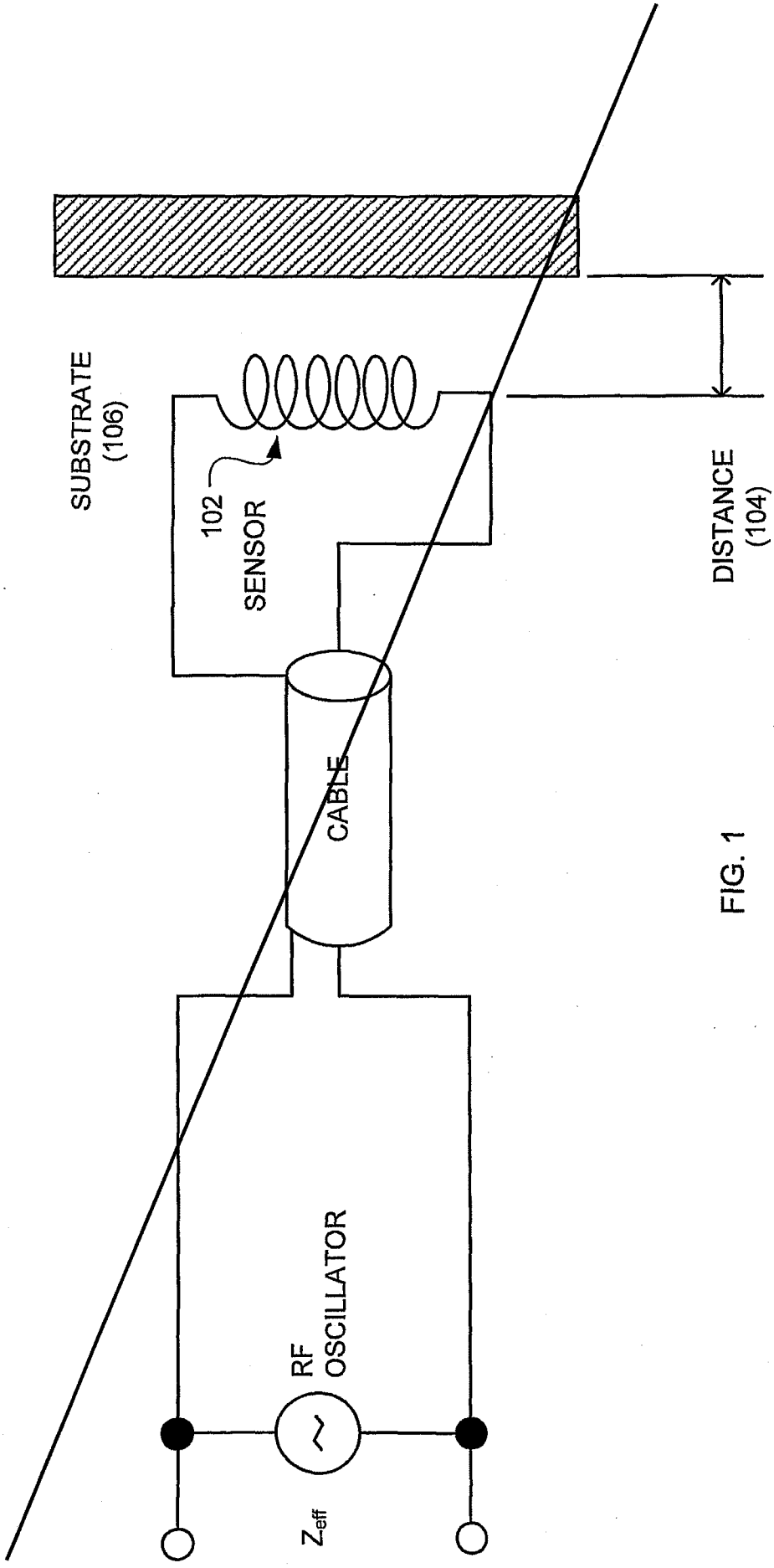

SUBSTRATE
(106)
102
SENSOR
DISTANCE
(104)
CABLE
RF
OSCILLATOR
Z_{eff}

FIG. 1

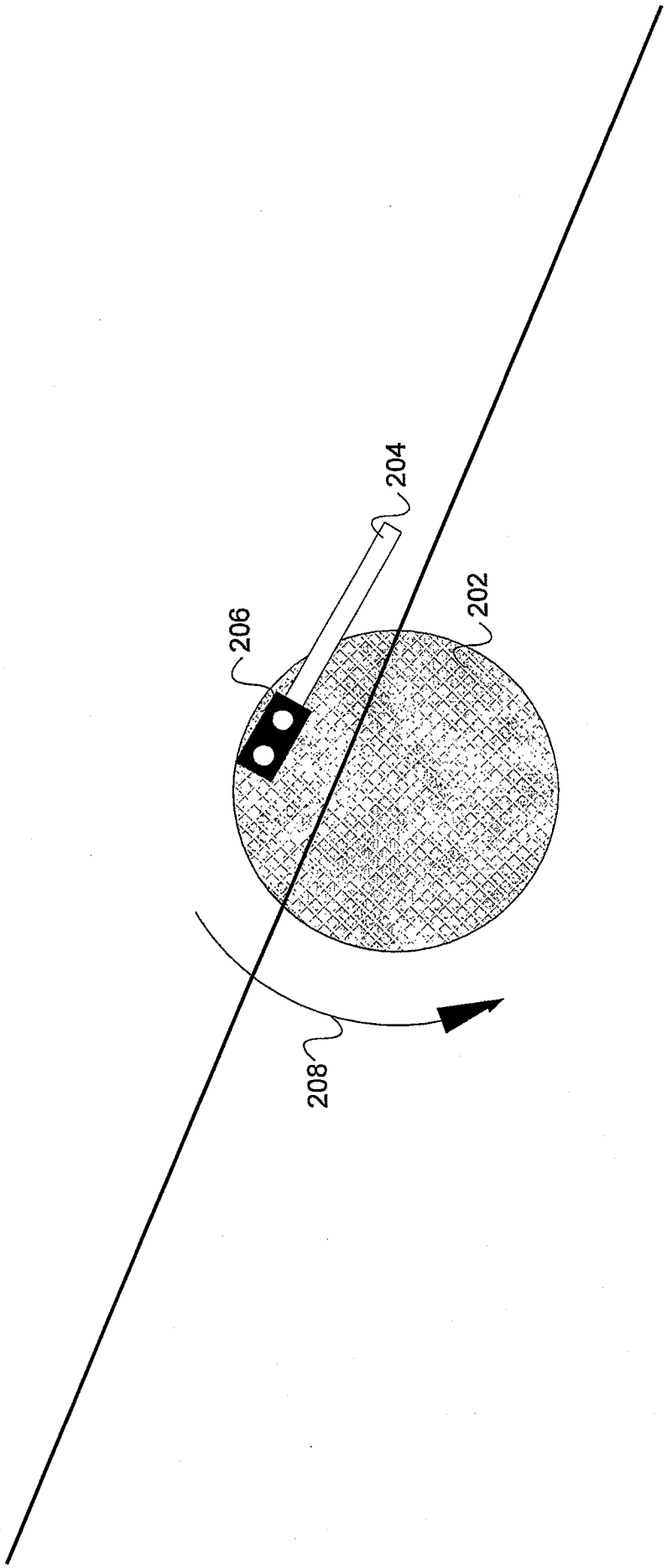


FIG. 2

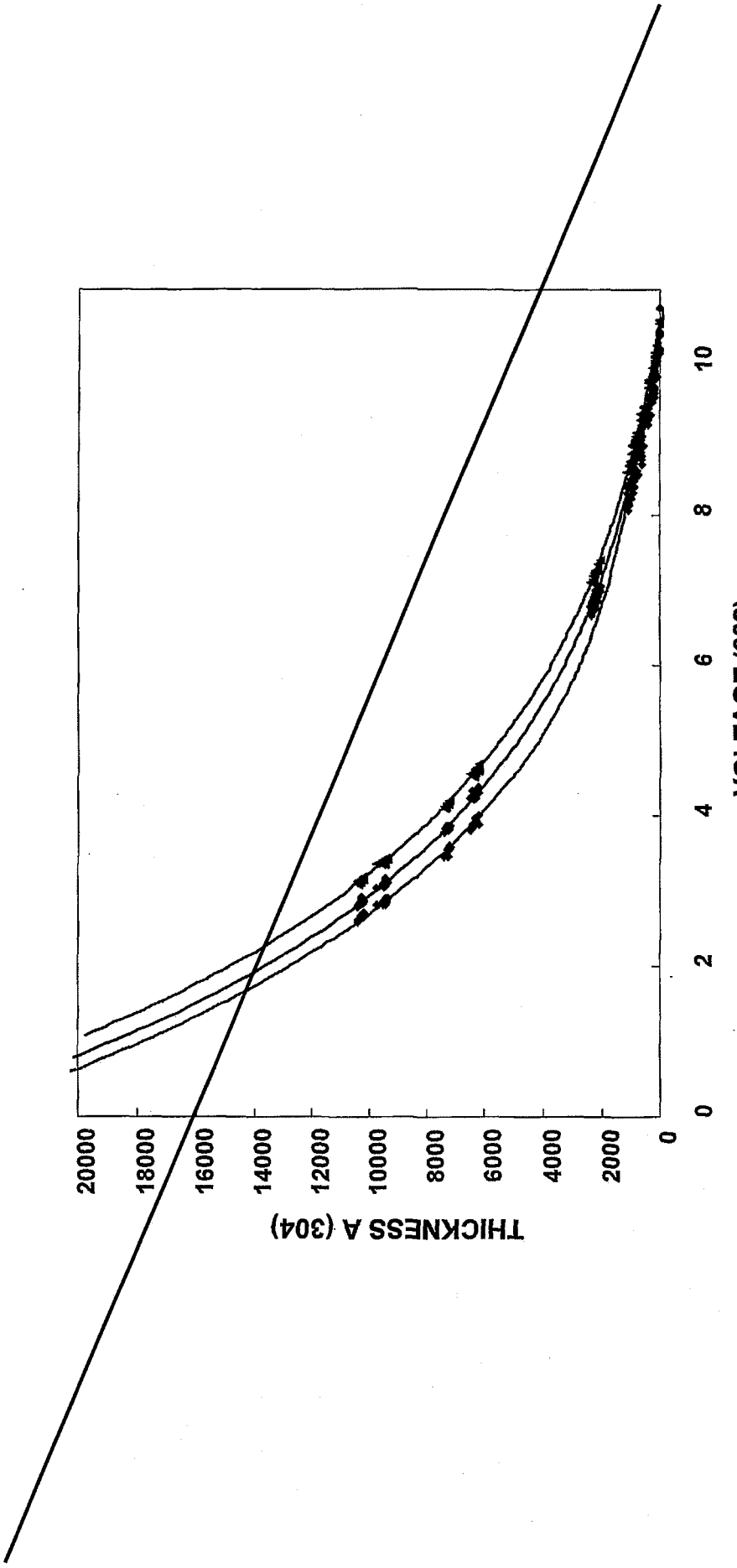

THICKNESS A (304)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
VOLTAGE (302)
0
2
4
6
8
10

FIG. 3

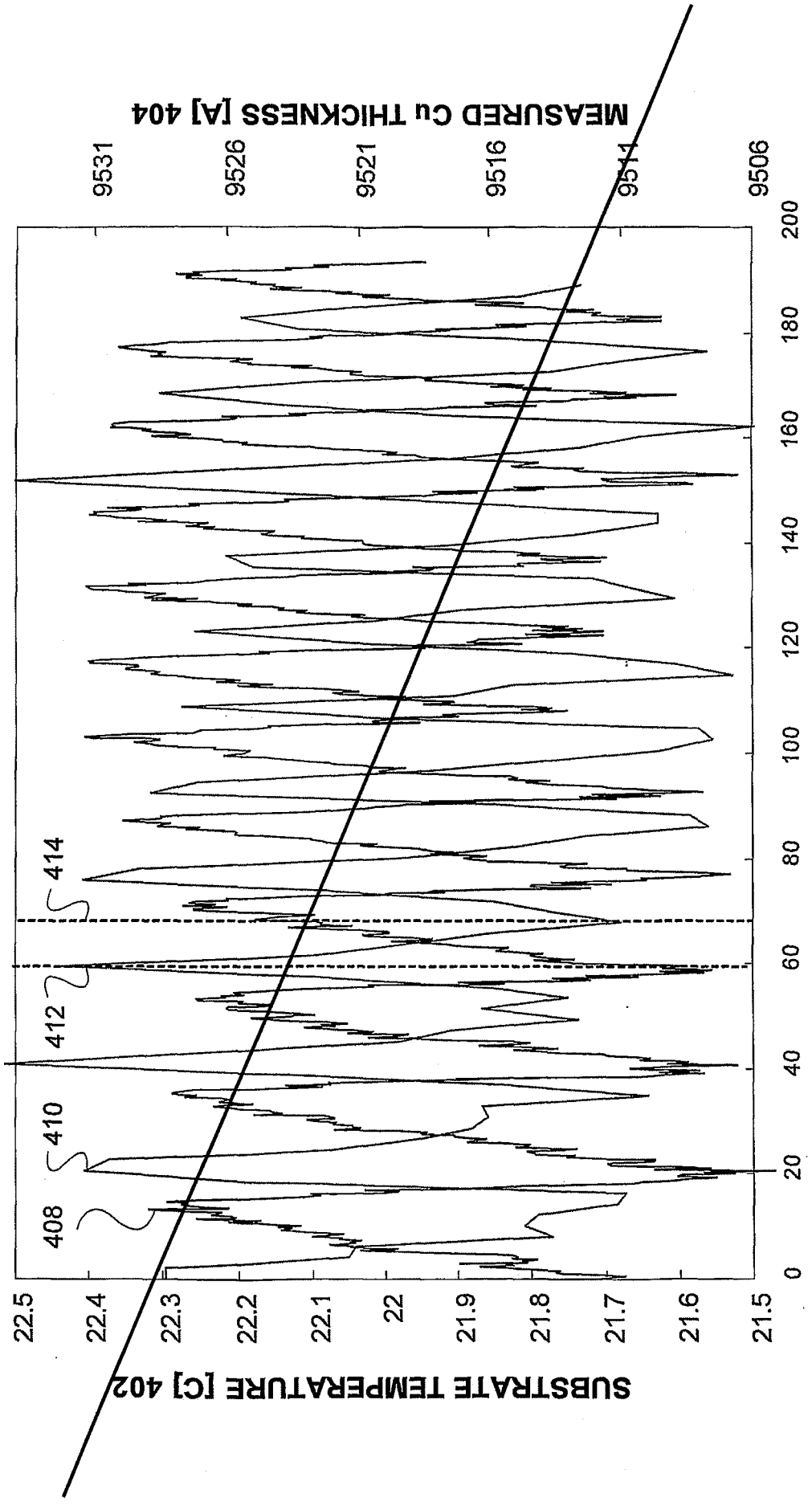

MEASURED Cu THICKNESS [A] 404
9531
9526
9521
9516
9511
9506
SUBSTRATE TEMPERATURE [C] 402
22.5
22.4
22.3
22.2
22.1
22
21.9
21.8
21.7
21.6
21.5
408
410
412
414
0
20
40
60
80
100
120
140
160
180
200
TIME [MIN] 406

FIG. 4

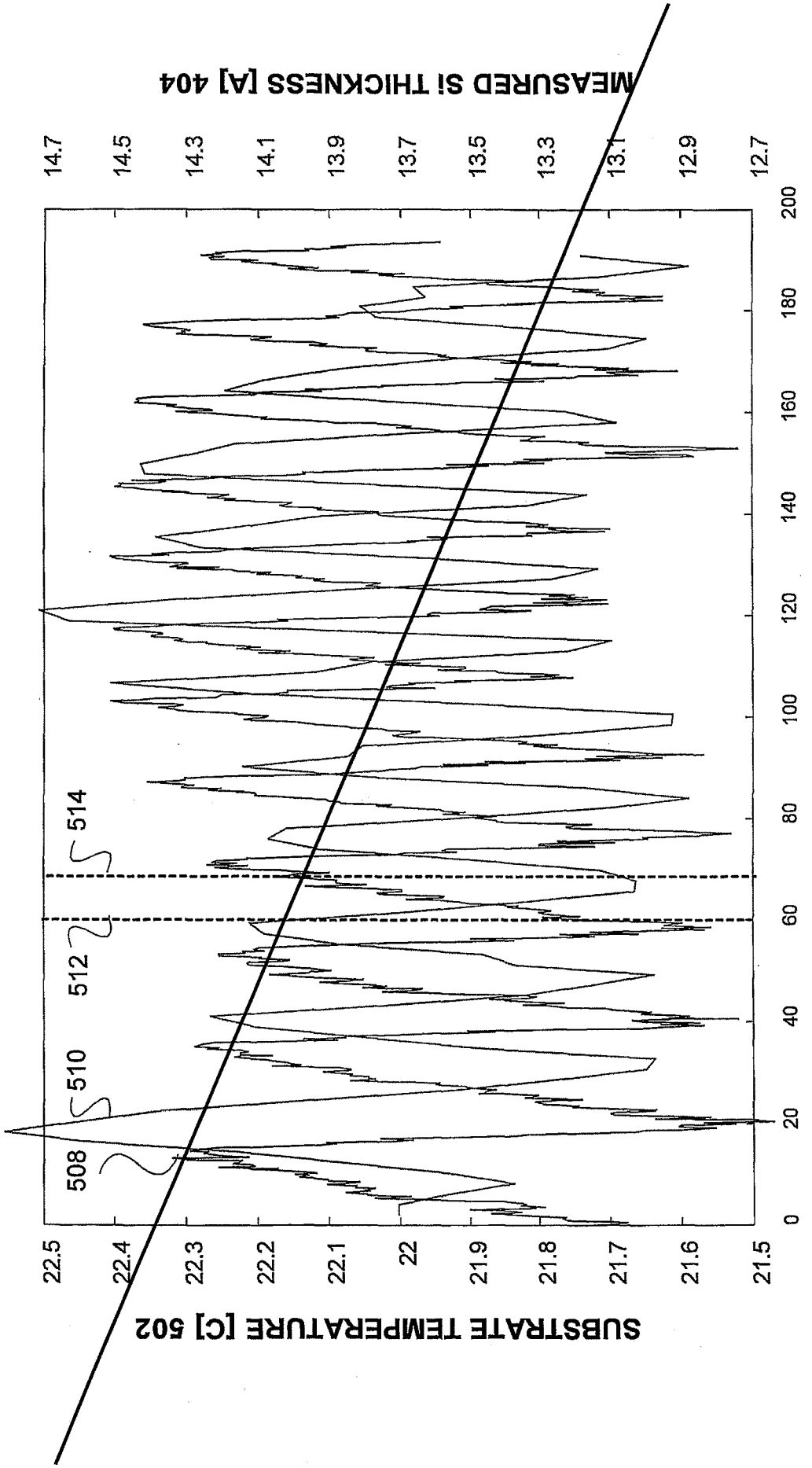

MEASURED Si THICKNESS [A] 404
14.7
14.5
14.3
14.1
13.9
13.7
13.5
13.3
13.1
12.9
12.7
SUBSTRATE TEMPERATURE [C] 502
22.5
22.4
22.3
22.2
22.1
22
21.9
21.8
21.7
21.6
21.5
508
510
512
514
0
20
40
60
80
100
120
140
160
180
200
TIME [MIN] 506

FIG. 5

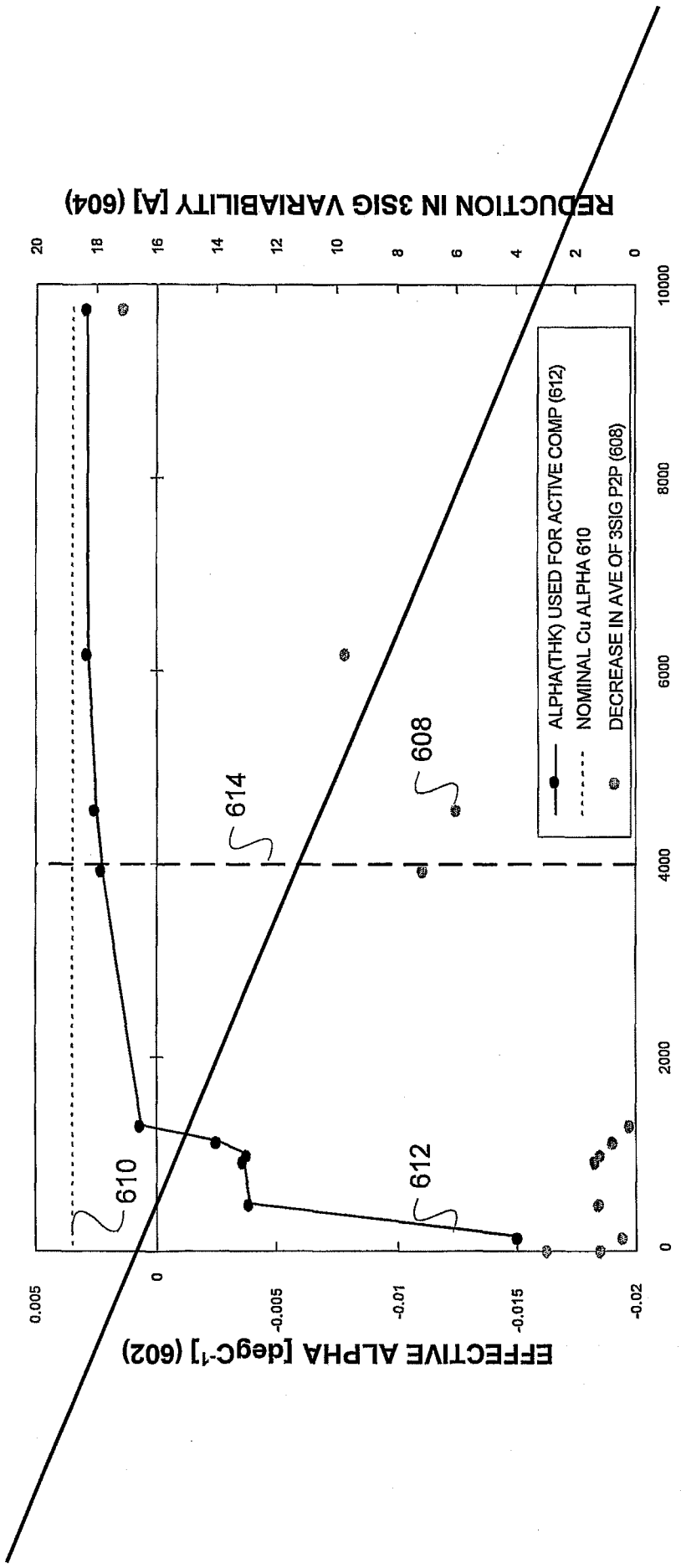

EFFECTIVE ALPHA [degC-1] (602)
REDUCTION IN 3SIG VARIABILITY [A] (604)
MEASURED MEAN CONDUCTIVE FILM THICKNESS [A] (606)
ALPHA(THK) USED FOR ACTIVE COMP (612)
NOMINAL Cu ALPHA 610
DECREASE IN AVE OF 3SIG P2P (608)
610
612
614
608
0.005
0
-0.005
-0.01
-0.015
-0.02
20
18
16
14
12
10
8
6
4
2
0
0
2000
4000
6000
8000
10000

FIG. 6

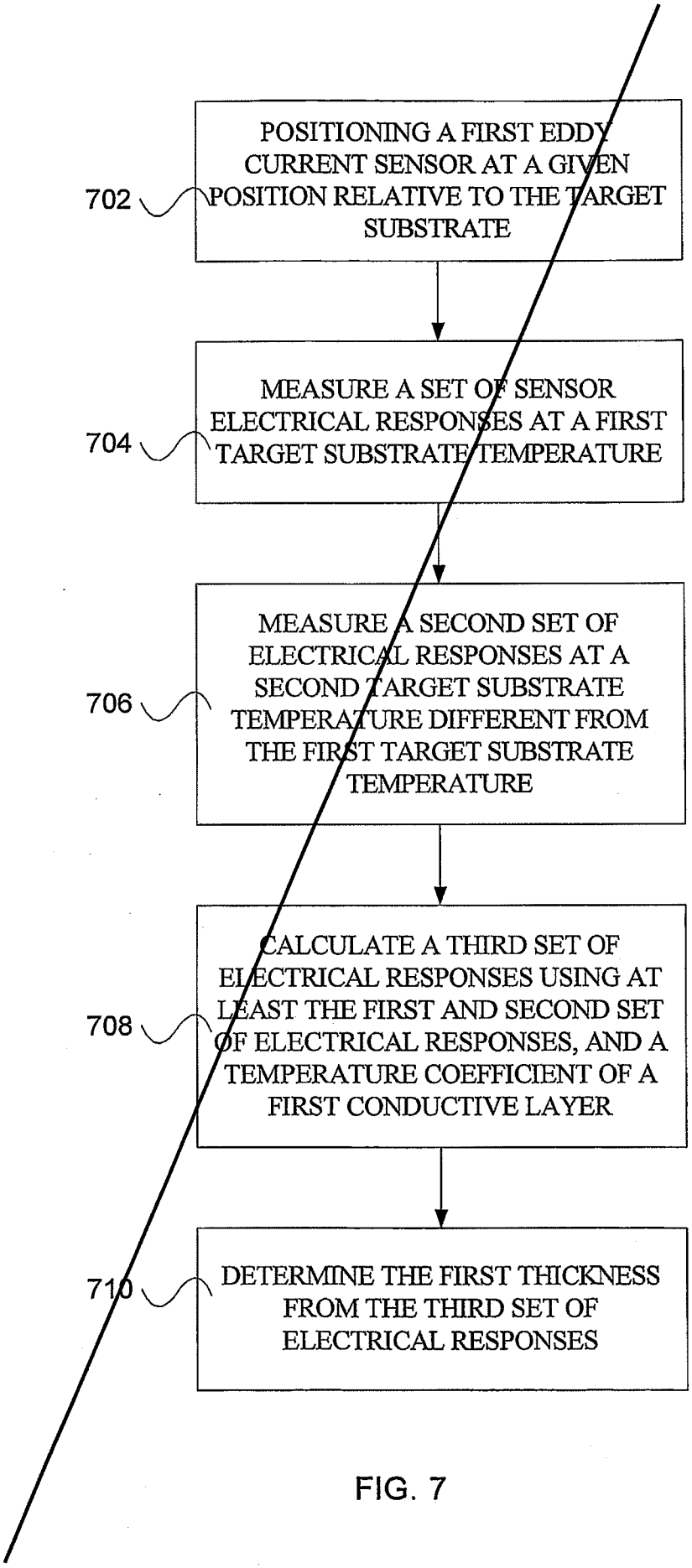

POSITIONING A FIRST EDDY CURRENT SENSOR AT A GIVEN POSITION RELATIVE TO THE TARGET SUBSTRATE
702
MEASURE A SET OF SENSOR ELECTRICAL RESPONSES AT A FIRST TARGET SUBSTRATE TEMPERATURE
704
MEASURE A SECOND SET OF ELECTRICAL RESPONSES AT A SECOND TARGET SUBSTRATE TEMPERATURE DIFFERENT FROM THE FIRST TARGET SUBSTRATE TEMPERATURE
706
CALCULATE A THIRD SET OF ELECTRICAL RESPONSES USING AT LEAST THE FIRST AND SECOND SET OF ELECTRICAL RESPONSES, AND A TEMPERATURE COEFFICIENT OF A FIRST CONDUCTIVE LAYER
708
DETERMINE THE FIRST THICKNESS FROM THE THIRD SET OF ELECTRICAL RESPONSES
710

FIG. 7

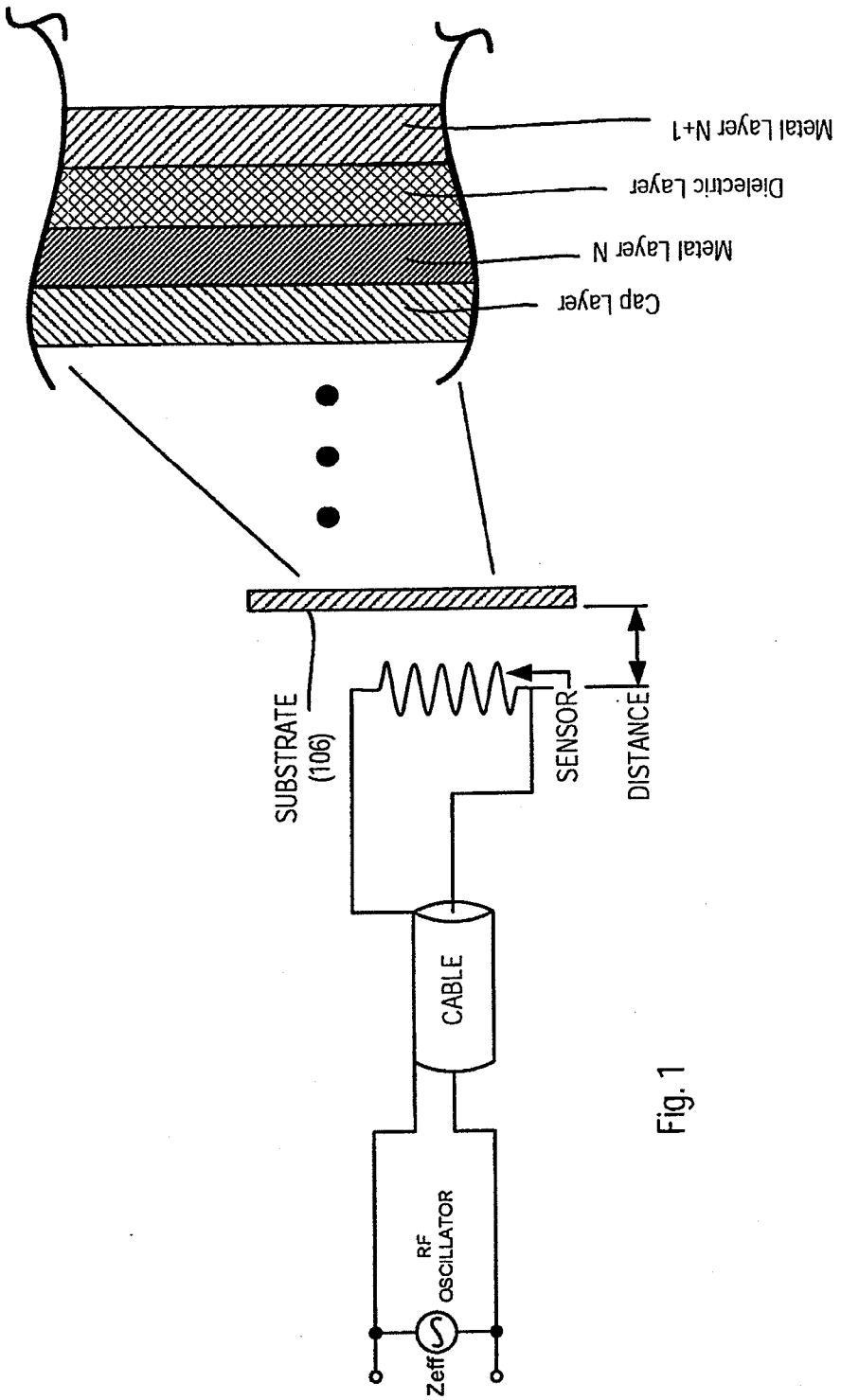

Metal Layer N+1
Dielectric Layer
Metal Layer N
Cap Layer
SUBSTRATE (106)
SENSOR
DISTANCE
CABLE
RF OSCILLATOR
Zeff

Fig. 1

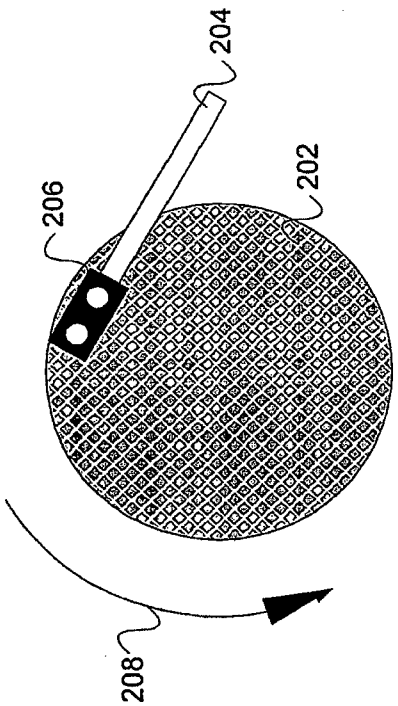


FIG. 2

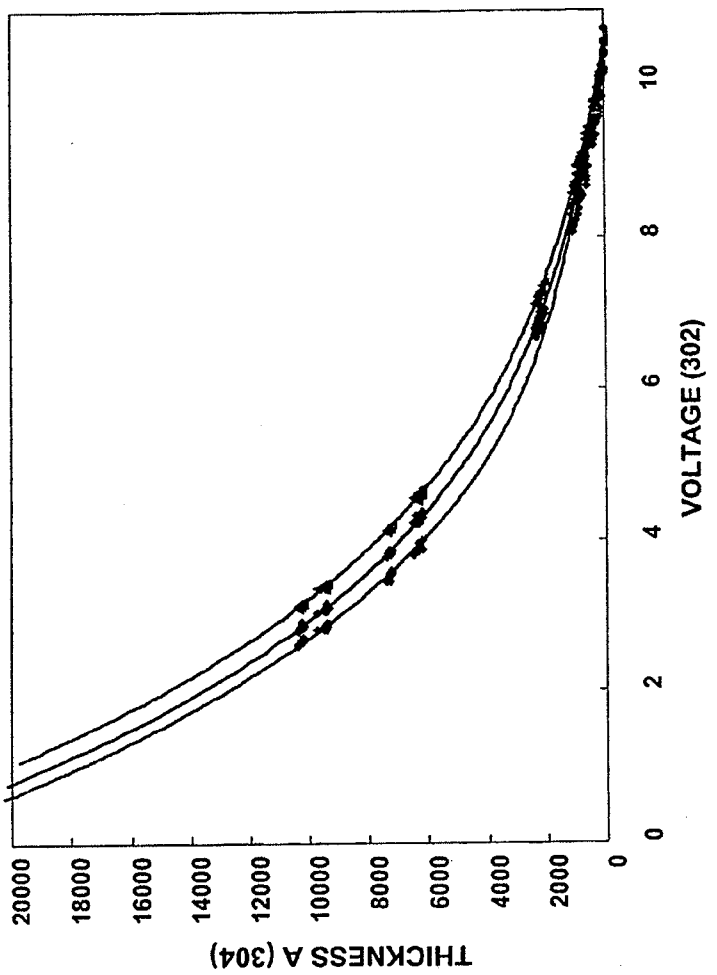

THICKNESS A (304)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
2
4
6
8
10
VOLTAGE (302)

FIG. 3

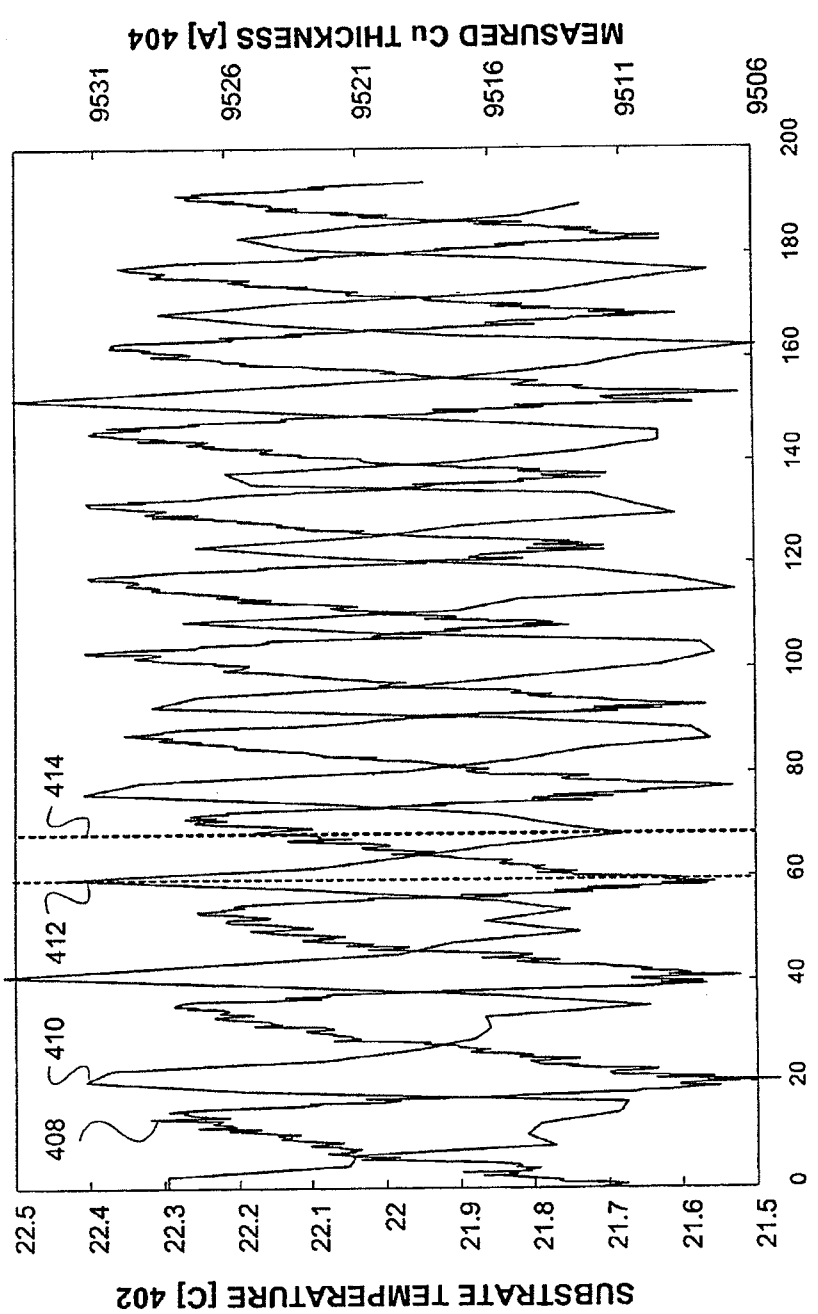

MEASURED Cu THICKNESS [A] 404
9531
9526
9521
9516
9511
9506
SUBSTRATE TEMPERATURE [C] 402
22.5
22.4
22.3
22.2
22.1
22
21.9
21.8
21.7
21.6
21.5
408
410
412
414
0
20
40
60
80
100
120
140
160
180
200
TIME [MIN] 406

FIG. 4

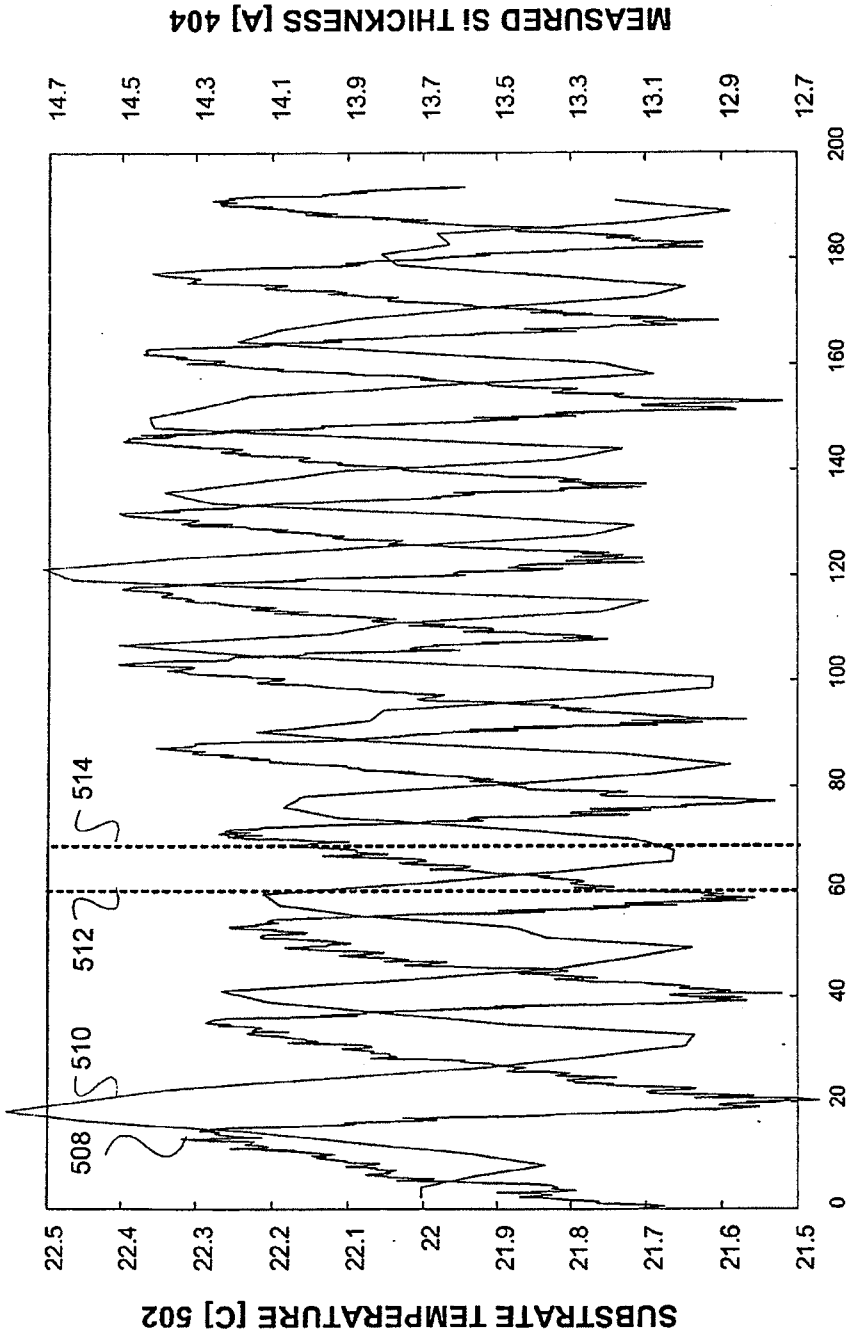

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14.7
14.5
14.3
14.1
13.9
13.7
13.5
13.3
13.1
12.9
12.7
SUBSTRATE TEMPERATURE [C] 502
22.5
22.4
22.3
22.2
22.1
22
21.9
21.8
21.7
21.6
21.5
508
510
512
514
0
20
40
60
80
100
120
140
160
180
200
TIME [MIN] 506

FIG. 5

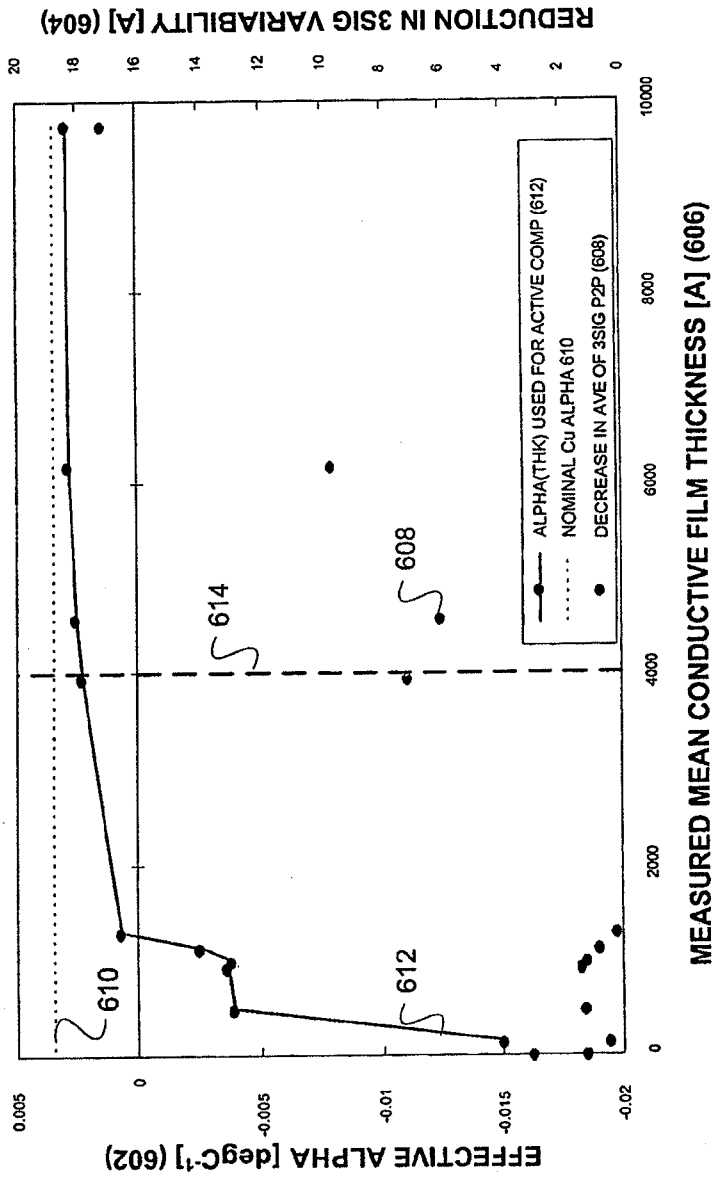

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MEASURED MEAN CONDUCTIVE FILM THICKNESS [A] (606)
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NOMINAL Cu ALPHA 610
DECREASE IN AVE OF 3SIG P2P (608)
610
612
608
614
20
18
16
14
12
10
8
6
4
2
0
0.005
0
-0.005
-0.01
-0.015
-0.02
0
2000
4000
6000
8000
10000

FIG. 6

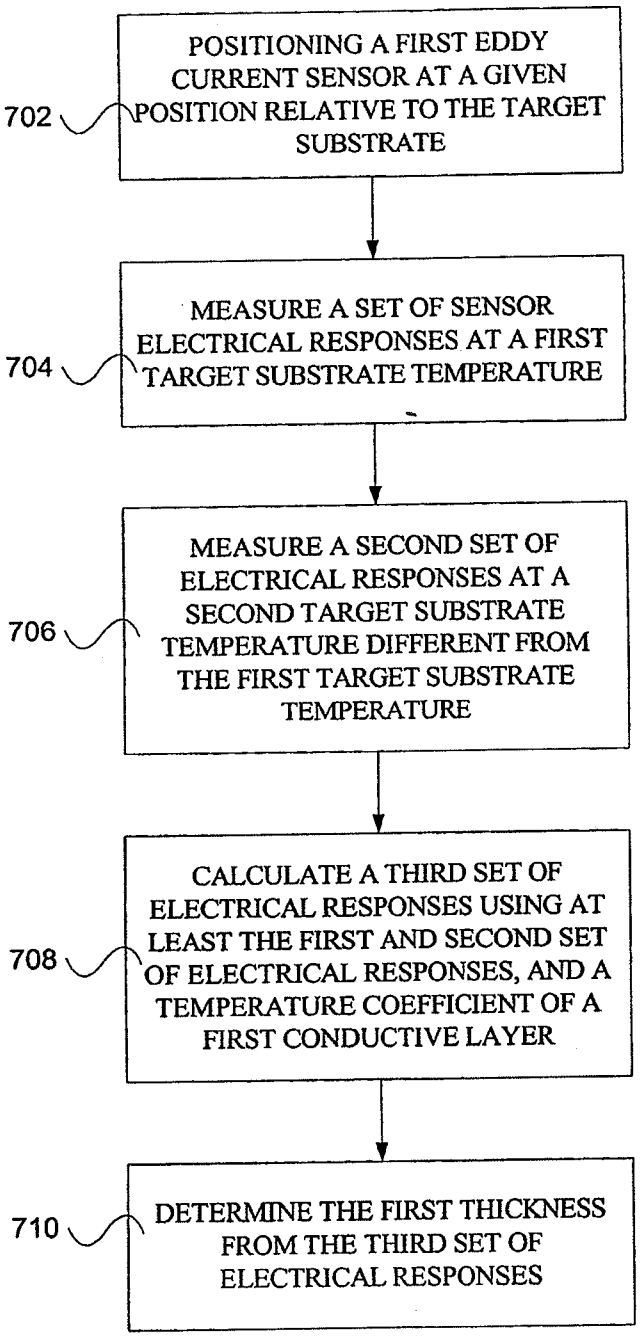

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FIG. 7