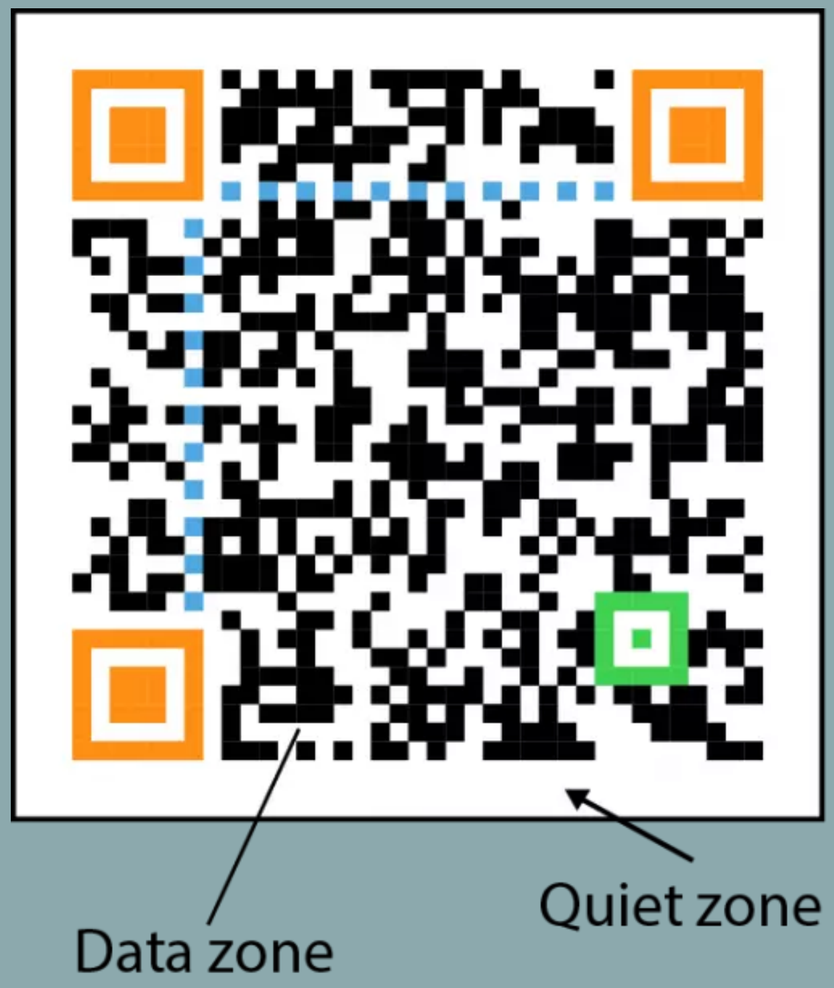
Code 128
Error Detection
No Error Correction
Simpler

Module

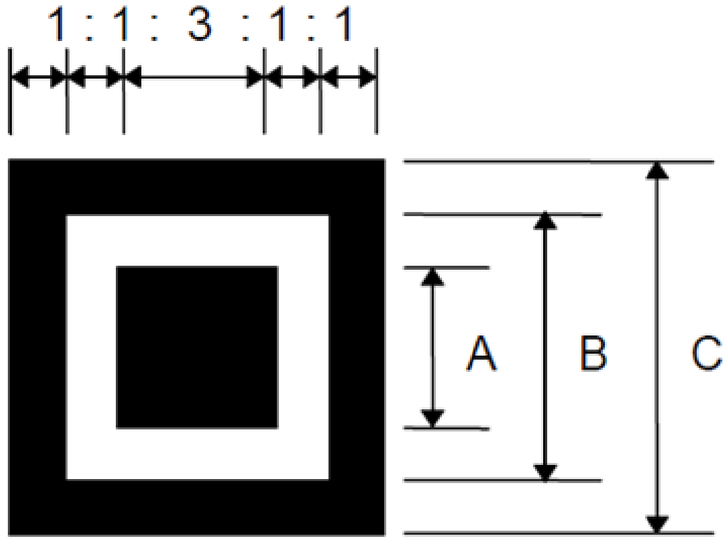
A singular pixel

Finder Pattern

Orange Portion



Finder Pattern



A: 3 modules

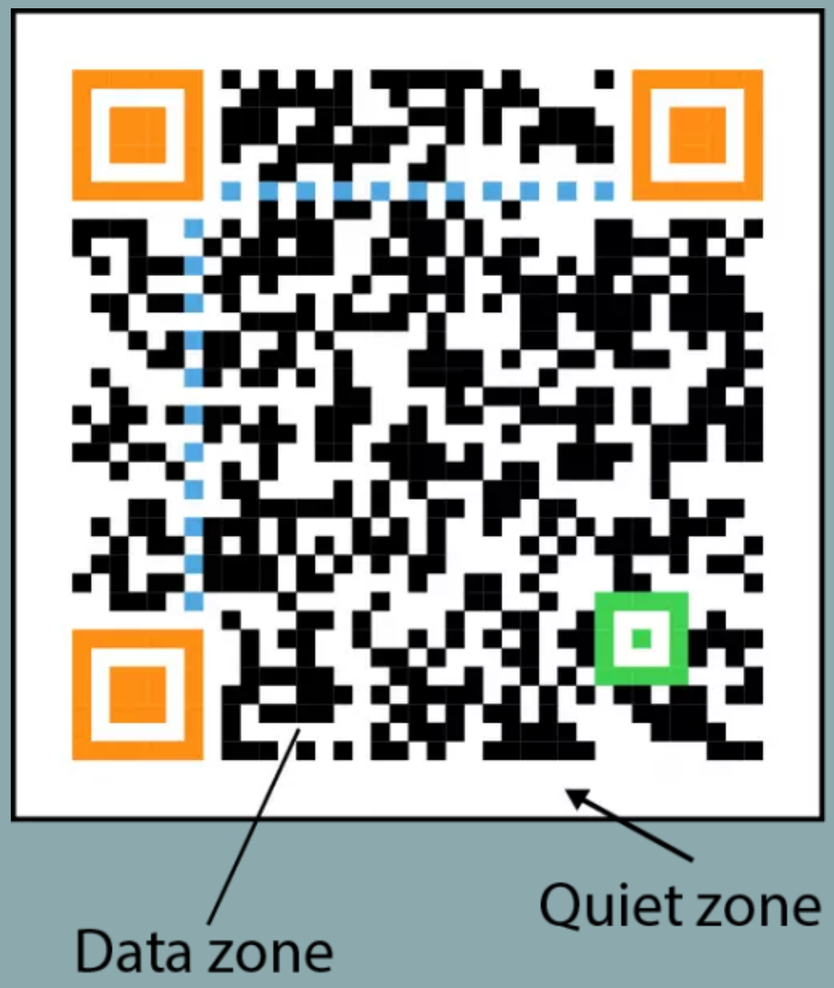
B: 5 modules

C: 7 modules

Structure of a finder pattern

Alignment Pattern

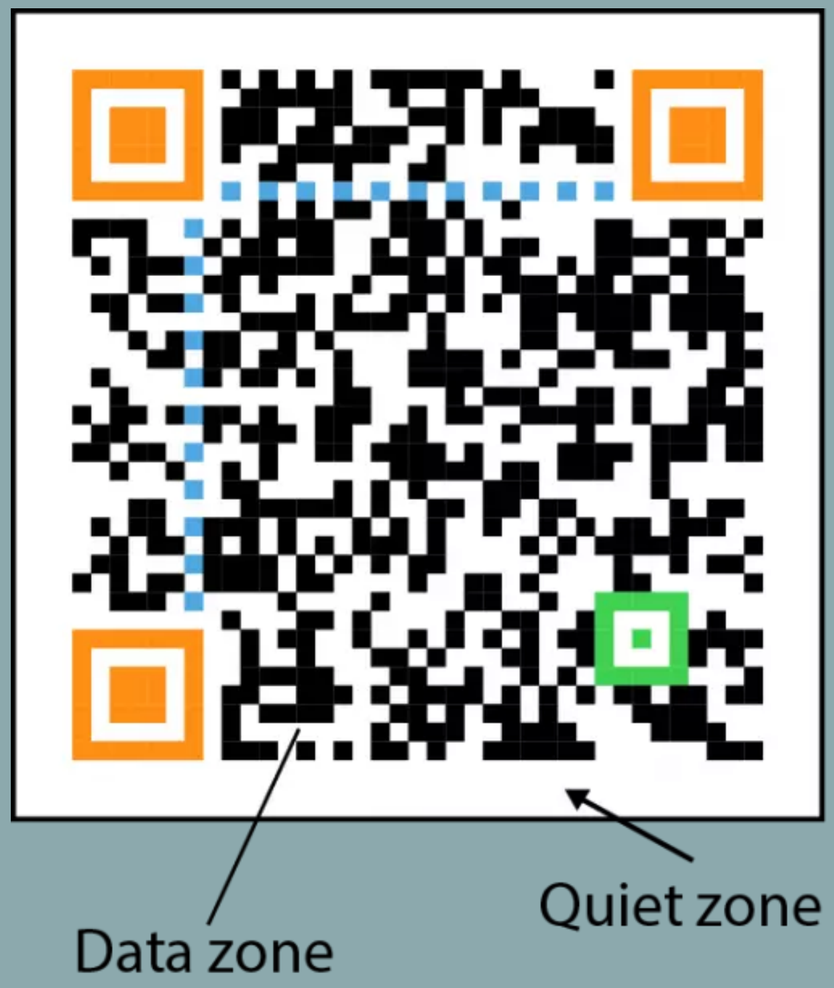
Green Portion



Alignment Pattern

Timing Patterns

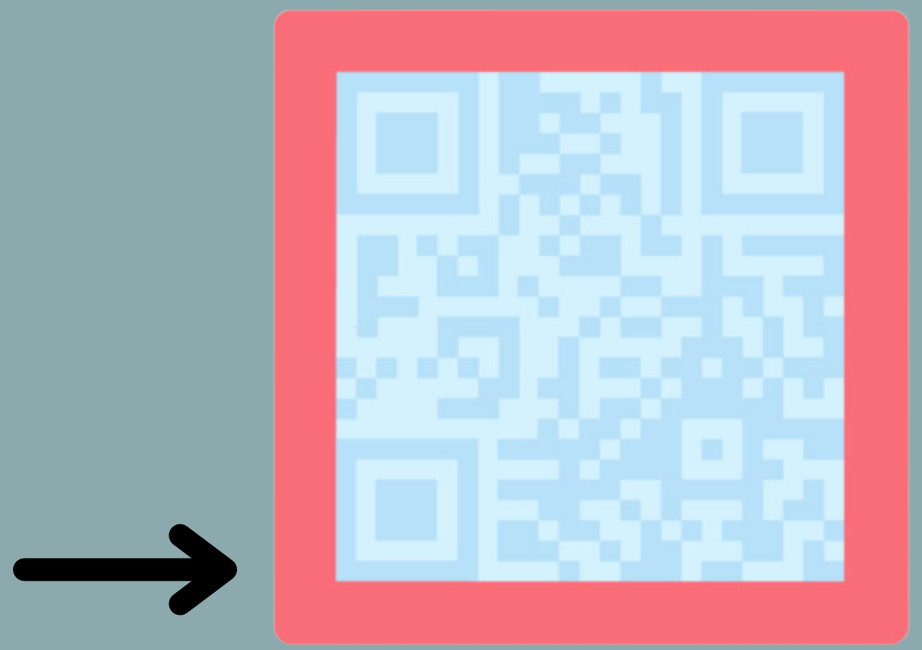
Blue Portion



Timing Patterns

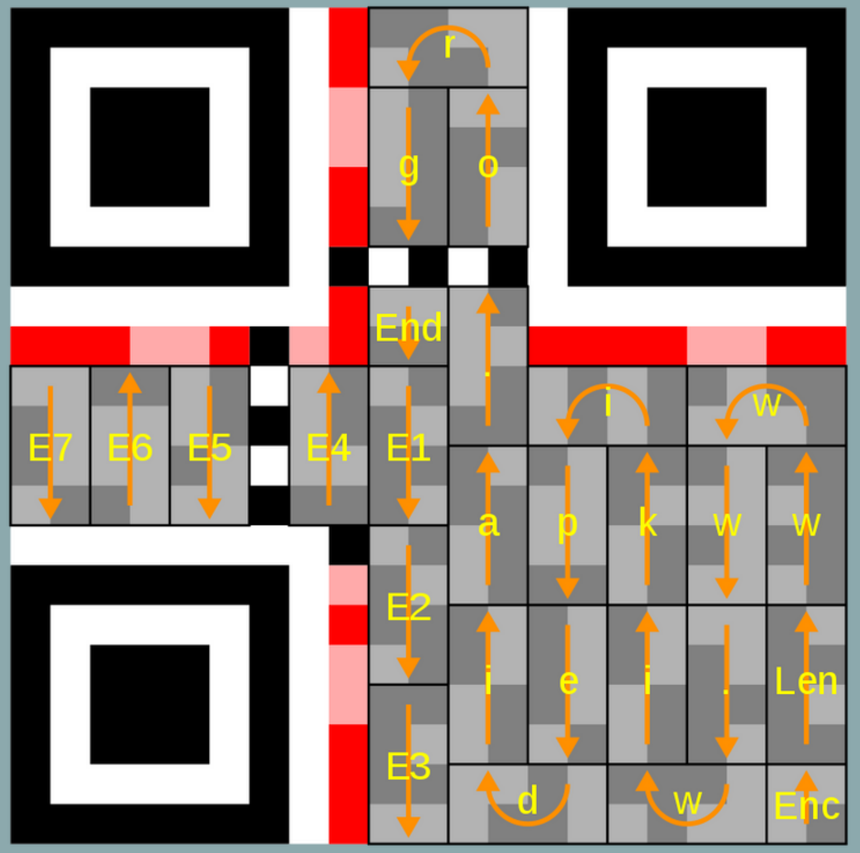
Margin

4 Modules Long



Version Information

Data



Fixed patterns

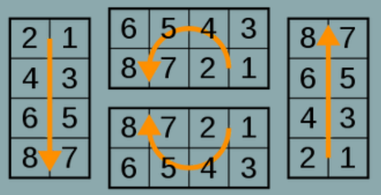
Format info

Enc: Encoding mode

Len: Message length

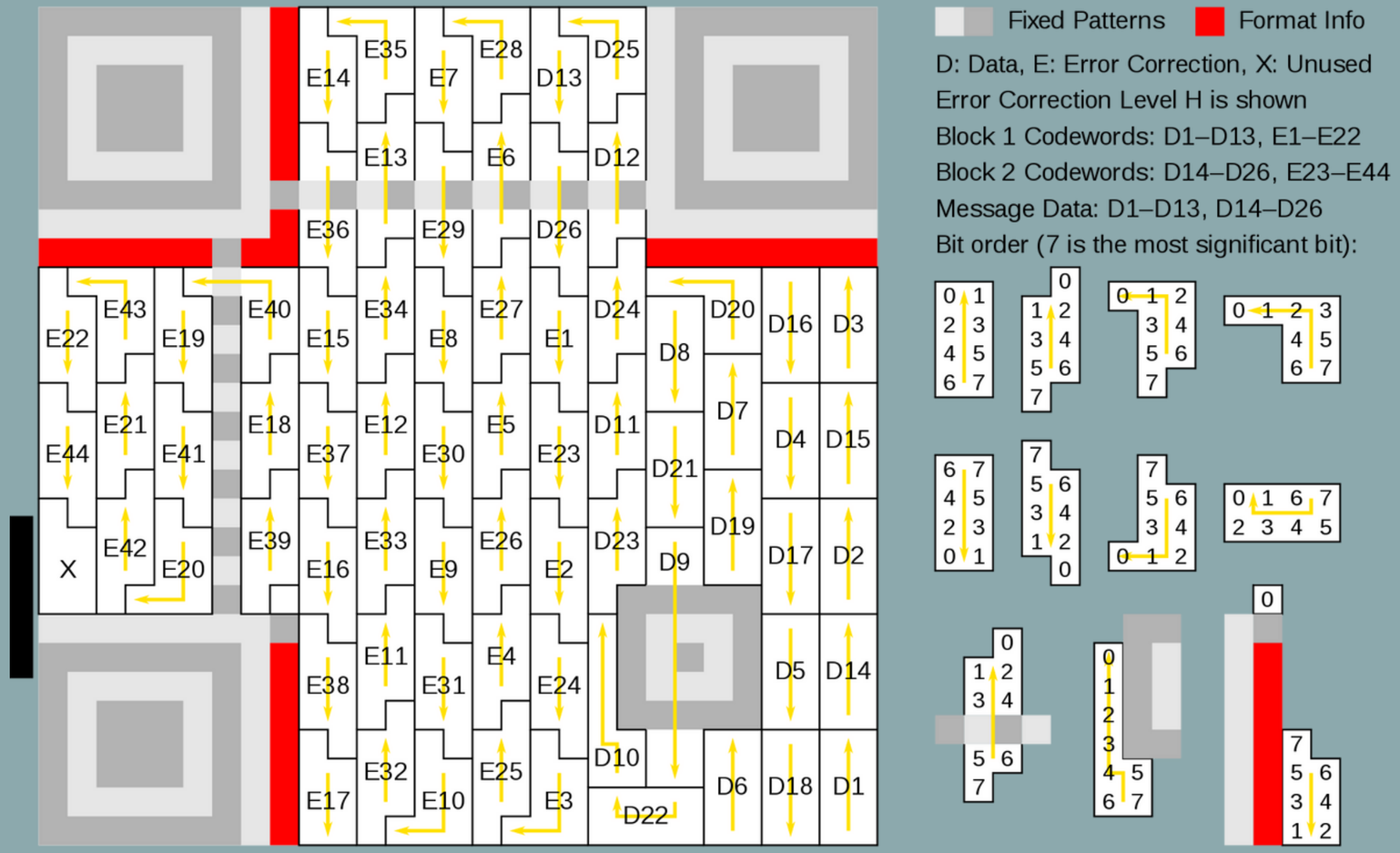
E1: Error correction

Bit order (1 is MSB):



In this symbol, dark is
0 on even rows,
1 on odd rows

Data


Fixed Patterns
Format Info
D: Data, E: Error Correction, X: Unused
Error Correction Level H is shown
Block 1 Codewords: D1–D13, E1–E22
Block 2 Codewords: D14–D26, E23–E44
Message Data: D1–D13, D14–D26
Bit order (7 is the most significant bit):
E14 E35 E7 E28 D13 D25
E13 E6 D12
E36 E29 D26
E22 E43 E19 E40 E15 E34 E8 E27 E1 D24 D8 D20 D16 D3
E44 E21 E41 E18 E37 E12 E30 E5 E23 D11 D21 D7 D4 D15
X E42 E20 E39 E16 E33 E9 E26 E2 D23 D9 D19 D17 D2
E38 E11 E31 E4 E24 D5 D14
E17 E32 E10 E25 E3 D10 D22 D6 D18 D1

Error Correction

Level L (Low) 7%

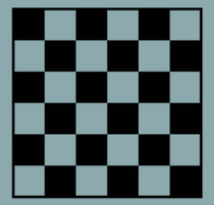
Level M (Medium) 15%

Level Q (Quartile) 25%

Level H (High) 30%

Error Correction

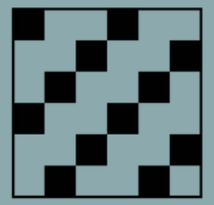
Reed-Solomon Encoding



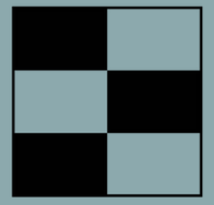
Mask 000
(i + j)%2 = 0

Mask 001
i % 2 = 0

Mask 010
j % 3 = 0



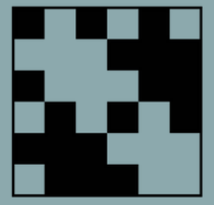
Mask 011
(i + j)%3 = 0



Mask 100
(i/2 + j/3)%2=0

Mask 101
(i*j)%2+(i*j)%3=0

Mask 110
((i*j)%3+i*j)%2=0

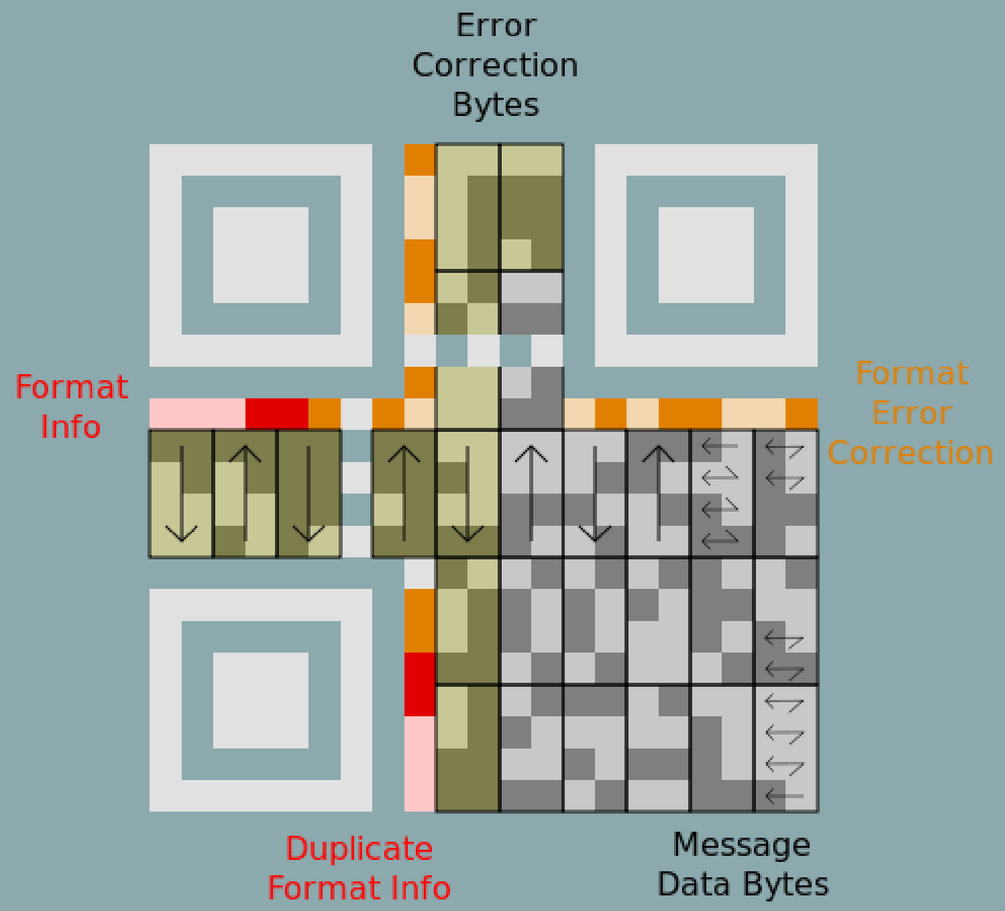


Mask 111
((i*j)%3+i+j)%2=0

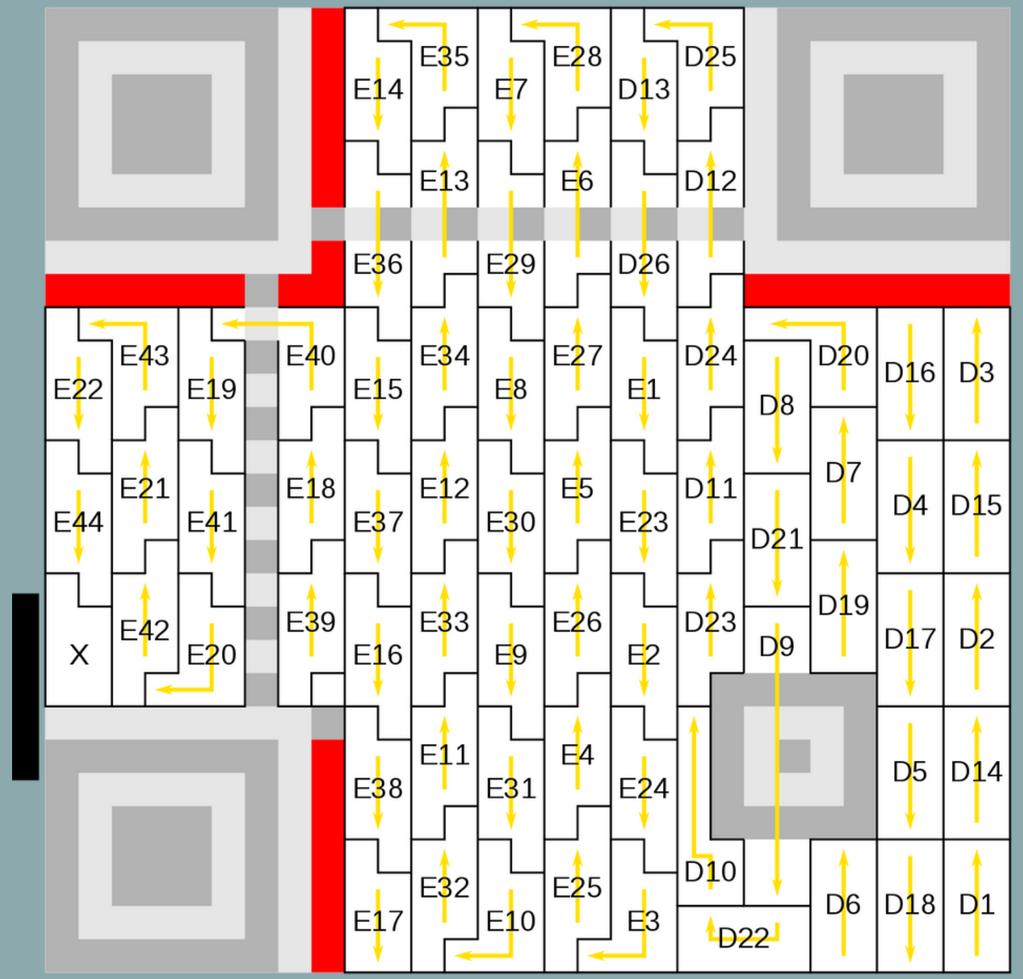
Error Correction

May be broken up into multiple blocks.

Block size of less than 15.



Block Size 13



Fixed Patterns Format Info

D: Data, E: Error Correction, X: Unused

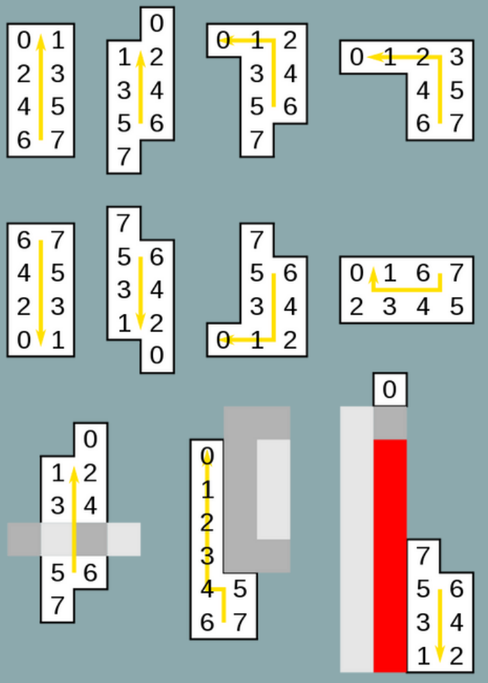
Error Correction Level H is shown

Block 1 Codewords: D1–D13, E1–E22

Block 2 Codewords: D14–D26, E23–E44

Message Data: D1–D13, D14–D26

Bit order (7 is the most significant bit):



Version X

4 x version # + 17

Version 1

21x21

Up to 25 Chars

Version 2

25x25

1 Alignment Pattern

Up to 47 Chars

Version 3

29x29

Version 4

33x33

Version 10

57x57

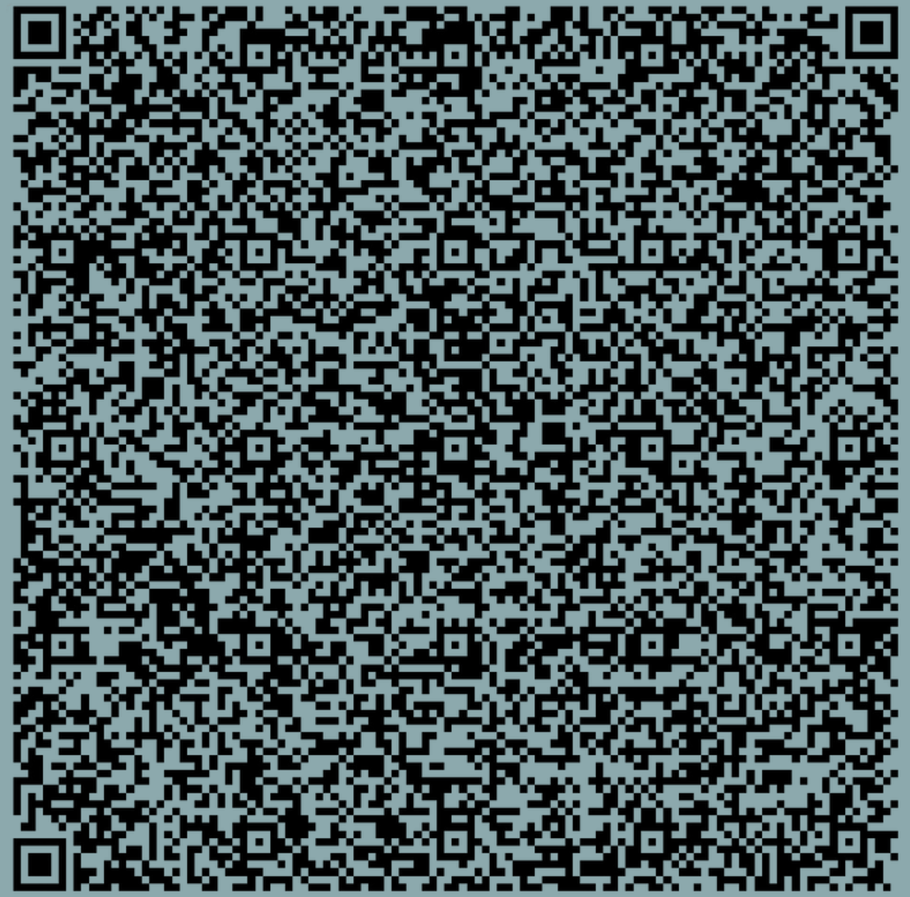
5 Alignment Patterns

Version 25

117x117

22 Alignment Patterns

Up to 1,269 Chars



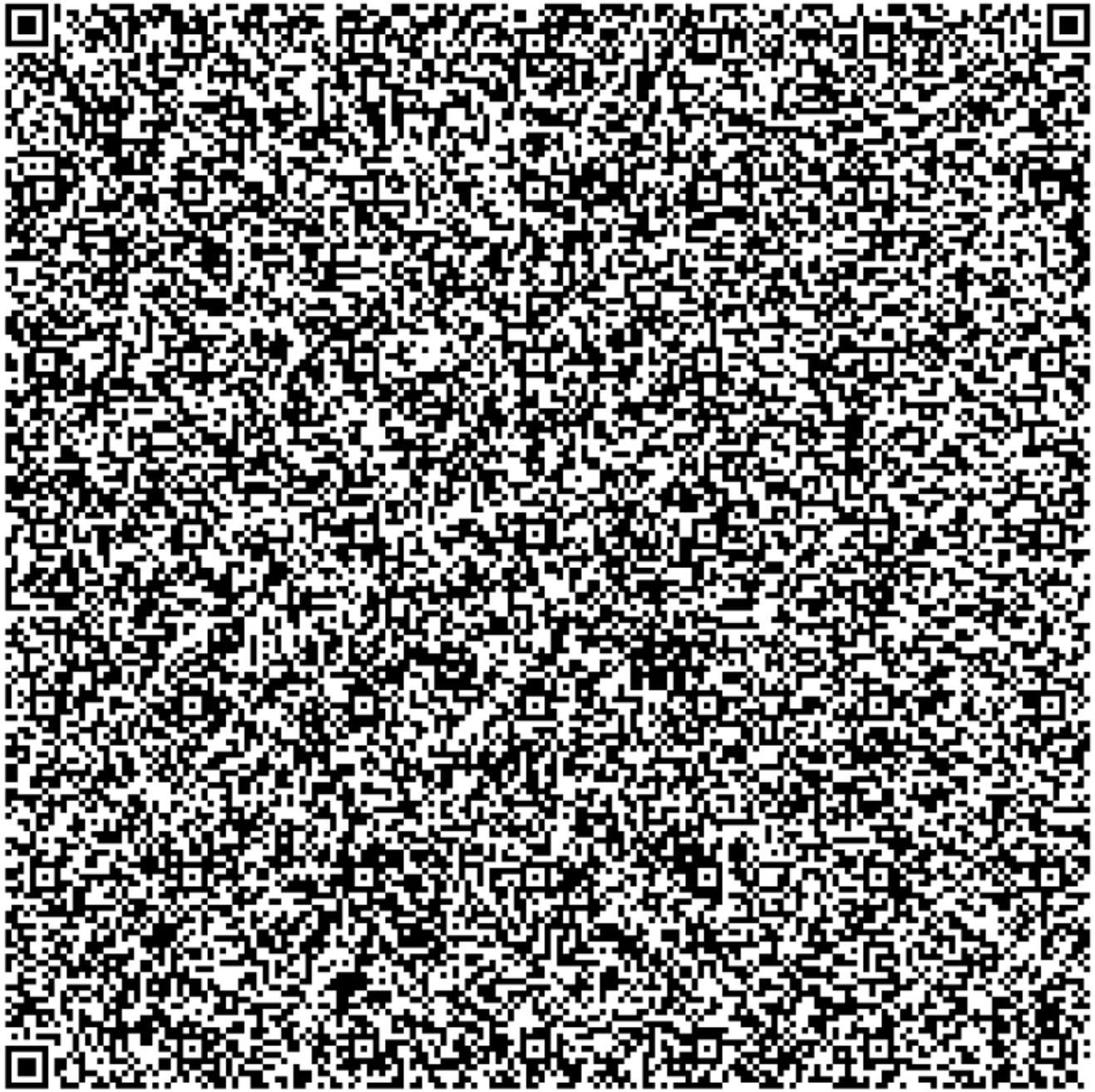
Version 40

177x177

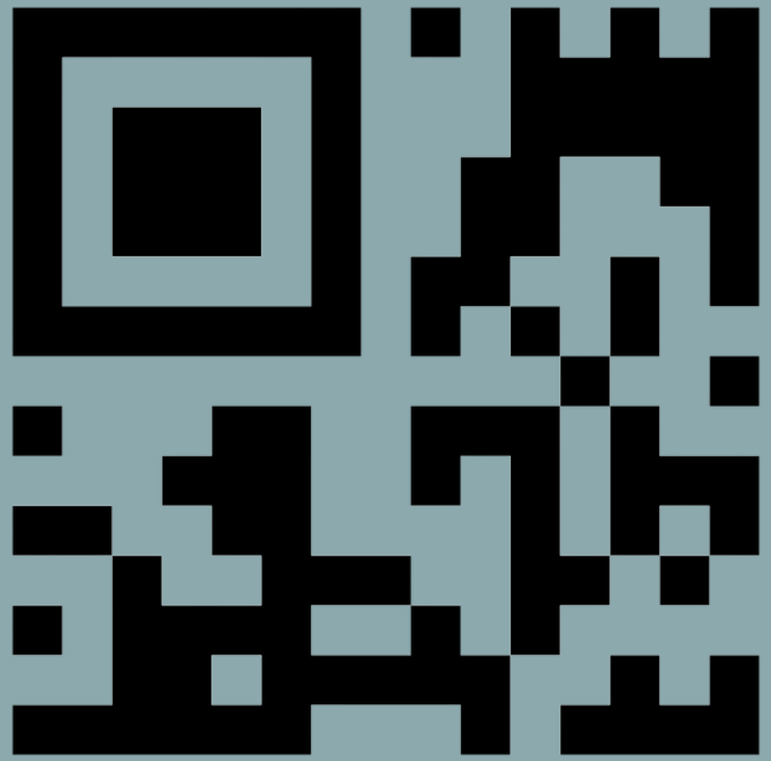
46 Alignments

Up to 4,296 Chars

Up to 1,852 H Level



Micro QR Code

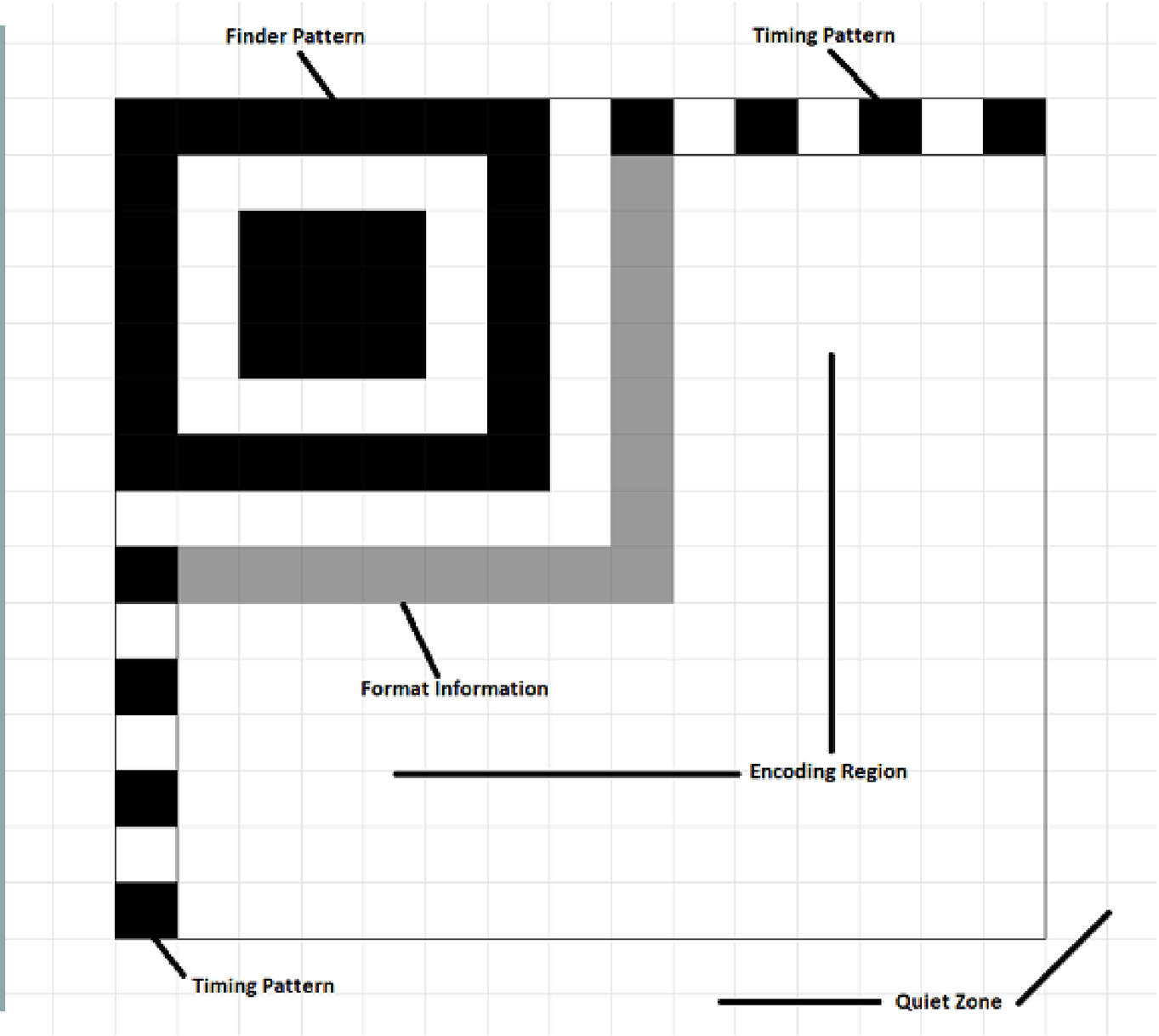


Micro QR Code

Singular Finder Pattern

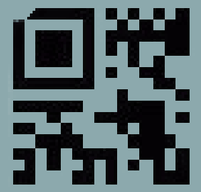
Edge Timing Pattern

2 Module Quiet Zone



Micro QR Code

4 Sizes of QR Code



Version	Error Correction	Numeric	Alphanumeric	Byte
M1	Detection Only	5	None	None
M2	L	10	6	None
M2	M	8	5	None
M3	L	23	14	9
M3	M	18	11	7
M4	L	35	21	15
M4	M	30	18	13
M4	Q	21	13	9

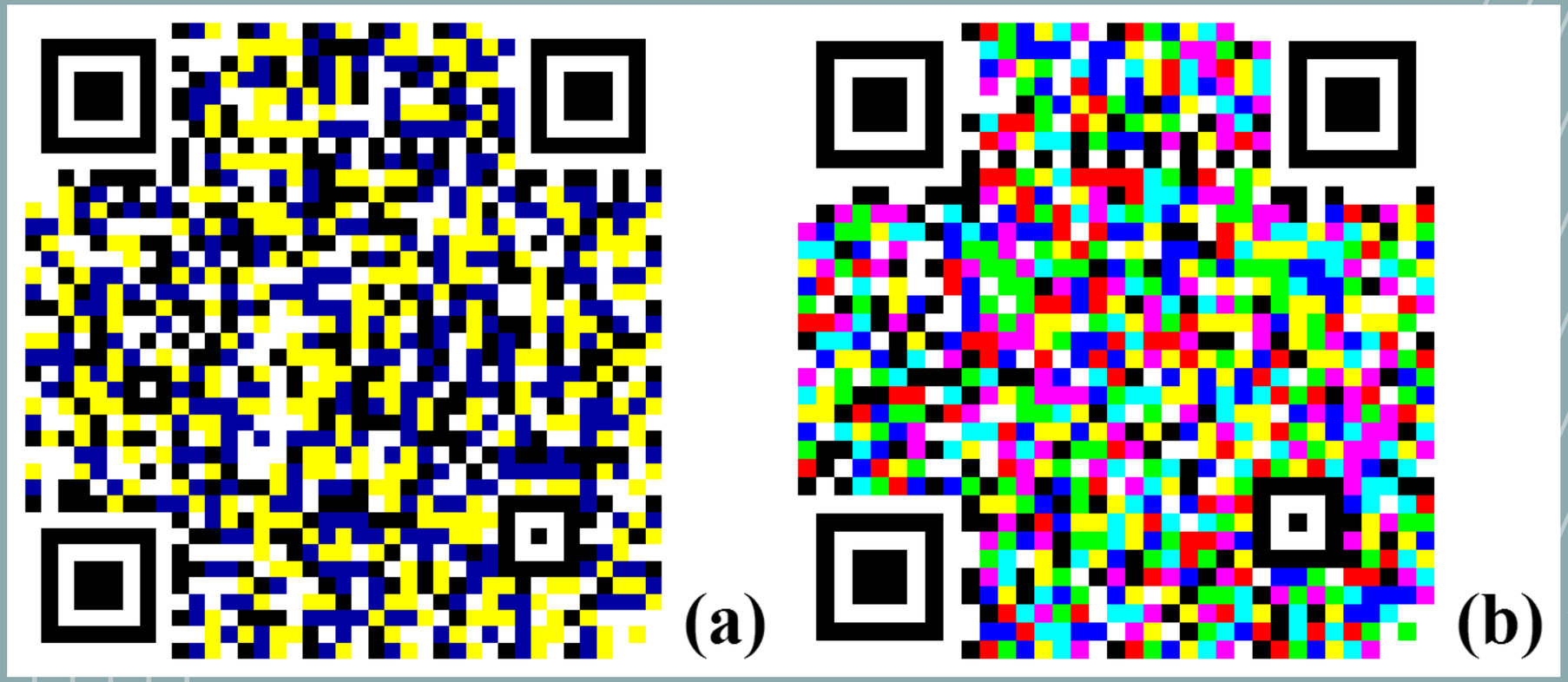
Similar Versions

Lacks timing patterns

Model 1

Version 2

FUTURE



4 color

8 color

BARCODES (AGAIN)

Cheaper

Easier to scan

Human Readable

4 color

8 color

QUESTIONS?