

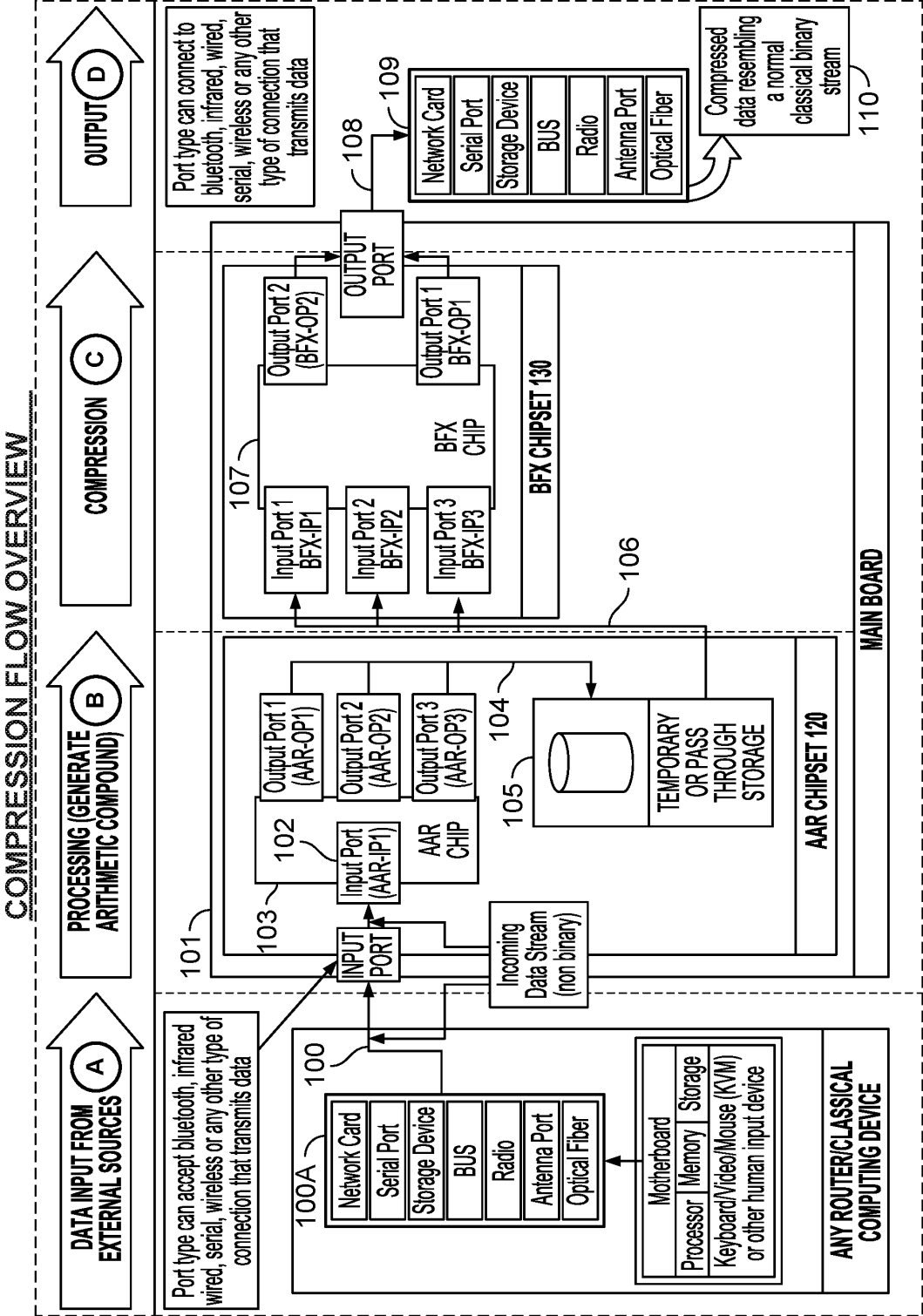


FIG. 1A

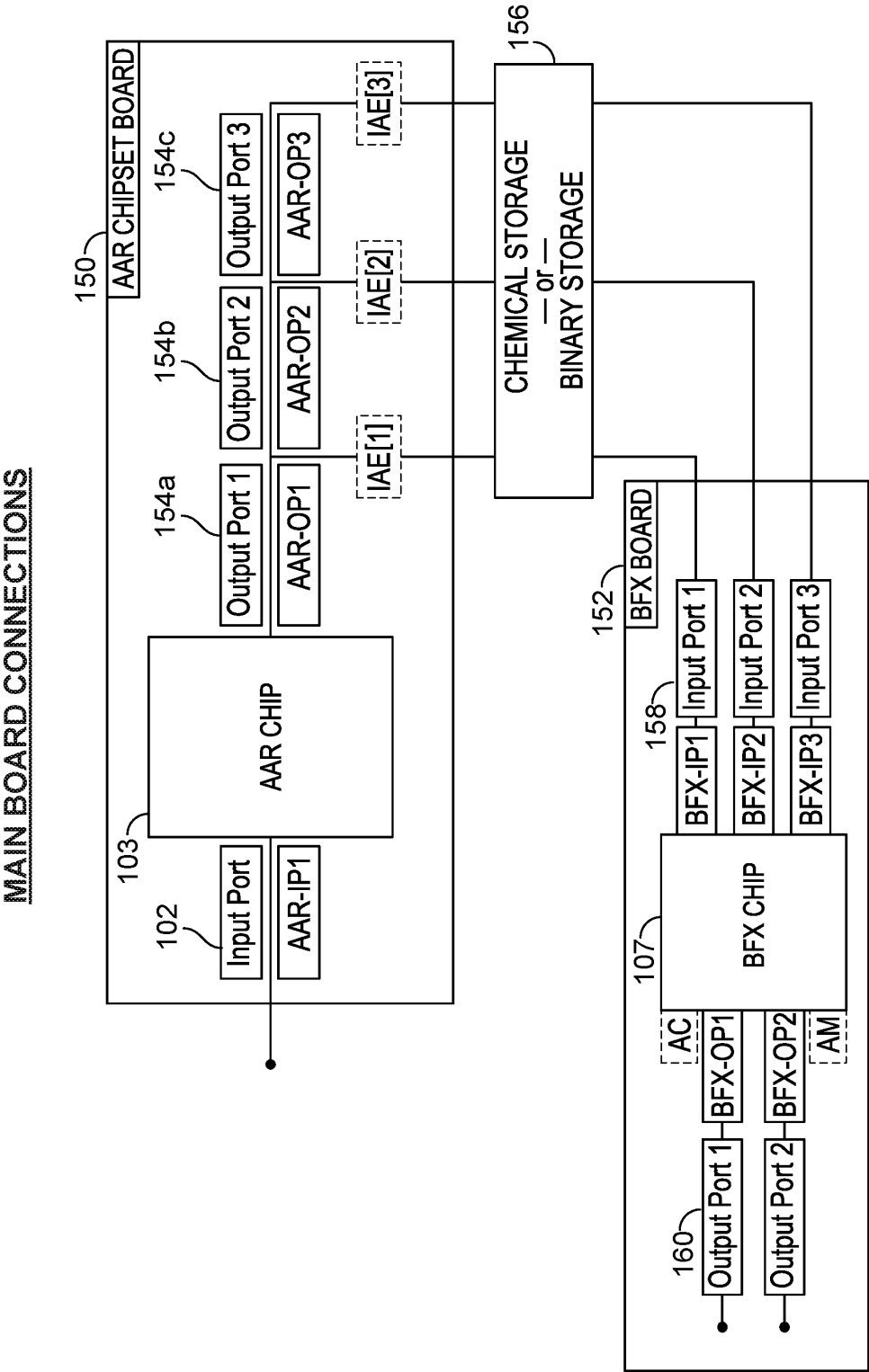


FIG. 1B

OVERVIEW OF COMPRESSION PROCESS

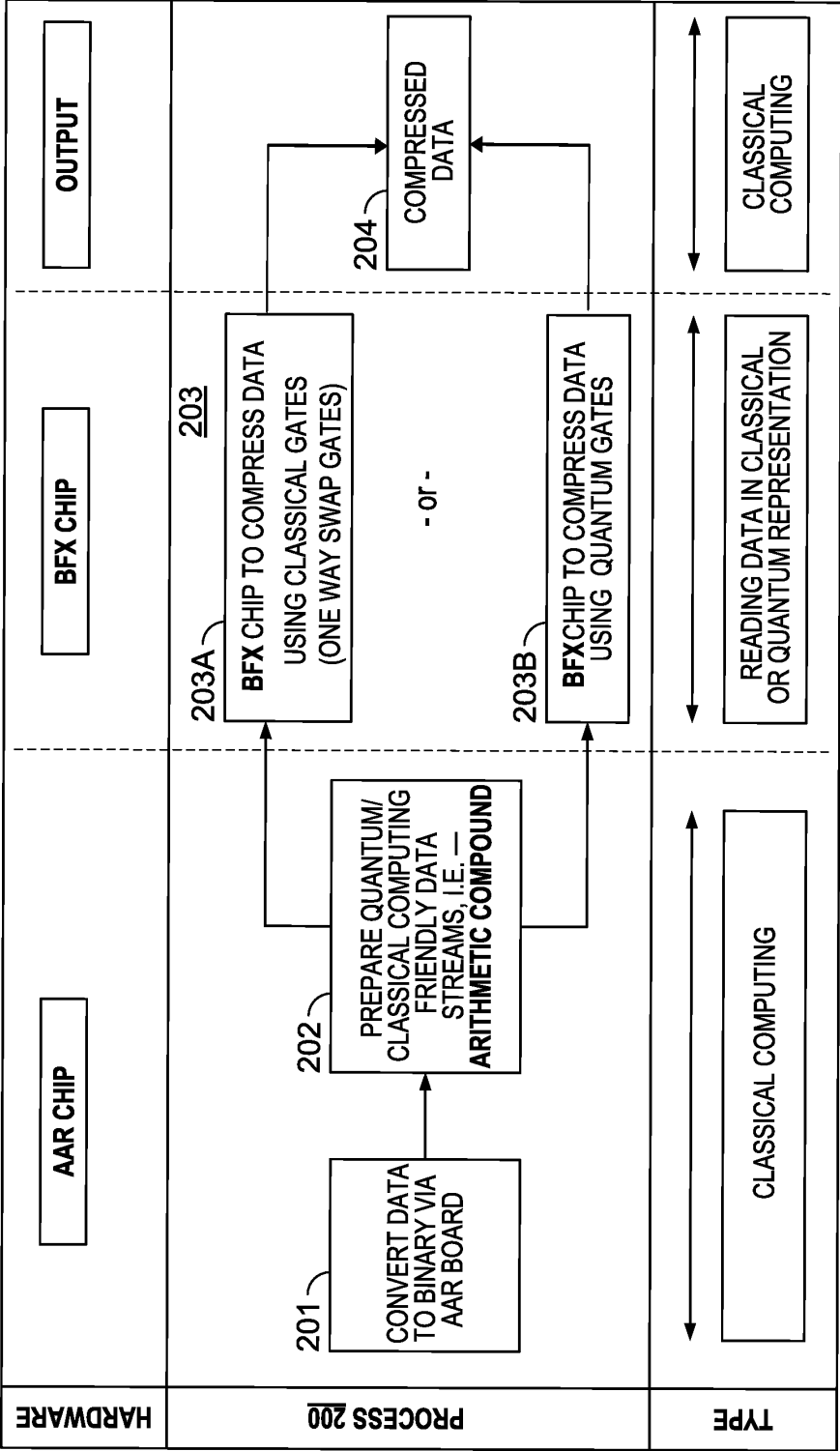


FIG. 2

APPLICATION FOR HIGH SPEED INTERNET BACKHAUL TRANSMISSION

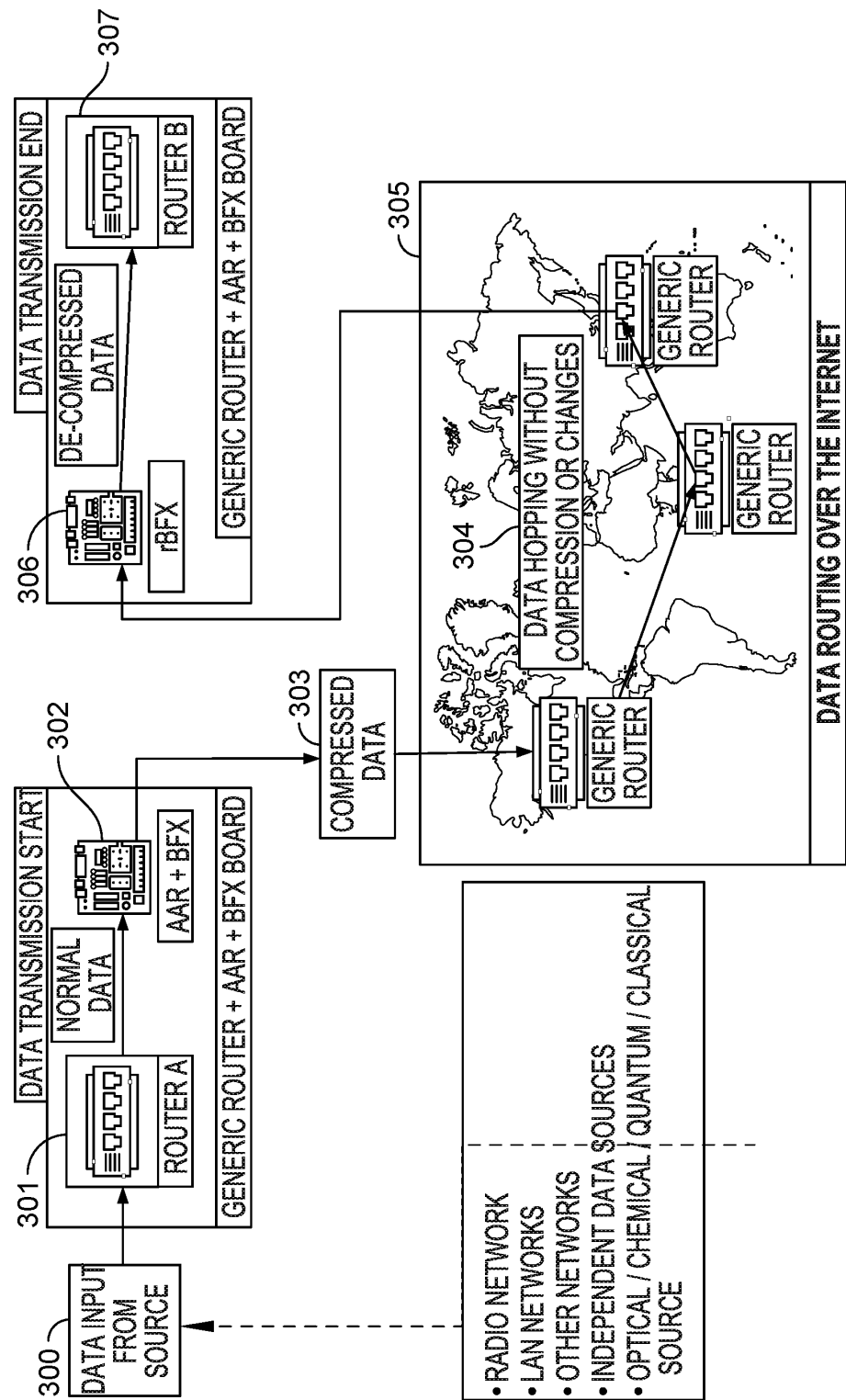


FIG. 3A

APPLICATION FOR UNLIMITED STORAGE SPACE

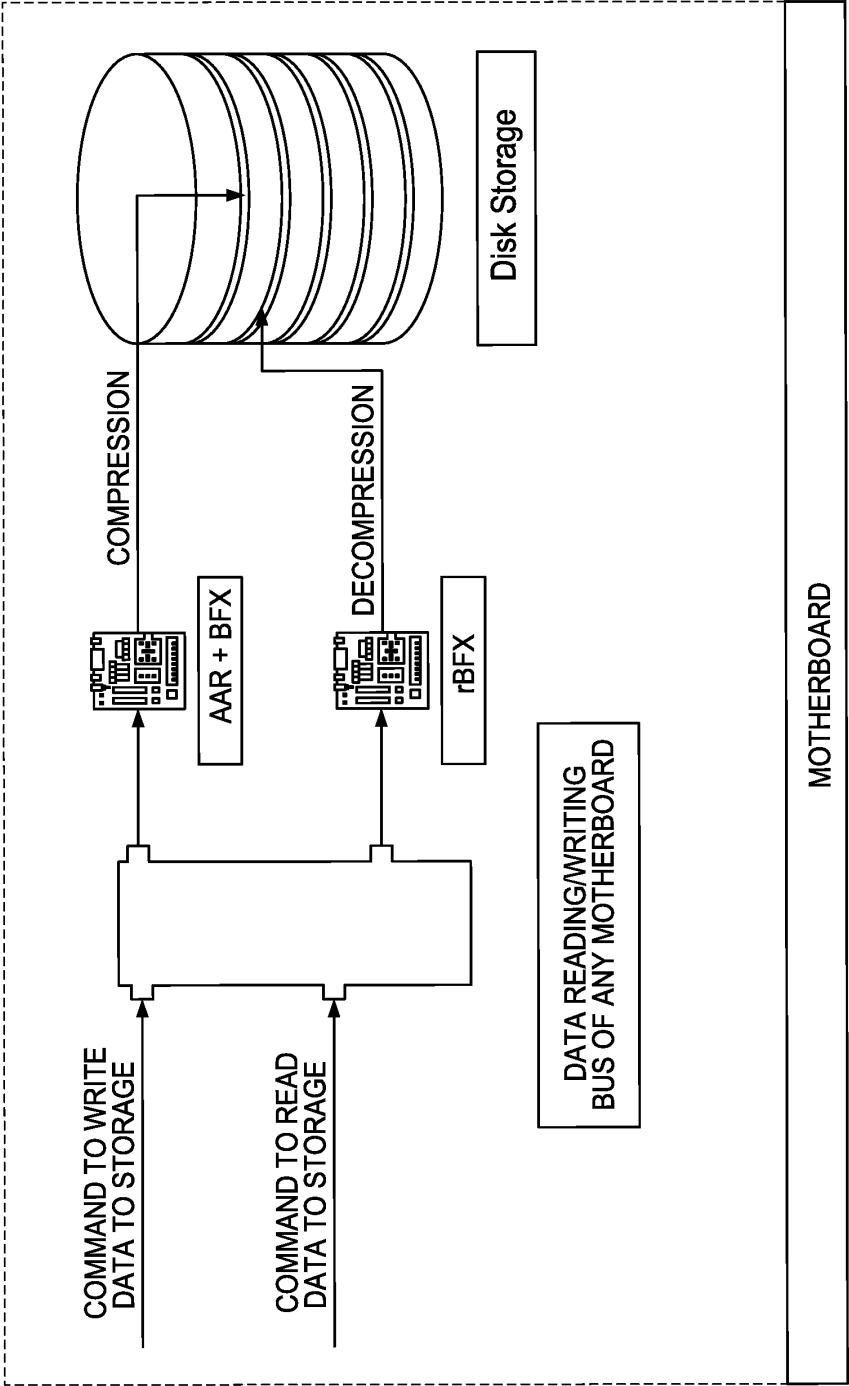
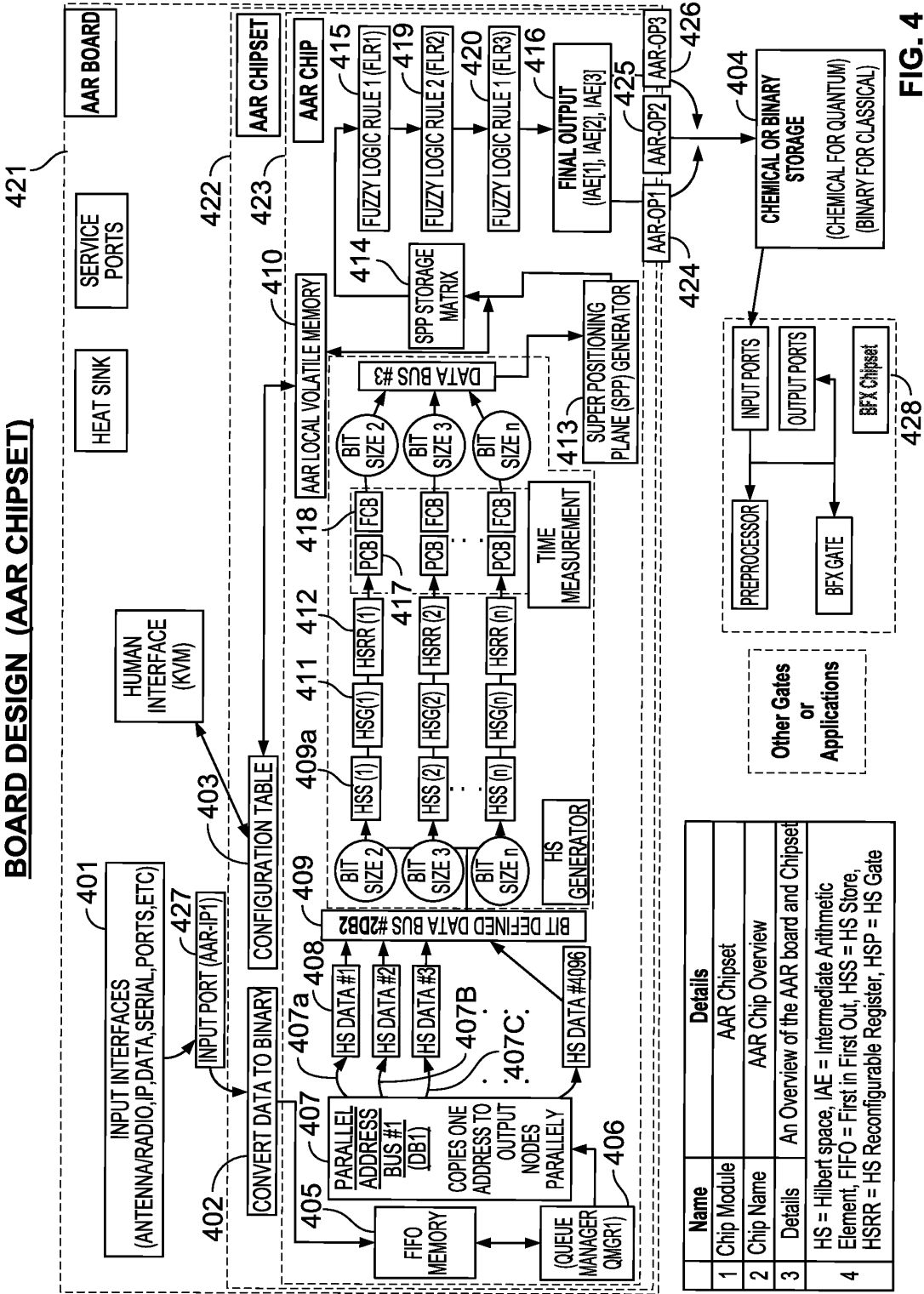


FIG. 3B



AAR CHIP ELEMENTS ARRANGEMENT

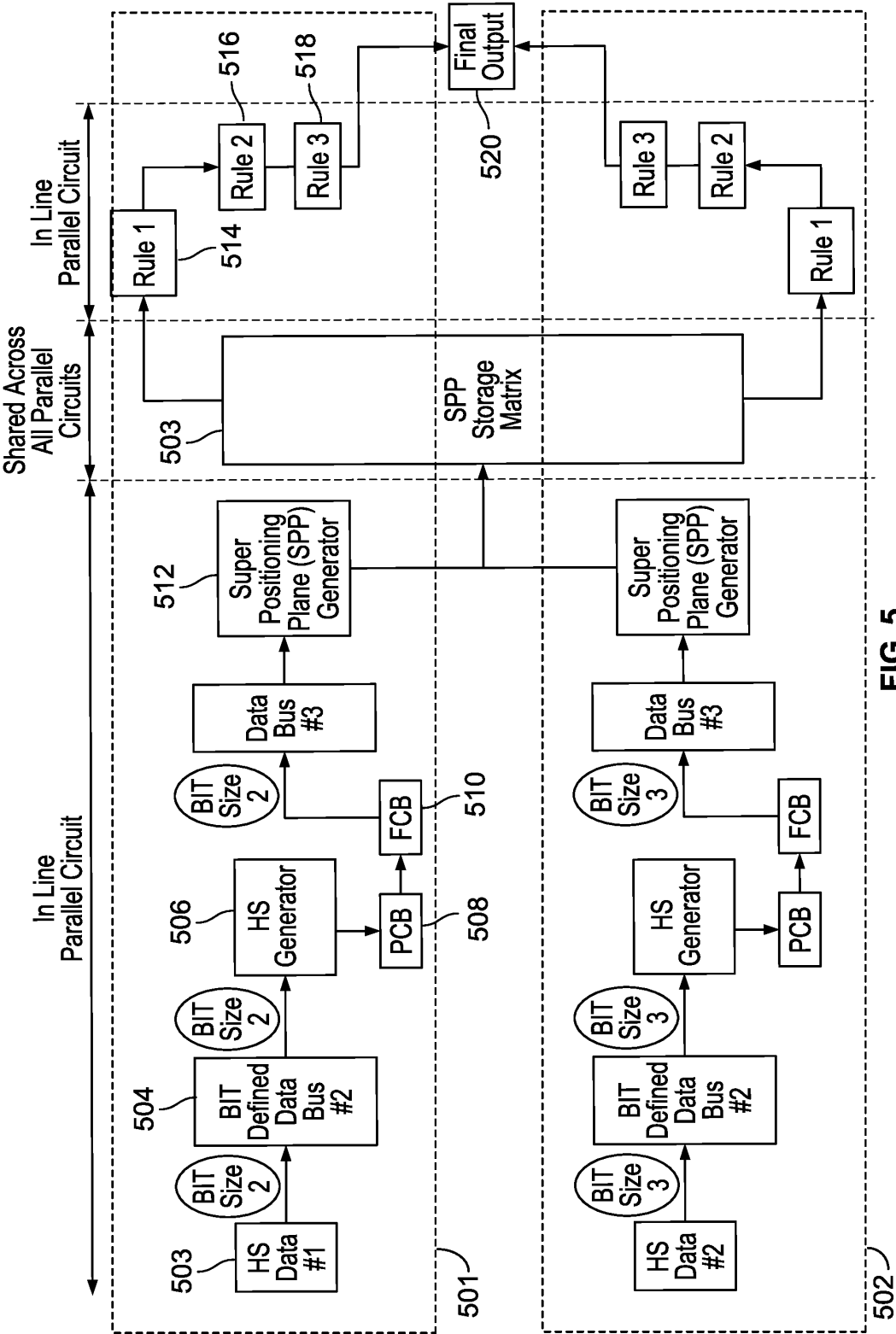
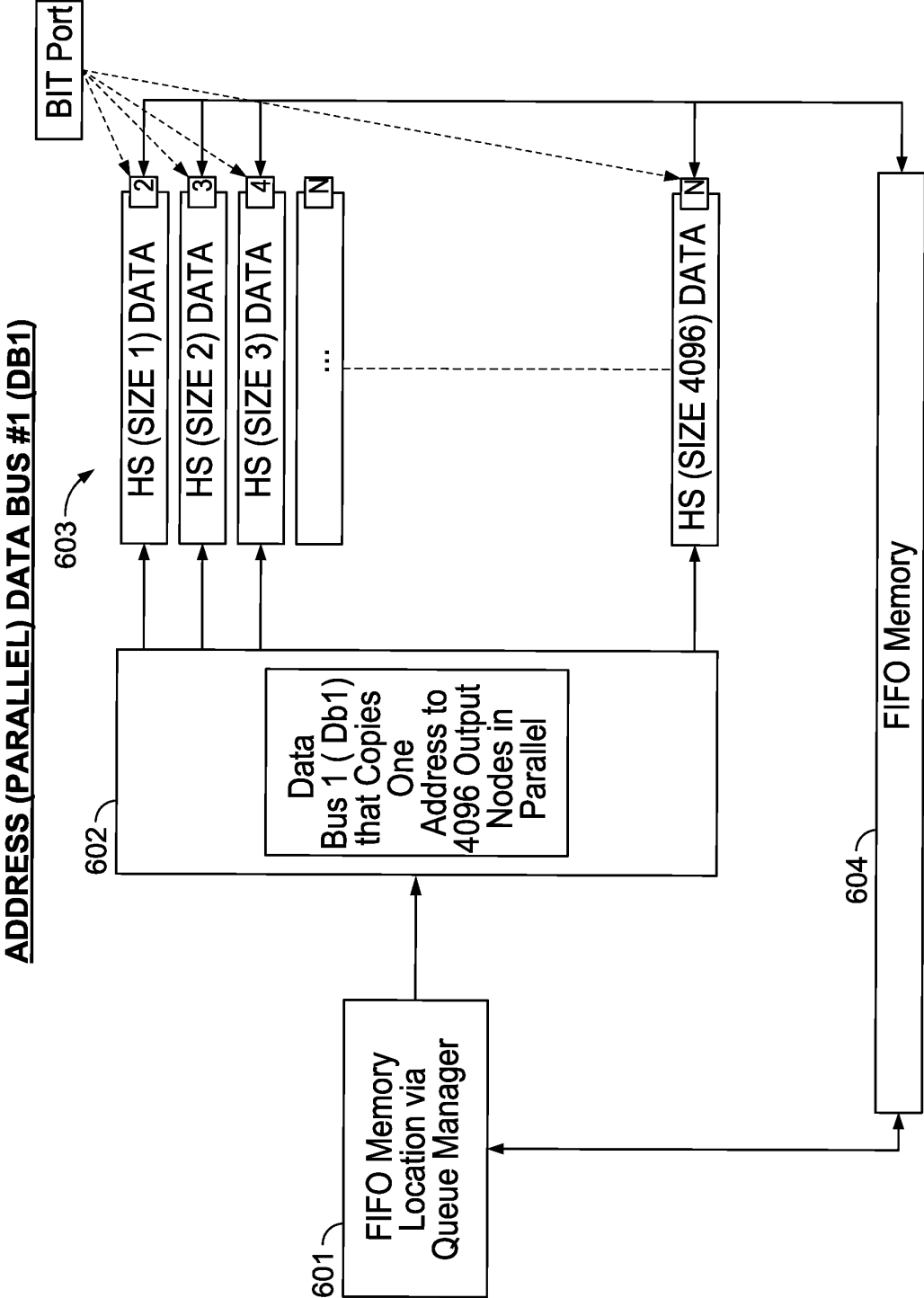


FIG. 5



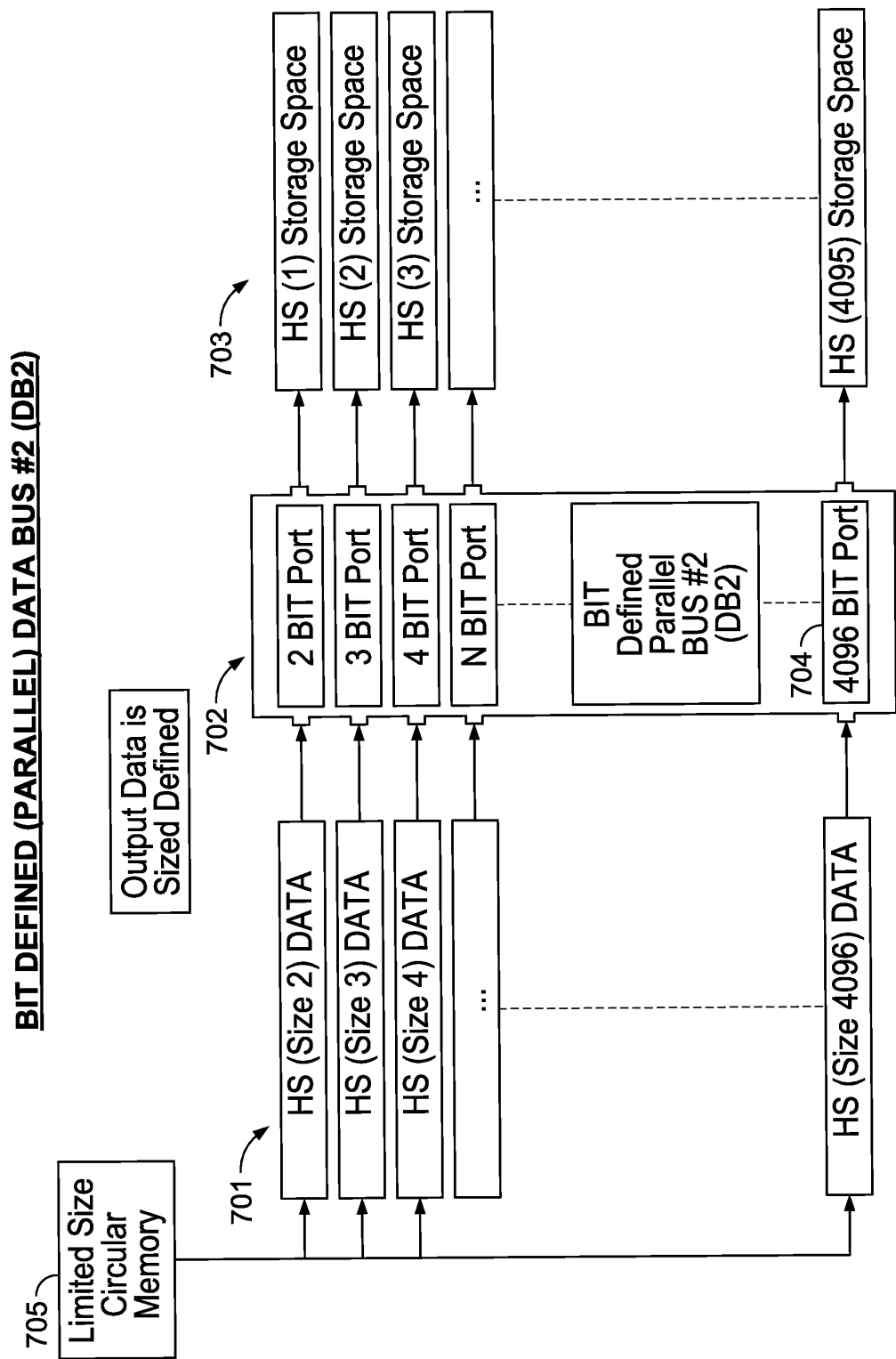


FIG. 7

DETAILS OF INPUT STREAM FOR COMPRESSION

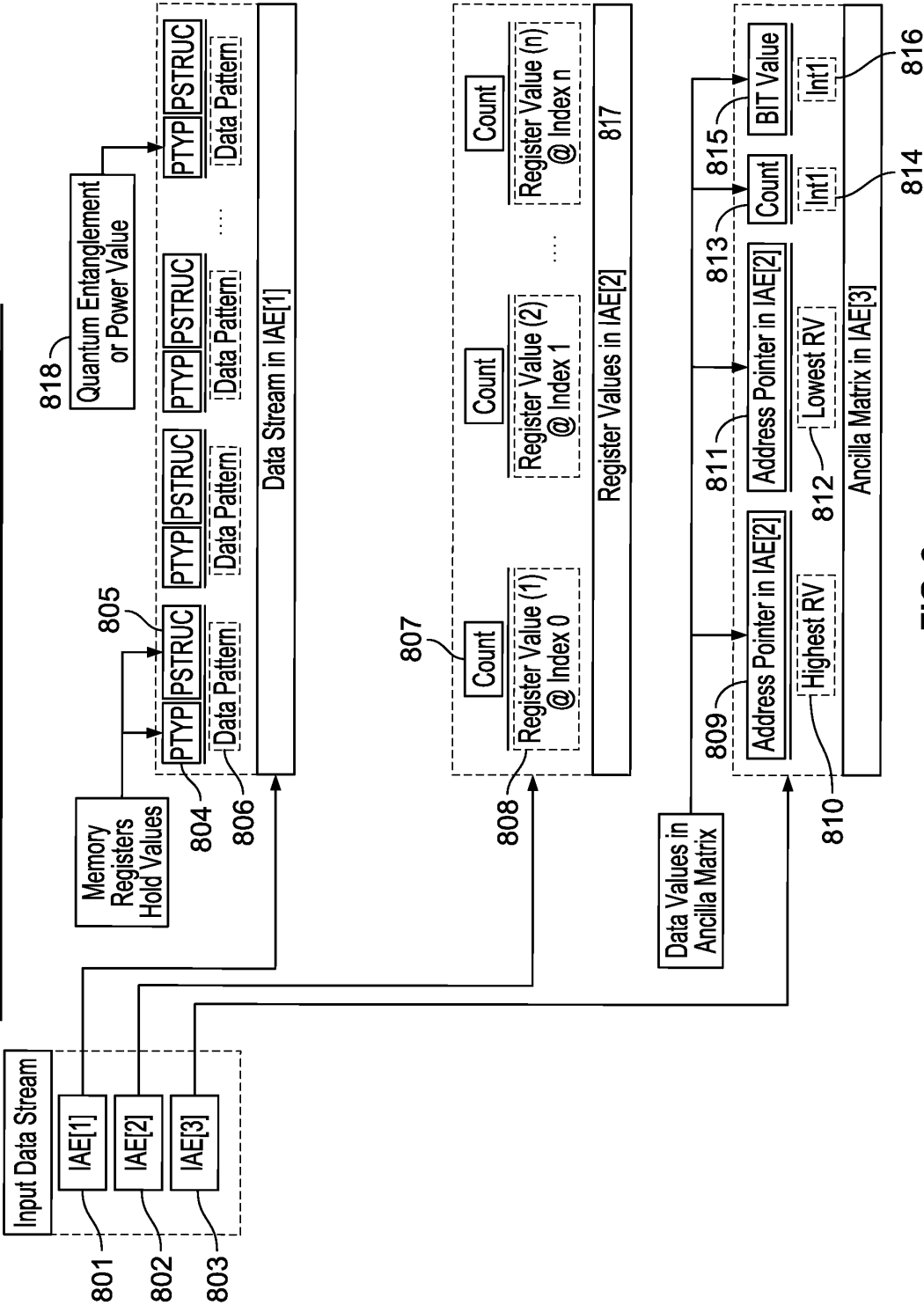


FIG. 8

HS GENERATOR (1 OF 3)
CREATE REGISTER MATRIX IN IAE[2]

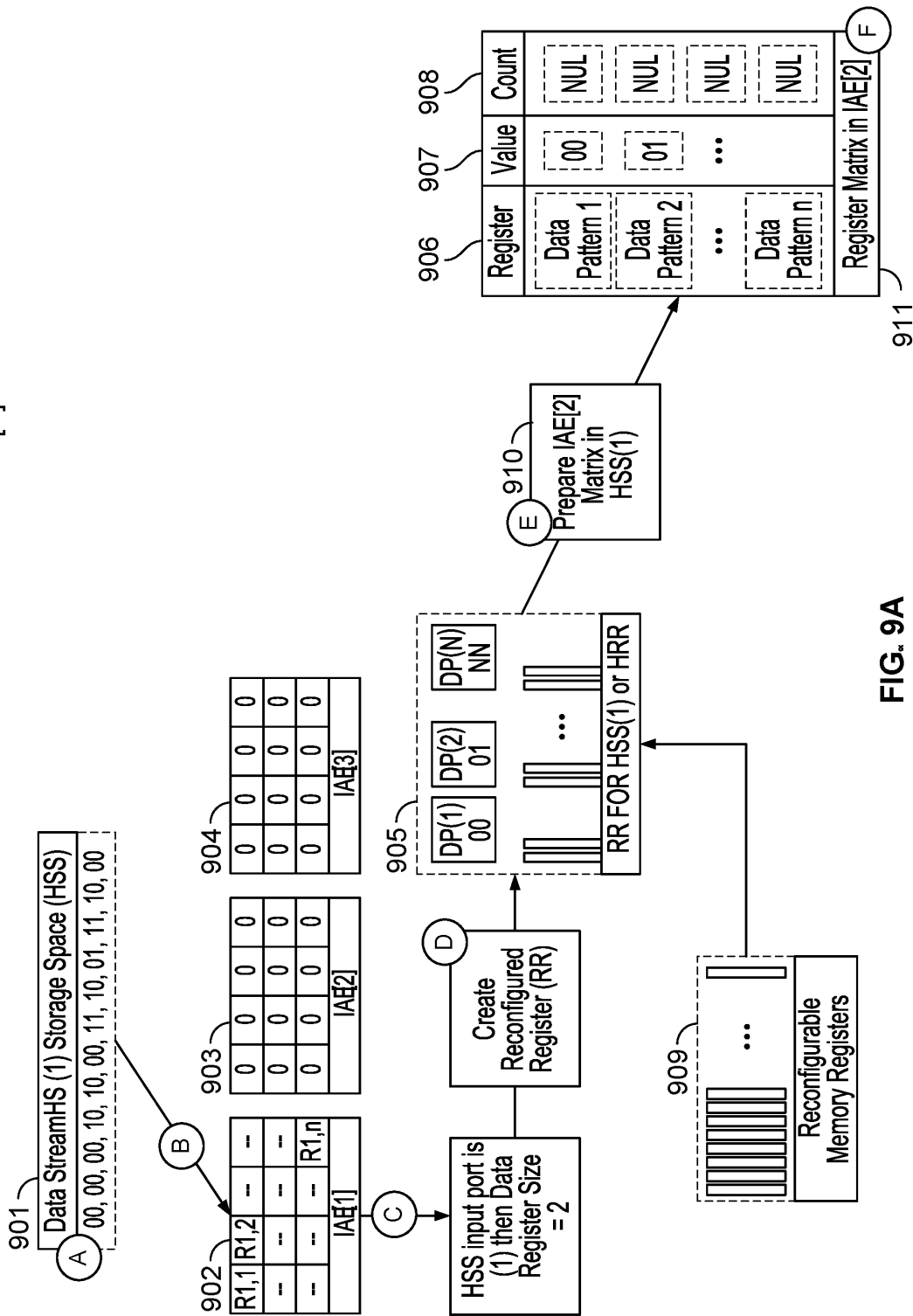


FIG. 9A

HS GENERATOR (2 OF 3)

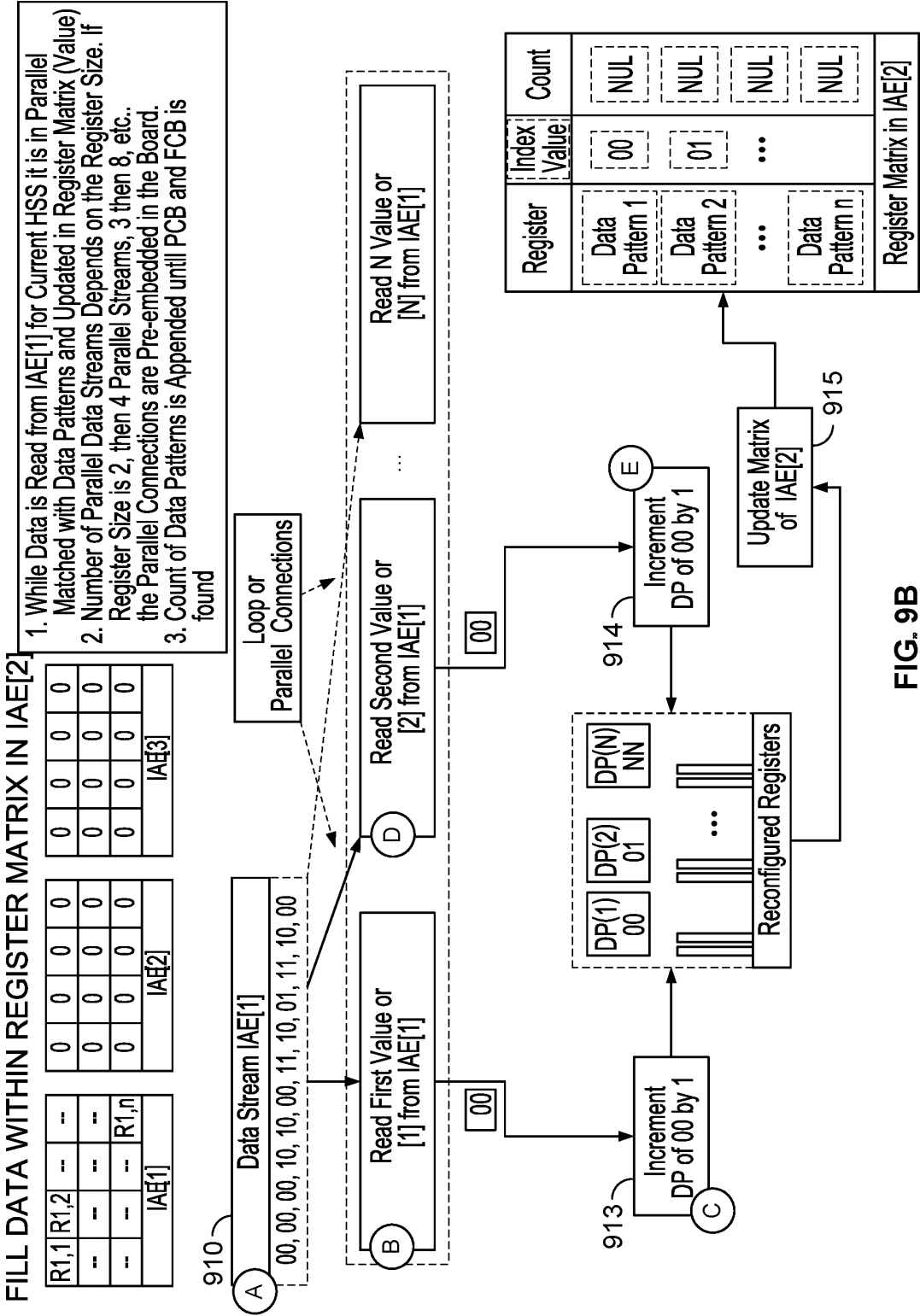


FIG. 9B

HS GENERATOR (3 OF 3)

TIME MEASUREMENT - TERMINATION OF HS WRITE OPERATIONS FOR IAE(1) AND IAE(2)

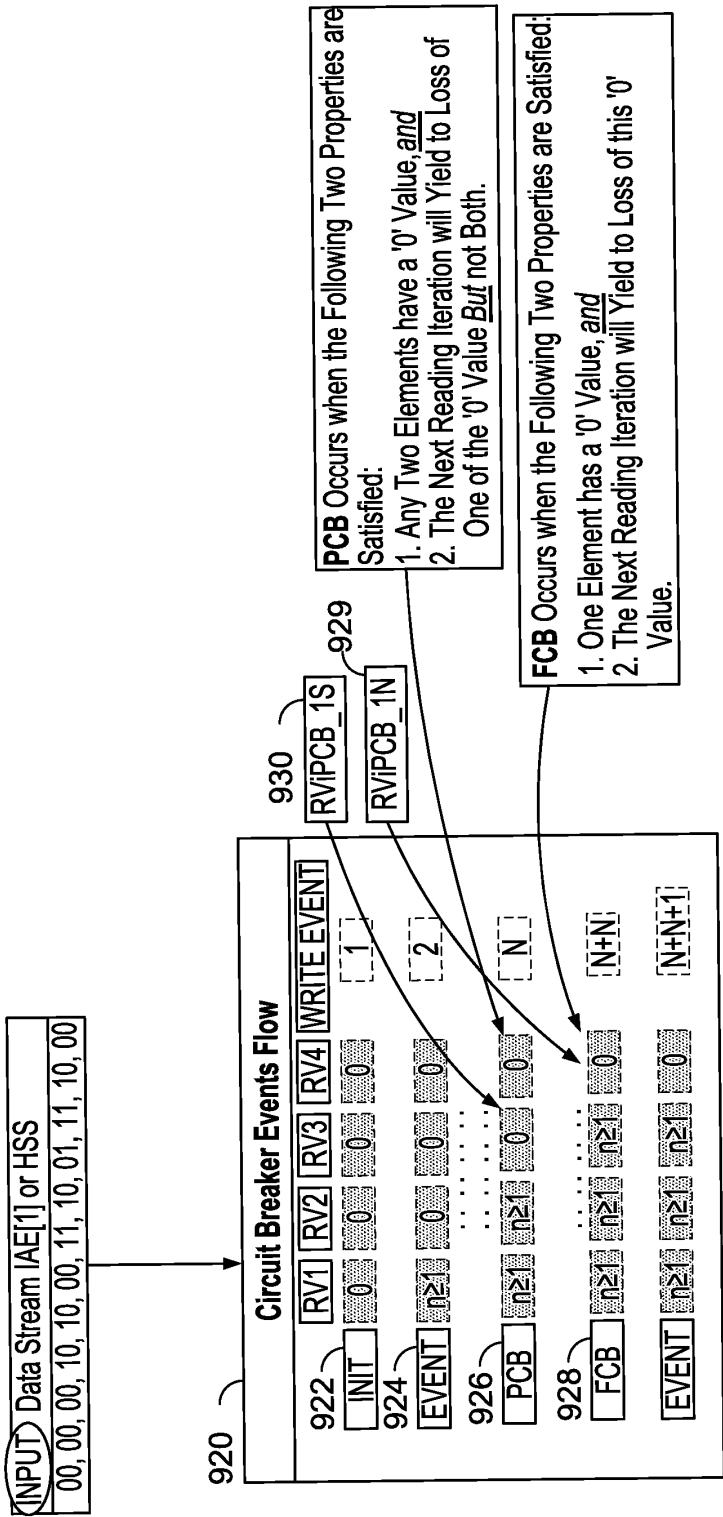


FIG. 9C

HS GENERATOR ARCHITECTURE

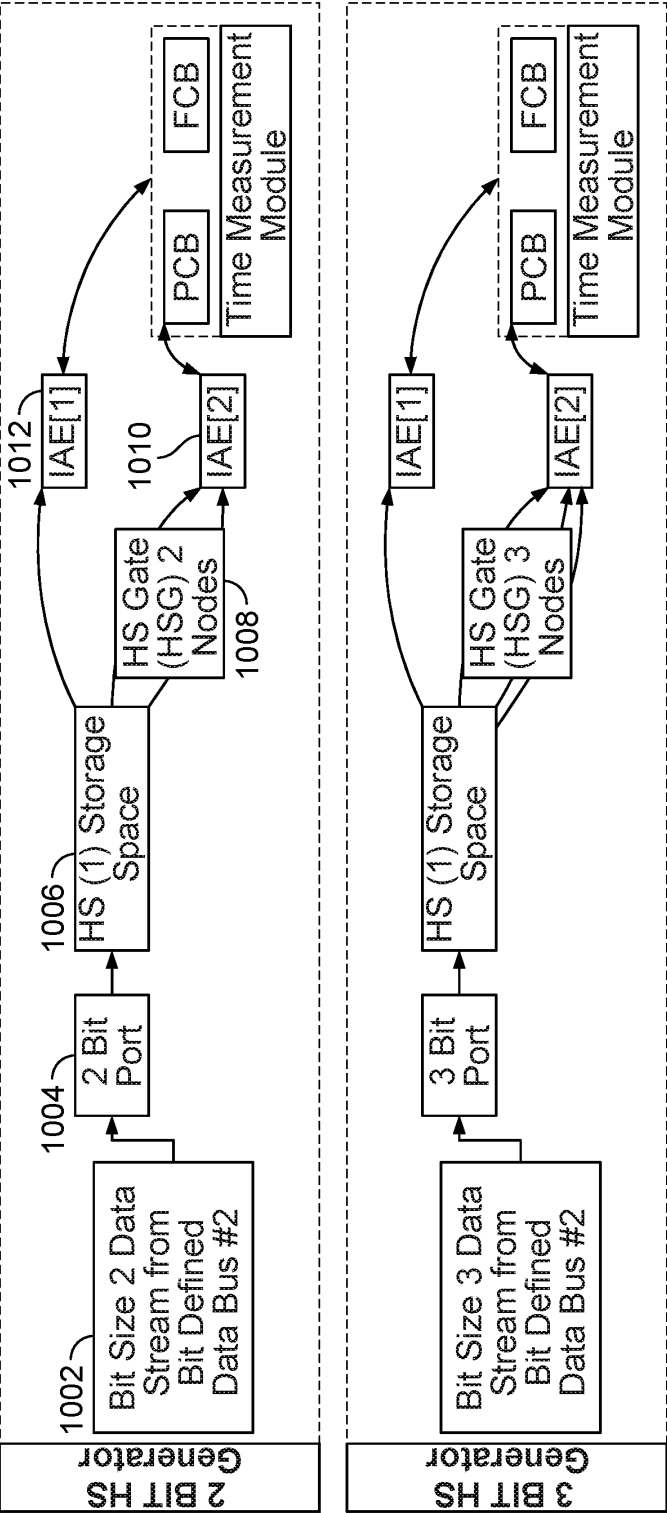


Table 1 :: Parallel Logic

Port Size (Bits)	Parallel Streams for IAE[2]
2	4
3	8
4	16
..	..

FIG. 10

SUPER POSITIONING PLANE GENERATOR

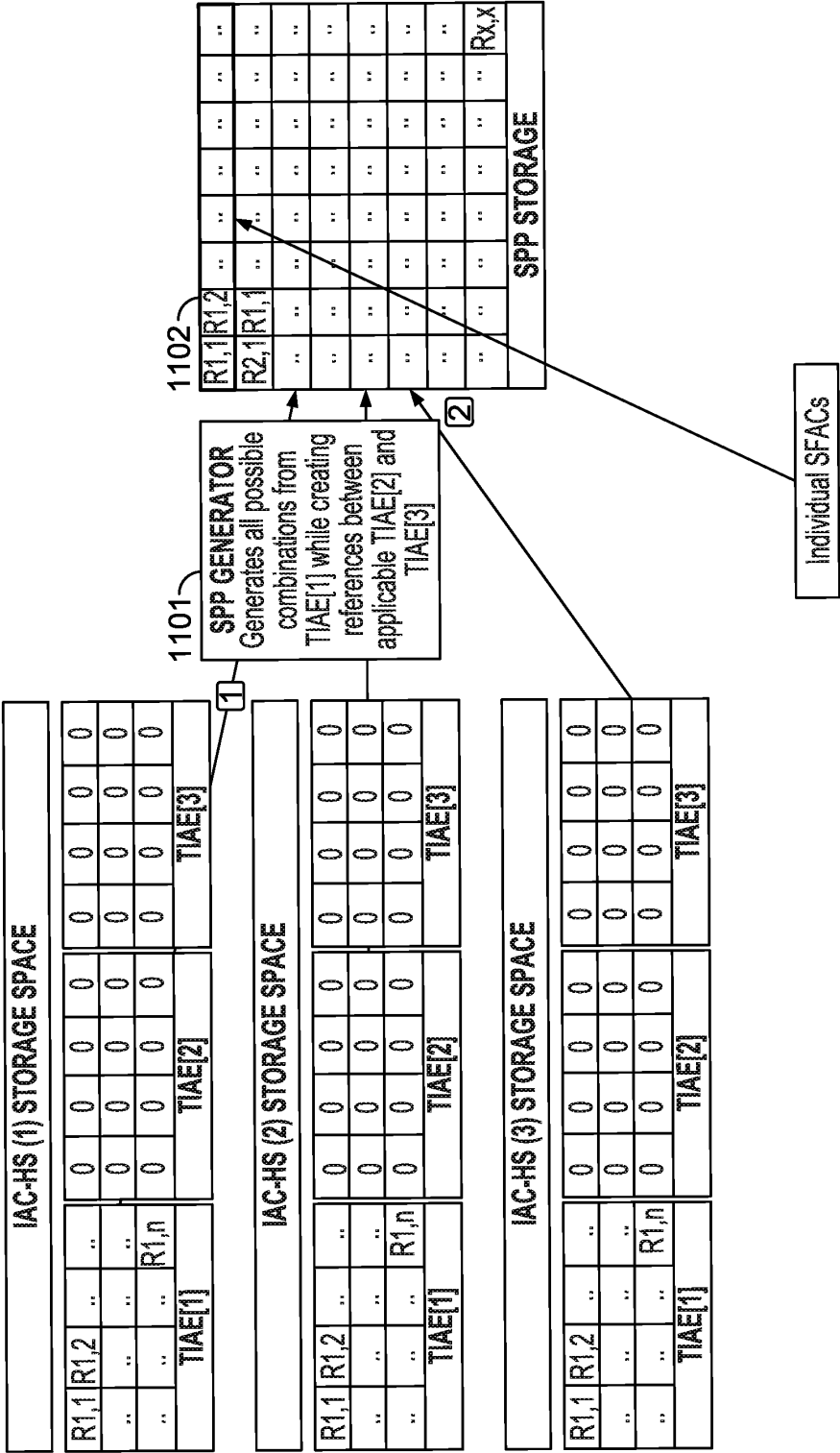


FIG. 11A

FCB AND PCB DETECTION CHARTS

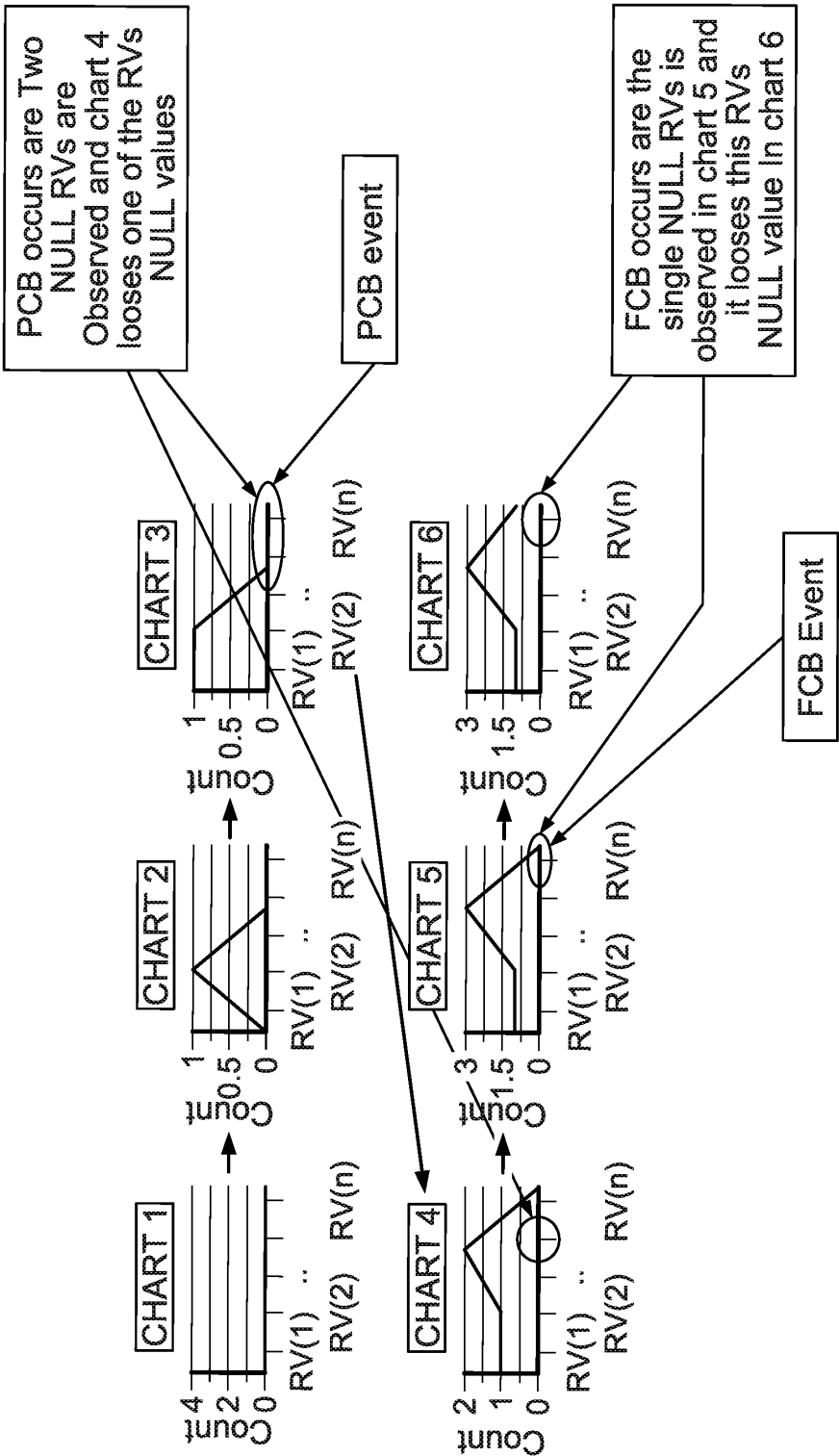


FIG. 11B

SSP GENERATION TO FINAL OUTPUT

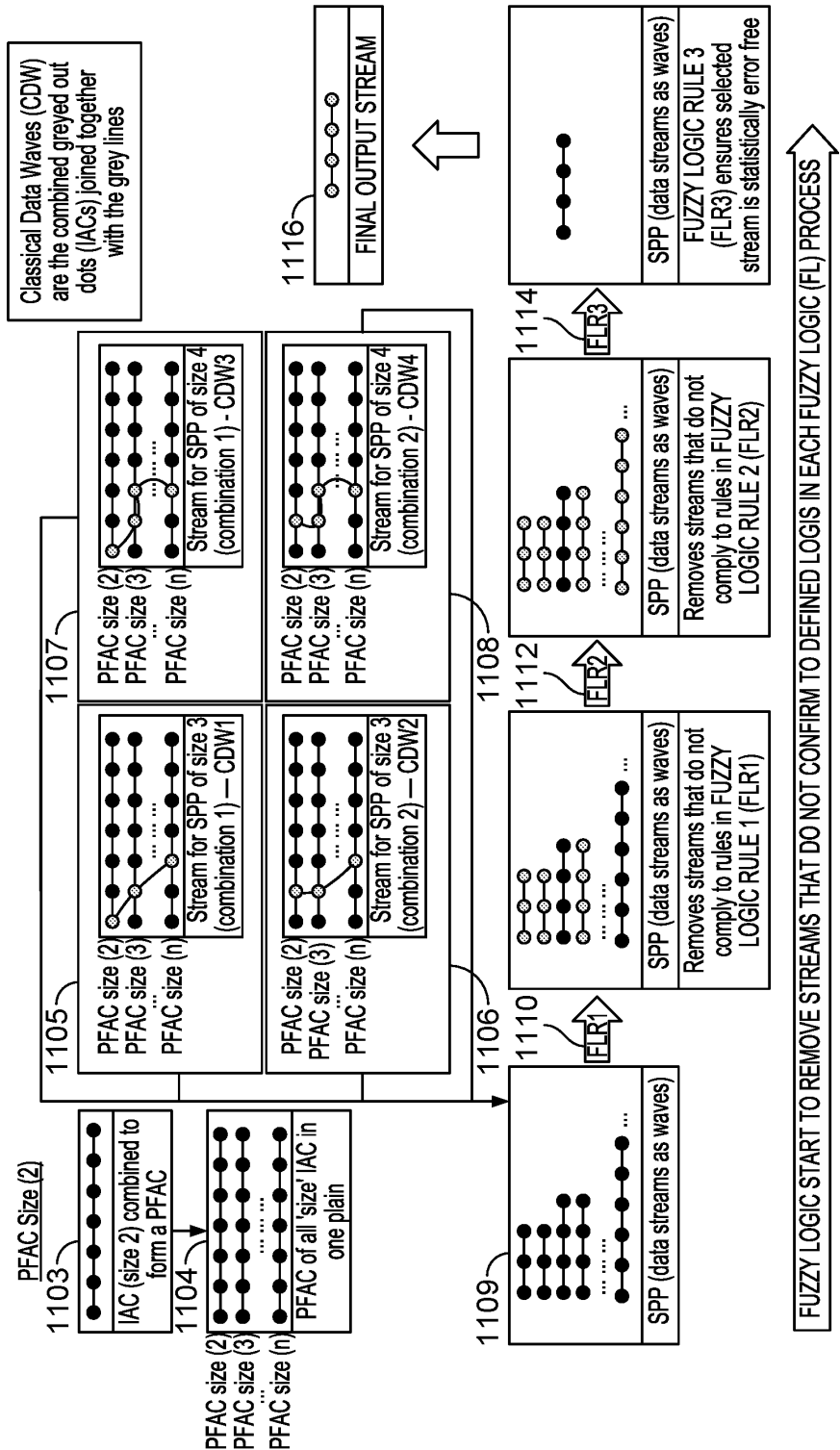
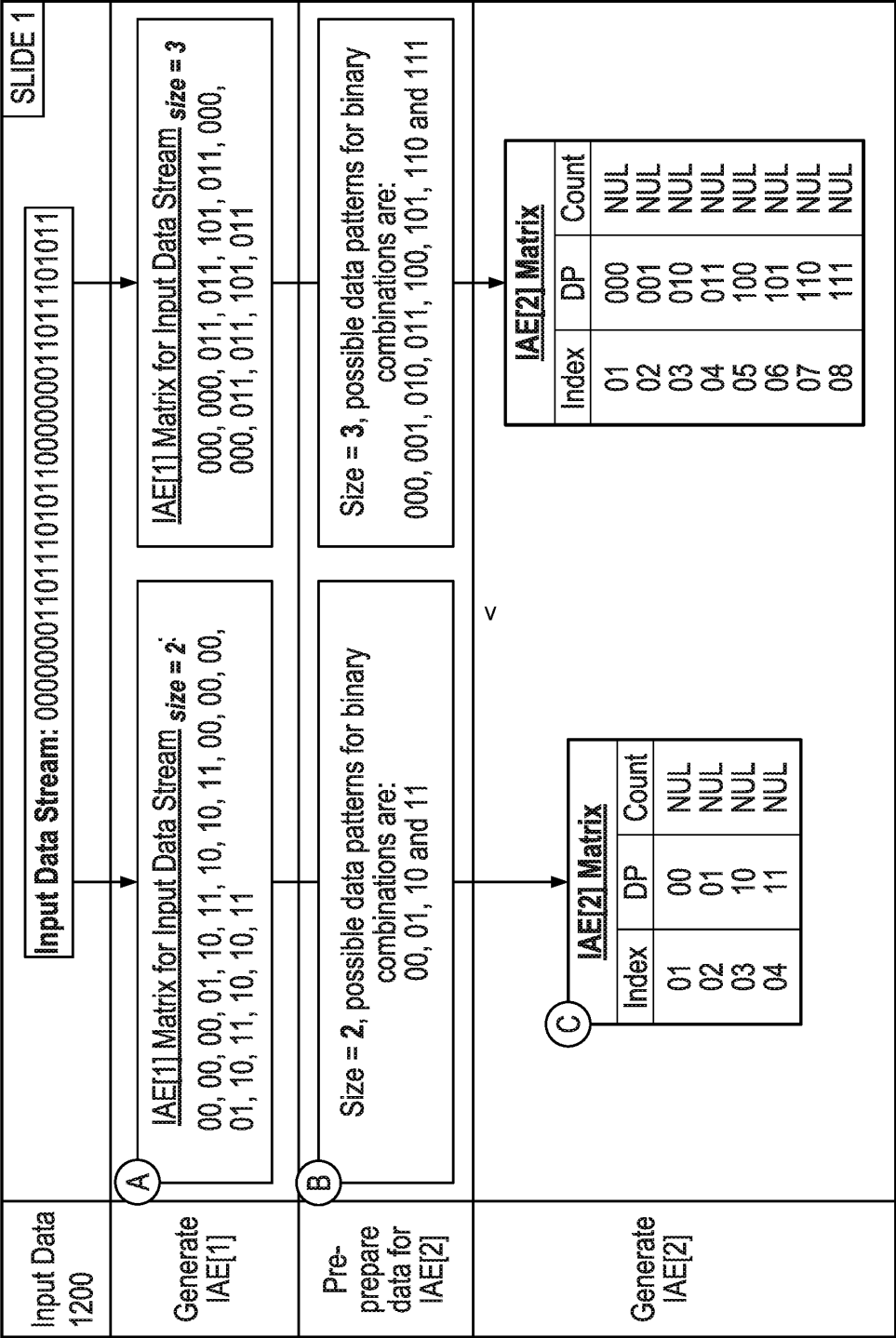


FIG. 11C



Generate IAE[1]

Pre-prepare data for IAE[2]

Generate IAE[2]

FIG. 12A

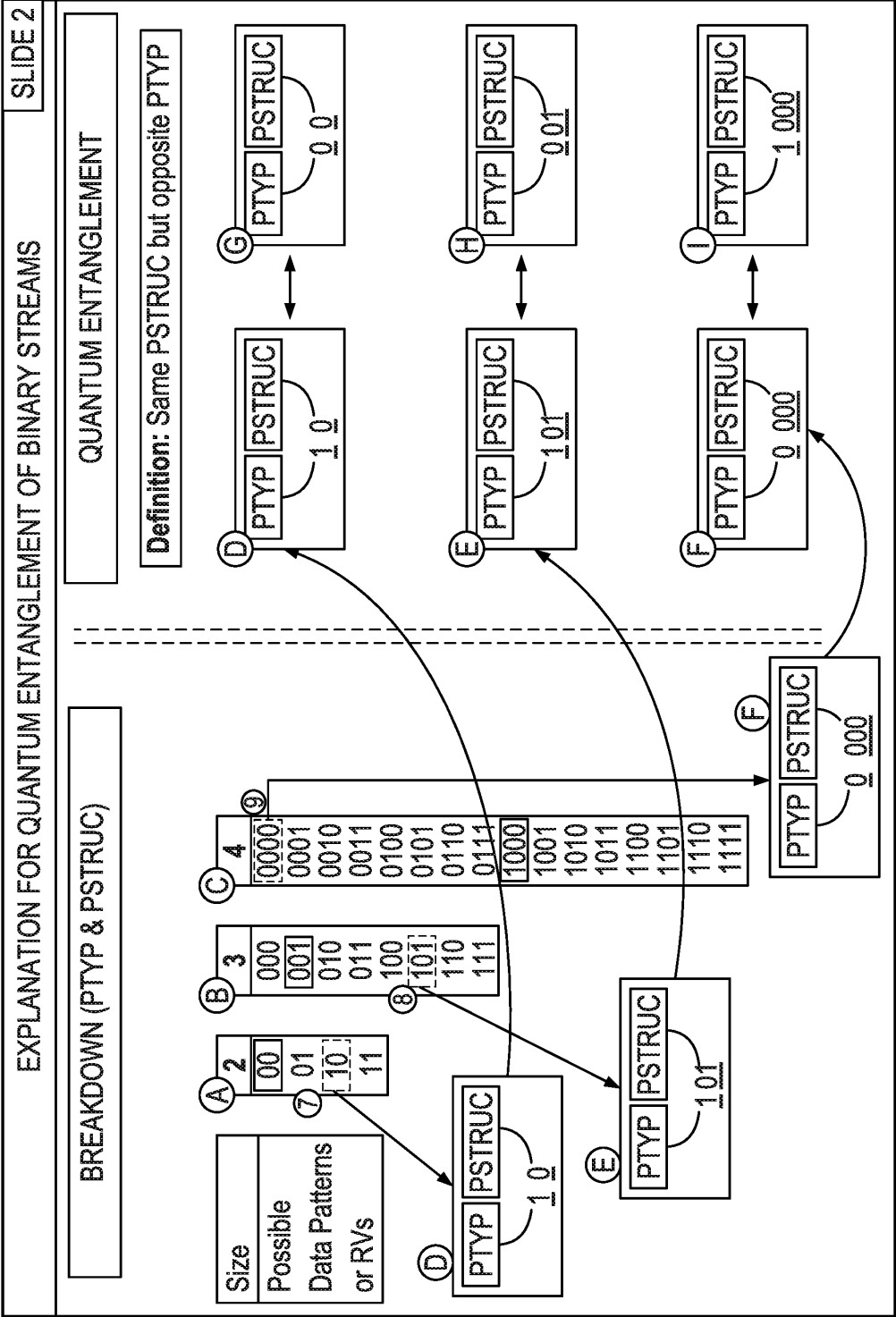


FIG. 12B

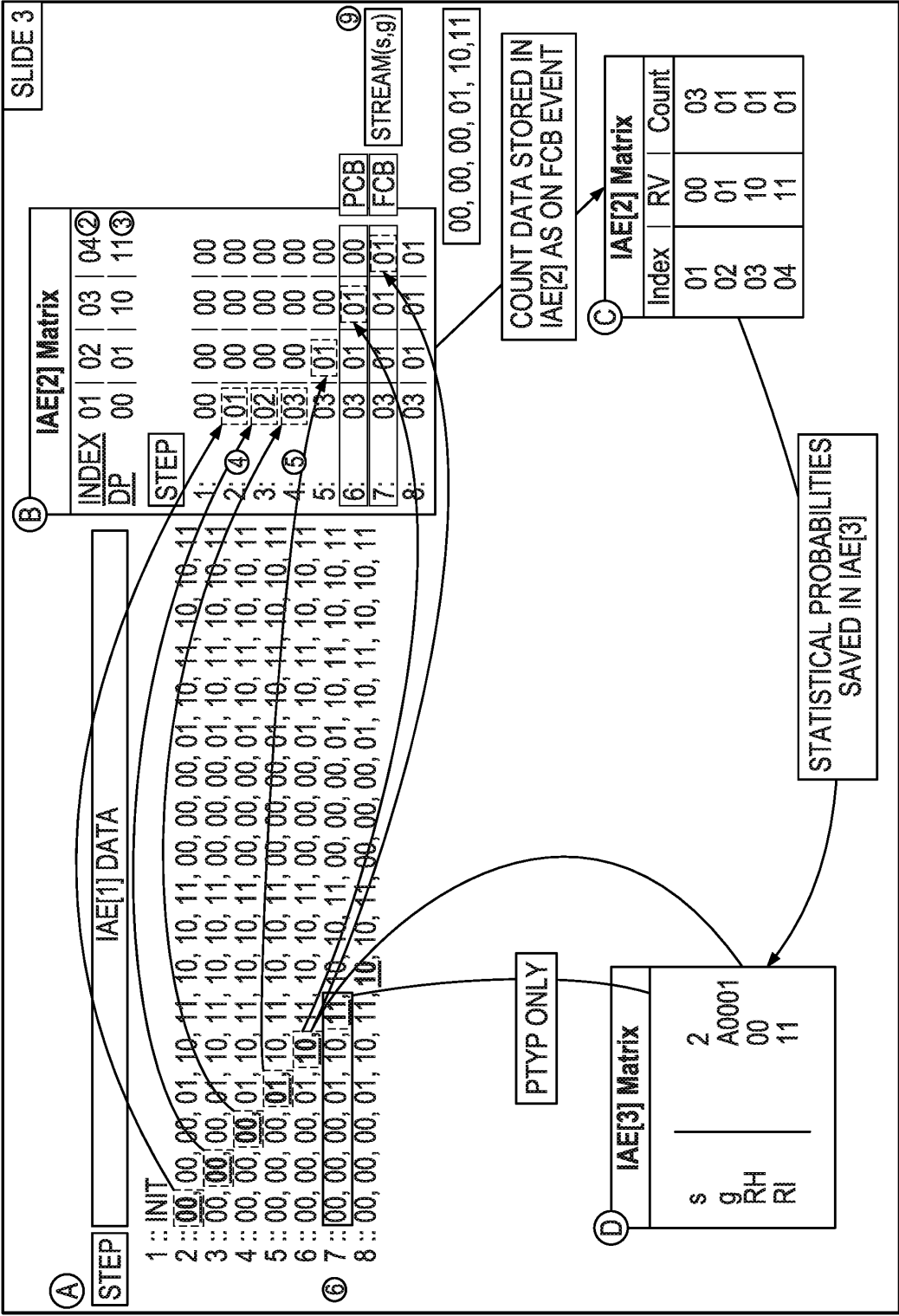


FIG. 12C

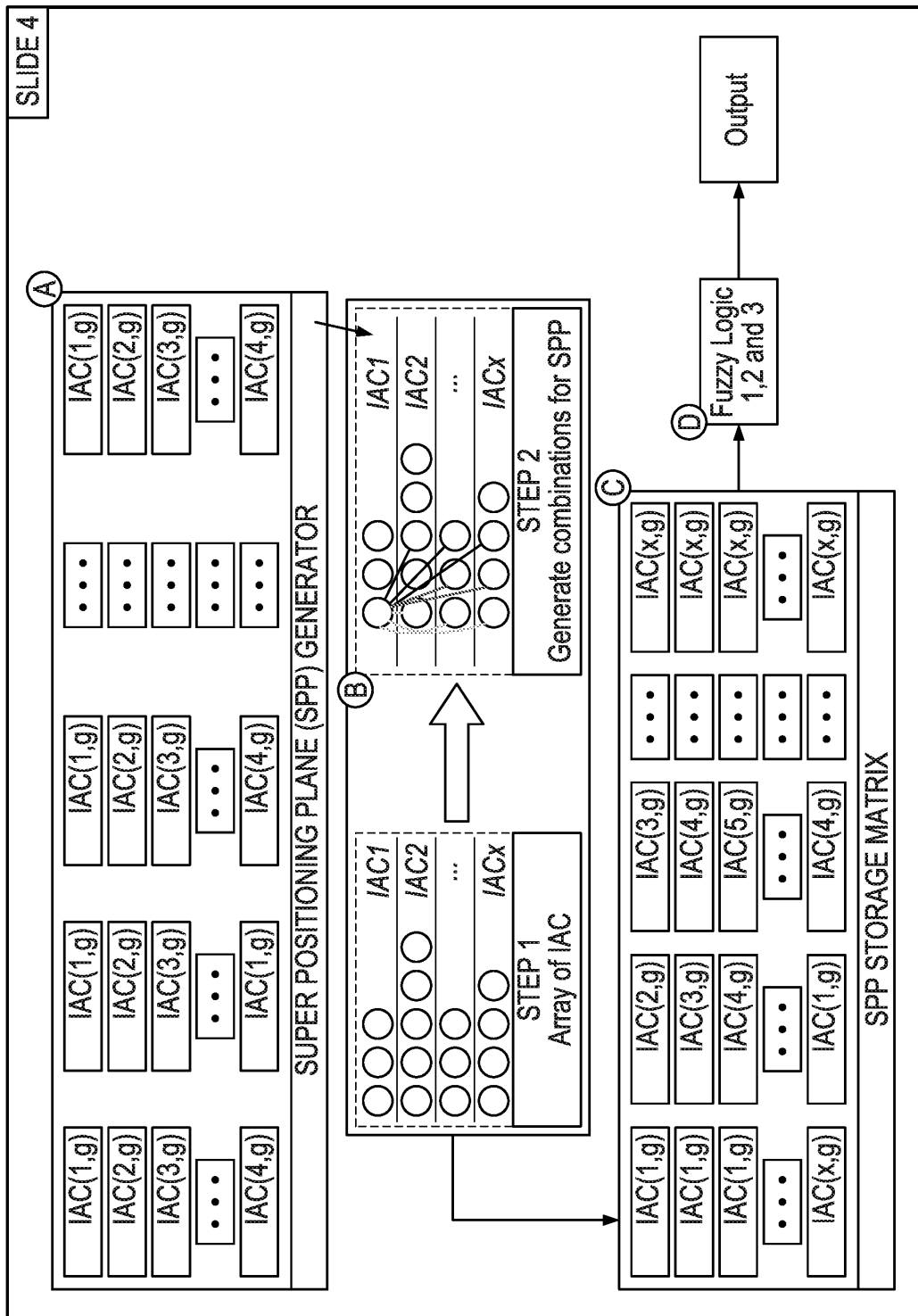


FIG. 12D

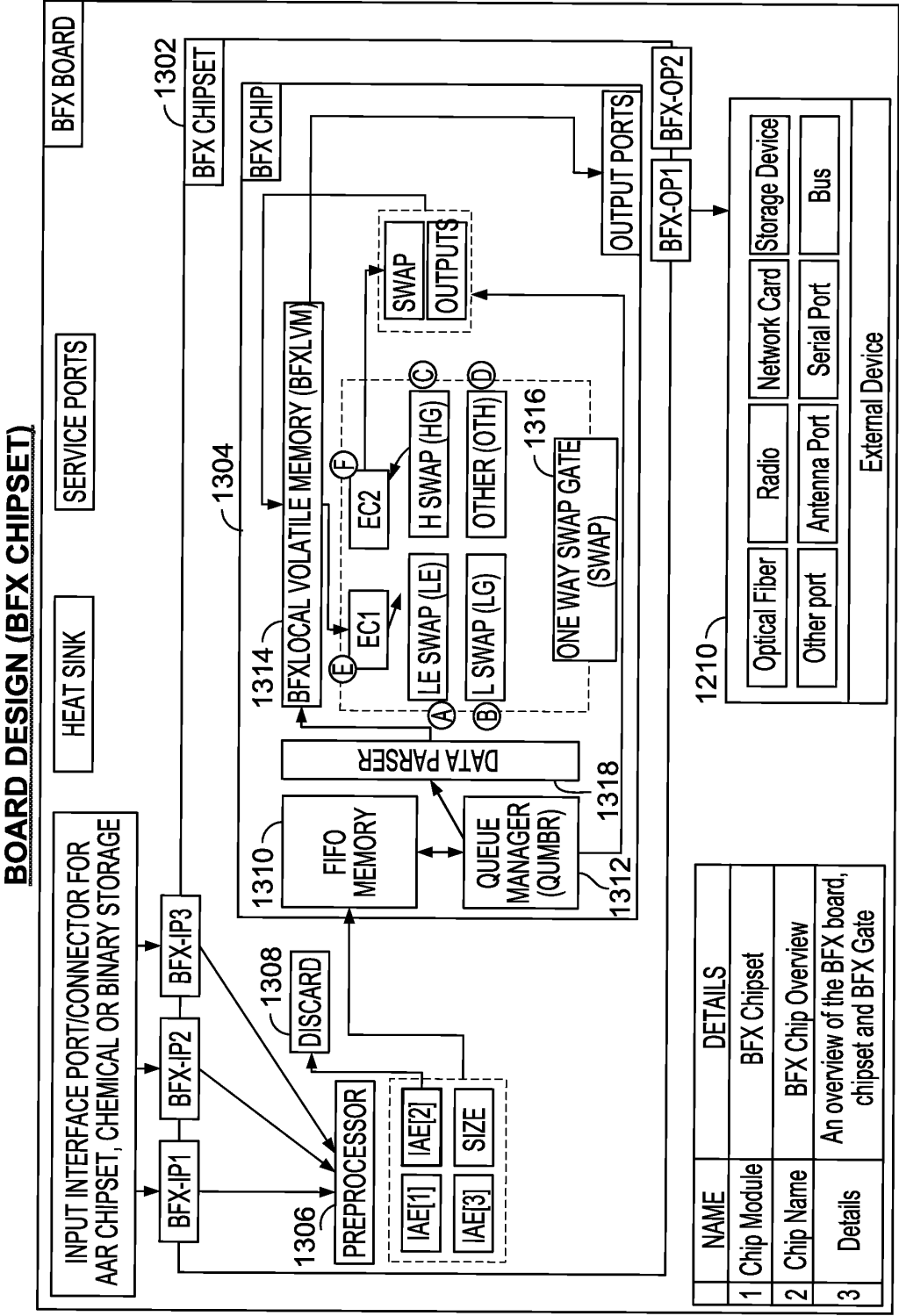


FIG. 13

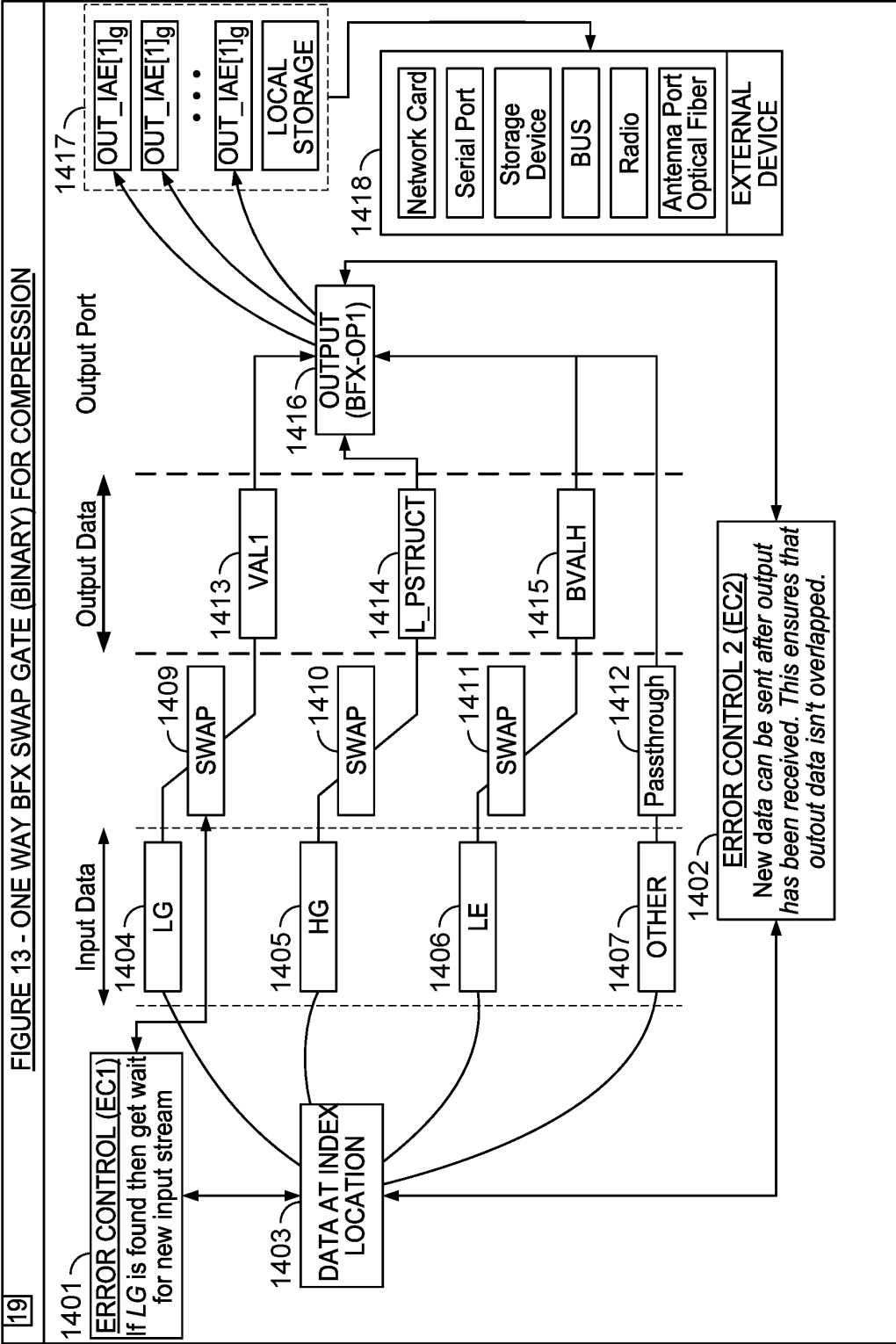


FIG. 14

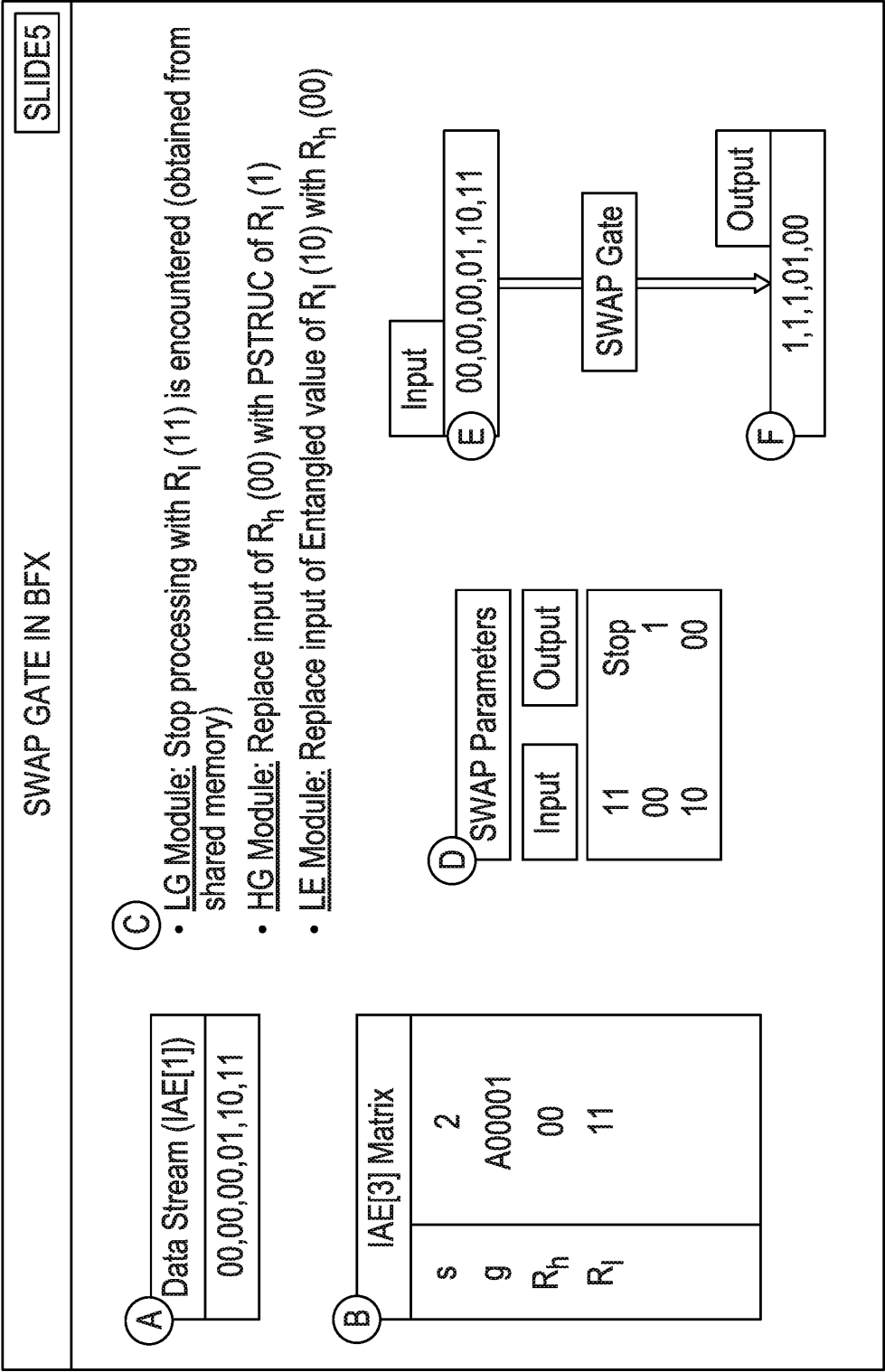


FIG. 15

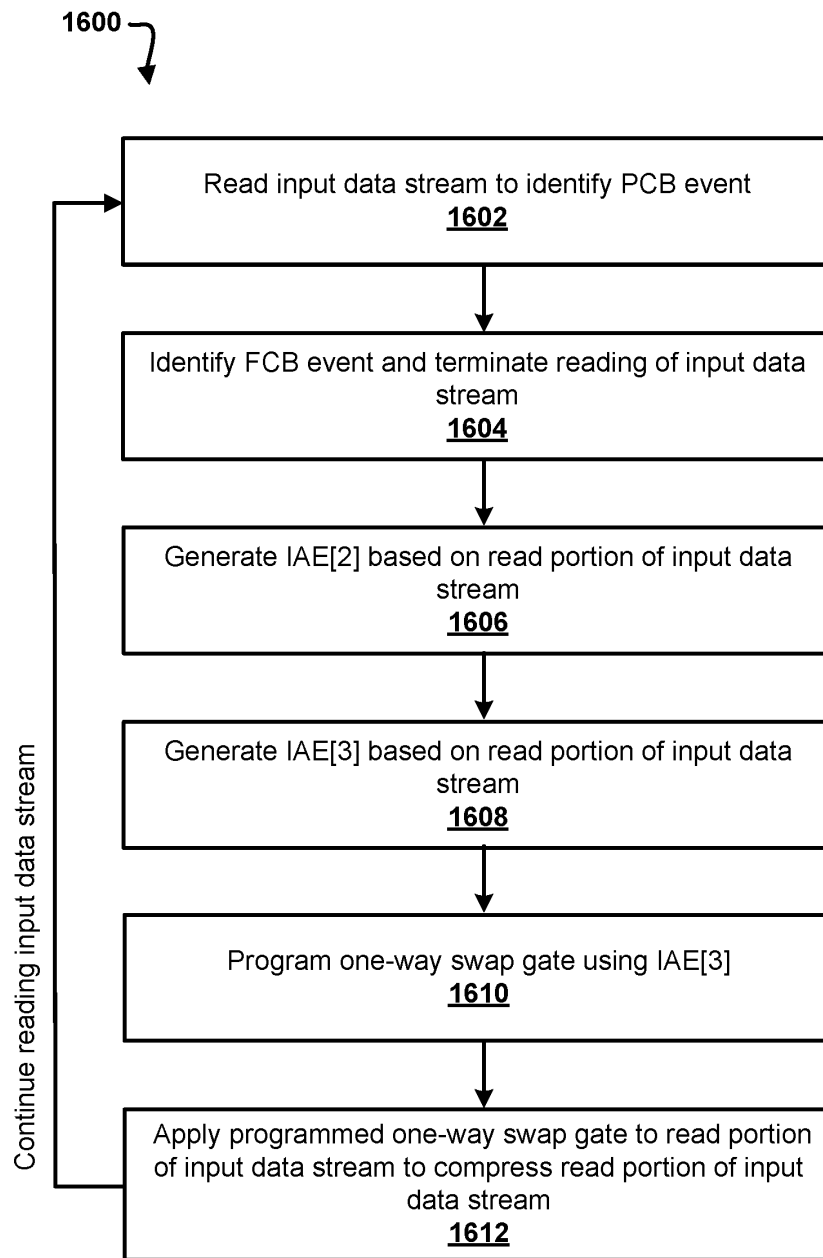


FIG. 16

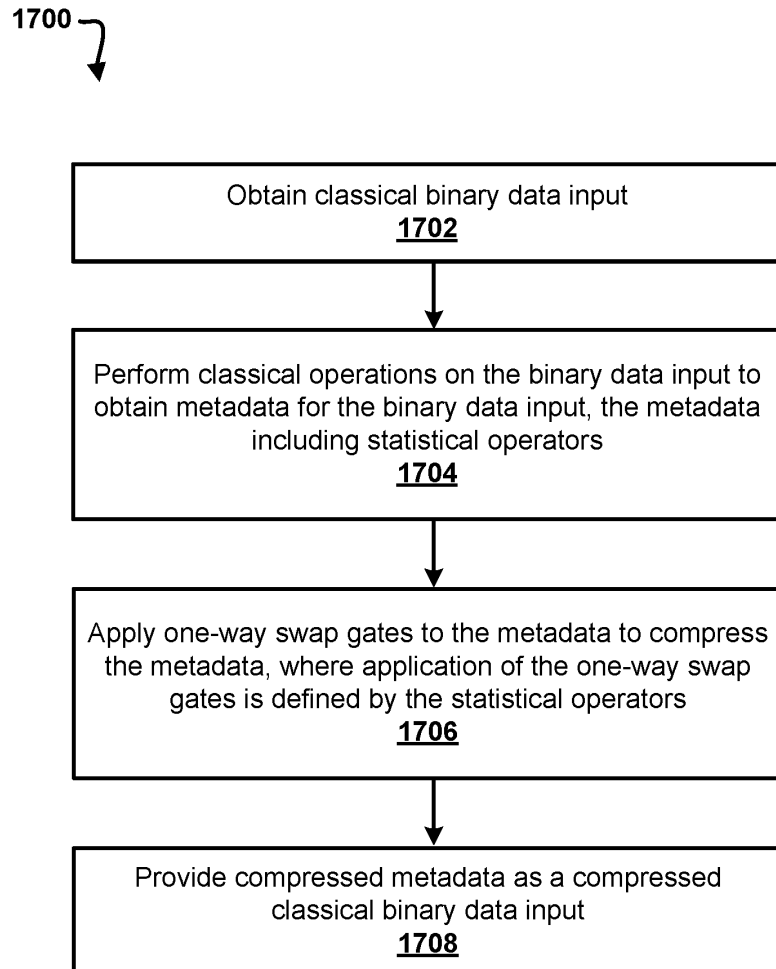


FIG. 17

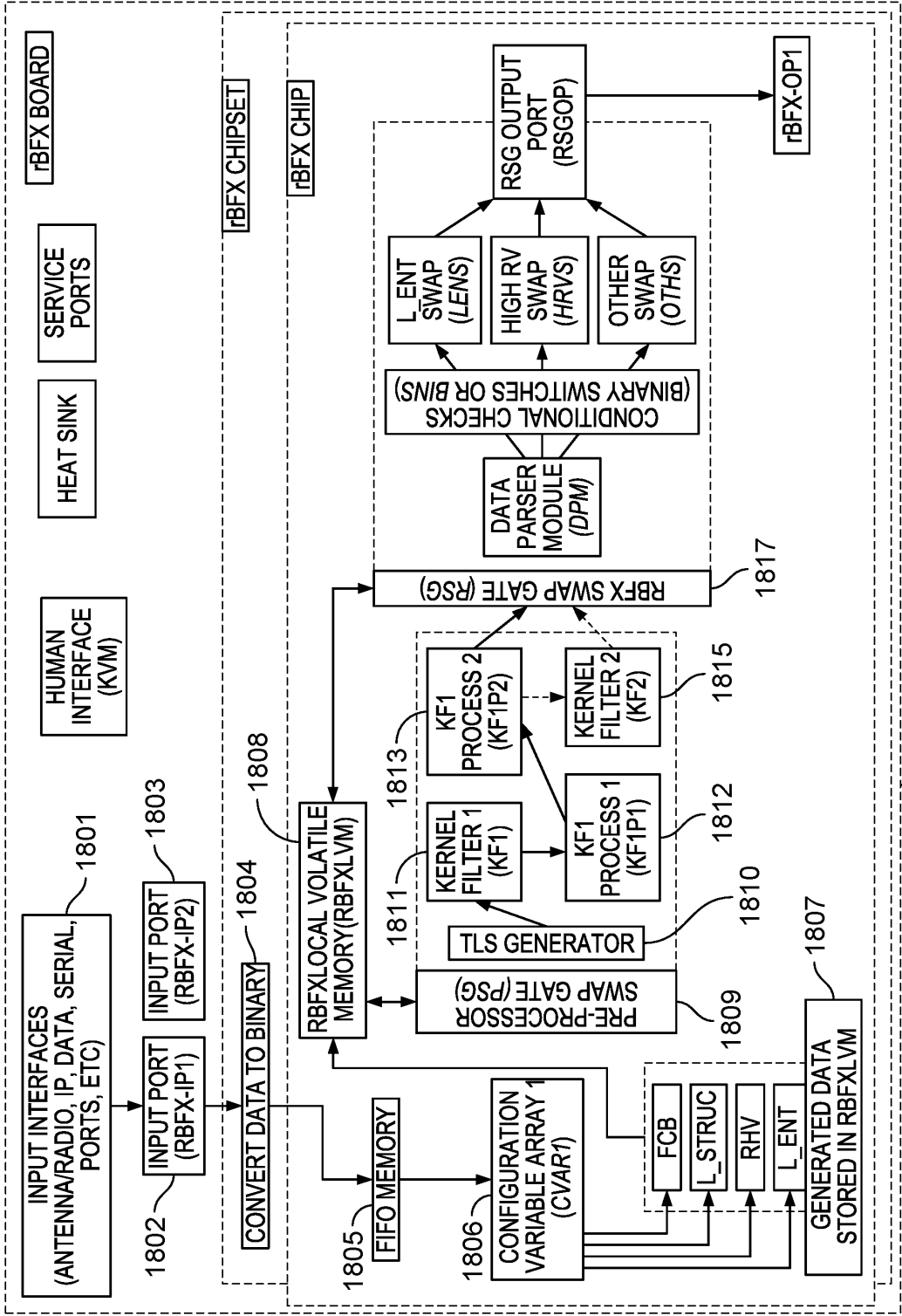


FIG. 18

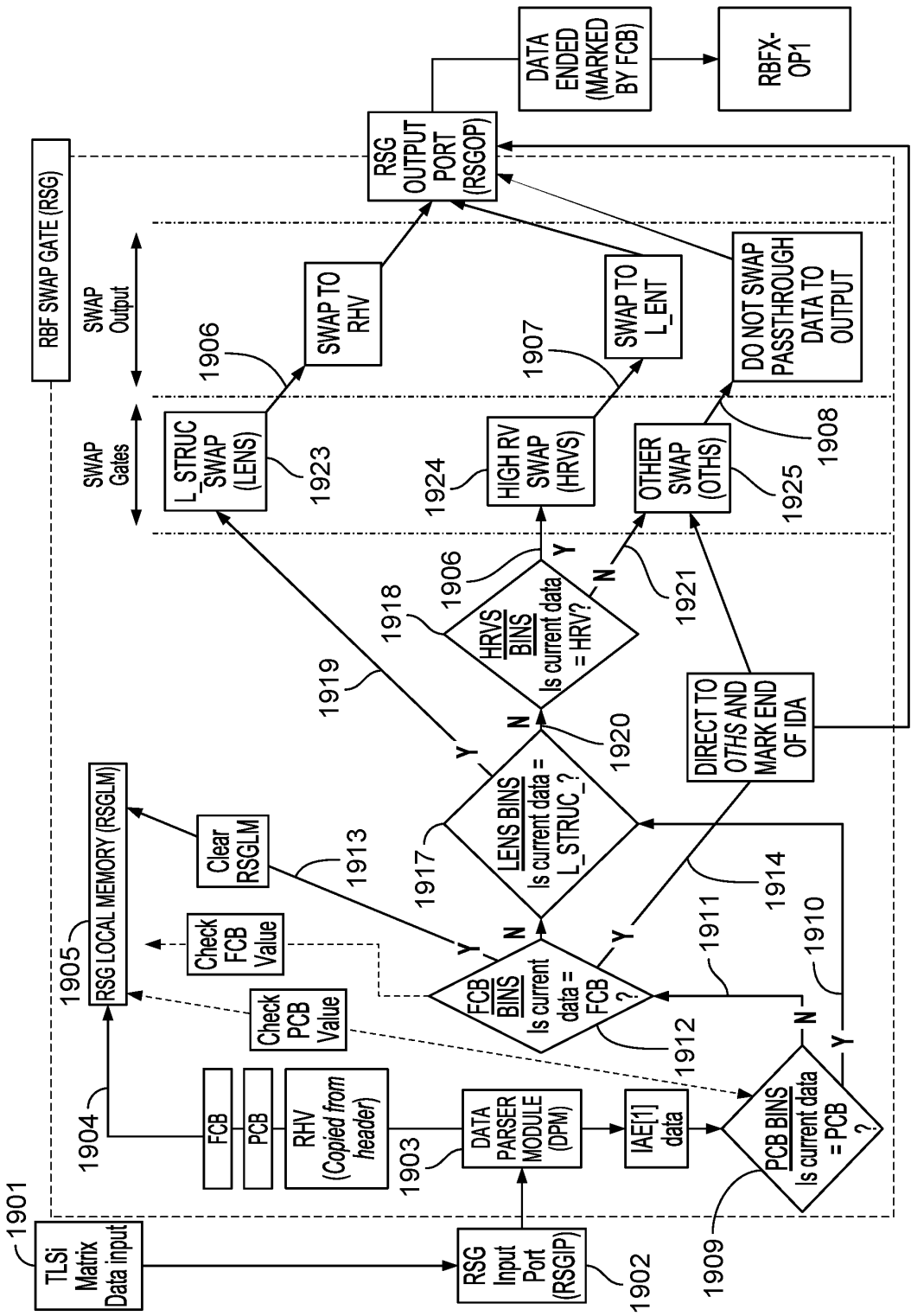


FIG. 19

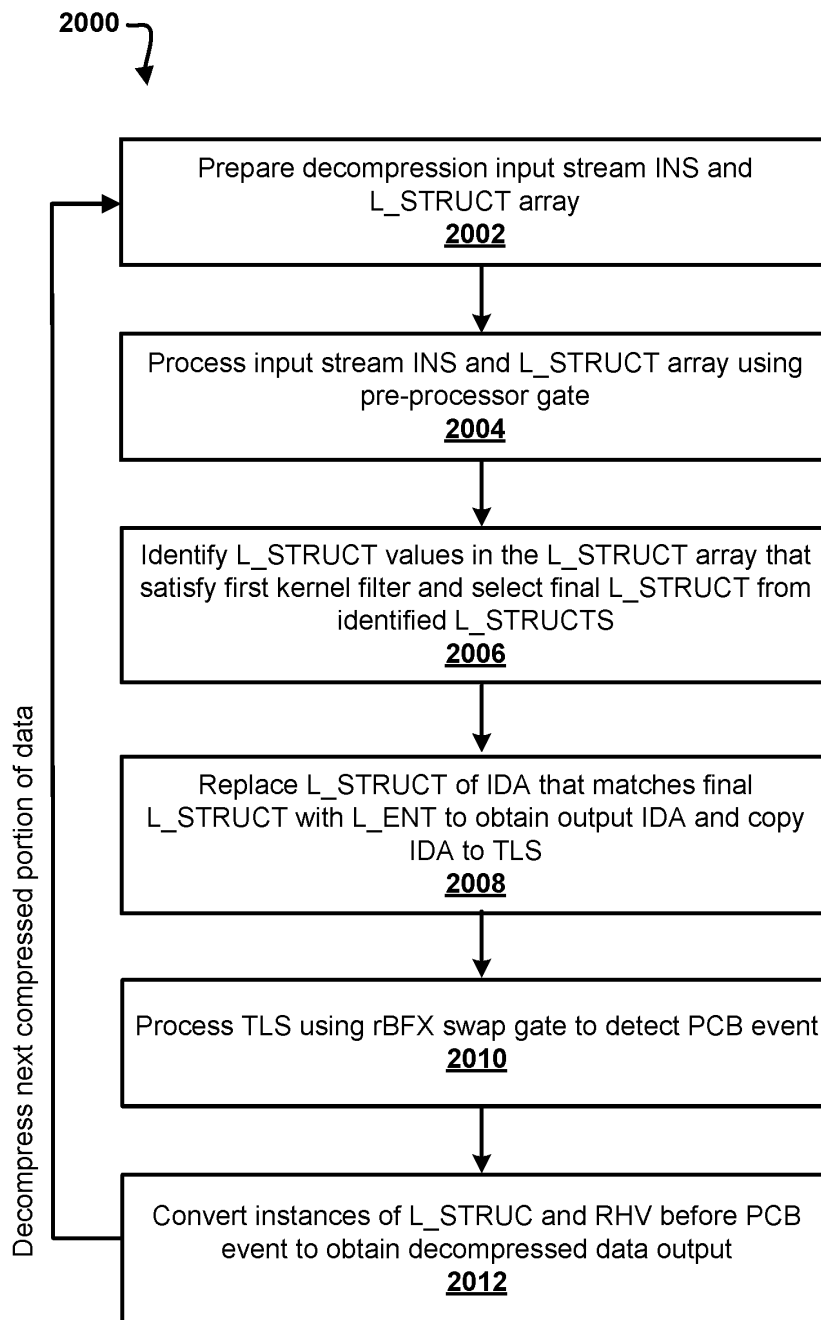


FIG. 20

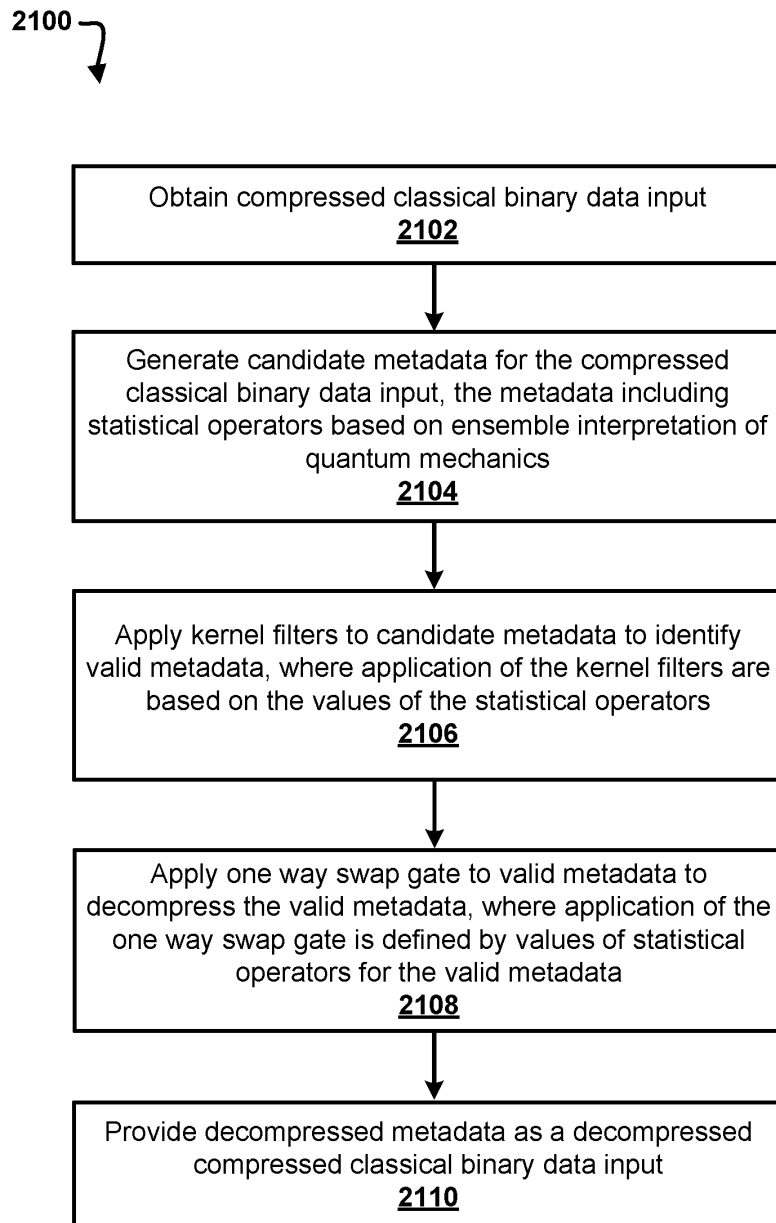


FIG. 21

EXAMPLE #1

IAE[1] (size = 2)	00 10 01 01 01 01 00 00 01 00 01 00 01 10 00 10 11
IAE[2]	00 01 10 11 7 8 3 1
R_h Distribution	8 / 19 = 42.10%
Compression	8 bits / 38 bits = 21.05%

EXAMPLE #2

IAE[1] (size = 4)	0010 0101 0101 0000 0100 0100 0100 0110 0010 1101 0011 0001 0010 1110 0011 0011 0000 1010 0010 0101 1100 0100 1110 0101 1111 0010 1110 0101 1110 1011 1010 0111 1111 0011 1010 0000 1101 0000 1100 0100 1100 0110 0000 1010 0011 0100 0010 0000 0011 0000 0010 0000 0110 1111 0110 0010 0110 1010 0000 1010 0011 1100 0011 1100 0010 0000 0010 1111 0100 1100 0110 0101 0110 1110 0110 0111 0111 0100 0110 1000 0010 0000 0011 0101 0010 0000 0011 0000 0010 0000 0101 0010 0010 0000 0010 1111 0100 0110 0110 1001
IAE[2]	0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100 1101 1110 1111 15 1 16 10 9 8 1 3 1 1 6 1 6 2 5 5
R_h Distribution	16 / 100 = 16%
Compression	16 bits / 400 bits = 4.00%

EXAMPLE #3

IAE[1] (size = 2)	01 01 11 11 00 11 10
IAE[2]	00 01 10 11 1 2 1 3
R_h Distribution	3 / 7 = 42.85%
Compression	3 bits / 14 bits = 2.14%

EXAMPLE #4

IAE[1] (size = 4)	0101 1111 0011 1001 0110 1011 1110 1011 1000 0110 0111 0000 1010 1101 1010 1100 0110 1001 1001 0100 1110 1100 0000 0000 0010 1110 0111 1000 1110 1101 0101 1101 0101 1011 0011 0000 0001
IAE[2]	0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100 1101 1110 1111 4 1 1 2 1 3 3 2 2 3 2 3 2 3 4 1
R_h Distribution	4 / 37 = 10.81%
Compression	4 bits / 148 bits = 2.70%

FIG. 22

ANALYSIS TABLE #1:: PER ROUND STATISTICS (CONSERVATIVE VALUES)

A	Min Input	16	96	512	2,560	12,288	57,344	262,144	1,179,648	5,242,880
B	Data Factor	1	2	4	8	16	32	64	128	256
C	Binary Size	2	3	4	5	6	7	8	9	10
D	Data Patterns	4	8	16	32	64	128	256	512	1024
E	Total Packets (A/C)	8	32	128	512	2,048	8,192	32,768	131,072	524,288
F	Packets per DP (E/D)	2	4	8	16	32	64	128	256	512
G	R_h Distrubtion	2%	3%	4%	5%	6%	7%	8%	9%	10%
H	R_h Packets (peaked)	0.16	0.96	5.12	25.6	122.88	573.44	2,621.44	11,796.48	52,428.8
I	Compression (in %) (H/A)	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%

A. Minimum Input is size of stream that is of conservative size. Only a multiple of 2 entries per data packets, where 1 data packet has one entry (R_l) and the other one has three (R_h)

B. Data Factor is a multiple of the input data size. The jump of data factor is applied as a multiple of 2 to justifies the size of the input stream when the binary size is appended.

C. Binary Size is the slicing value when reading the in input

D. Data Patterns are the number of possible IAE[2] Data Patterns (DP).

E. Total Packets is obtained when input size is divided in the binary size to obtain the number of packets in the input stream.

F. Packets Per DP is the standard value of total number of packets per DP

G. R_h Distribution is the value of R_h count with increased deviation.

H. R_h Packets (peaked) is the number of R_h Packets as per the value of G

I. Compression is the calculation of 1 bit removal from all R_h packets that results in compression (%)

ANALYSIS TABLE #2:: PER ROUND STATISTICS (AVERAGE VALUES)

A	Min Input	16	96	512	2,560	12,288	57,344	262,144	1,179,648	5,242,880
B	Data Factor	1	2	4	8	16	32	64	128	256
C	Binary Size	2	3	4	5	6	7	8	9	10
D	Data Patterns	4	8	16	32	64	128	256	512	1024
E	Total Packets (A/C)	8	32	128	512	2,048	8,192	32,768	131,072	524,288
F	Packets per DP (E/D)	2	4	8	16	32	64	128	256	512
G	Peak of R_h	10%	10%	10%	15%	15%	15%	20%	20%	20%
H	R_h Packets (peaked)	0.8	3.2	12.8	76.8	307.2	1,228.8	6,553.6	26,214.4	104,857.6
I	Compression (in %) (H/A)	5.00%	3.33%	2.50%	3.00%	2.50%	2.14%	2.50%	2.22%	2.00%

FIG. 23

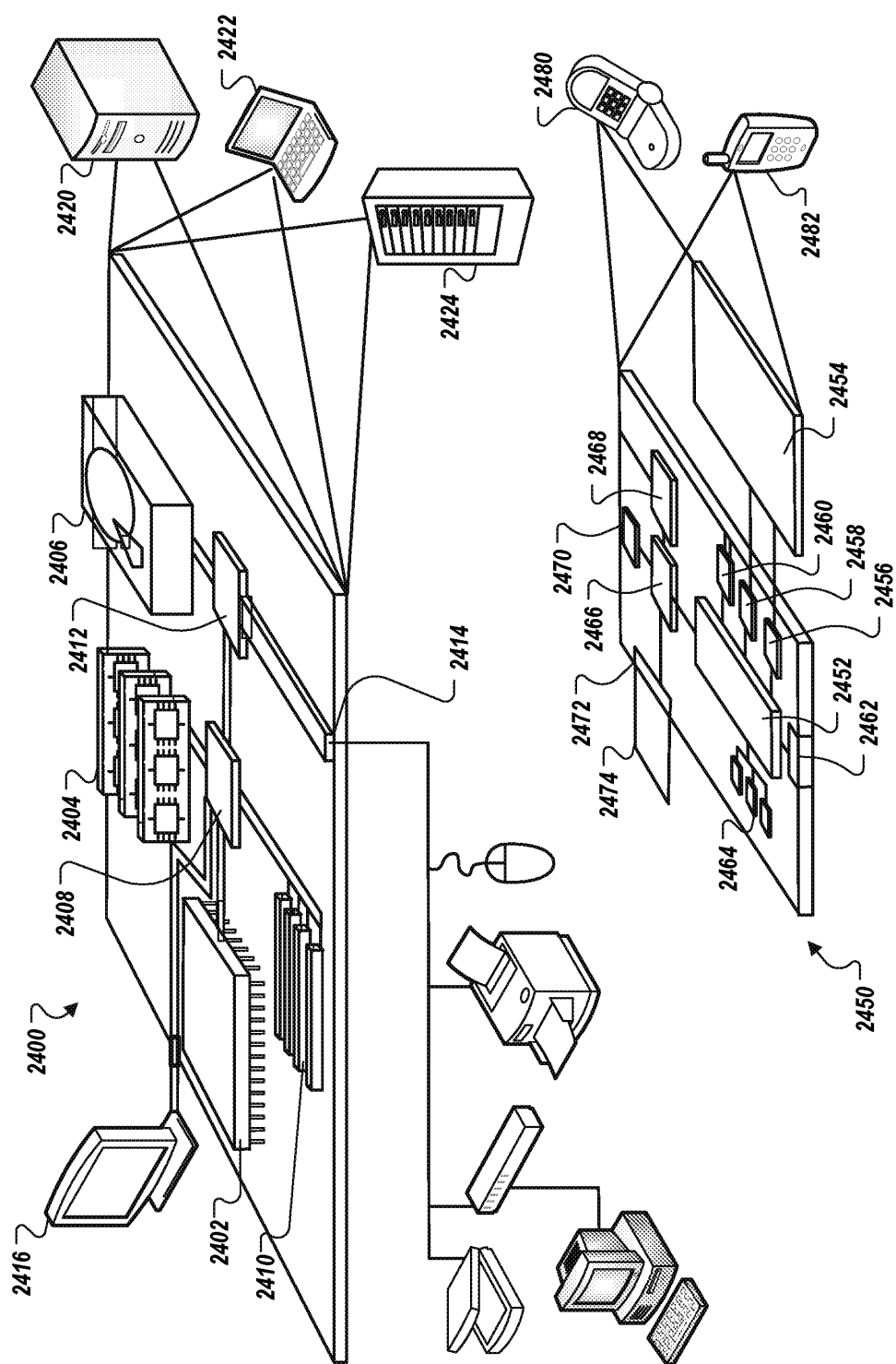


FIG. 24