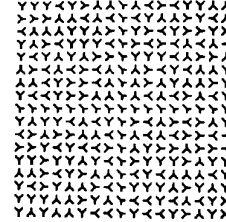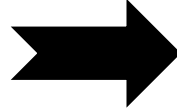# WHAT IS A SIGNAKEY?

- It looks like this ➡

- Uses NSA Suite B, FIPS Compliant, AES 256 Bit, Secure Hash Algorithm Encryption. It is VERY secure!

- 256 Hexadecimal data symbols can make 5.19 X 10^{33} unique identifiers.

- NASA estimates there are 3 x 10^{22} Stars in the Cosmos.

- Can be printed on Label or Laser Marked onto component.

- Fast decode (< 2 seconds) with $7.95 webcam or Smartphone.

HOW DOES A SIGNAKEY WORK?

Virtually Unlimited Quantities

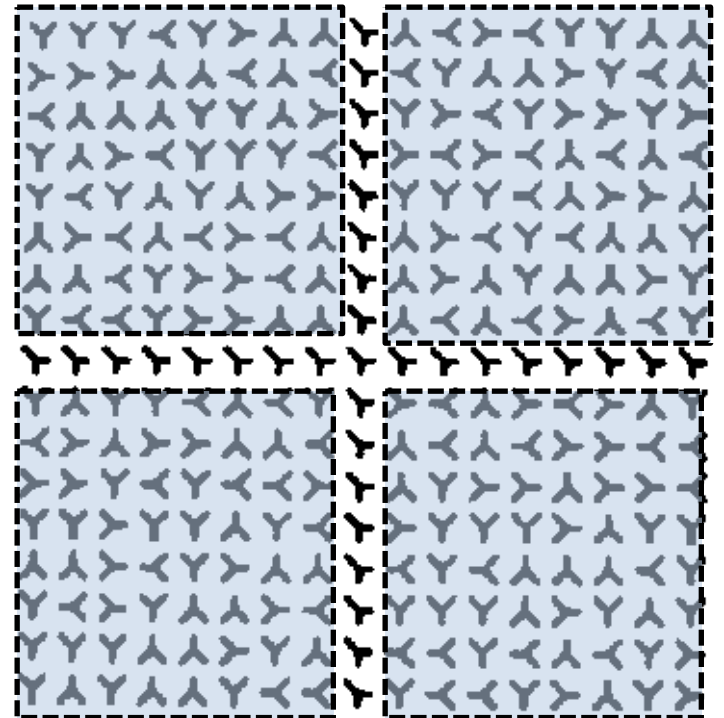256 Data Hexadecimal Data Symbols provides

⬇
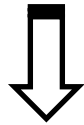
5.19 Decillion Unambiguously Unique Marks

⬇

5,190,000,000,000,000,000,000,000,000,000,000

All 256 Data Symbols Shown
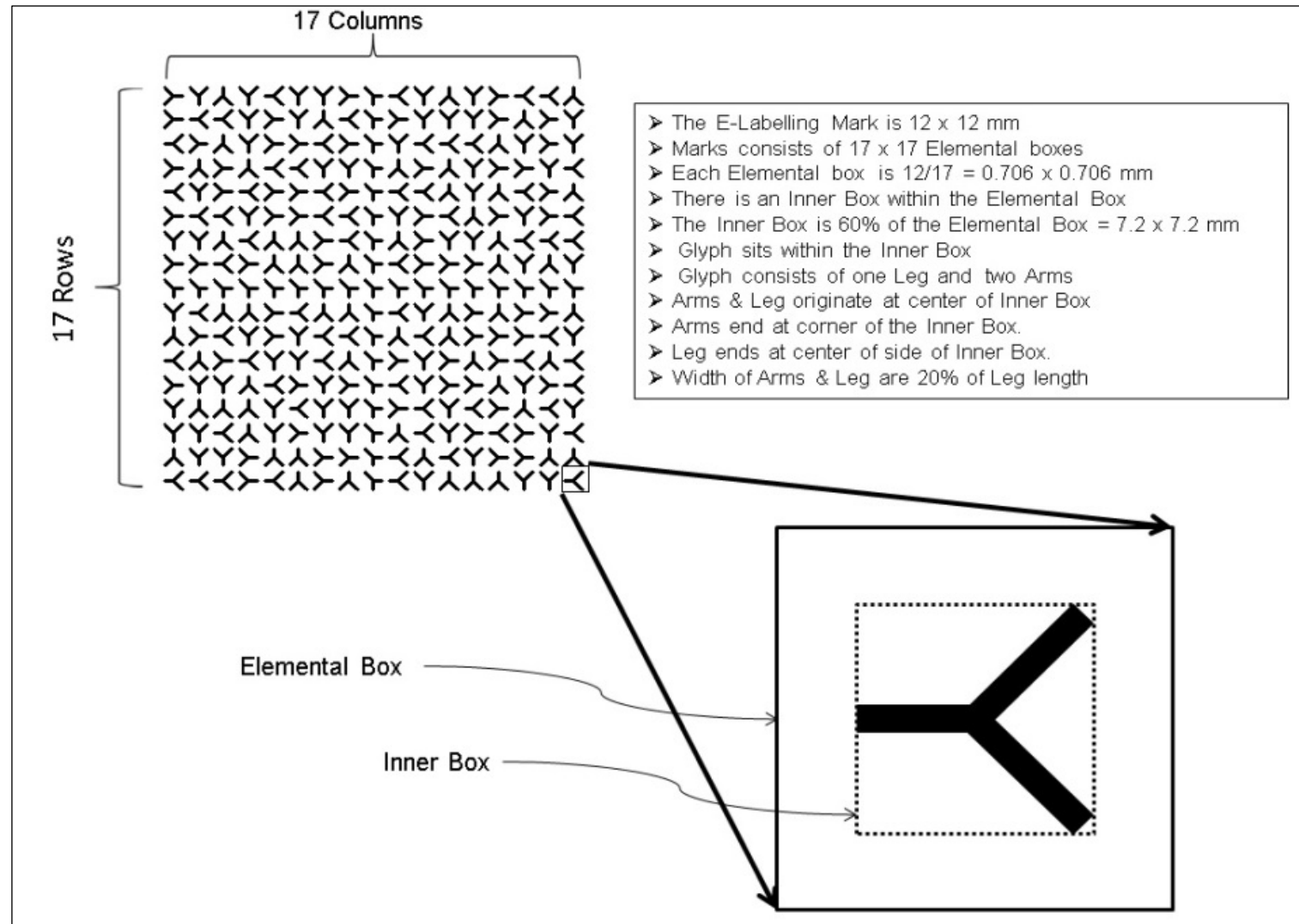

Orientation Symbols

SIGNAKEY MARK IS MADE OF "Y"

If only these **2**

入 **Bi**nary equivalent = 0

Y **Bi**nary equivalent = 1

If there are **4**

入 **Quat**nary equivalent = 0

⊱ **Quat**nary equivalent = 1

Y **Quat**nary equivalent = 2

≺ **Quat**nary equivalent = 3

WHAT ARE THE INNER DETAILS

17 Columns

17 Rows

- The E-Labelling Mark is 12 x 12 mm
- Marks consists of 17 x 17 Elemental boxes
- Each Elemental box is 12/17 = 0.706 x 0.706 mm
- There is an Inner Box within the Elemental Box
- The Inner Box is 60% of the Elemental Box = 7.2 x 7.2 mm
- Glyph sits within the Inner Box
- Glyph consists of one Leg and two Arms
- Arms & Leg originate at center of Inner Box
- Arms end at corner of the Inner Box.
- Leg ends at center of side of Inner Box.
- Width of Arms & Leg are 20% of Leg length

Elemental Box

Inner Box

Similar to QR Code – Except Safe and Secure – Every e-Label is unique

THE PERFECT DIGITAL MARK

Found Mark Grading

Overall grade 4.0

Key Measurements

1) Mark height 384 pixels, 384 pixels expected.

2) Found 289 of 289 glyphs.

3) Average glyph size is 0.0 x 0.0 pixels, off by 0.0% x 0.0%

4) Glyph clocking off -1 to 0 x -1 to 0

The four Key Measurements shown here combine through a weighting algorithm to provide Grades: 4.0 to 0.0. 4.0 being the highest. 2.0 is the minimum acceptable.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	3	0	2	0	0	1	1	1	4	1	3	1	3	1	3	0	2
2	3	3	2	0	0	1	1	2	4	0	1	2	0	0	0	2	1
3	1	3	0	2	0	0	3	1	4	3	0	1	3	2	3	1	1
4	2	3	0	0	0	0	3	3	4	1	3	0	1	1	1	1	0
5	2	3	0	0	3	3	0	4	1	2	0	0	0	2	0	2
6	1	1	0	2	0	0	3	4	0	1	0	1	0	0	0	2
7	1	2	1	2	2	0	0	4	3	2	2	1	2	3	0	3
8	0	2	2	0	0	1	0	4	3	3	0	1	0	3	2	2
9	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
10	2	0	1	3	3	2	0	3	2	3	1	0	1	3	0	0
11	2	2	1	3	1	0	0	3	2	0	2	1	2	0	1	0
12	2	0	0	2	2	3	0	3	3	1	0	2	0	0	0
13	2	1	0	2	0	1	2	3	3	0	1	0	0	0	2
14	1	2	0	0	3	1	3	0	3	1	2	1	1	2
15	1	2	0	0	3	0	3	2	0	1	0	1	2	2	3	1
16	1	1	0	3	0	3	4	3	1	3	0	1	3	2	3

Symbol Width Distribution

Symbol	13	14
0/up	10	44
1/right	45	20
2/down	12	63
3/left	51	11
4/up-left	33	0
5/up-right	0	0
6/down-right	0	0
7/down-left	0	0
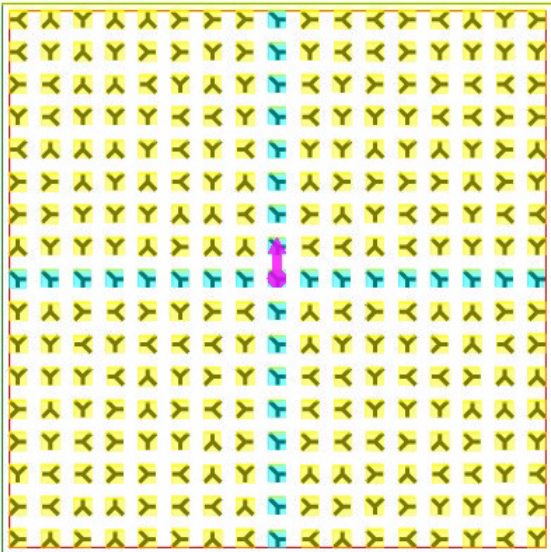
Symbol Height Distribution

Symbol	13	14
0/up	35	19
1/right	11	54
2/down	59	16
3/left	13	49
4/up-left	32	1
5/up-right	0	0
6/down-right	0	0
7/down-left	0	0

SignaKey Mark Analyzer

Video Control

Select Camera

Using: USB 2760 Camera

Found Mark & Symbols

MarkFinder result Success
Symbols found are 17x17, rotated 0 degrees, focus point 324,242
Located between NW 133,51 and SE 516,434

Size x 1

PRINTED WITH 600 DPI INKJET

Overall grade 3.4

Key Measurements

1) Mark height 358 pixels, 384 pixels expected. Adjust camera.

2) Found 289 of 289 glyphs.

3) Average glyph size is 15.0 x 15.2 pixels, off by 16.2% x 17.8%

4) Glyph clocking off -4 to 1 x -3 to 1 Adjust and check print engine.

This E-Label is very good and was produced on a 600 DPI printer. The Verifier program suggests how it can be improved.

Symbol Width Distribution

Symbol	13	14	15	16
0/up	1	45	25	0
1/right	1	37	29	0
2/down	0	34	20	0
3/left	1	44	19	0
4/up-left	2	20	11	0
5/up-right	0	0	0	0
6/down-right	0	0	0	0
7/down-left	0	0	0	0

Symbol Height Distribution

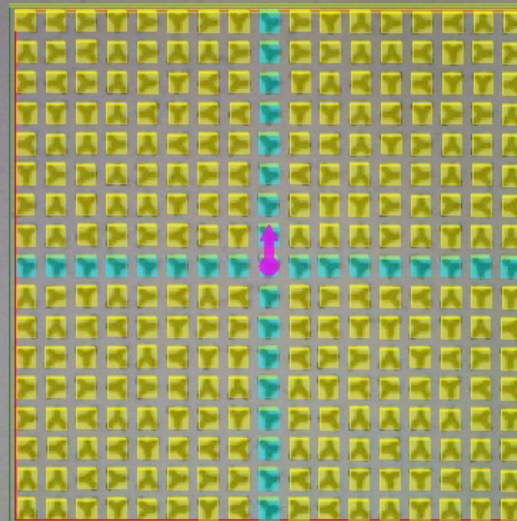| Symbol	13	14	15	16
0/up	0	3	51	17
1/right	0	5	49	13
2/down	0	4	37	13
3/left	0	7	42	15
4/up-left	0	7	20	6
5/up-right	0	0	0	0
6/down-right	0	0	0	0
7/down-left	0	0	0	0

gnaKey Decode Camera

Decode

Alt-F12

Found Mark & Symbols

MarkFinder result Success
Symbols found are 17x17, rotated 0 degrees, focus point 322,240
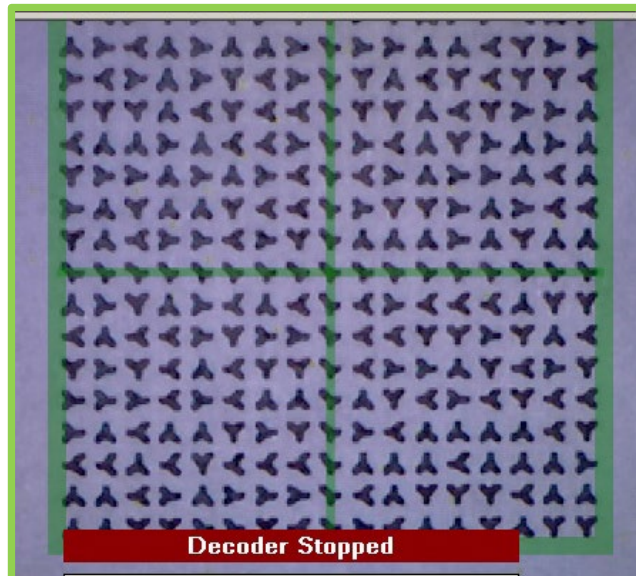Located between NW 144,61 and SE 500,418

Size x 1

ANALYIS TO OBTAIN A GRADE

This is a 10 x 10 mm Grade 3.0 Mark, Printed on a 6-years old HP Color Laser Jet Printer with 600 x 600 Resolution
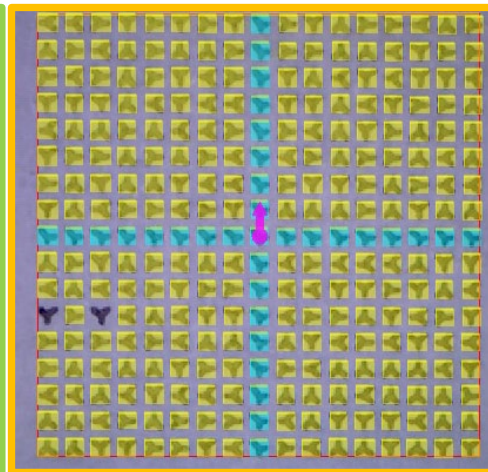
Actual View thru camera after decode

Decoder Stopped

Positional Analysis of each Glyph

Quatnary Transformation of each Glyph

Mark found is 17x17, 287 of 289 (1089) found, 99.3% (26.4%).
Focus at 16,16. Oriented N.

Data Analysis of Pixel size and position

Symbol Width Distribution

Symbol	14	15	16	17	18
0/up	1	23	32	10	5
1/right	0	15	34	14	4
2/down	0	9	25	16	2
3/left	0	30	21	11	2
4/up-left	0	6	22	3	2
5/up-right	0	0	0	0	0
6/down-right	0	0	0	0	0
7/down-left	0	0	0	0	0

Symbol Height Distribution

| Symbol	14	15	16	17	18
0/up	0	29	35	7	0
1/right	11	35	15	6	0
2/down	1	28	16	7	0
3/left	2	20	29	13	0
4/up-left	2	19	10	2	0
5/up-right	0	0	0	0	0
6/down-right	0	0	0	0	0
7/down-left	0	0	0	0	0

REQUIREMENTS TO PRINT AN E-LABEL

- Minimum 600 DPI Printer

- Minimum: Aven Mighty-Scope Digital Microscope (or equivalent) with 1.3 M.P. resolution, 0 - 200 X with 6 co-axial LED's.

- E-Label software/App

- Verifier Software.

- ECCC E-Label Print Calibration Master

Aven Mighty-Scope

E-Label Calibration Master

E-Label Print Calibration Master

DO NOT LAMINATE

| 24 x 24 mm | 18 x 18 mm | 12 x 12 mm | 8 x 8 mm |
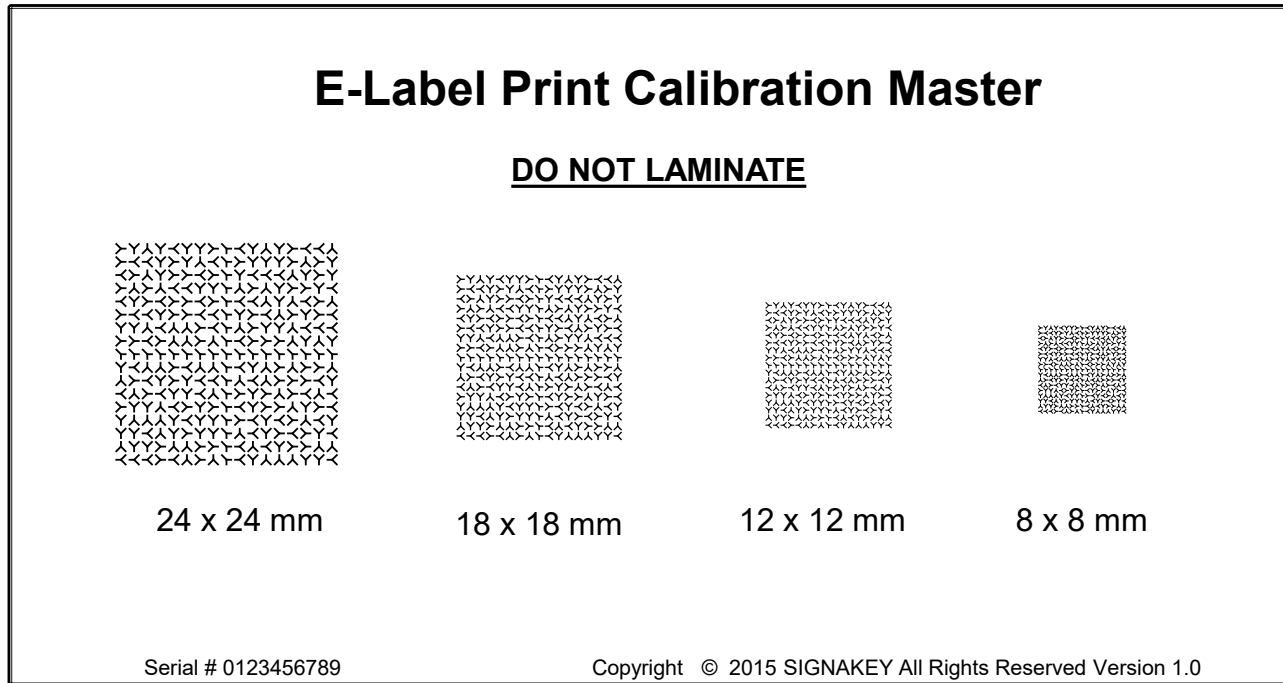
E-Label Print Calibration Masters are digitally printed by Memjet with 1,600 DPI Resolutions and will read 4.0 with the verifier if correctly positioned