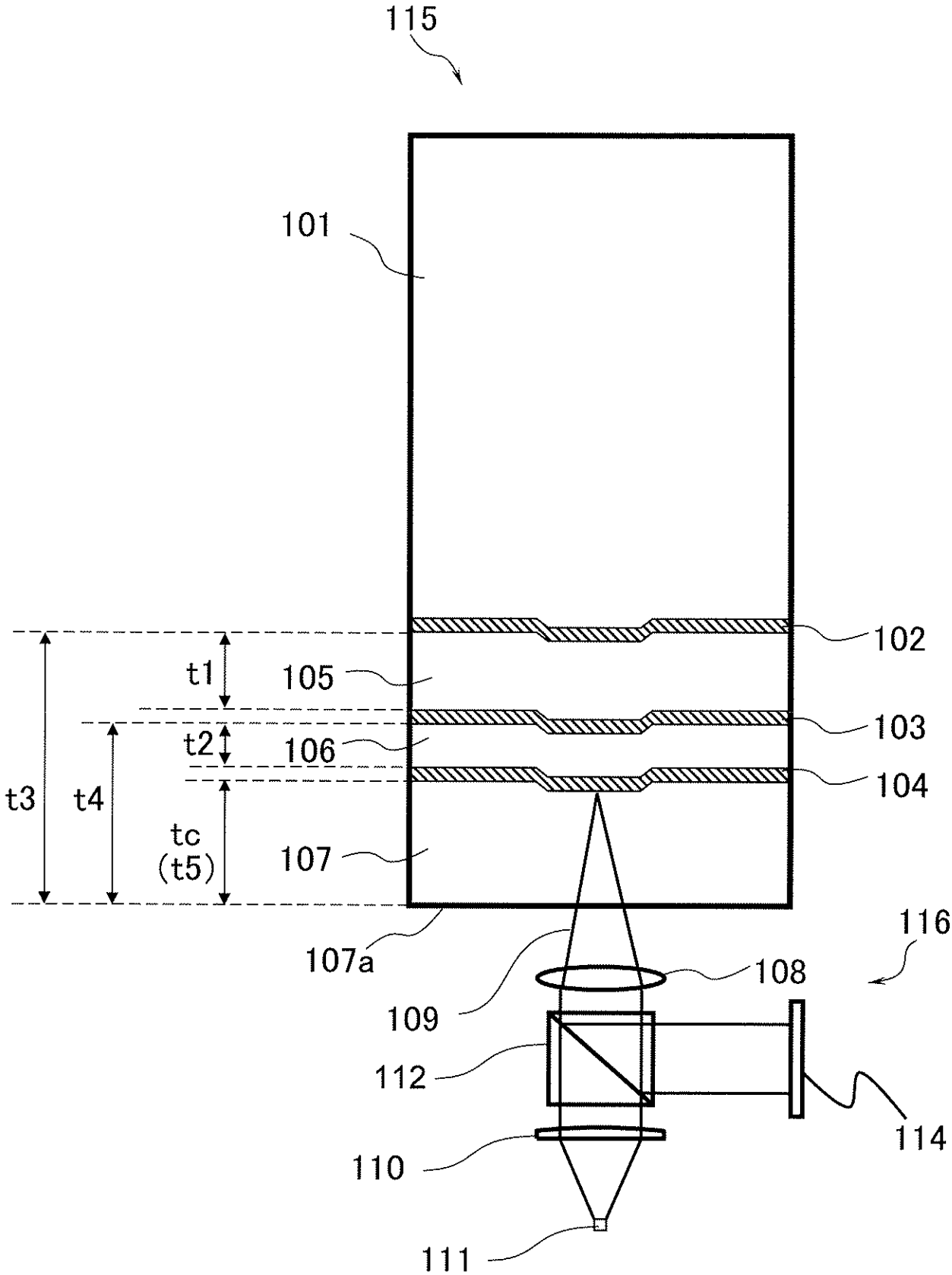

115
101
102
t1
105
103
t2
106
104
t3
t4
tc
(t5)
107
107a
116
108
109
112
114
110
111

FIG. 1A

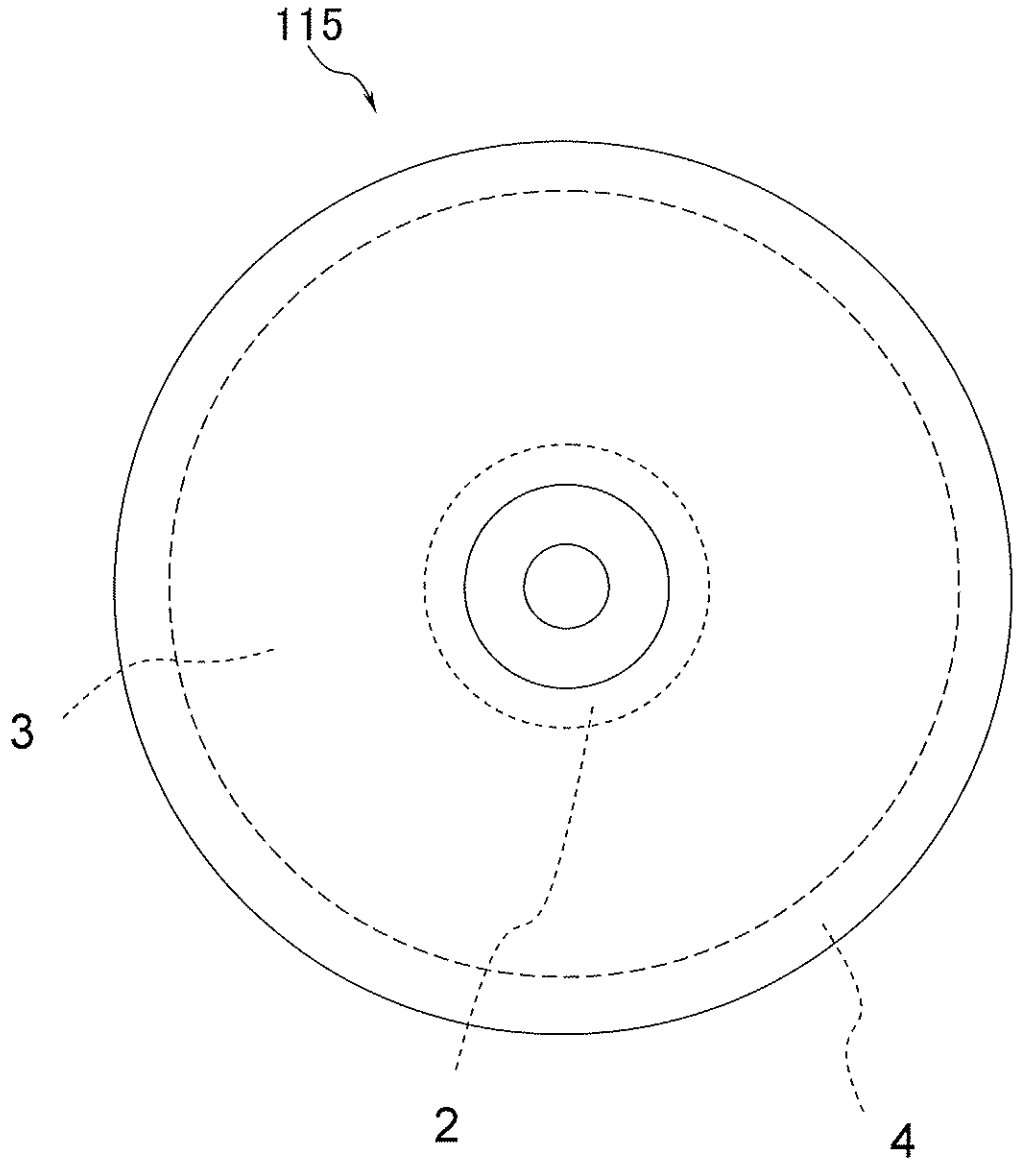


FIG. 1B

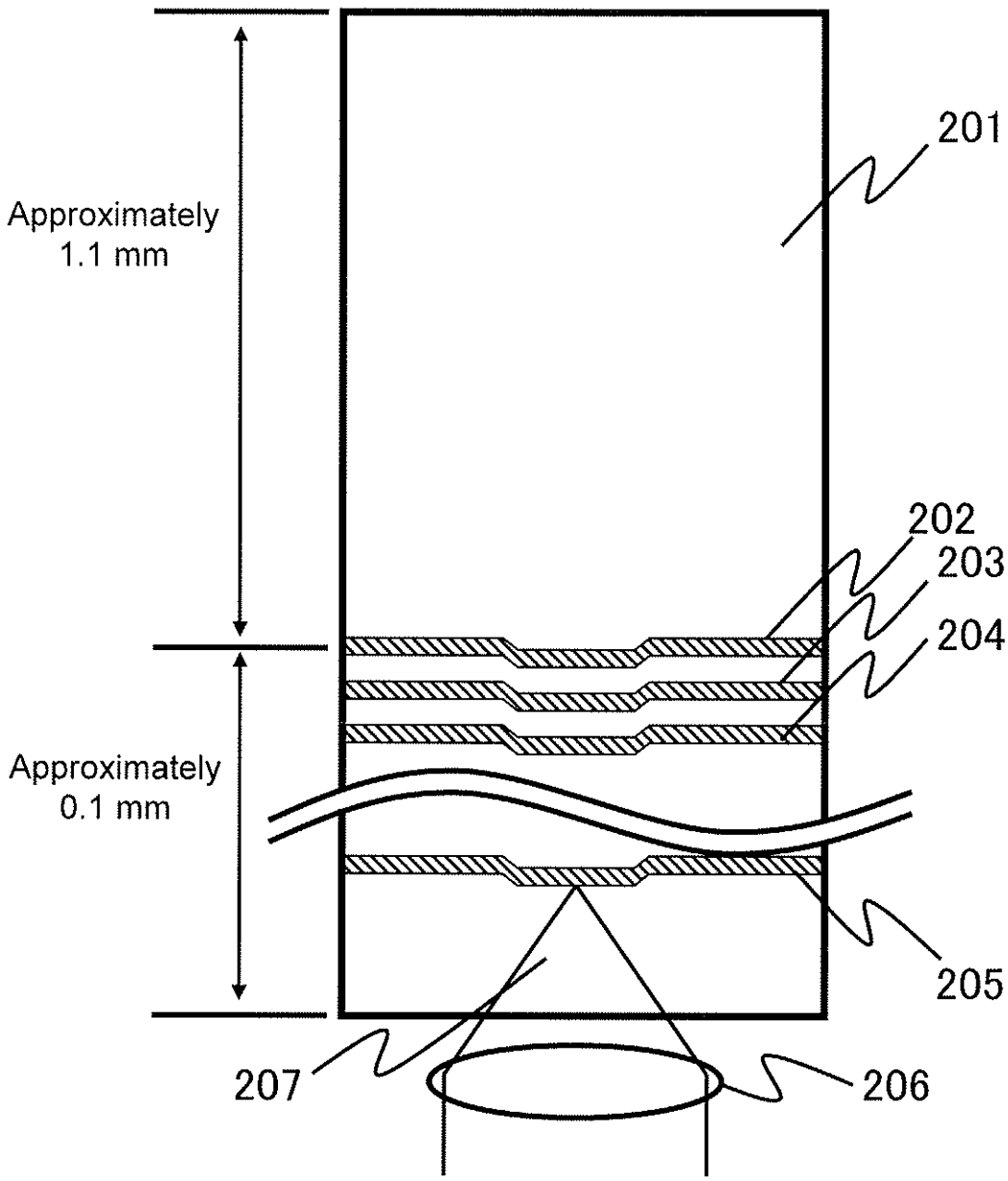

Approximately
1.1 mm
Approximately
0.1 mm
201
202
203
204
205
206
207

FIG. 2

FIG. 3A

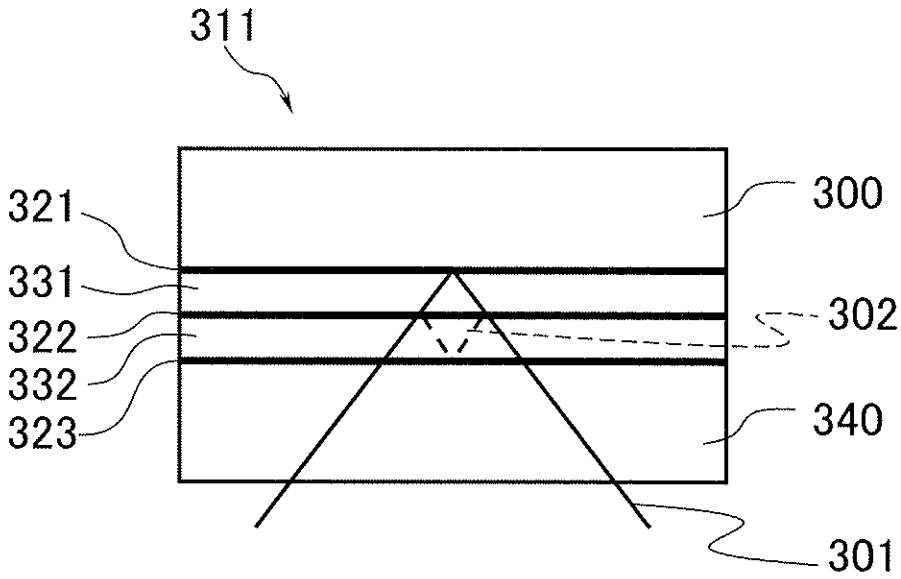


FIG. 3B

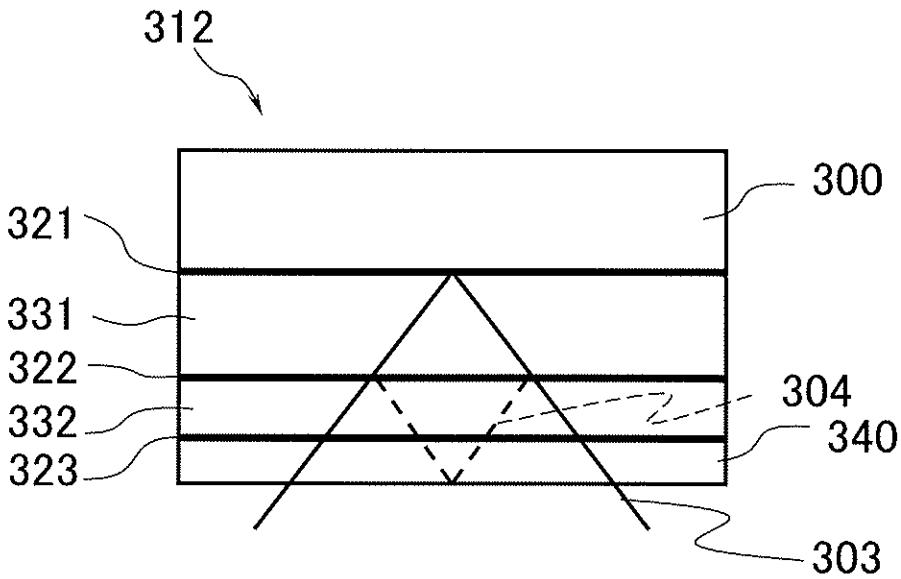


FIG. 3C

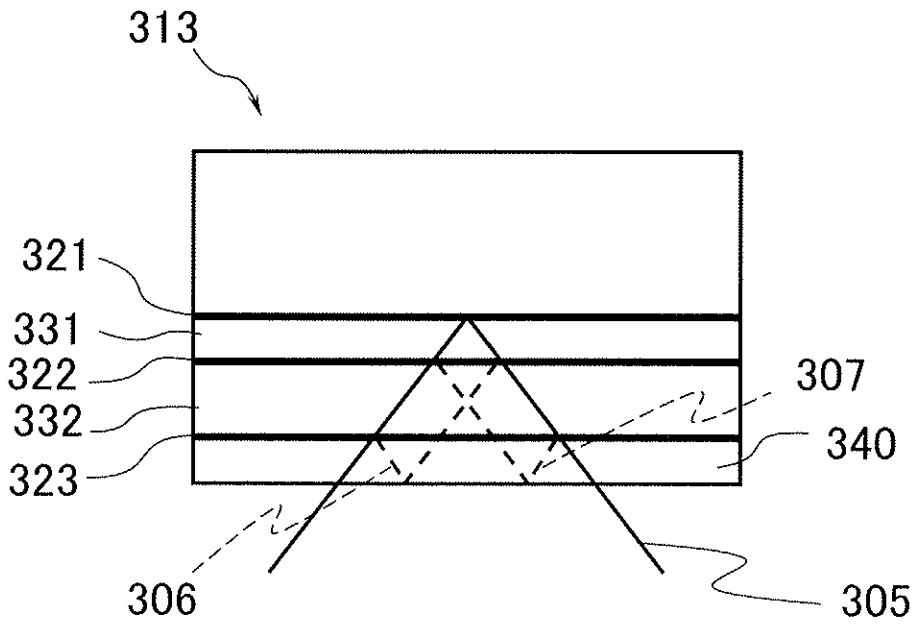


FIG. 4

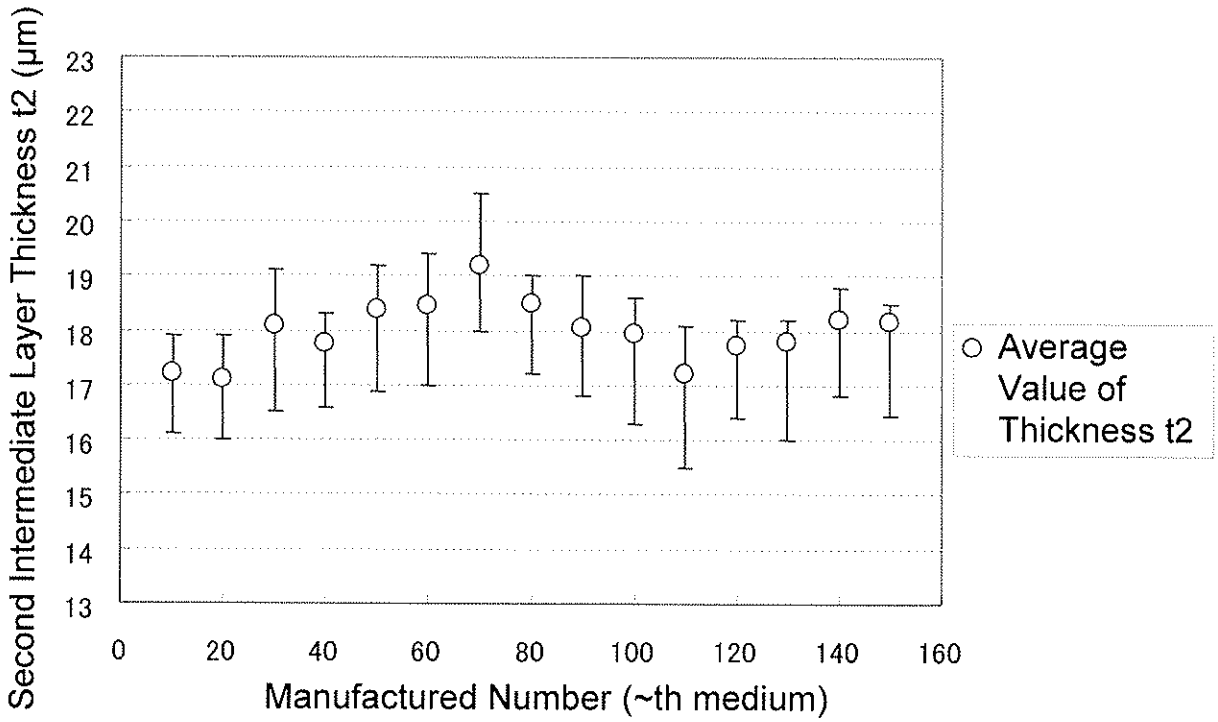
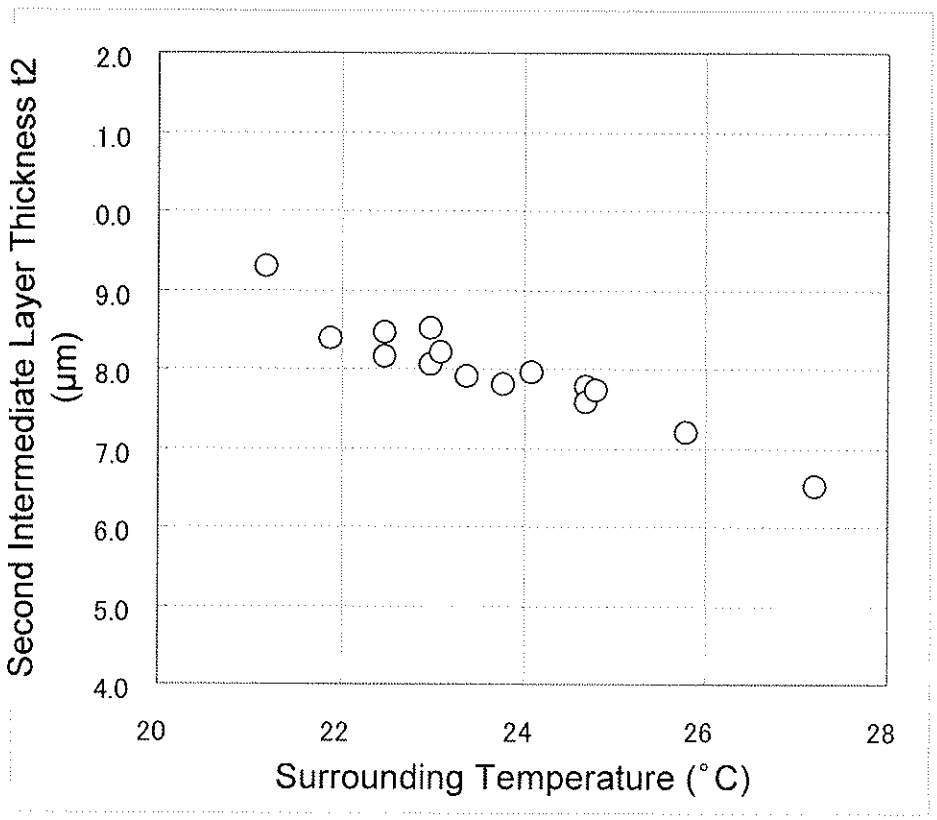

Second Intermediate Layer Thickness t2 (μm)
23
22
21
20
19
18
17
16
15
14
13
0
20
40
60
80
100
120
140
160
Manufactured Number (~th medium)
Average Value of Thickness t2

FIG. 5


Second Intermediate Layer Thickness t2 (μm)
2.0
1.0
0.0
9.0
8.0
7.0
6.0
5.0
4.0
20
22
24
26
28
Surrounding Temperature (°C)

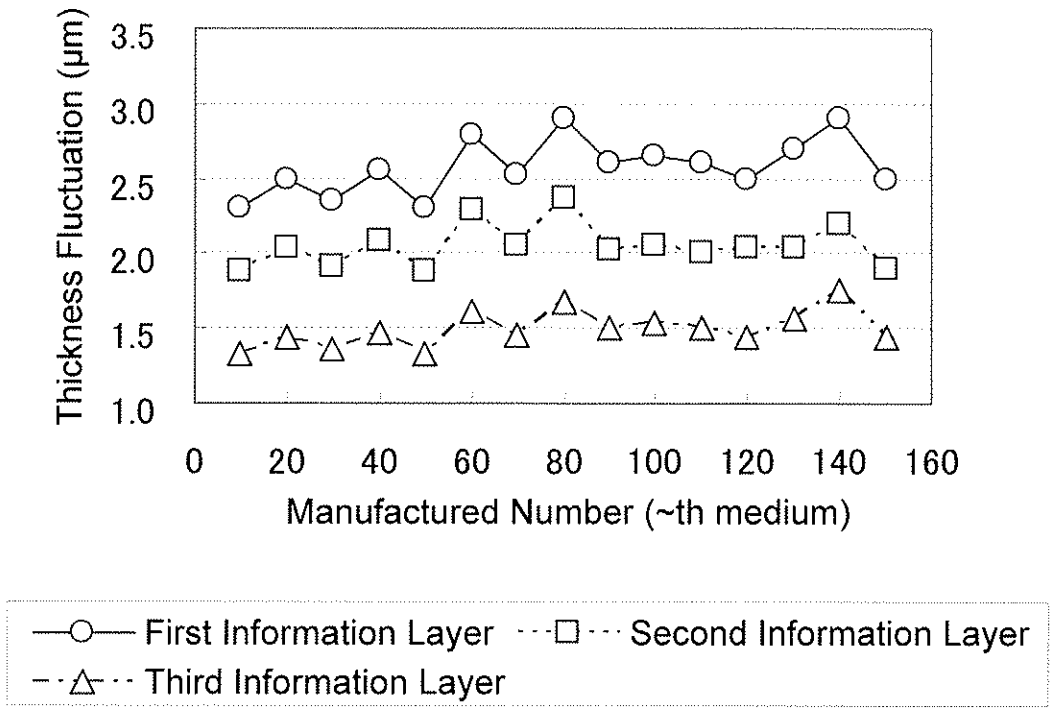

Thickness Fluctuation (μm)
3.5
3.0
2.5
2.0
1.5
1.0
0
20
40
60
80
100
120
140
160
Manufactured Number (~th medium)
First Information Layer
Second Information Layer
Third Information Layer

FIG. 6

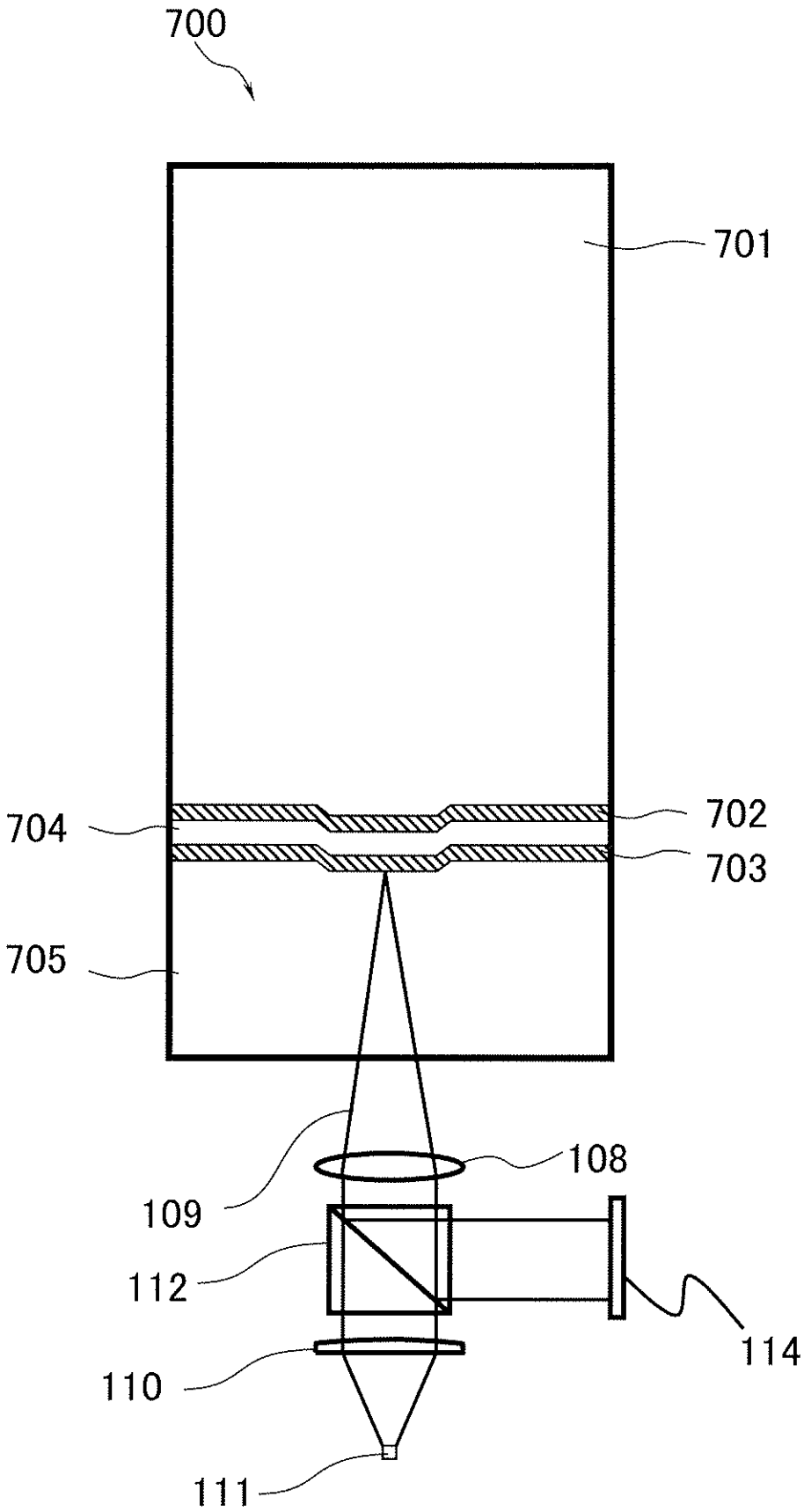


FIG. 7

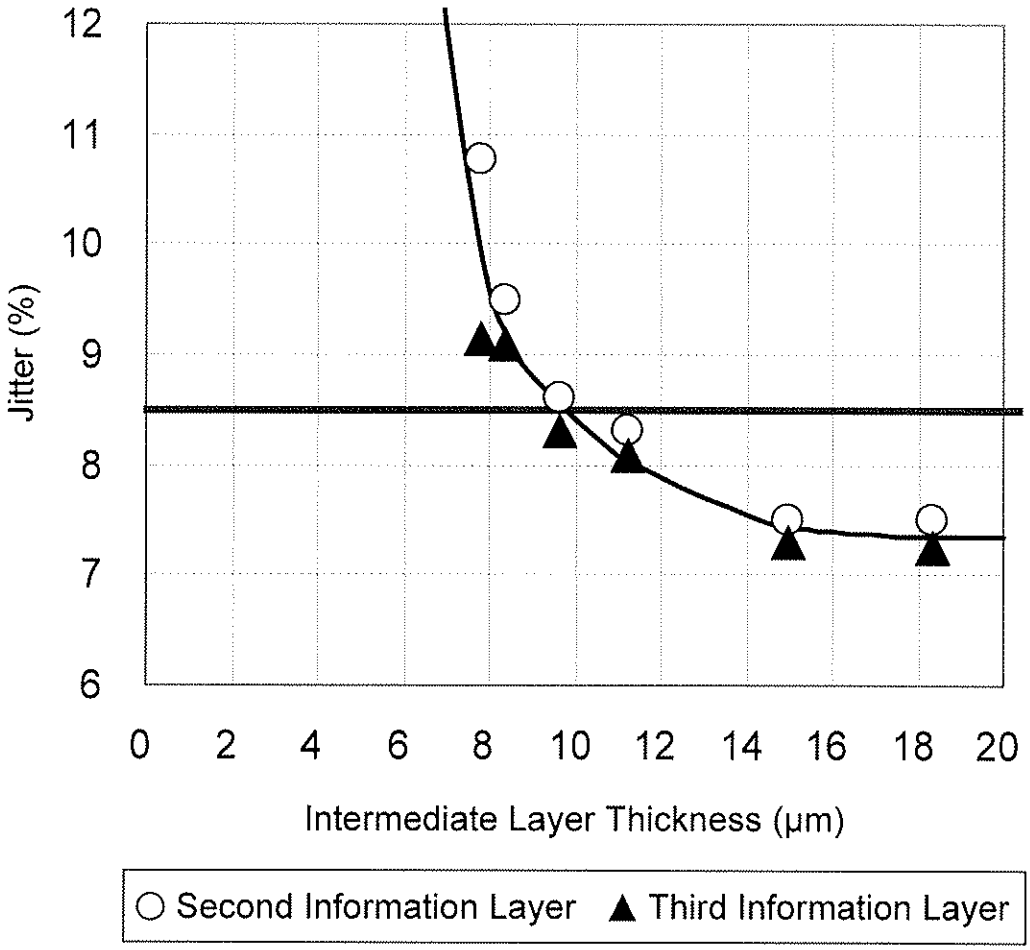

12
11
10
9
8
7
6
Jitter (%)
0
2
4
6
8
10
12
14
16
18
20
Intermediate Layer Thickness (μm)
○ Second Information Layer
▲ Third Information Layer

FIG. 8

FIG. 9

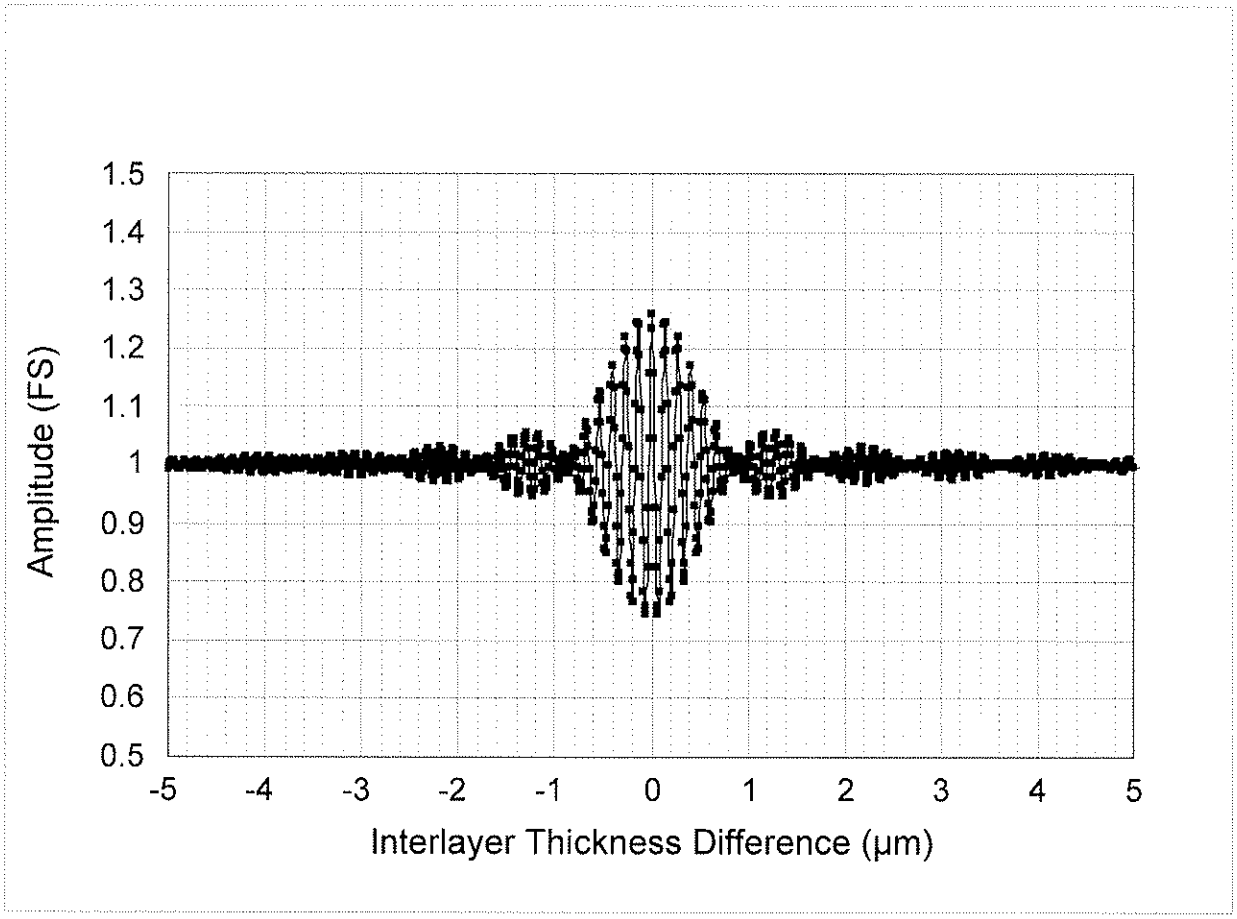
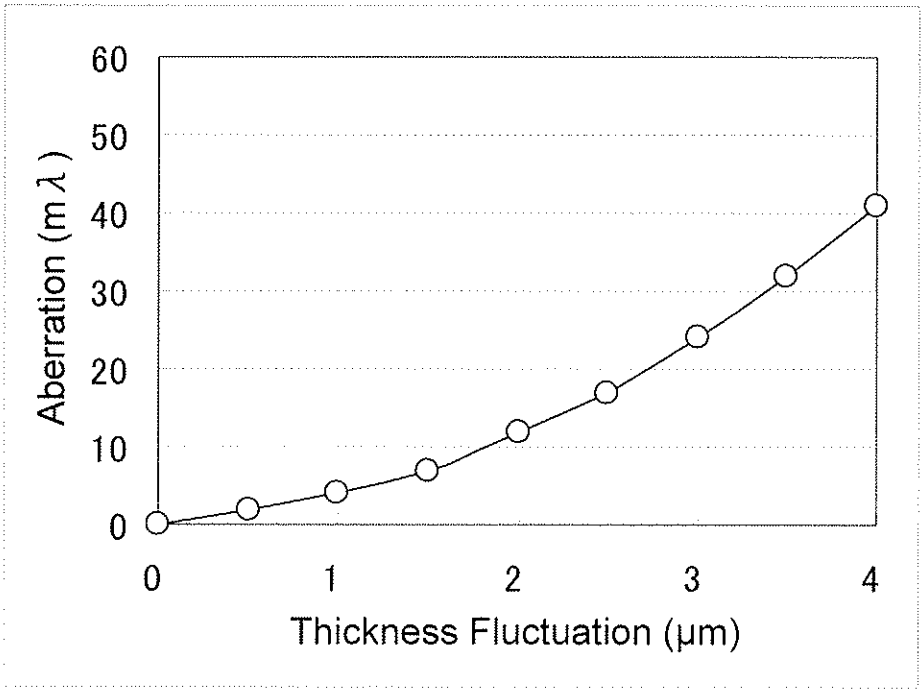

1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
Amplitude (FS)
-5
-4
-3
-2
-1
0
1
2
3
4
5
Interlayer Thickness Difference (μm)

FIG. 10


60
50
40
30
20
10
0
Aberration (mλ)
0
1
2
3
4
Thickness Fluctuation (μm)

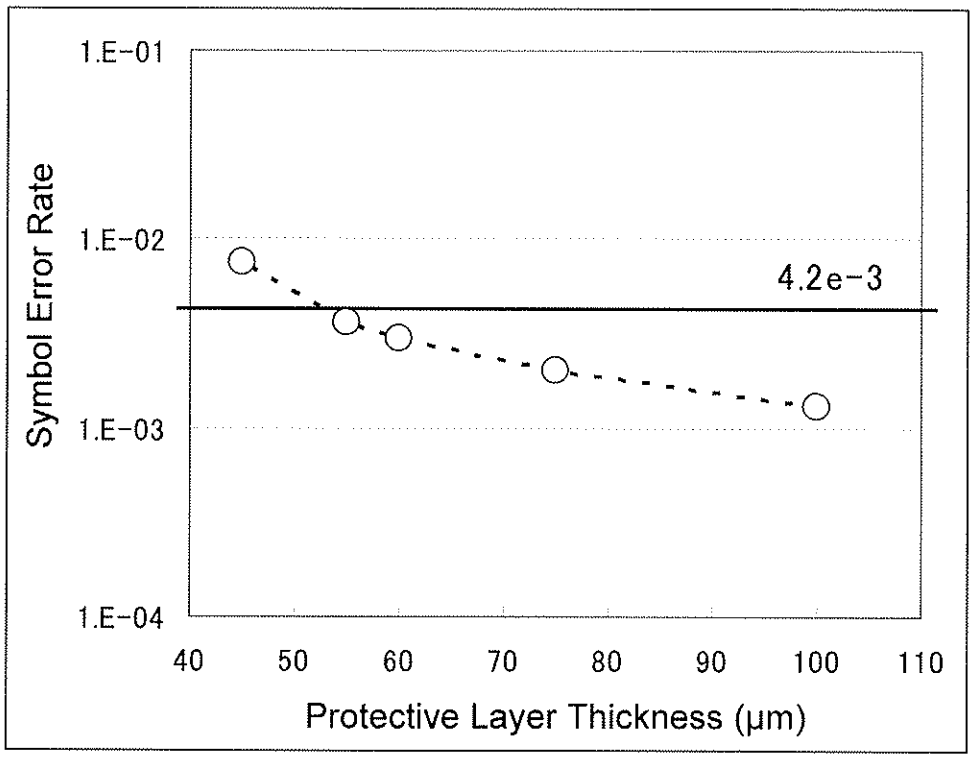

1.E-01
1.E-02
1.E-03
1.E-04
Symbol Error Rate
4.2e-3
40
50
60
70
80
90
100
110
Protective Layer Thickness (μm)

FIG. 11

FIG. 12A

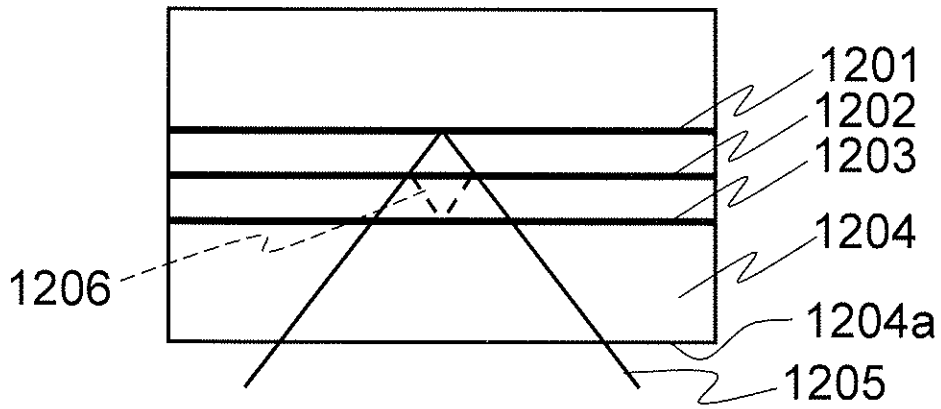


FIG. 12B

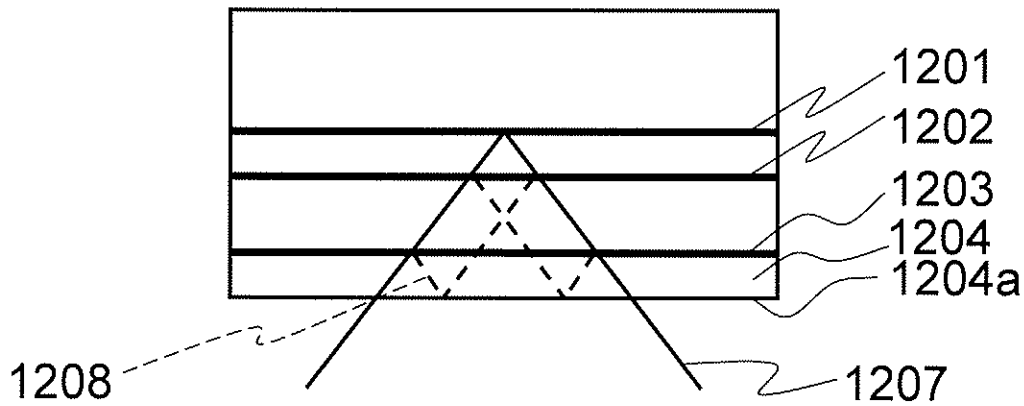
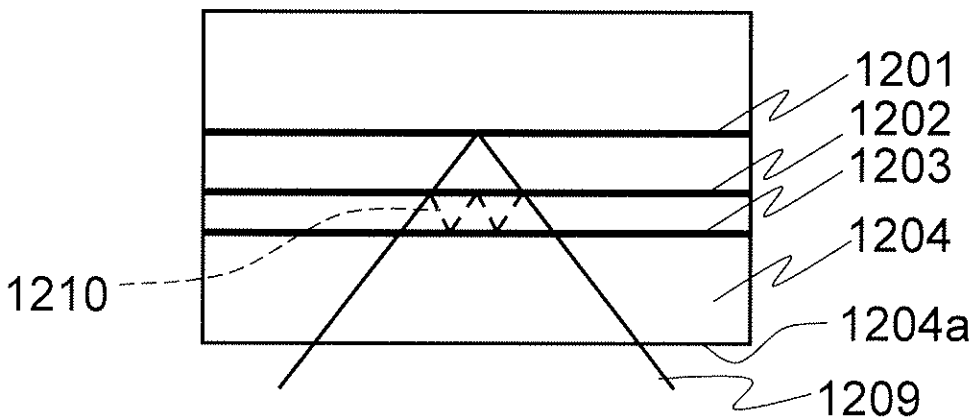


FIG. 12C



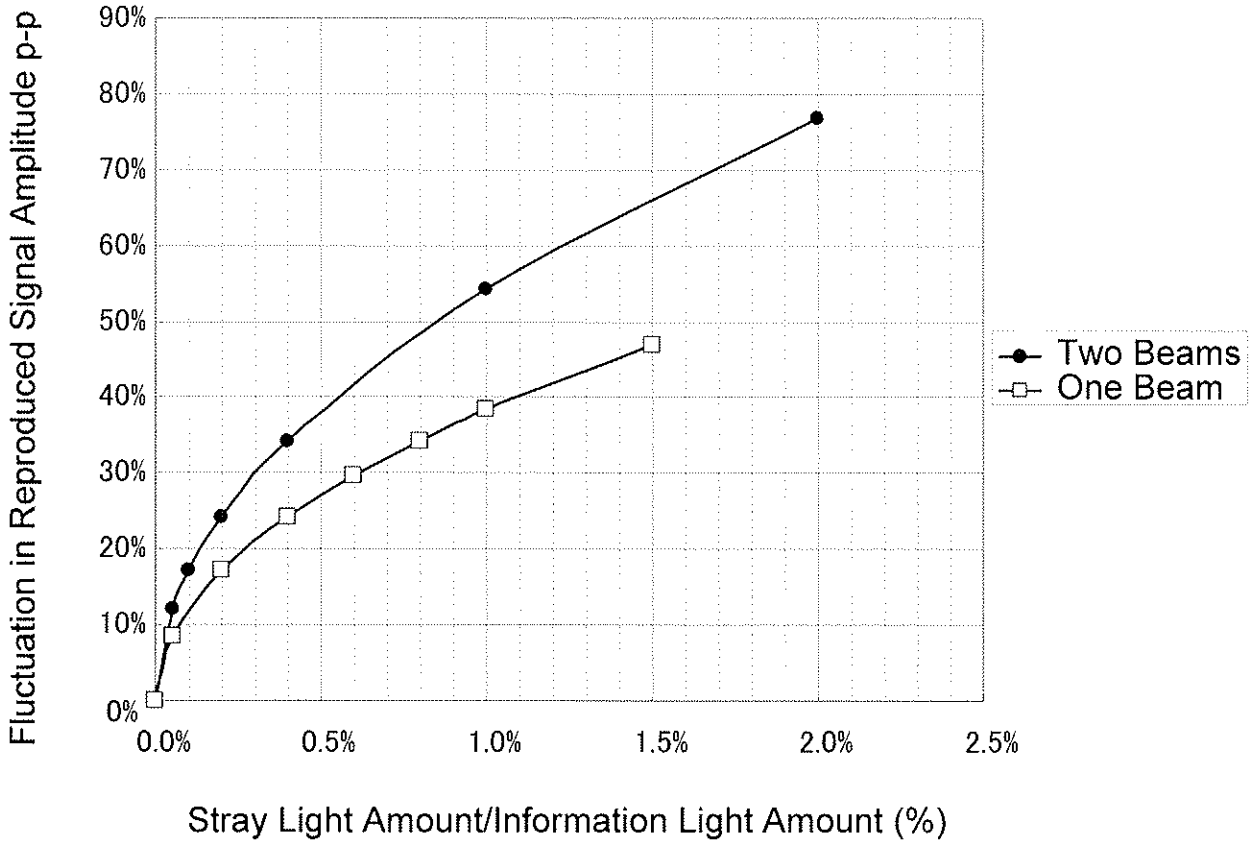

Fluctuation in Reproduced Signal Amplitude p-p
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0.0%
0.5%
1.0%
1.5%
2.0%
2.5%
Two Beams
One Beam
Stray Light Amount/Information Light Amount (%)

FIG. 13

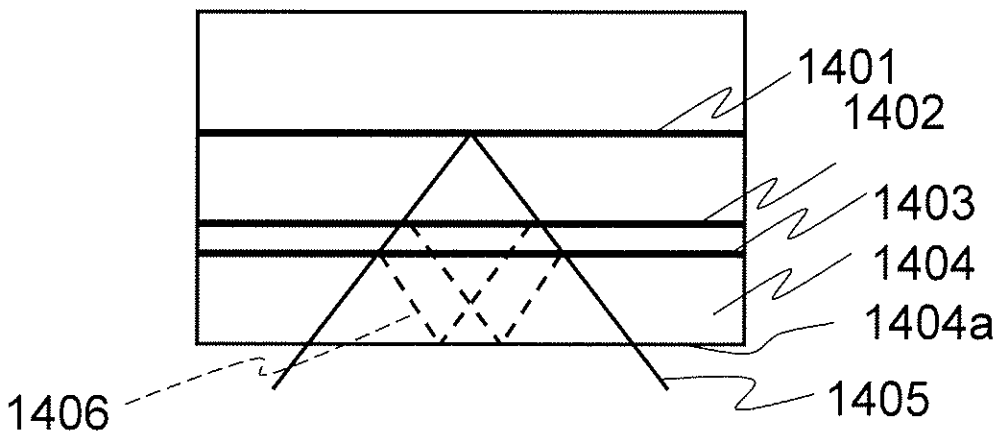

1401
1402
1403
1404
1404a
1405
1406

FIG. 14

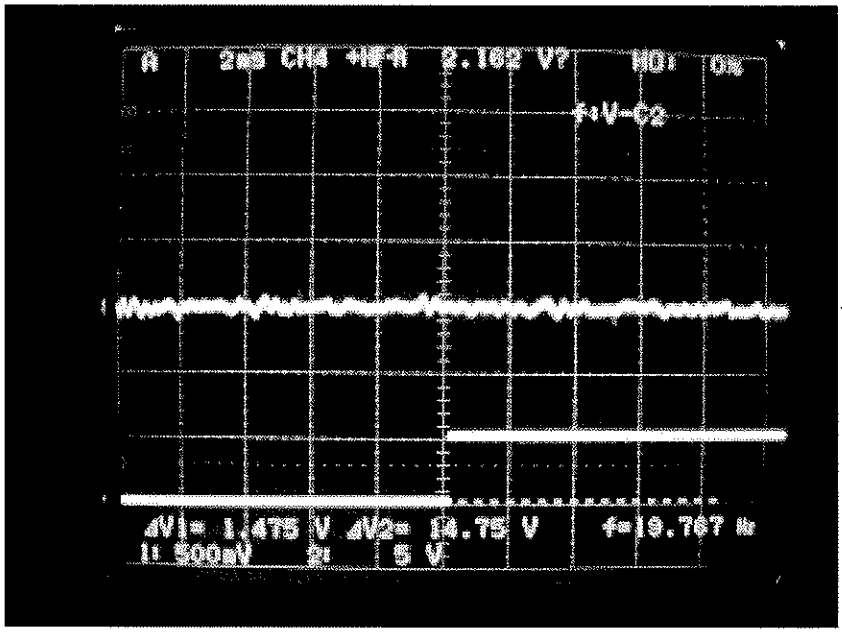


FIG. 15A

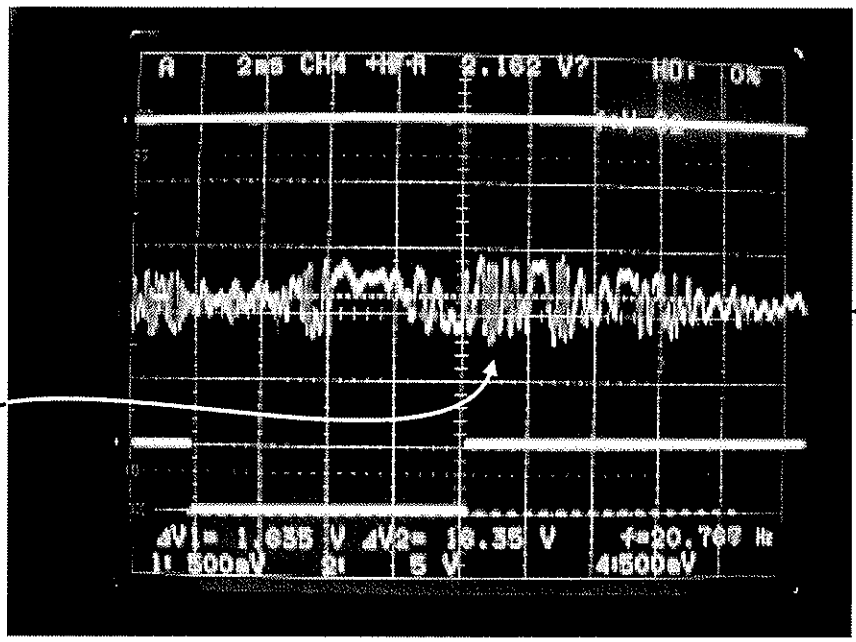


FIG. 15B

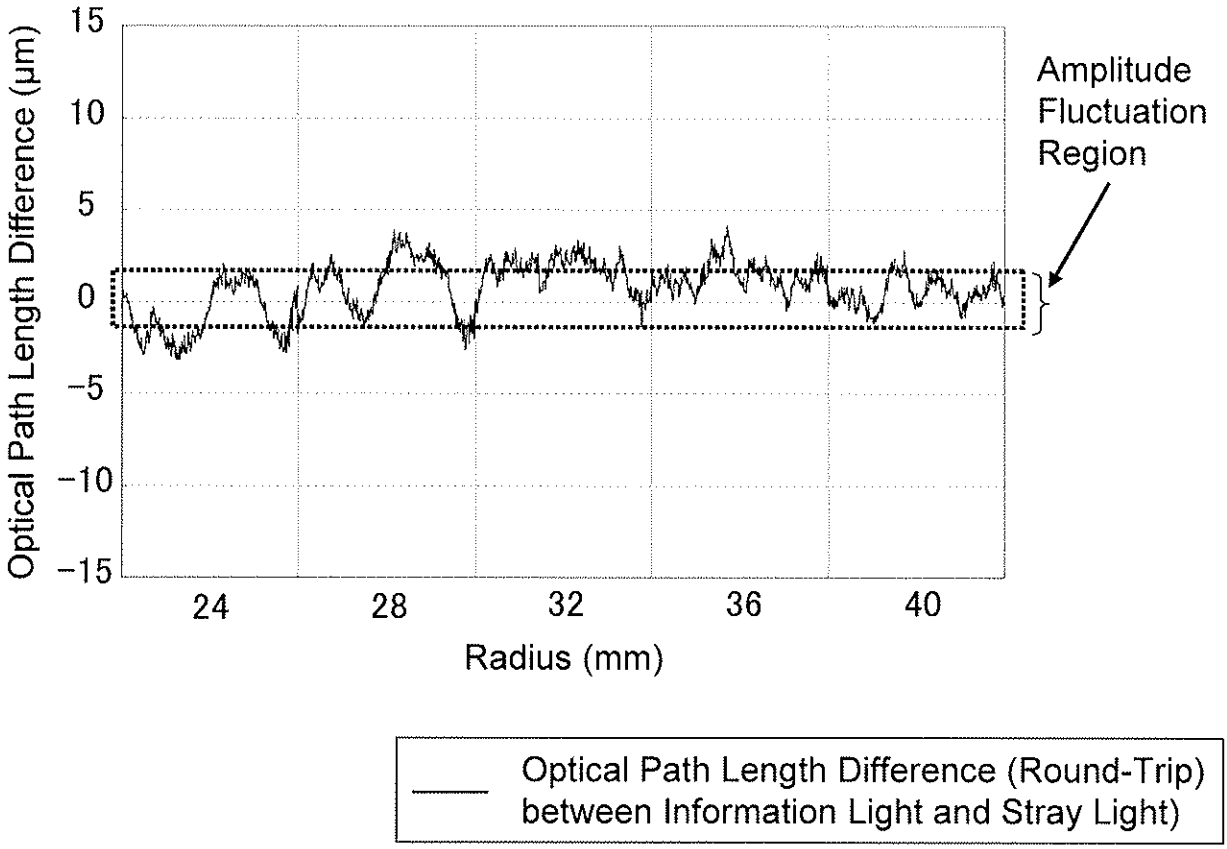

15
10
5
0
−5
−10
−15
Optical Path Length Difference (μm)
24
28
32
36
40
Radius (mm)
Amplitude
Fluctuation
Region
Optical Path Length Difference (Round-Trip)
between Information Light and Stray Light)

FIG. 16

FIG. 17

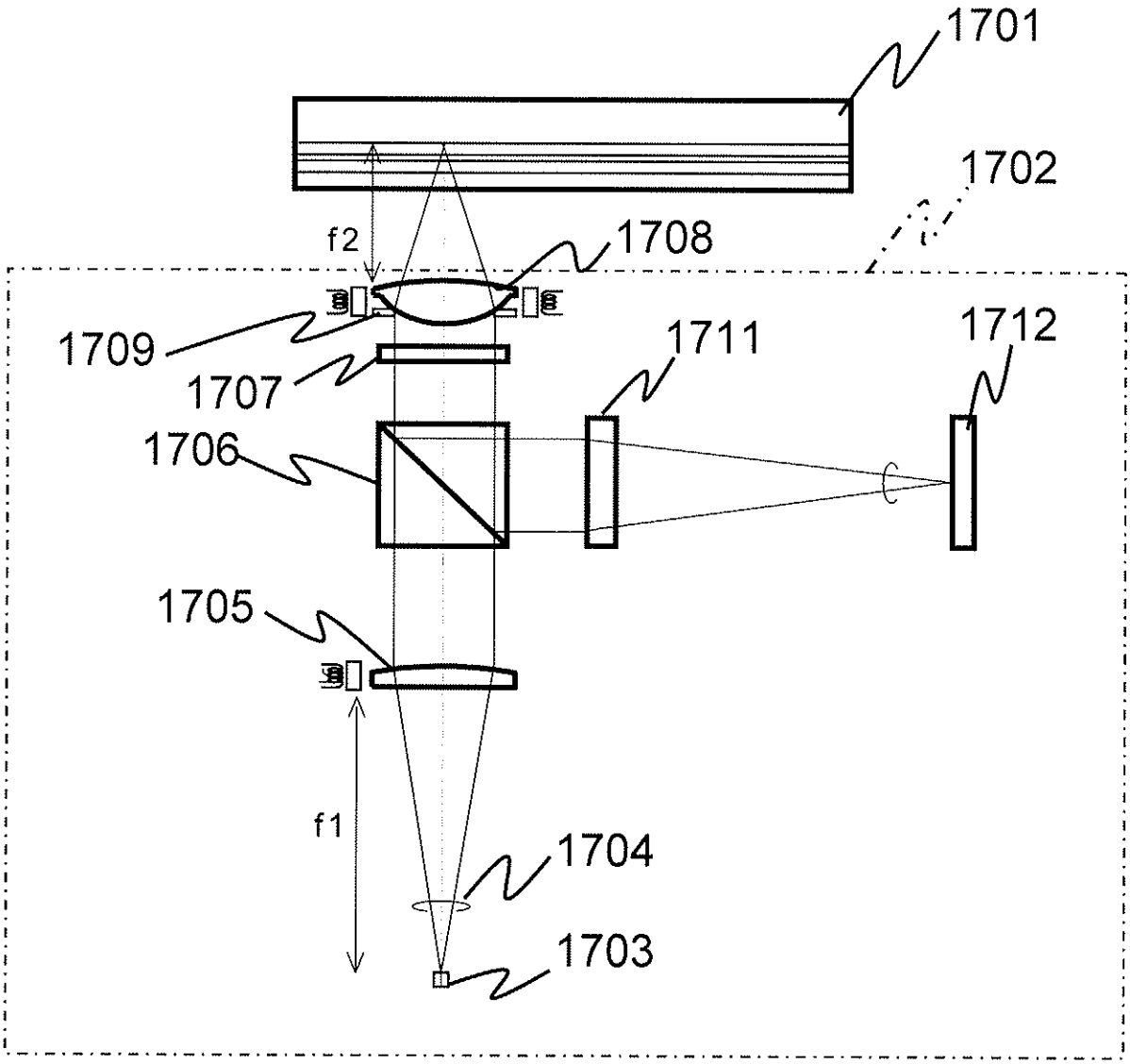
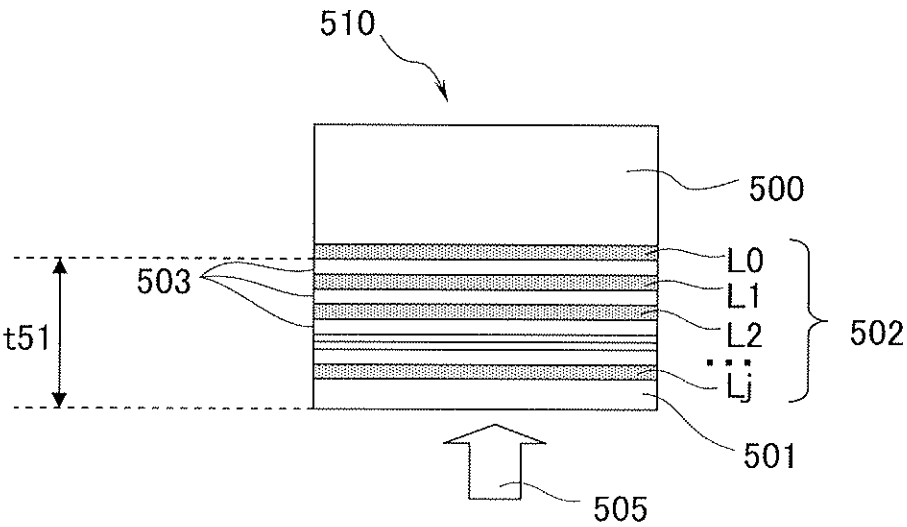

1701
1702
f2
1708
1709
1707
1711
1712
1706
1705
f1
1704
1703

FIG. 18


510
500
503
L0
L1
L2
Lj
502
t51
501
505

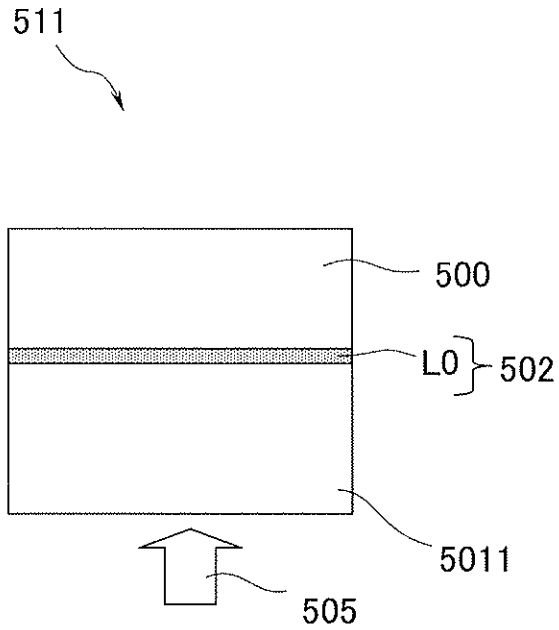


FIG. 19

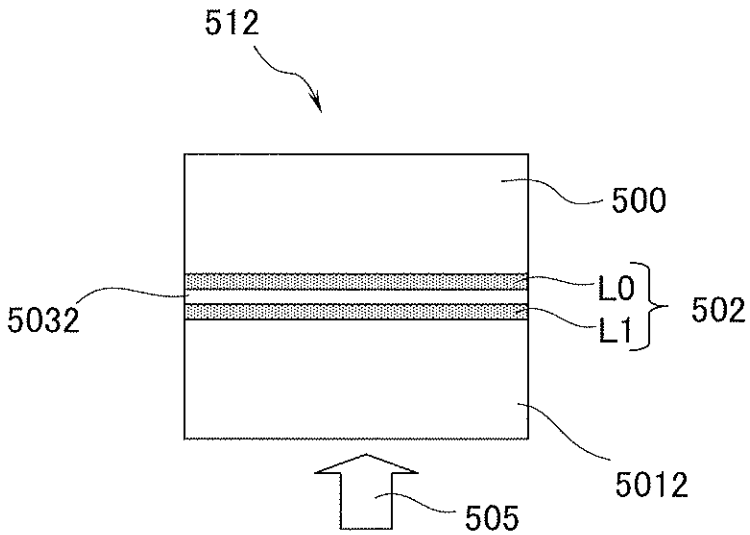


FIG. 20

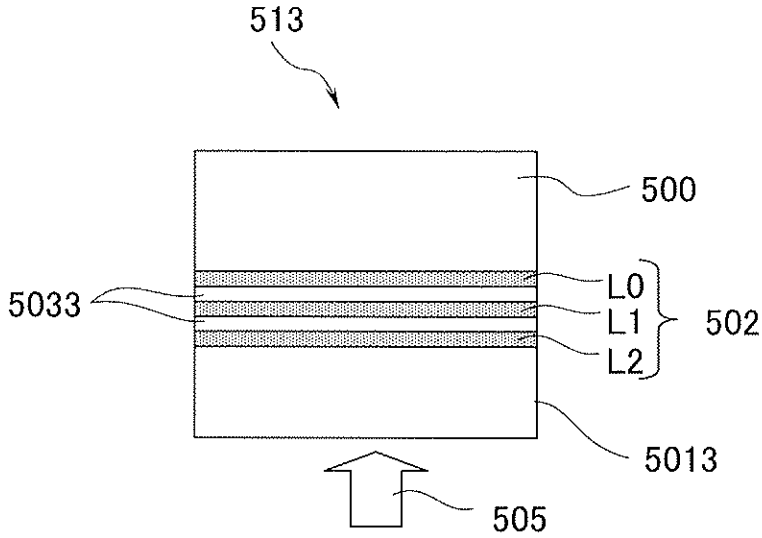

513
500
5033
L0
L1
L2
502
5013
505

FIG. 21

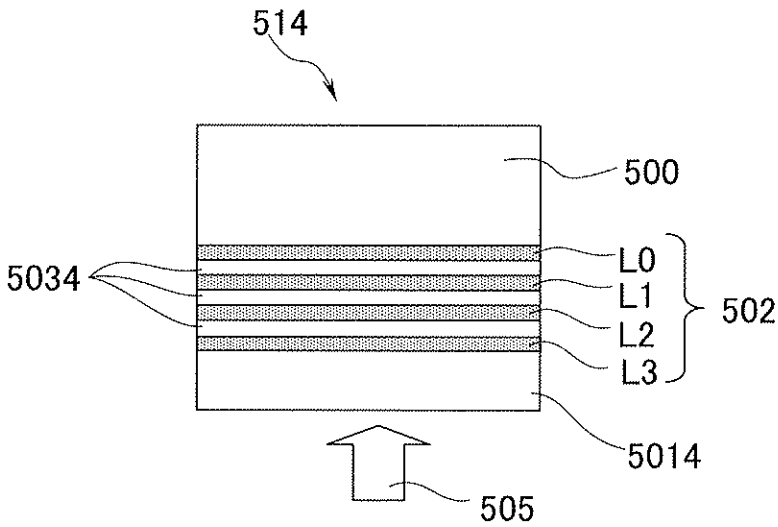

514
500
5034
L0
L1
L2
L3
502
5014
505

FIG. 22

FIG. 23

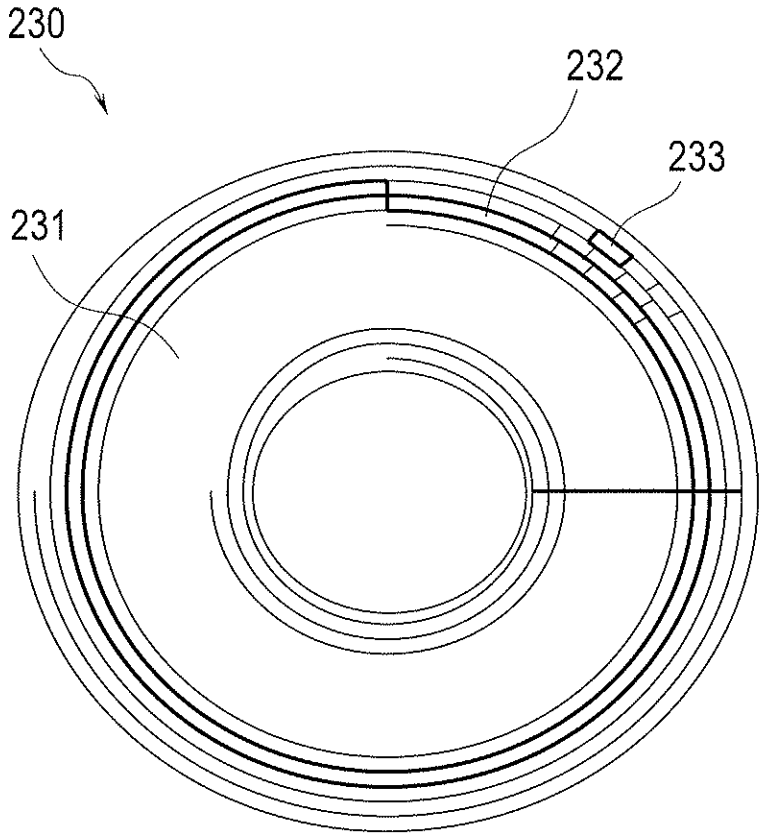

230
232
233
231

FIG. 24

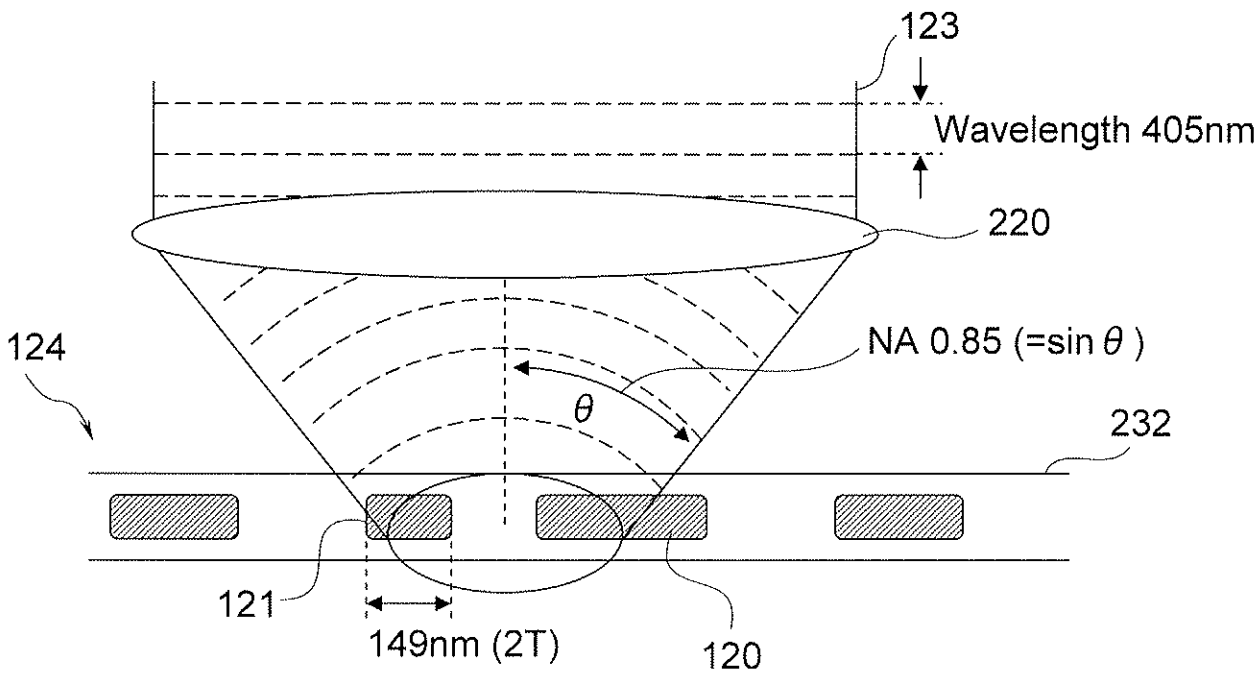

123
Wavelength 405nm
220
124
NA 0.85 (=sin θ)
θ
232
121
149nm (2T)
120

FIG. 25

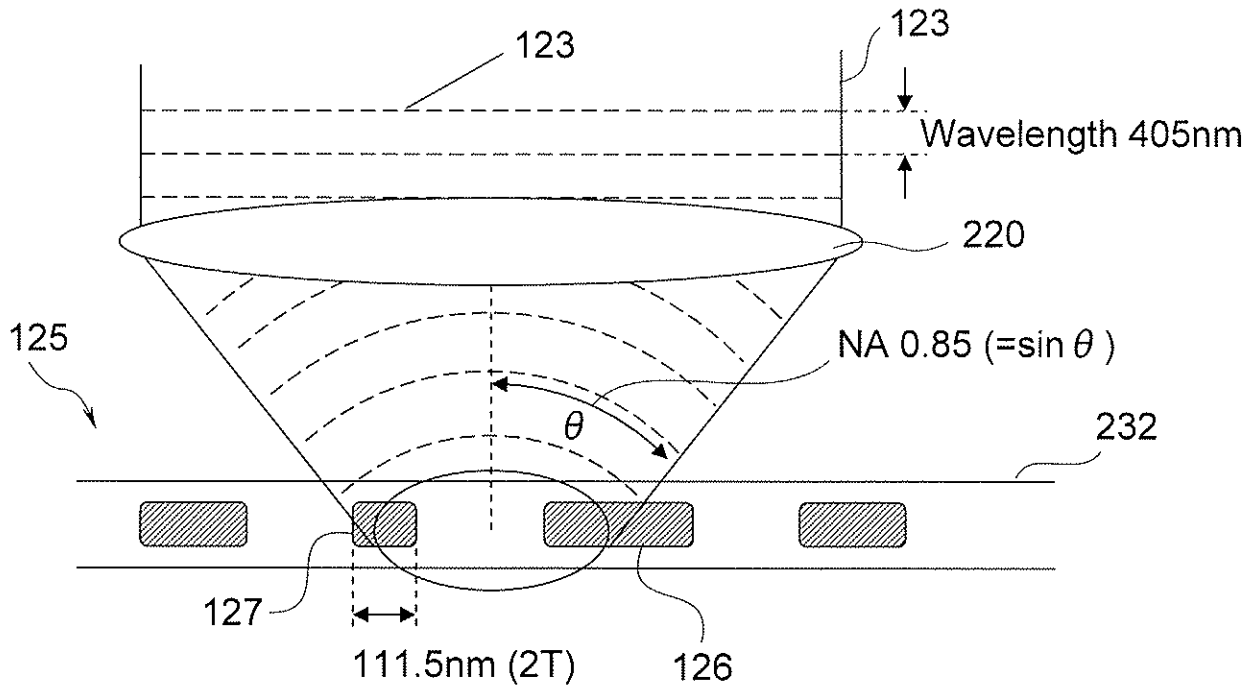


FIG. 26

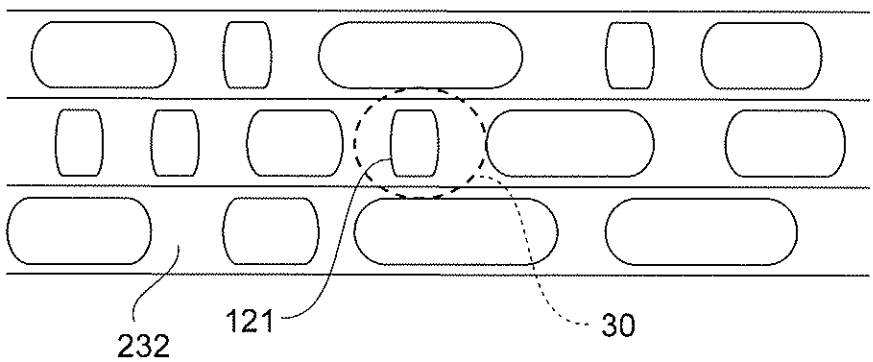
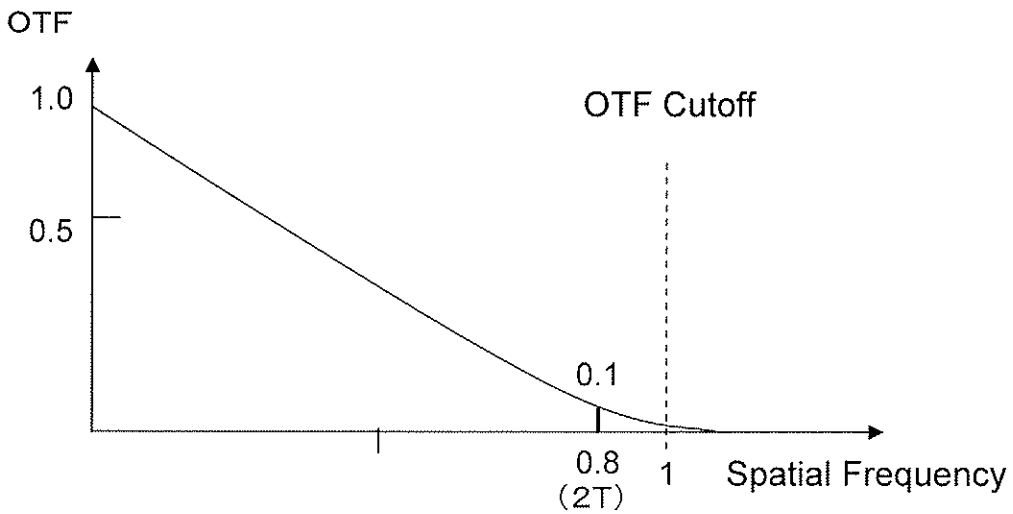


FIG. 27



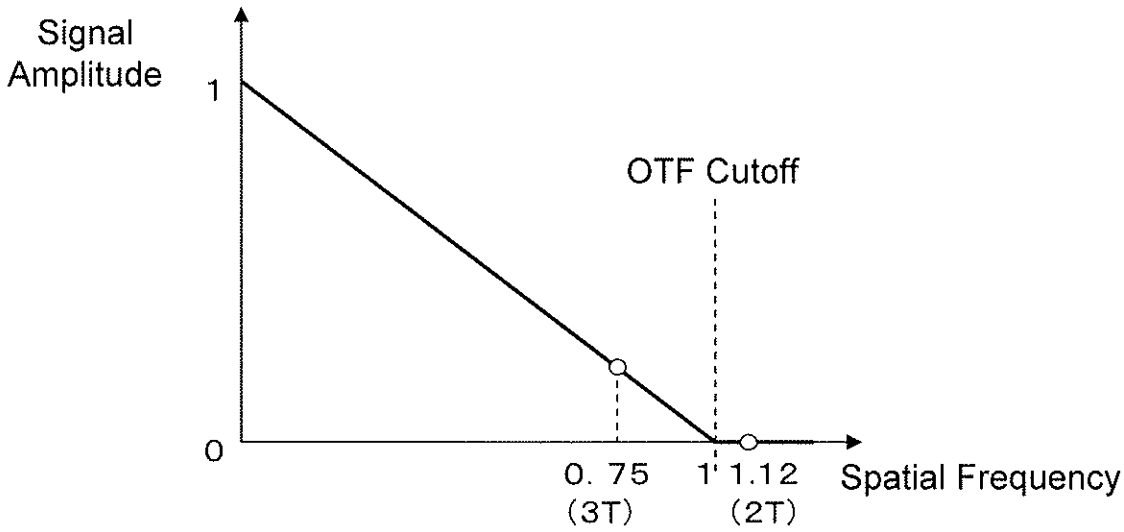

Signal
Amplitude
1
0
OTF Cutoff
0. 75
(3T)
1
1.12
(2T)
Spatial Frequency

FIG. 28