1

5G

"　　"

246"　　　　　　"　　"

1

≥7000 Vpk   CMTI ≥100 kV/s

≤0.3%   ≤0.03%   -40℃~125 ℃

3000

3   2

500

20%

2   6

System on Chip, SoC)

Real-Time Clock   RTC

RTC   Liquid Crystal

Display LCD RISC-V

ARM Cortex-M0 32 MCU Micro Control Unit

RTC LCD

SoC SoC

SoC SoC

SoC

IP 8000:1

<0.1%

0.5S 0.2S

<0.1% RTC -30 ℃~80 ℃ <5 ppm

0.03 ppm

CPU 32 kHz <18 μA Sleep <8 μA

3000

6 4

4

500

20%

3 / /

摘 要

5G

400G/800G/1.6T   (Arrayed Waveguide

Grating, AWG)   /   MUX/DEMUX

              8   /   /

        MUX/DEMUX

                                                                /

/

                                    /

          /

    MUX/DEMUX

        5G   MUX/DEMUX

              8   /   MUX/DEMUX

        100   MUX/DEMUX

        1 400G/800G/1.6T   LAN-WDM

          ≤ 0.01 dB/cm   1.2 dB,

0.5 dB   2.8 nm   4.5nm

25 dB   30 dB   2   5G   6/12

CWDM   ≤ 0.01 dB/cm

20 nm   2.5 dB,   0.25 dB

13 nm   25 dB   30

dB   3000

3   3

500

20%

4   6

5G

Bulk Acoustic Wave   BAW

Solidly Mounted

Resonator   SMR

SMR-BAW

SMR-BAW   Thin-Film

Acoustic Packaging   TFAP

N78   SMR-BAW

6/8　　　SMR-BAW

5G　　SMR-BAW　　　　　SMR-BAW

N78　　3400~3500 MHz

100 MHz　　　<2.2 dB　　　　　　VSWR　<2.0 dB

>40 dB　　　　　　　>5 W

-4 ℃~85 ℃　　　　　　　　　2000

3　　　　　　　　　　2

500

20%

5

CMOS

Two Dimension Field-Effect Transistor,

2D-FET

-

-   /

Two Dimension

Field-Effect Transistor, 2D-FET   100 nm

2D-FeFET 10^5 s

10 ns   2 V   10 fJ

10^4 2D-FeFET

2D-FeFET

EDA   6-8   16 kb 2D-FeFET

3   2   SCI

8

100   30%

1

/

-    -

≥1000 S/cm   100%

360°   <10%   >90%

<0.5 N   100%   <10%

≥8

>100%

<0.05%   >100

2000   5   PCT

2   3

300

20%

2

Bs 0.6 T

100000   0.5 A/m   85%

700

A   -40℃ 125℃

20   0.2%

3000   3

1

300

20%

3

k

100 MPa   ≥50 kPa   <10%

≤20mm×20mm

                                        ≥10000

                                        ≥30 ℃   ≥10

≥0.3   ≤-20 ℃   ≥10

  ≥0.2   ≥1

                        2000

10   5

                        500

  20%

4

1

5

800 ms   1.16

96%

8 MB/s

400   /   1.16

3000

3   5

300

20%

5

LED

21

w/m   80   >190 lm/w
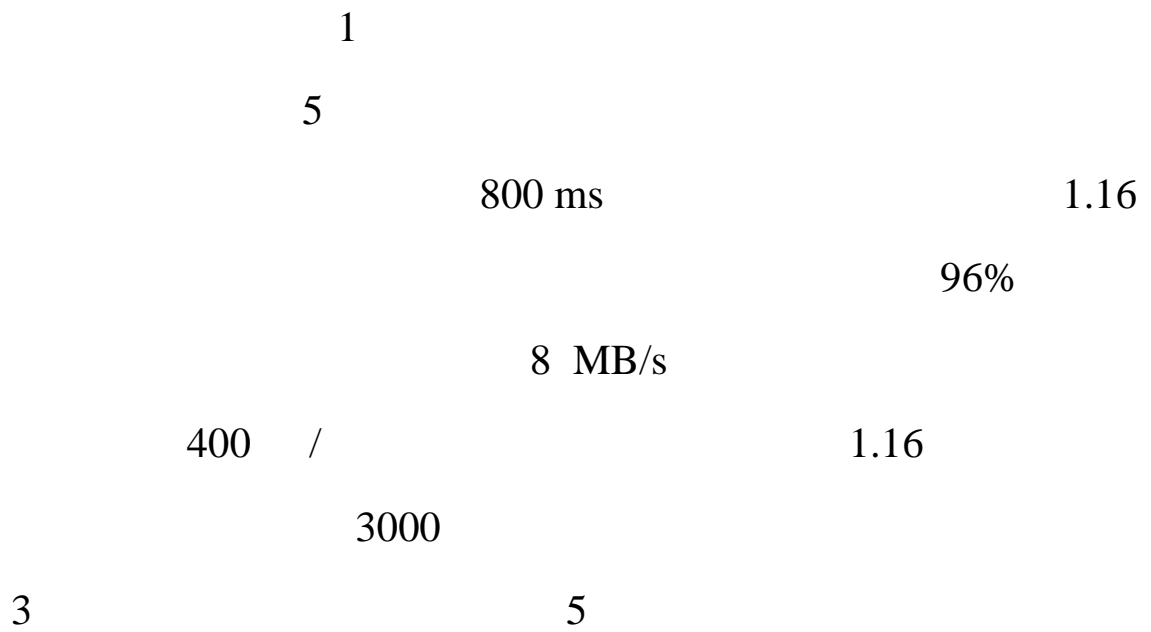
10%   35°   UGR<21

3.5   2   1.8~2.4

,   2.4

0.7   600 lx

Maxos LED   20%

10   5000

1   1

10

500

20%

6

≤500 nm   ≤30 μm   ≤5%

≤50 nN   ≤0.3 nN

4

3

100   30%

7
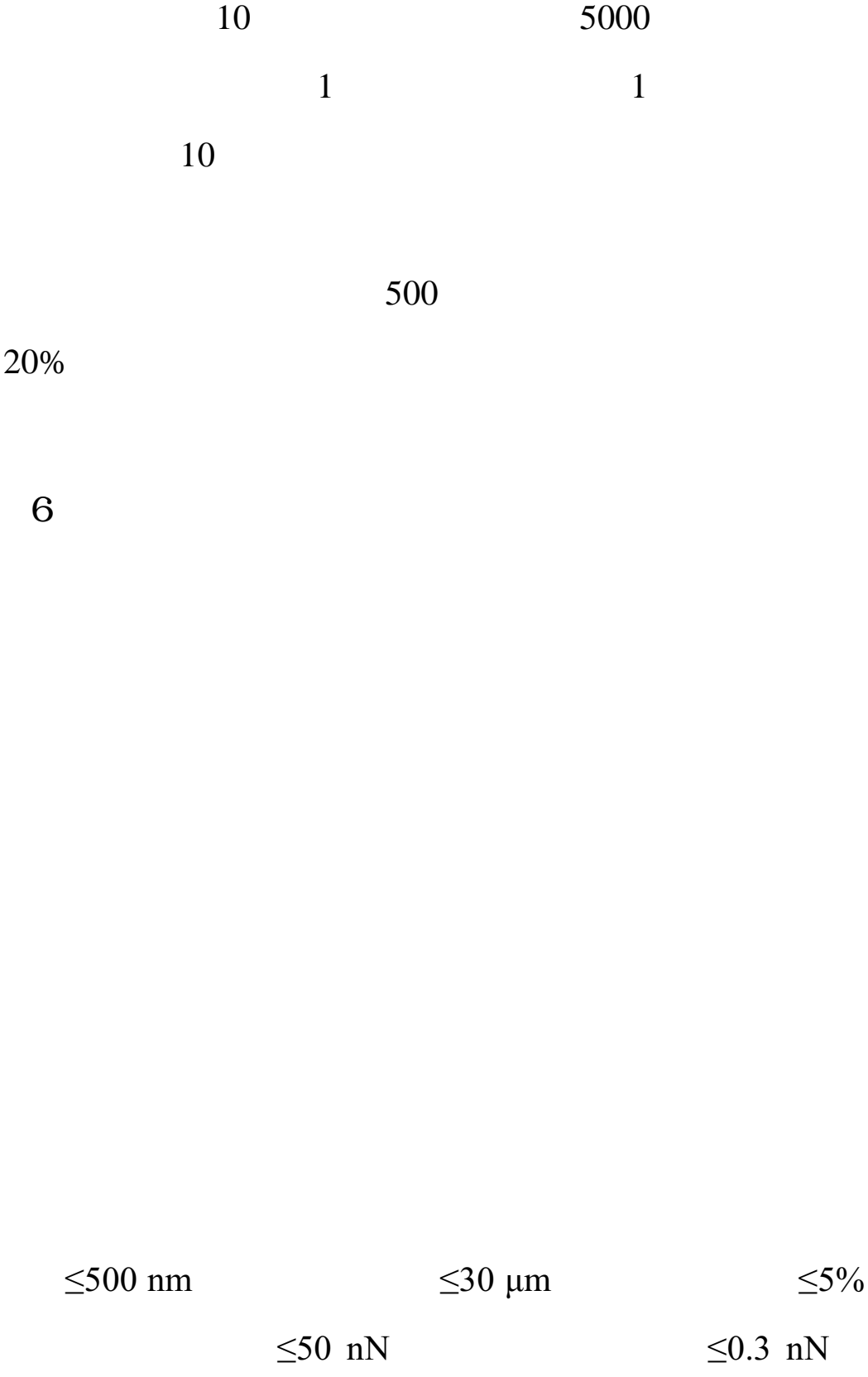
95%   1

5   5

100   30%

1

L2+   L4

300

20%

2

Two-Phase Commit Protocol, 2PC

Multi-Version Concurrency Control,

MVCC

80 RPS Requests per second

0.8 20:1

2 1000

3   2

2

300

20%

3

1

≤20 ms

≥98%

5   ≥95%   5

8   ≥95%

5000

3   6

2

300

20%

4

1

120   IO

                                        2   ;

        0.5   ;   2

                                        2

        5   5

        5

                                              2

CAD

90%

60%

90%

85%   (   )   1000

5   5

3

300

20%

6   A

                                              AI
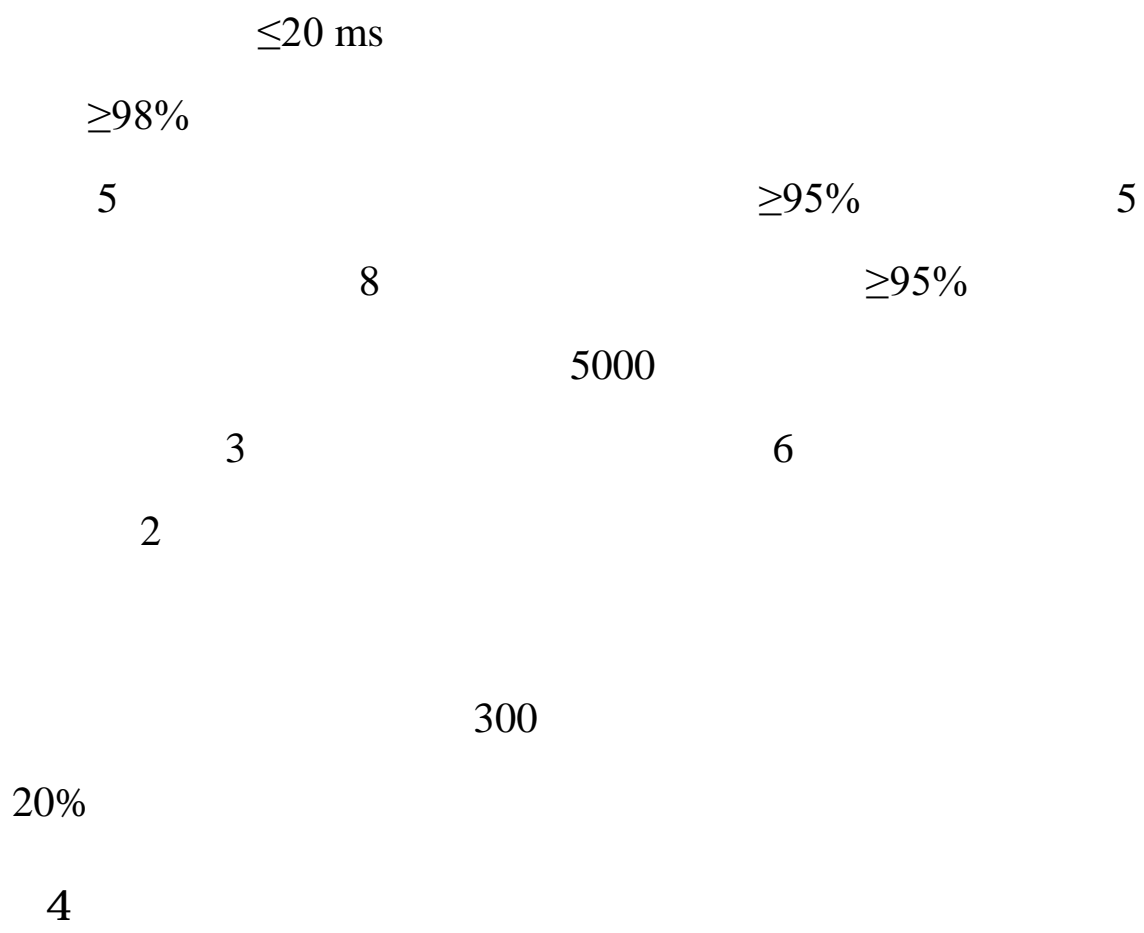

                              AI

                      1

AI   1

        3   AI   75%

                                          2000

                2   3

3   SCI   4

300

20%

7

IOT

1

1

10

50 ms   20%

0.5 s   Wi-Fi

ZigBee RF PLC   5

20   20

5   3

3000

3   10   SCI

2

300

20%

8   ℭ

CT

1

CAD/PLM

1   2000

        200   CAD

                        98%   1000

10000

        500   BOM

                        3

1000   2

        5   2   AutoCAD Inventor

TeamCenter   Windchill

                        300

    20%

Ⅱ

400 m

0.1 ms

95%   2 m

20 m³/

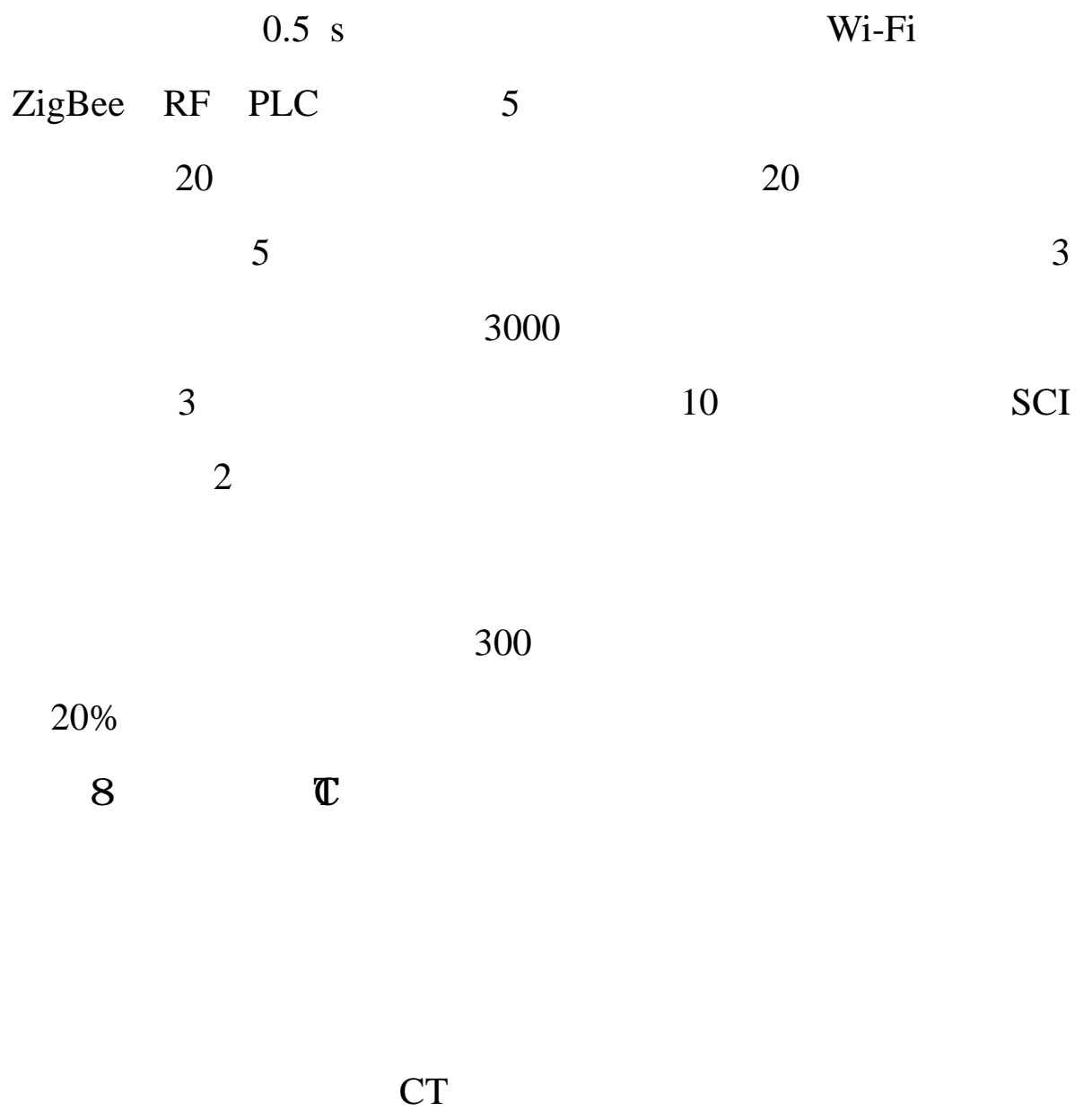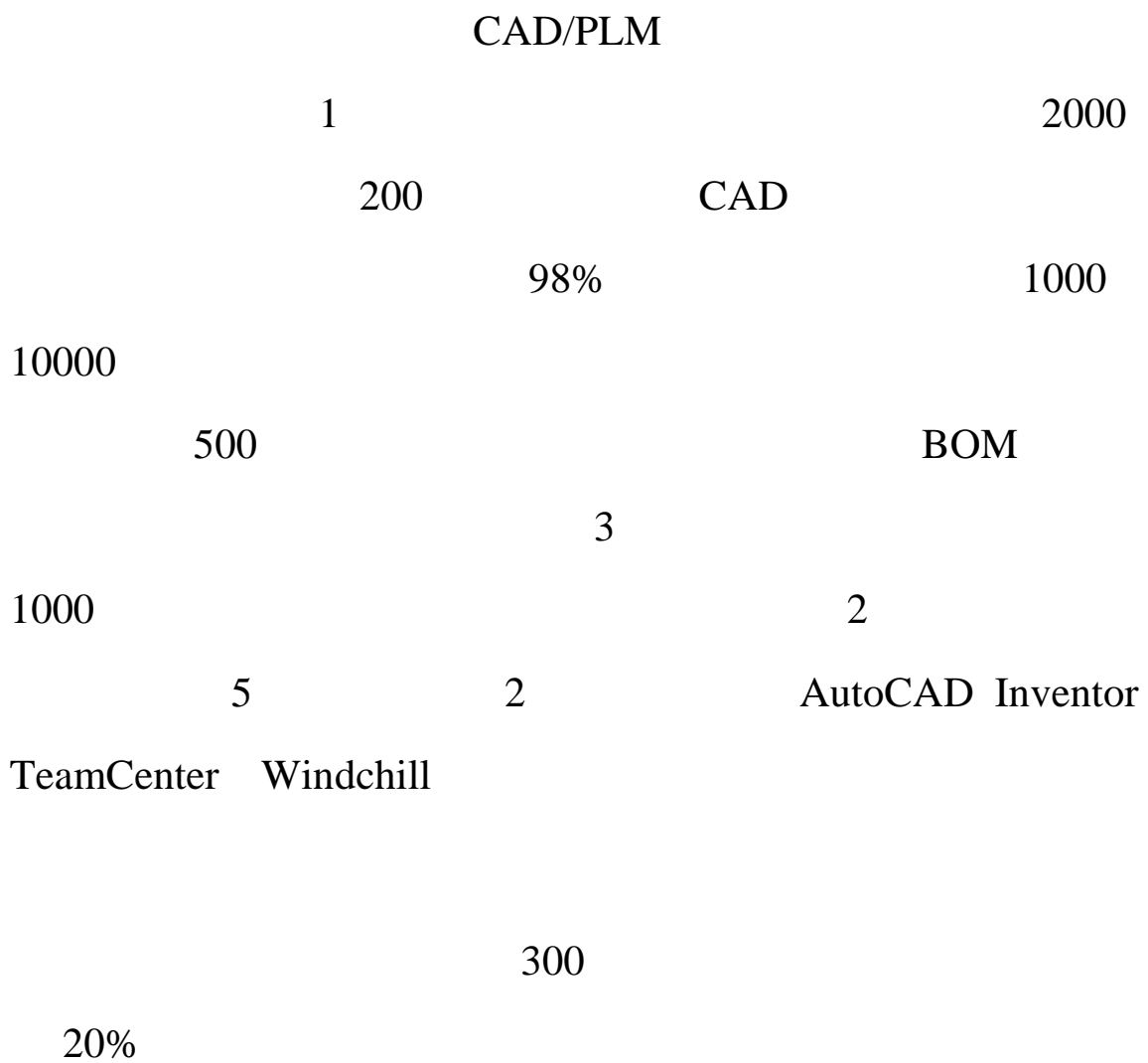6   PCT   2   4

300

20%

1

:

80

<10   >30%

<10   >90%

80

2   5

50   30%

2

1

8%   12%

6   ≤15%

1   5

2   2

50   30%

ℬ

SoH

SoH

SoH

5%

92%   70%   SoH

95%   10

95%

5   2   1

50   30%