

Most possible mechanism:

It's clearly evident that transposase carried the 18bp from some other part of the genome and recognized the ~32bp TIR, since it has the homology with the 18bp. Then, this 18bp either inserted at the region after 93bp from the ~32bp TIR

Transposase carrying the element 5' **AGTACCATCTCCACAGAA** **TGTT** **NNNN**
 3' **TCATGGTACAGGAGTCTT** **ACAA** **NNNN**

(Total 1191bp-- (18bp+18bpTIR+ (4bp+4bpITSD) +1147bp internal region)) from some where else of the genome)

Recognizing the Same TIR and considering TC as a target site after ~90bp

(This schematic diagram focused on 5' terminal)

Insertion after ~90bp at both 5' and 3' terminals

ACTGTAA **TC** **AGTACCATCTCCACAGAA** **ACAATTGTA**-----93bp----- **TC** (Target site)

ACTGTAA **TC** **AGTACCATCTCCACAGAA** **ACAATTGTA**-----93bp-----5' **TC** **AGTACCATCTCCACAGAA** **TGTT** **NNNN**
 3' **TCATGGTACAGGAGTCTT** **ACAA** **NNNN**

5' **TC** **AGTACCATCTCCACAGAA** **TGTT** **NNNN**
 3' **TCATGGTACAGGAGTCTT** **ACAA** **NNNN**

5' **TC** **AGTACCATCTCCACAGAA** **TGTT** **NNNN**
 3' **AG** **TCATGGTACAGGAGTCTT** **ACAA** **NNNN**

The organization of internal transposon will be:

5' 2bp TSD +18bpTIR+4bp ITSD+internal 1147bp region+4bp ITSD+18bpTIR+2bpTSD 3'

Total length of internal transposon: 1191bp+ 2+2bpTSD-----1195bp

Now the total length of this nested non autonomous DNA transposon:

253bp (already existing transposon)+1191(newly inserted)+2bp+2bp(TSD upon insertion at both end)= 1448bp

Organization of this nested non autonomous DNA transposon:

4bpTSD 32bpTIR + 93bp + 2bpTSD 18bpTIR + 4bpITSD --1147bp-- 4bpITSD + 18bpTIR 2bpTSD + 89bp + 31bpTIR 4bpTSD

Or

The 18bp enlarged up to ~32bp upon the selective insertion of this 18bp TIR+2bpTSD on 12bp TIR, which leads to the formation of ~32bp TIR with 4bp TSD.

TCAGTACCATCTCCACAGAATGTT

18bpTIR

Selections of TSD and TIR from 18bpTIR transposable element and leaving ITSD for the Insertion on the destination (14bp TIR already having 4bpTSD) by Transposase?

Insertion of 18bp on 12bp TIR transposon, which is already having 4bpTSD

ACTGTAAACAATTGTA

12bp

ACTGTAA**TCAGTACCATCTCCACAGAA**ACAATTGTA

~32 bp TIR

(Now ~32 bp TIR formed with 4bp TSD externally, besides the 18bp TIR with 2bp TSD)