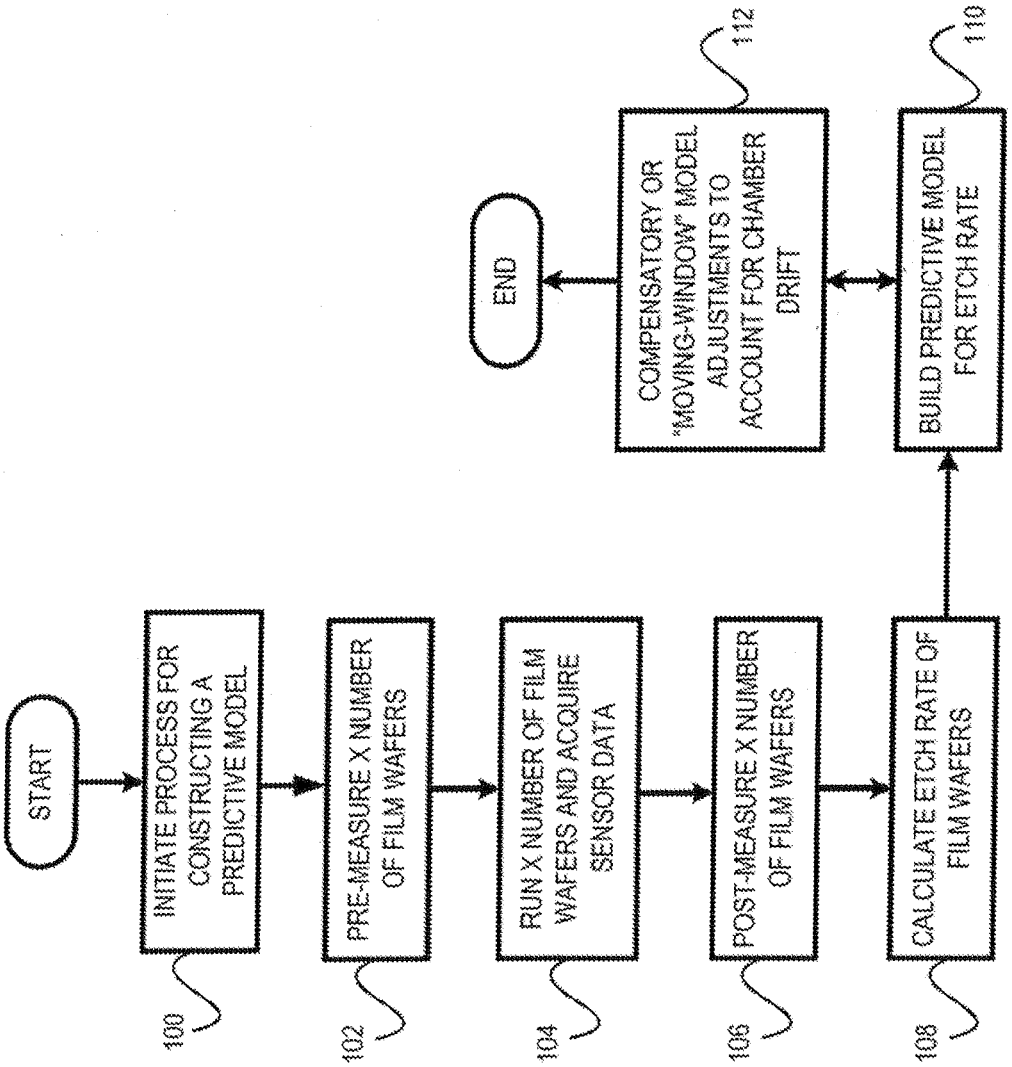


FIG. 1
(PRIOR ART)

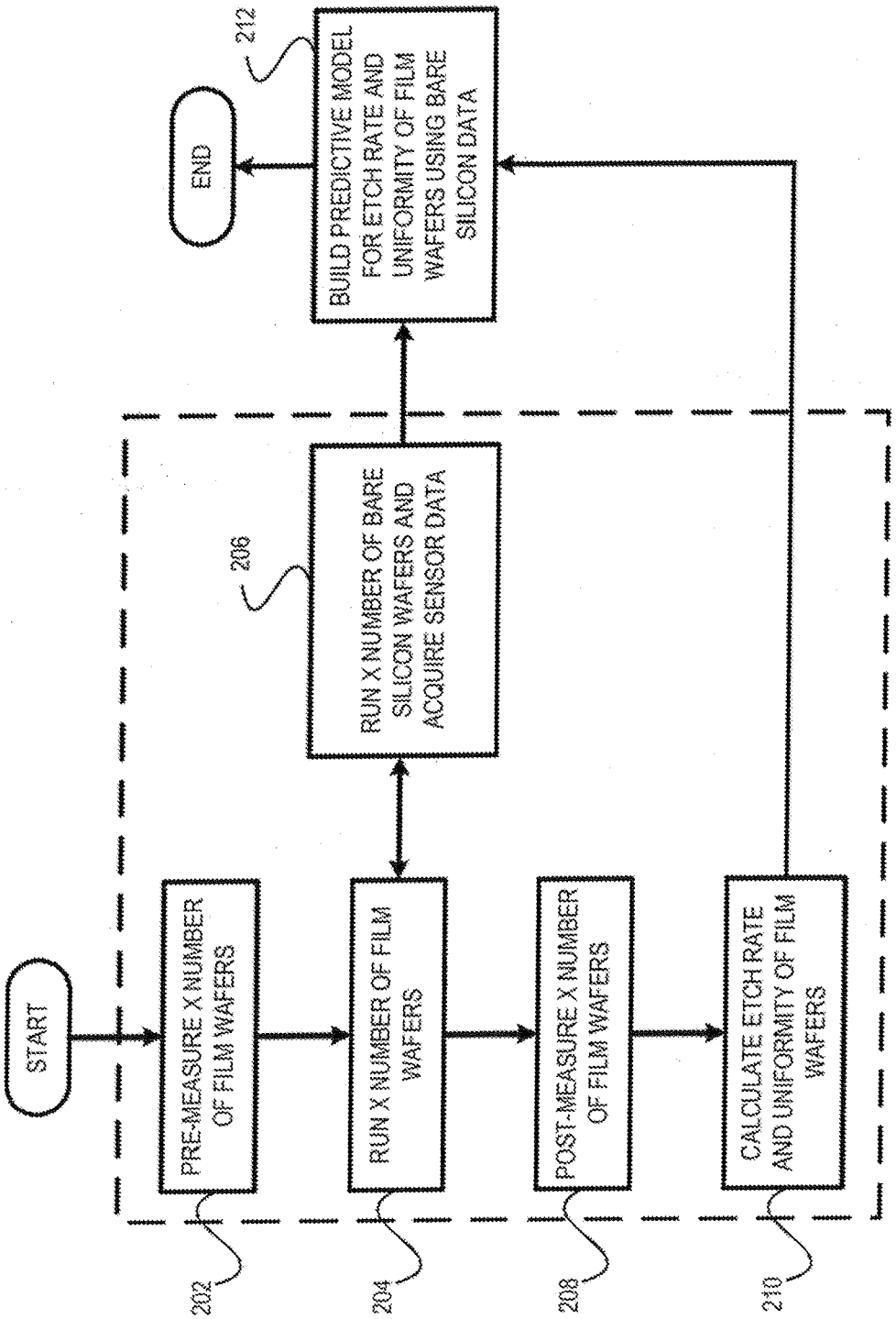

START
PRE-MEASURE X NUMBER OF FILM WAFERS
RUN X NUMBER OF FILM WAFERS
POST-MEASURE X NUMBER OF FILM WAFERS
CALCULATE ETCH RATE AND UNIFORMITY OF FILM WAFERS
RUN X NUMBER OF BARE SILICON WAFERS AND ACQUIRE SENSOR DATA
BUILD PREDICTIVE MODEL FOR ETCH RATE AND UNIFORMITY OF FILM WAFERS USING BARE SILICON DATA
END
202
204
206
208
210
212

FIG. 2

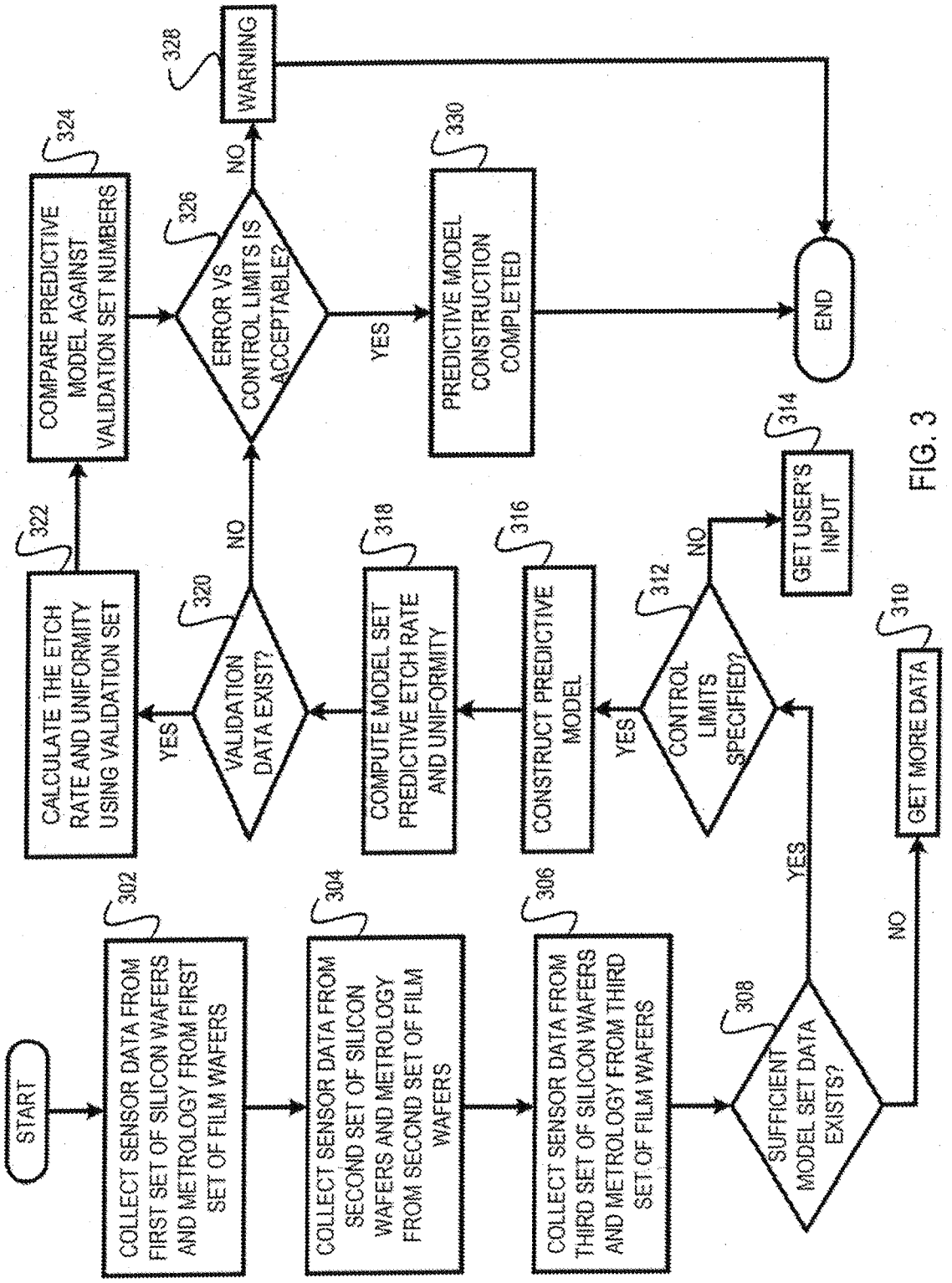

START
COLLECT SENSOR DATA FROM FIRST SET OF SILICON WAFERS AND METROLOGY FROM FIRST SET OF FILM WAFERS
302
COLLECT SENSOR DATA FROM SECOND SET OF SILICON WAFERS AND METROLOGY FROM SECOND SET OF FILM WAFERS
304
COLLECT SENSOR DATA FROM THIRD SET OF SILICON WAFERS AND METROLOGY FROM THIRD SET OF FILM WAFERS
306
SUFFICIENT MODEL SET DATA EXISTS?
308
YES
NO
GET MORE DATA
310
CONTROL LIMITS SPECIFIED?
312
YES
NO
GET USER'S INPUT
314
CONSTRUCT PREDICTIVE MODEL
316
COMPUTE MODEL SET PREDICTIVE ETCH RATE AND UNIFORMITY
318
VALIDATION DATA EXIST?
320
YES
NO
CALCULATE THE ETCH RATE AND UNIFORMITY USING VALIDATION SET
322
COMPARE PREDICTIVE MODEL AGAINST VALIDATION SET NUMBERS
324
ERROR VS CONTROL LIMITS IS ACCEPTABLE?
326
YES
NO
PREDICTIVE MODEL CONSTRUCTION COMPLETED
330
WARNING
328
END

FIG. 3

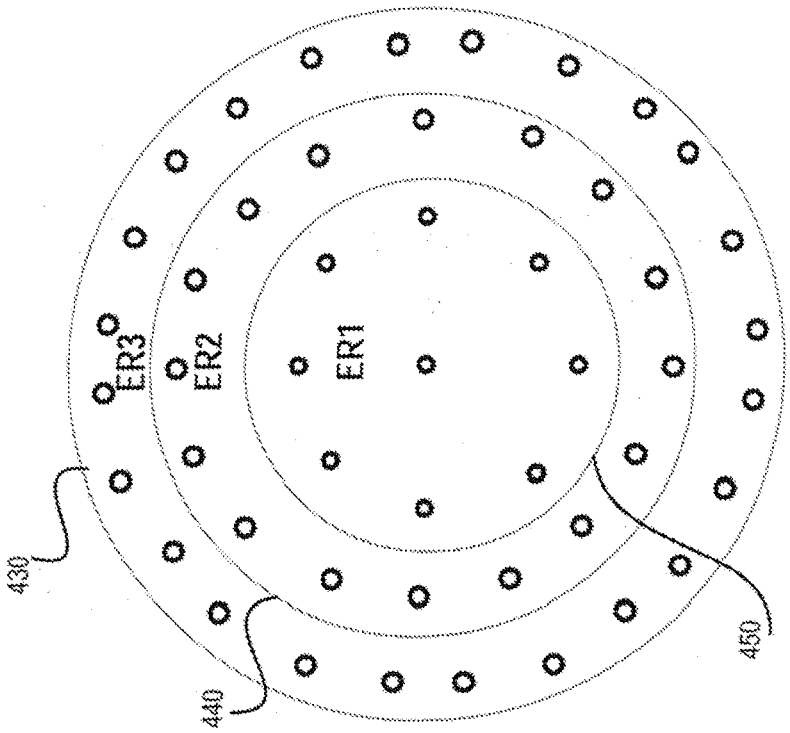


FIG. 4B

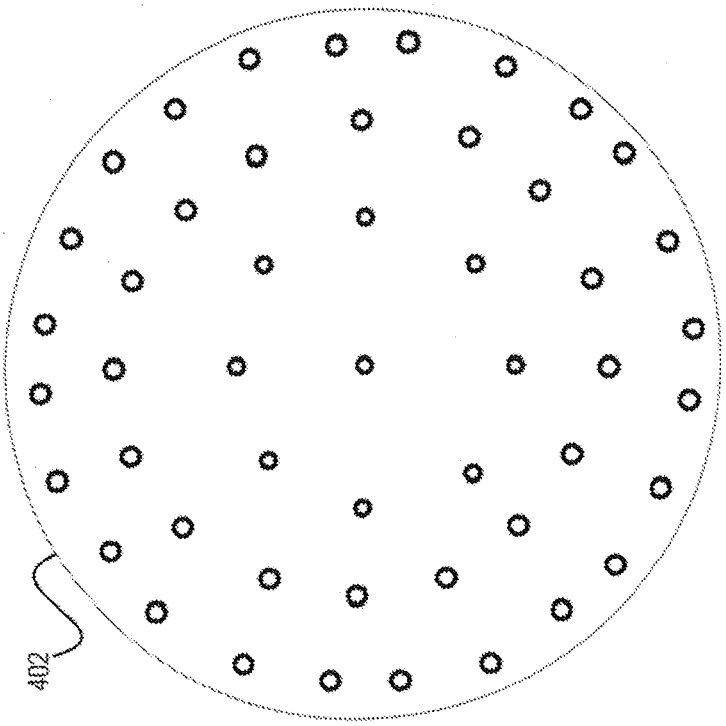


FIG. 4A

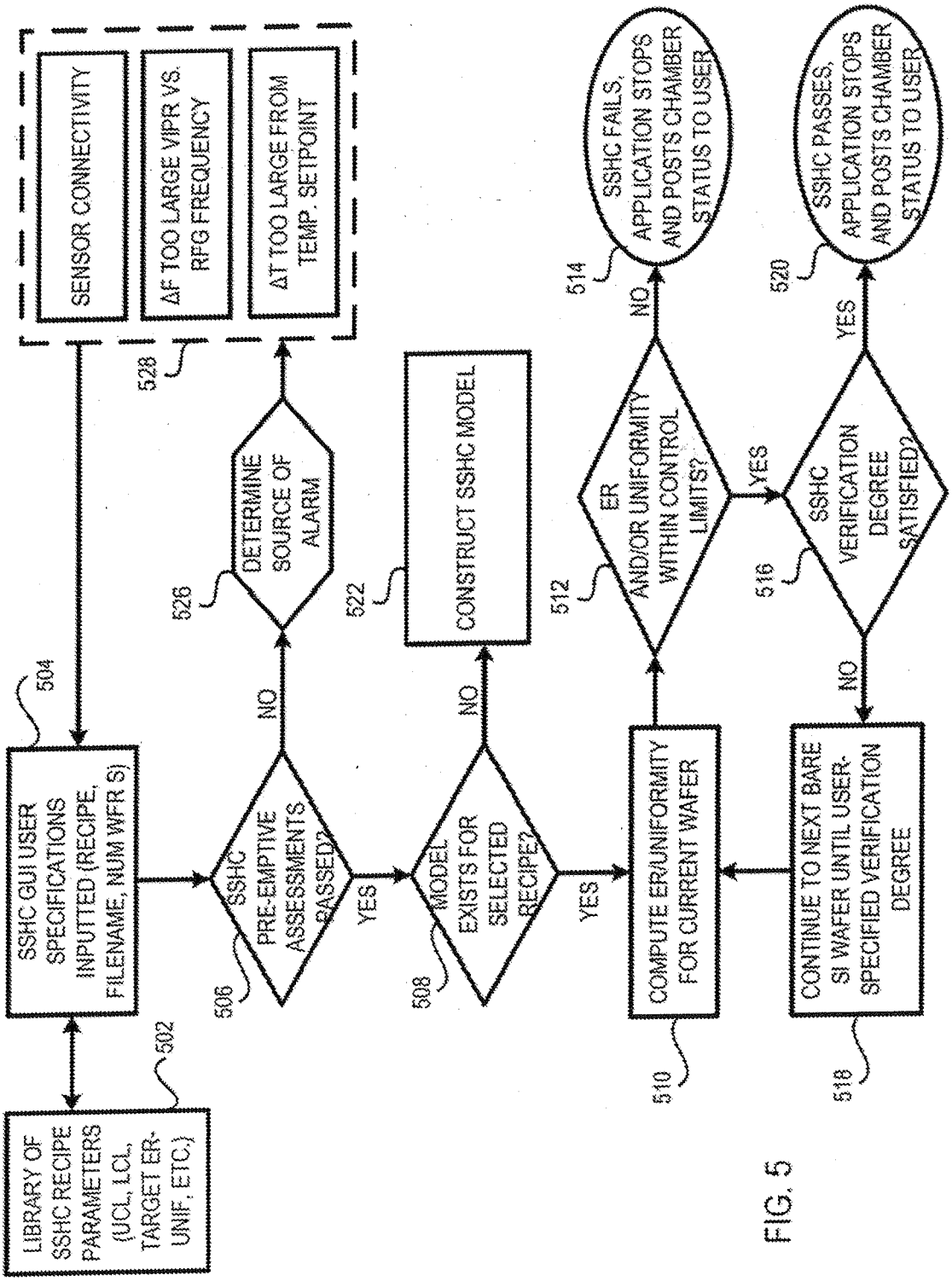

LIBRARY OF SSHC RECIPE PARAMETERS (UCL, LCL, TARGET ER-UNIF, ETC.)
502
SSHC GUI USER SPECIFICATIONS INPUTTED (RECIPE, FILENAME, NUM WFR S)
504
SSHC PRE-EMPTIVE ASSESSMENTS PASSED?
506
NO
YES
DETERMINE SOURCE OF ALARM
526
SENSOR CONNECTIVITY
ΔF TOO LARGE VPR VS. RFG FREQUENCY
ΔT TOO LARGE FROM TEMP. SETPOINT
528
MODEL EXISTS FOR SELECTED RECIPE?
508
NO
YES
CONSTRUCT SSHC MODEL
522
COMPUTE ER/UNIFORMITY FOR CURRENT WAFER
510
ER AND/OR UNIFORMITY WITHIN CONTROL LIMITS?
512
NO
YES
SSHC FAILS, APPLICATION STOPS AND POSTS CHAMBER STATUS TO USER
514
SSHC VERIFICATION DEGREE SATISFIED?
516
NO
YES
SSHC PASSES, APPLICATION STOPS AND POSTS CHAMBER STATUS TO USER
520
CONTINUE TO NEXT BARE SI WAFER UNTIL USER-SPECIFIED VERIFICATION DEGREE
518

FIG. 5