


FIG. 1
PRIOR ART




FIG. 2
PRIOR ART

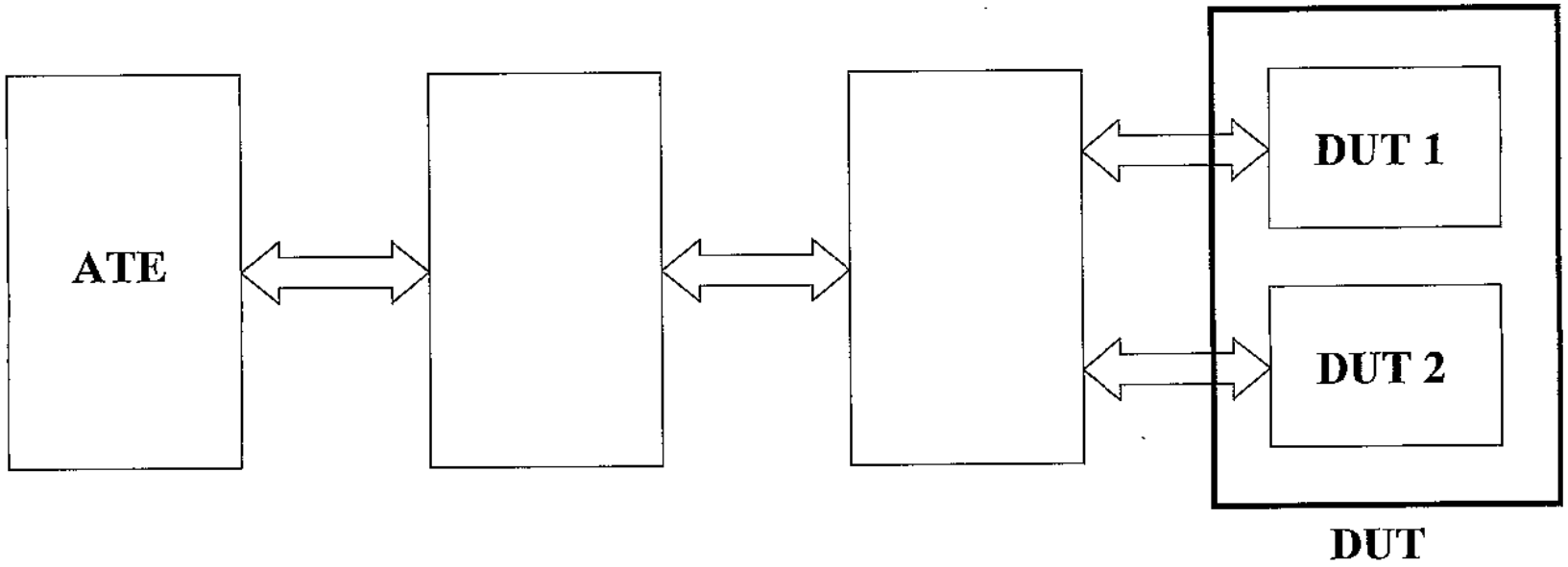


FIG. 3
PRIOR ART

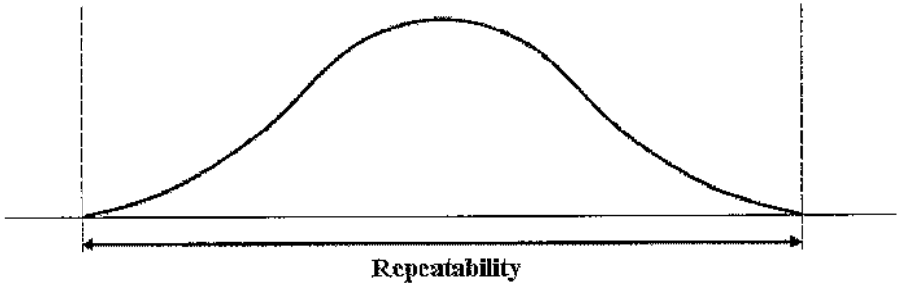


FIG. 4A
PRIOR ART

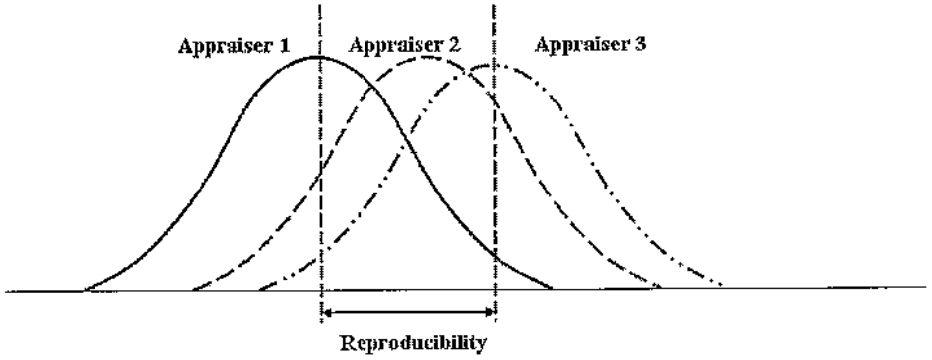


FIG. 4B
PRIOR ART

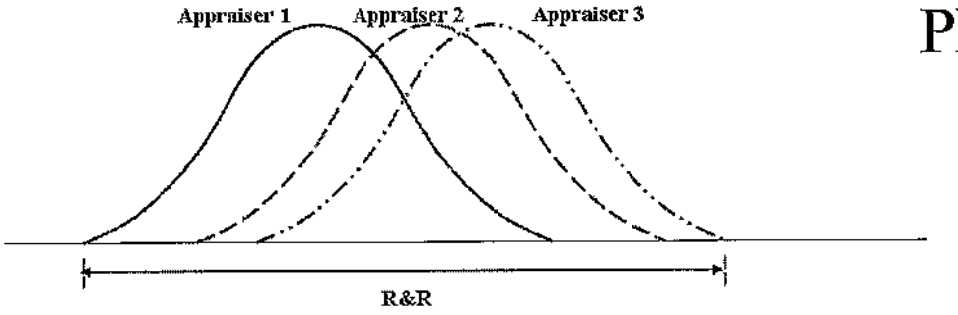


FIG. 4C
PRIOR ART

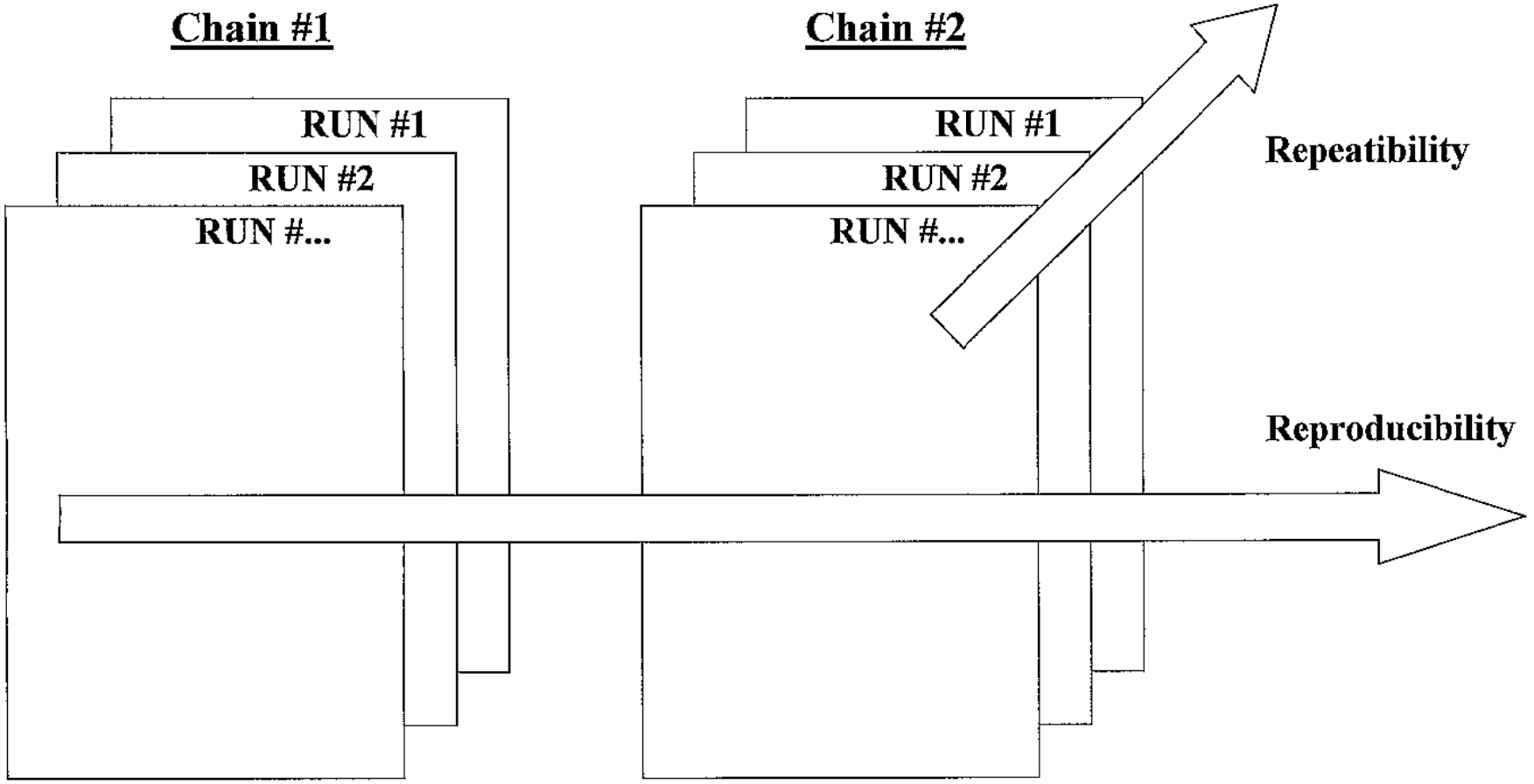


FIG. 5
PRIOR ART

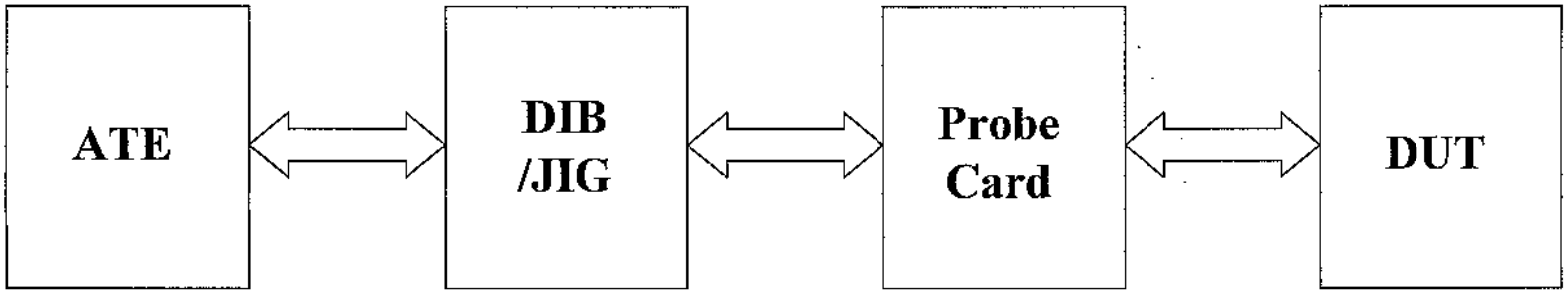


FIG. 6A
PRIOR ART

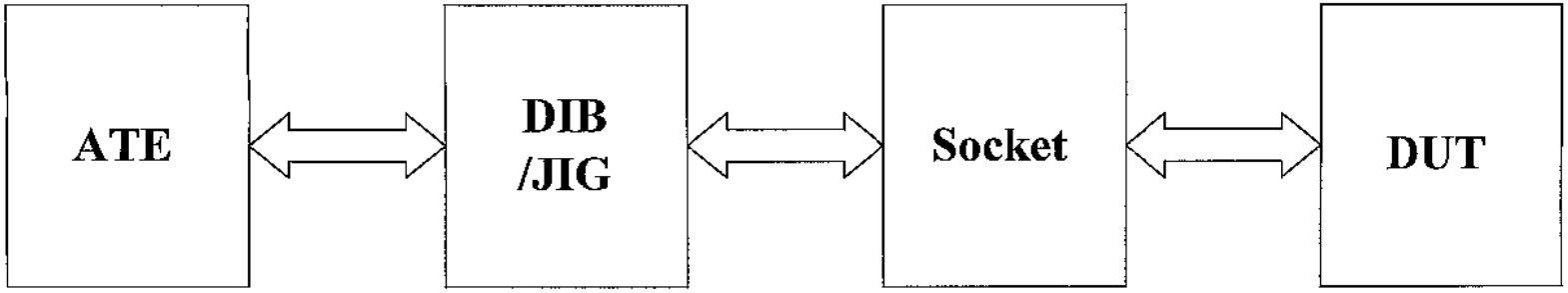


FIG. 6B
PRIOR ART

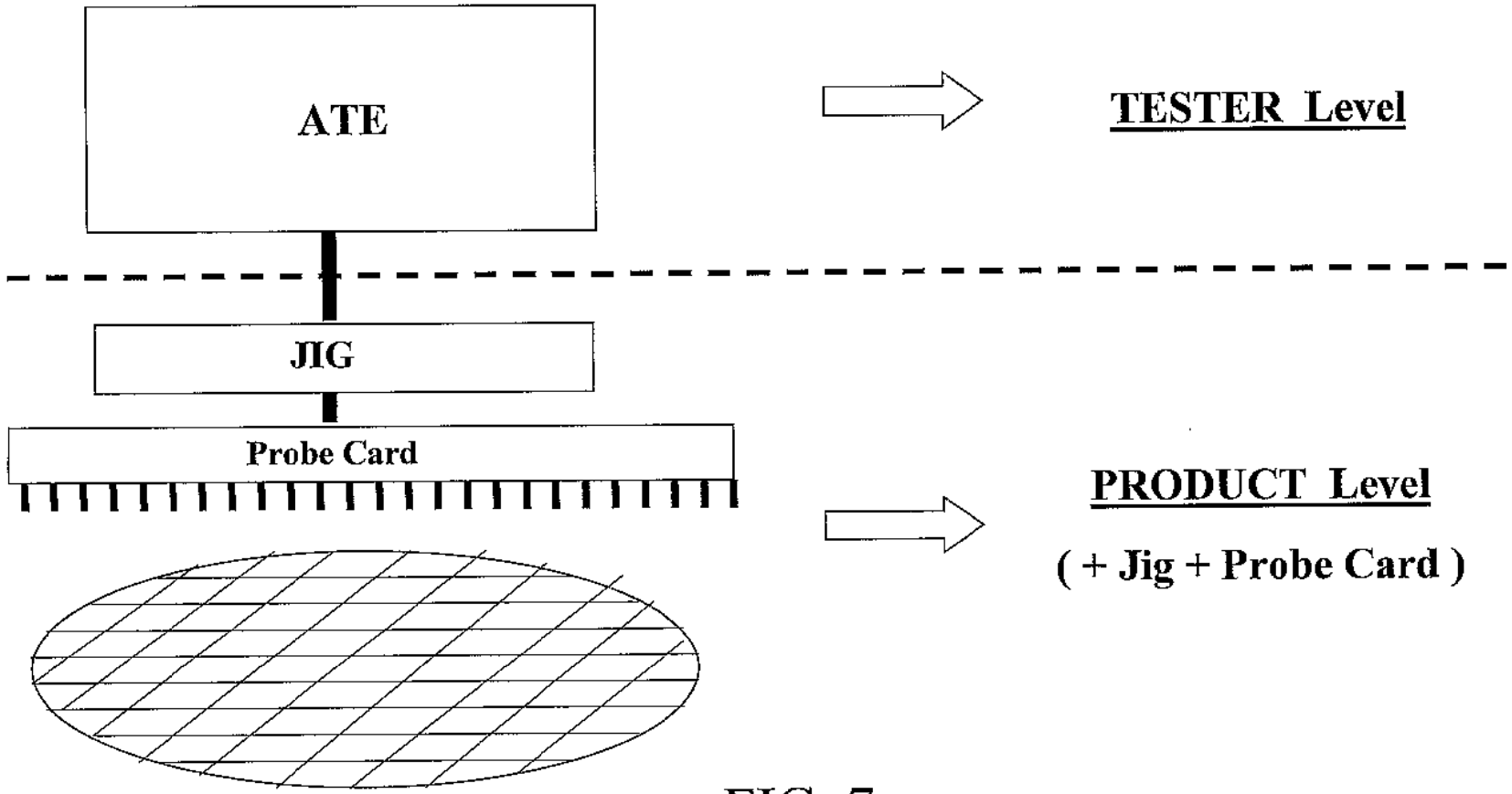
ATE
TESTER Level
JIG
Probe Card
PRODUCT Level
( + Jig + Probe Card )

FIG. 7

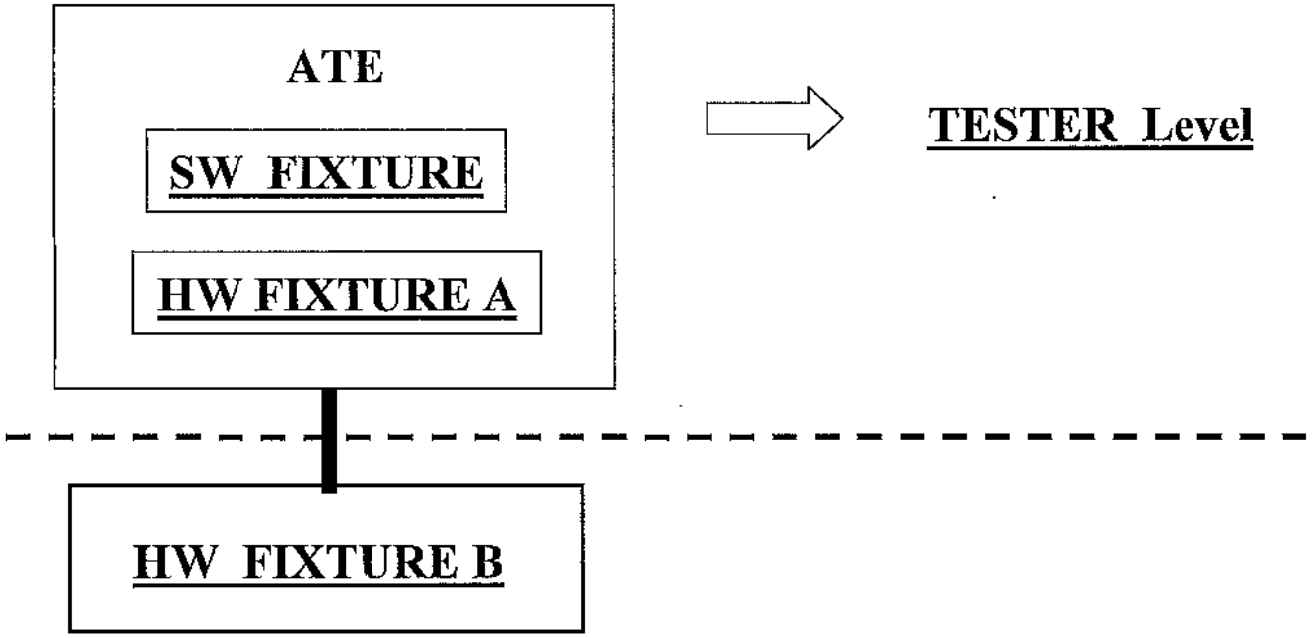


FIG. 8

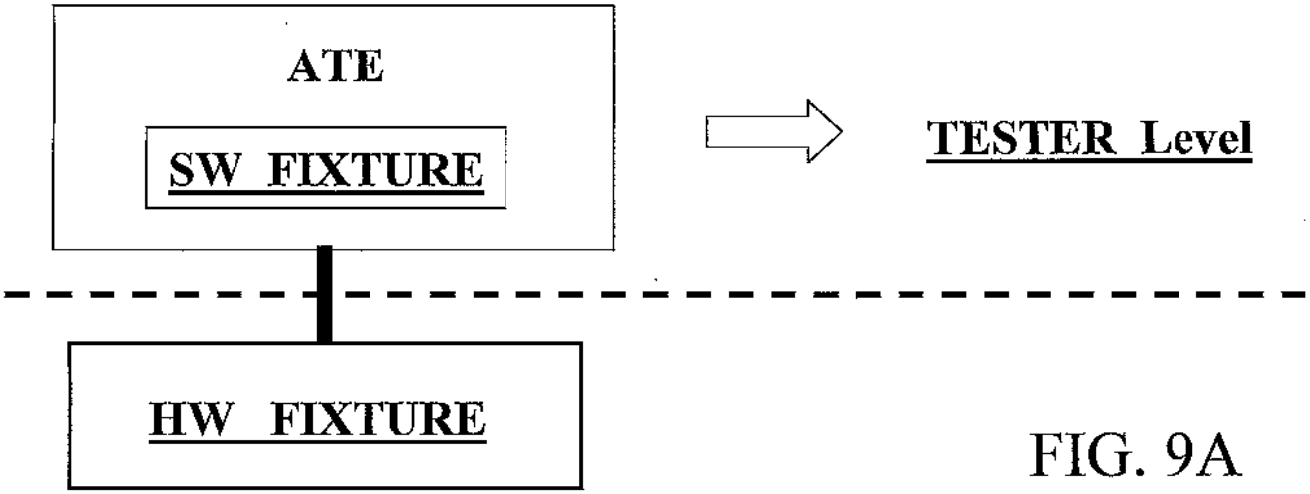


FIG. 9A

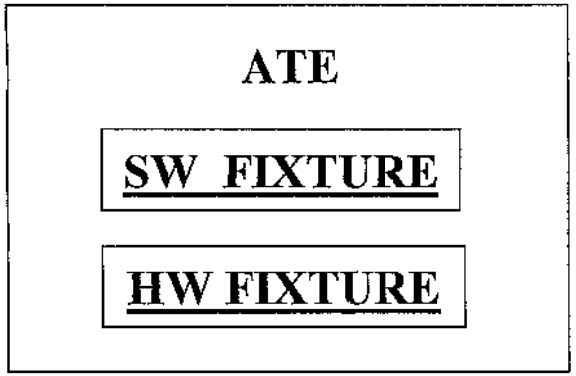


FIG. 9B

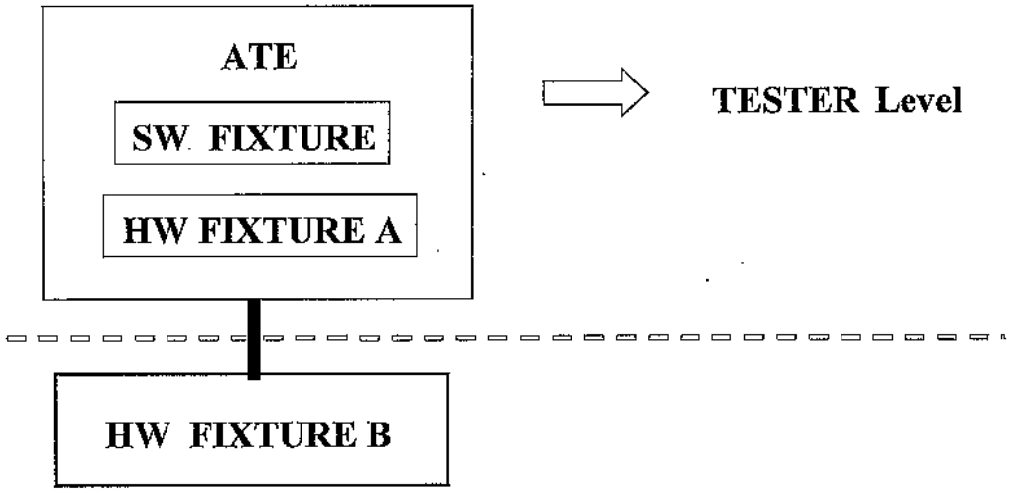


FIG. 9C

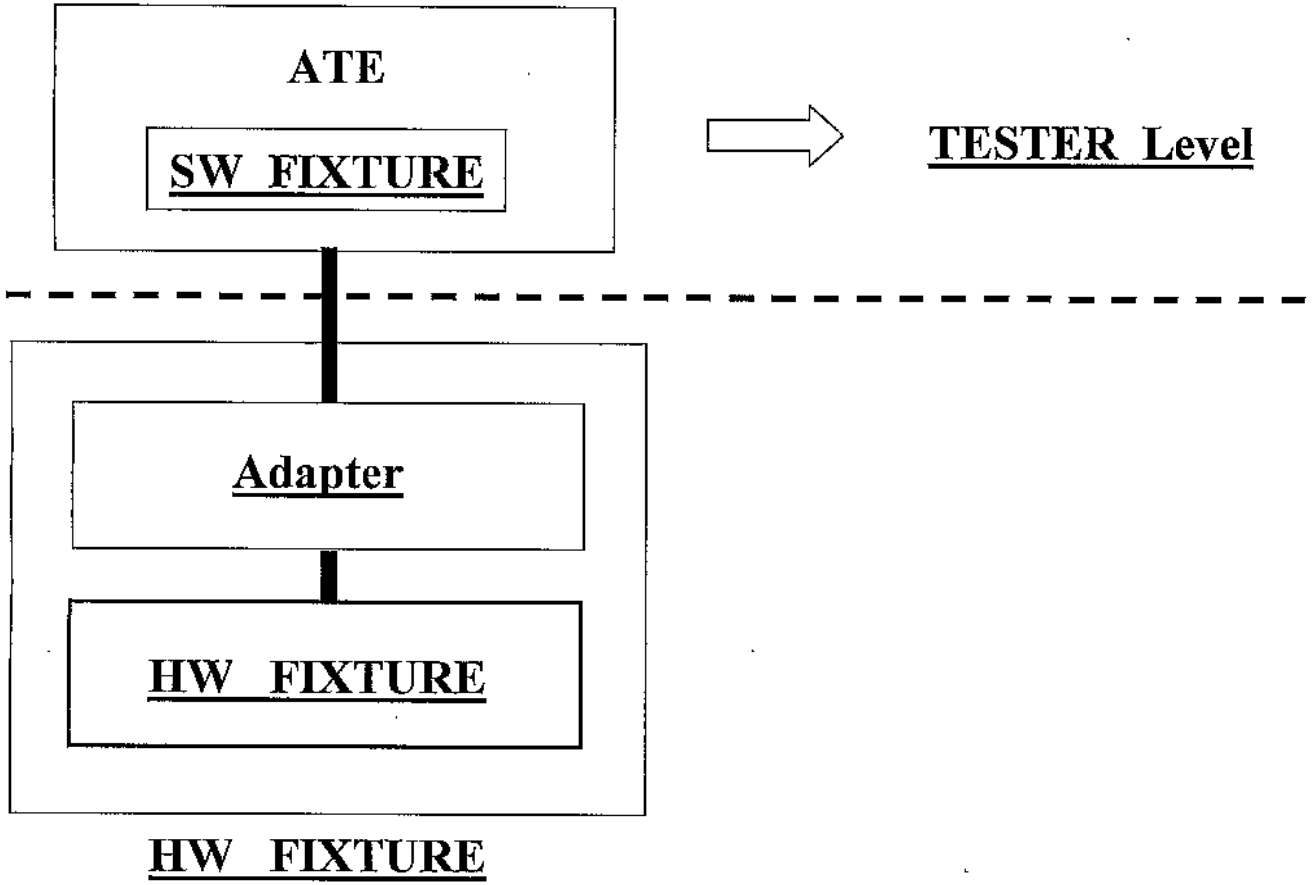


FIG. 9D

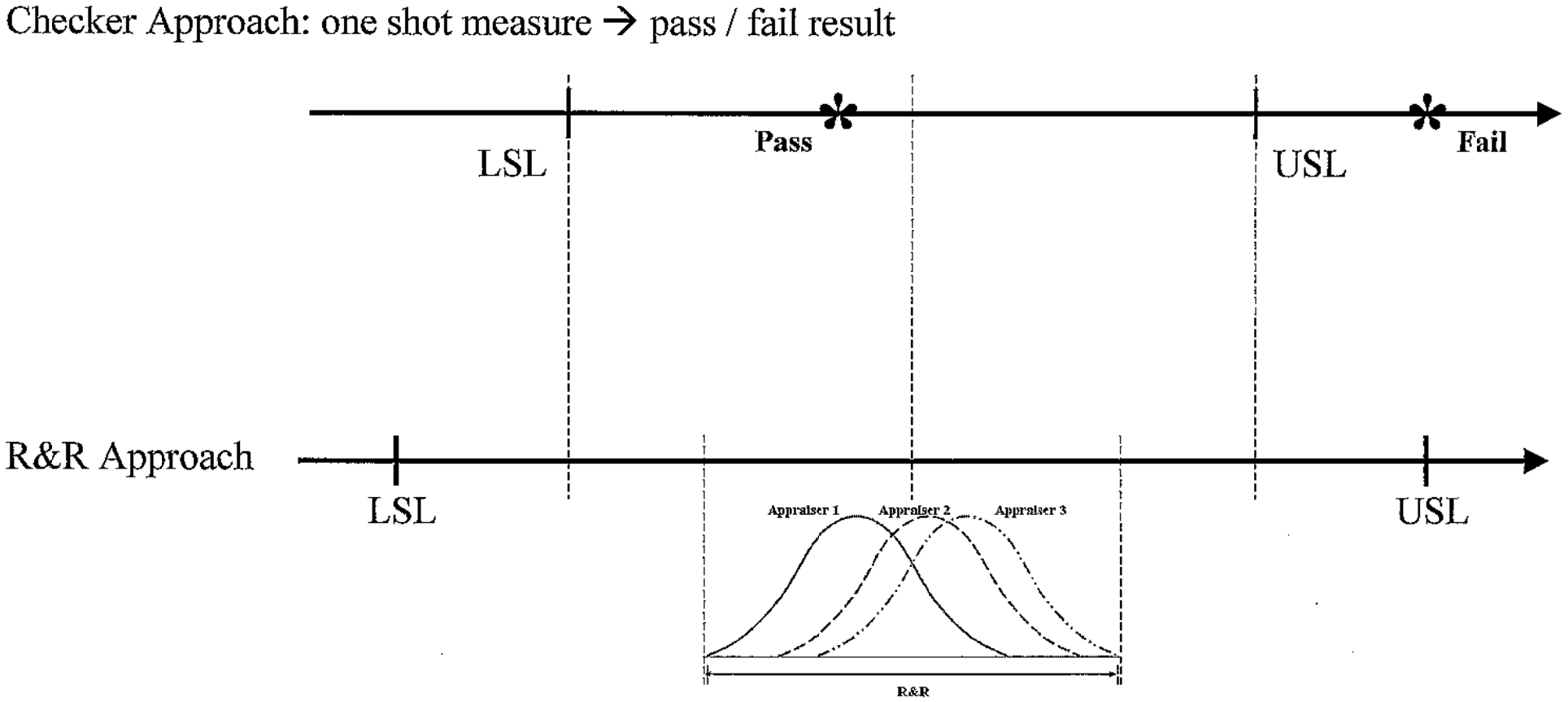
Checker Approach: one shot measure → pass / fail result
LSL
Pass
USL
Fail
R&R Approach
LSL
Appraiser 1
Appraiser 2
Appraiser 3
USL
R&R

FIG. 10

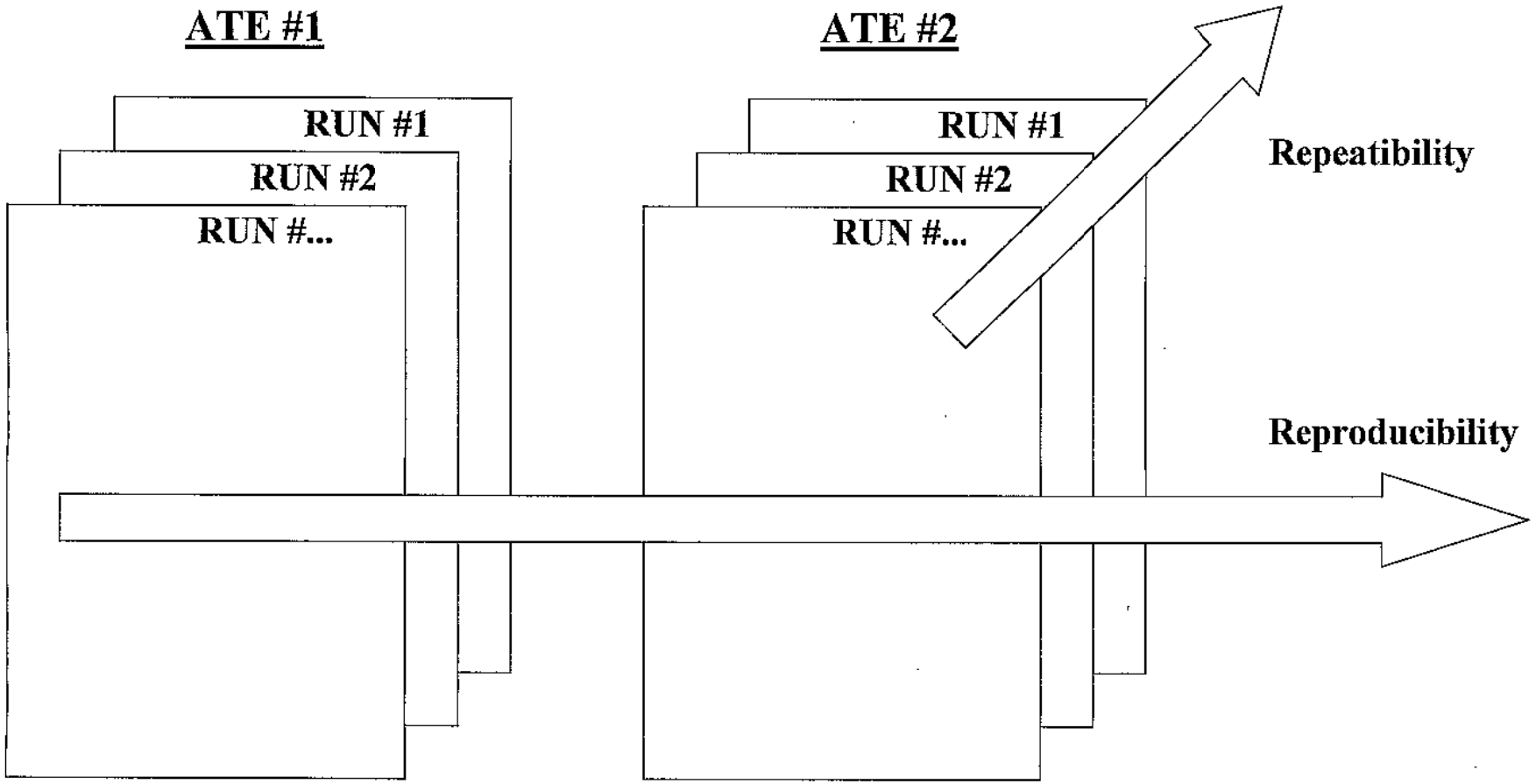
ATE #1
ATE #2
RUN #1
RUN #2
RUN #...
RUN #1
RUN #2
RUN #...
Repeatibility
Reproducibility

FIG. 11

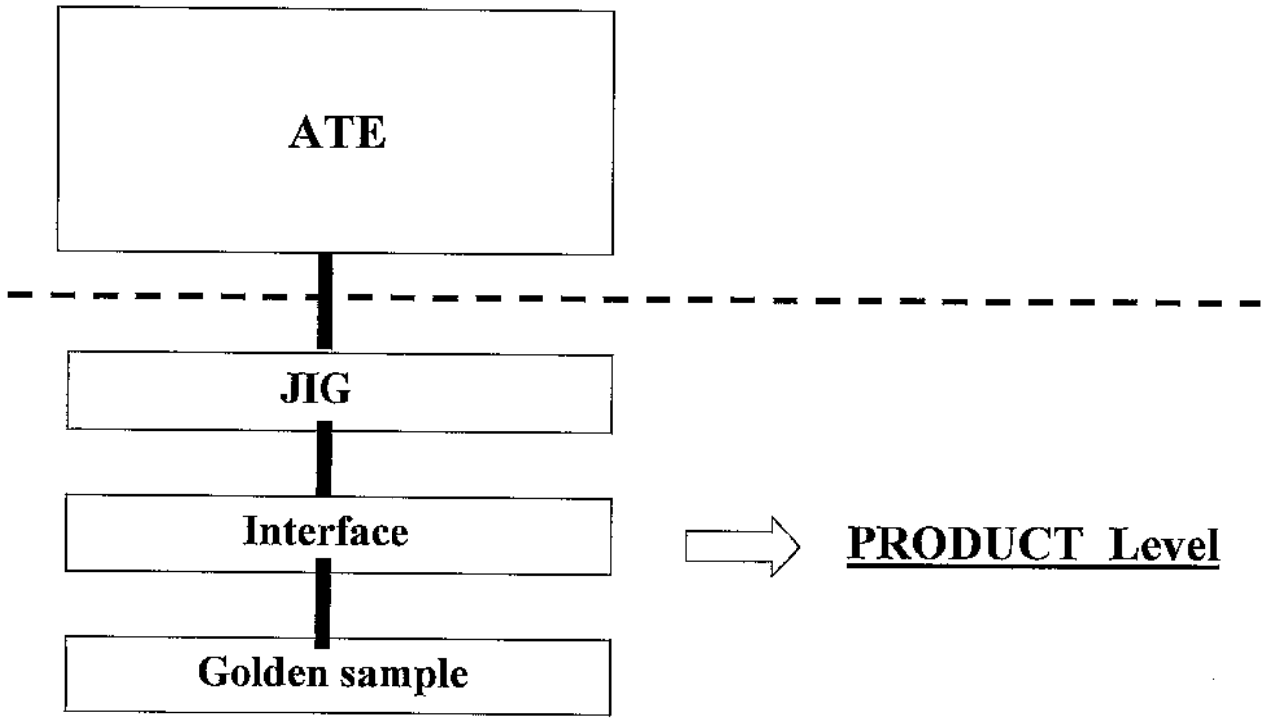


FIG. 12

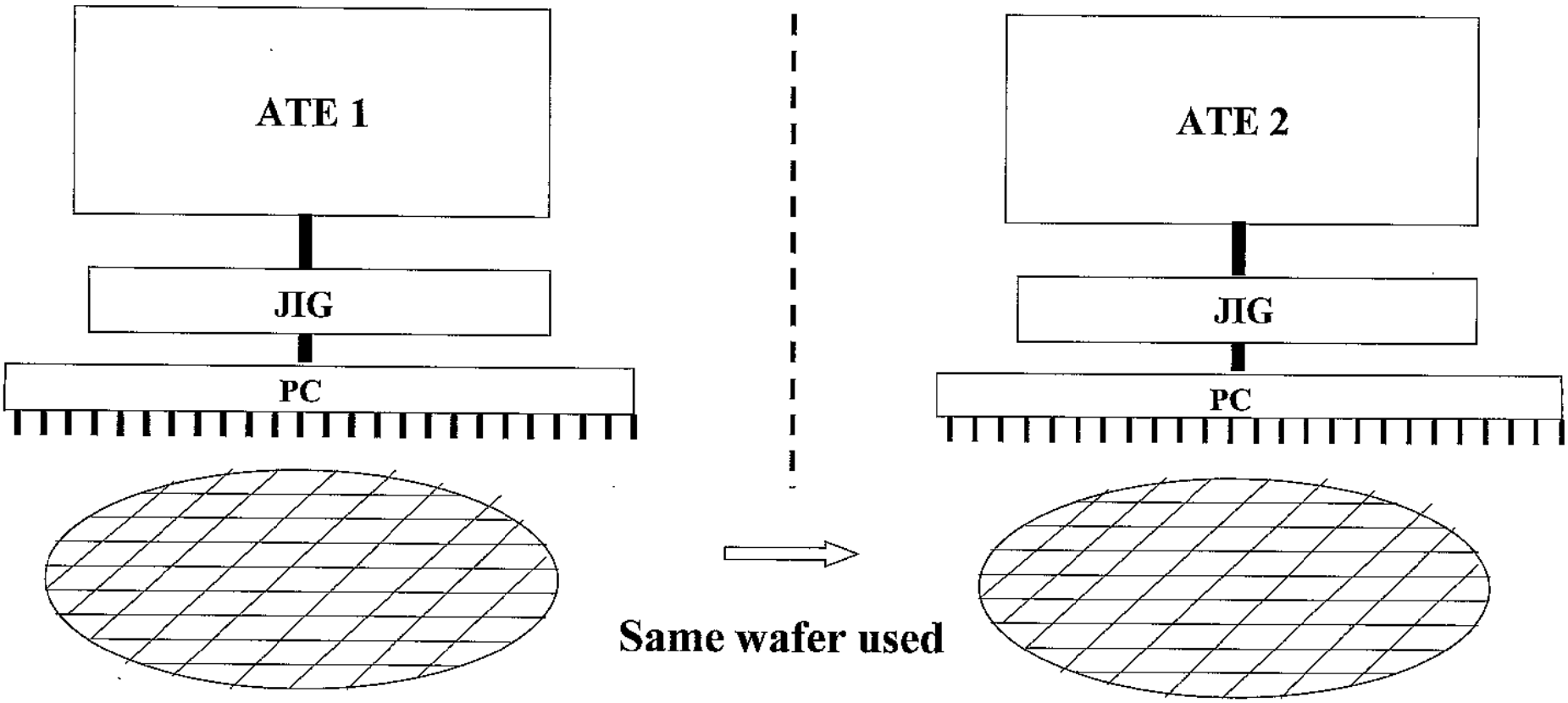


FIG. 13

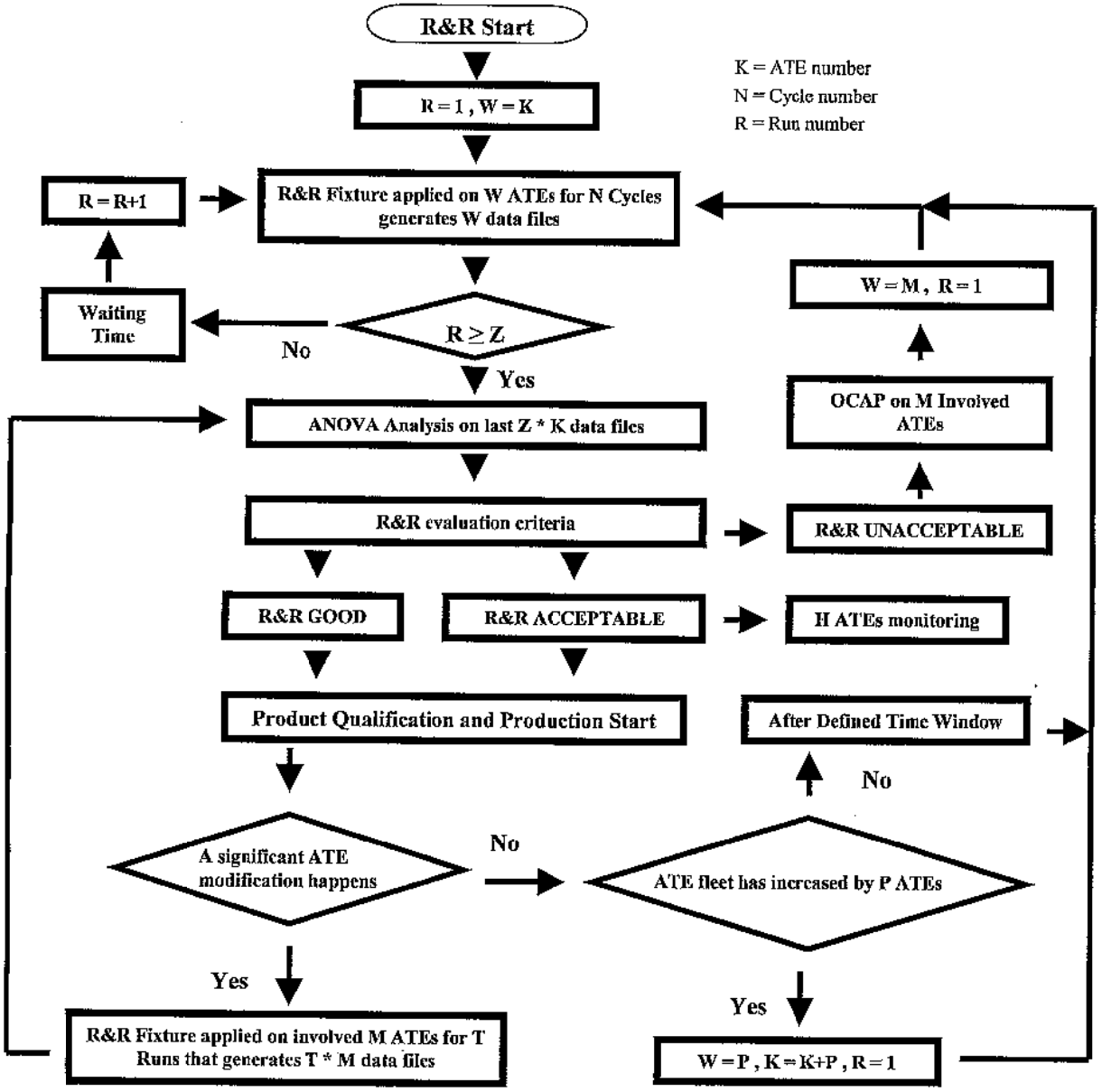
R&R Start
K = ATE number
N = Cycle number
R = Run number
R = 1 , W = K
R&R Fixture applied on W ATEs for N Cycles generates W data files
R = R+1
Waiting Time
No
R ≥ Z
Yes
ANOVA Analysis on last Z * K data files
R&R evaluation criteria
R&R GOOD
R&R ACCEPTABLE
R&R UNACCEPTABLE
H ATEs monitoring
OCAP on M Involved ATEs
W = M , R = 1
Product Qualification and Production Start
After Defined Time Window
No
A significant ATE modification happens
No
ATE fleet has increased by P ATEs
Yes
R&R Fixture applied on involved M ATEs for T Runs that generates T * M data files
Yes
W = P , K = K+P , R = 1

FIG. 14