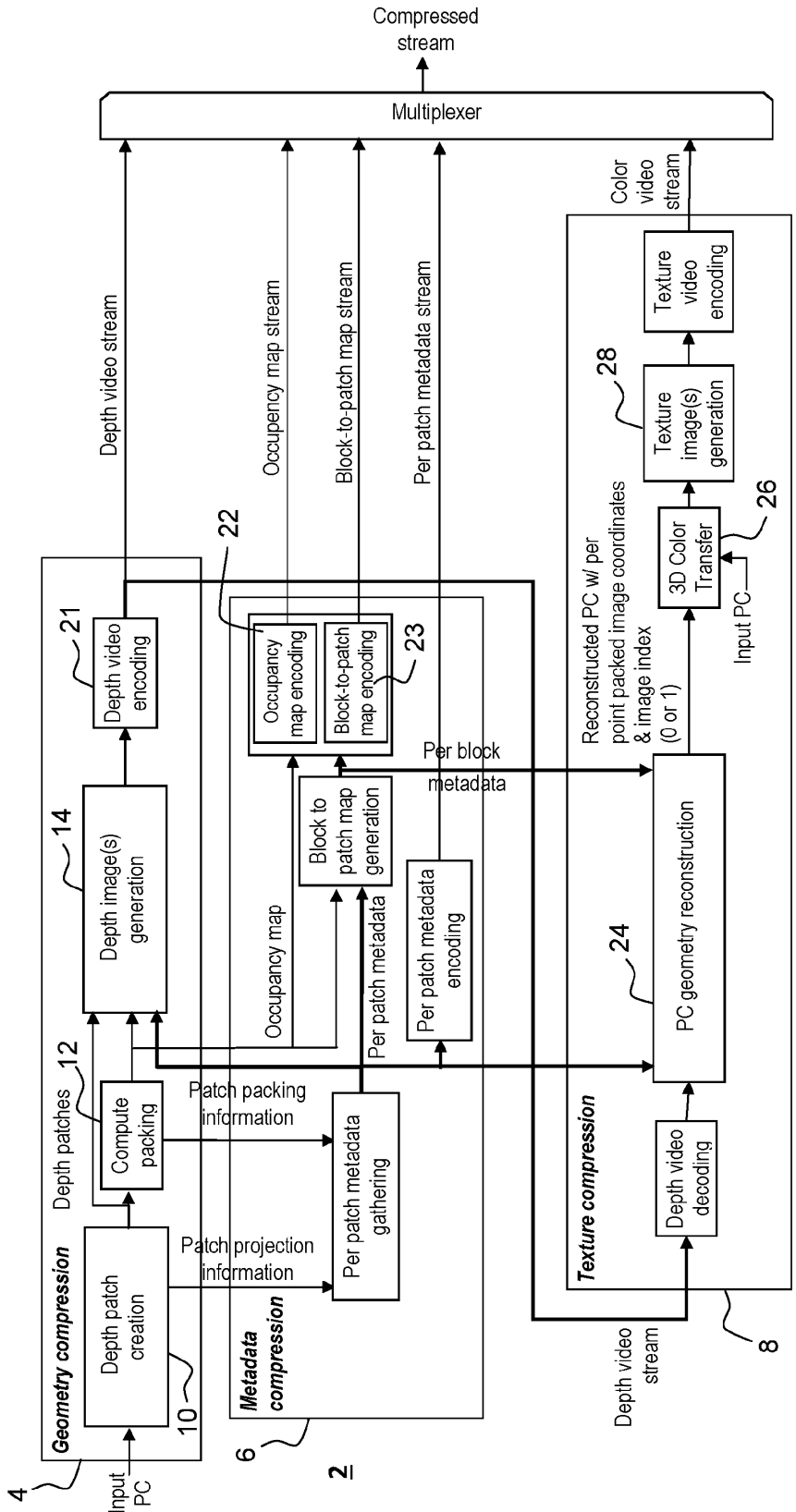
Compressed stream
Multiplexer
Depth video stream
Occupancy map stream
Block-to-patch map stream
Per patch metadata stream
Color video stream
Texture video encoding
Texture image(s) generation
28
3D Color Transfer
26
Input PC
Reconstructed PC w/ per point packed image coordinates & image index (0 or 1)
22
Depth video encoding
21
Occupancy map encoding
Block-to-patch map encoding
23
Per block metadata
Depth image(s) generation
14
Block to patch map generation
Occupancy map
Per patch metadata
Per patch metadata encoding
24
PC geometry reconstruction
Depth patches
12
Compute packing
Patch packing information
Per patch metadata gathering
Patch projection information
Depth patch creation
10
Geometry compression
Metadata compression
Texture compression
Depth video decoding
Depth video stream
8
6
2
4
Input PC

FIG.1

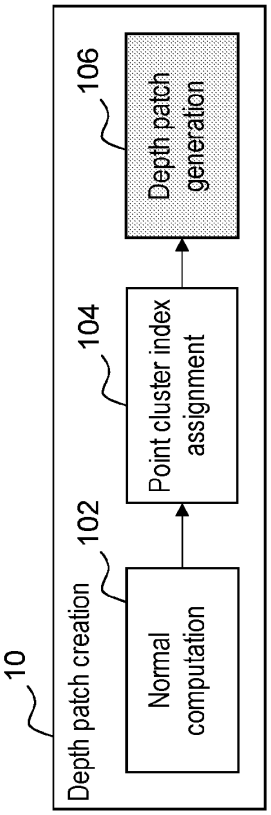
10
Depth patch creation
102
Normal computation
104
Point cluster index assignment
106
Depth patch generation

FIG.2

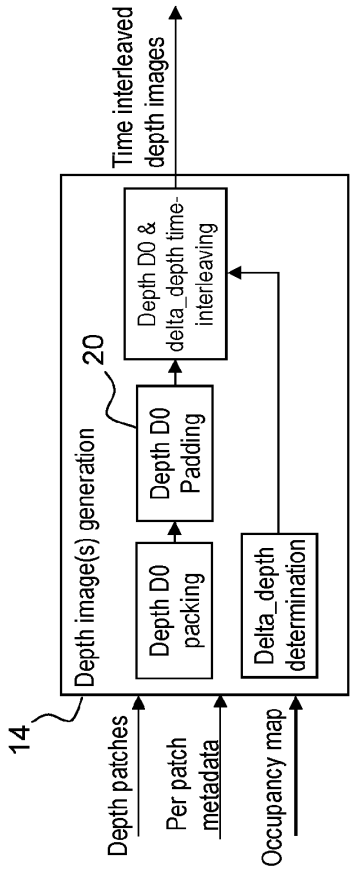
14
Depth image(s) generation
20
Depth D0 packing
Depth D0 Padding
Depth D0 & delta_depth time-interleaving
Delta_depth determination
Time interleaved depth images
Depth patches
Per patch metadata
Occupancy map

FIG.3

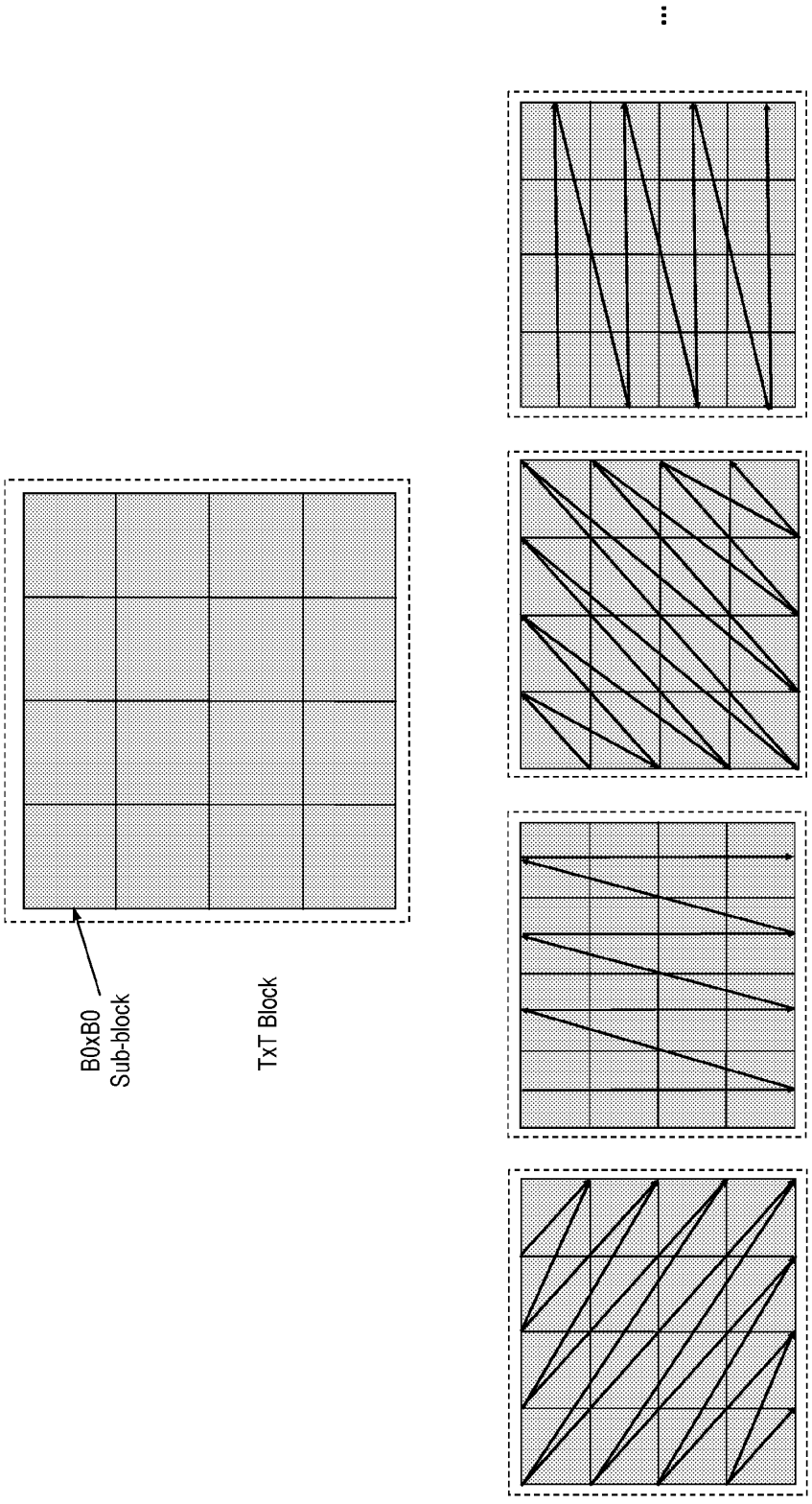

FIG.4

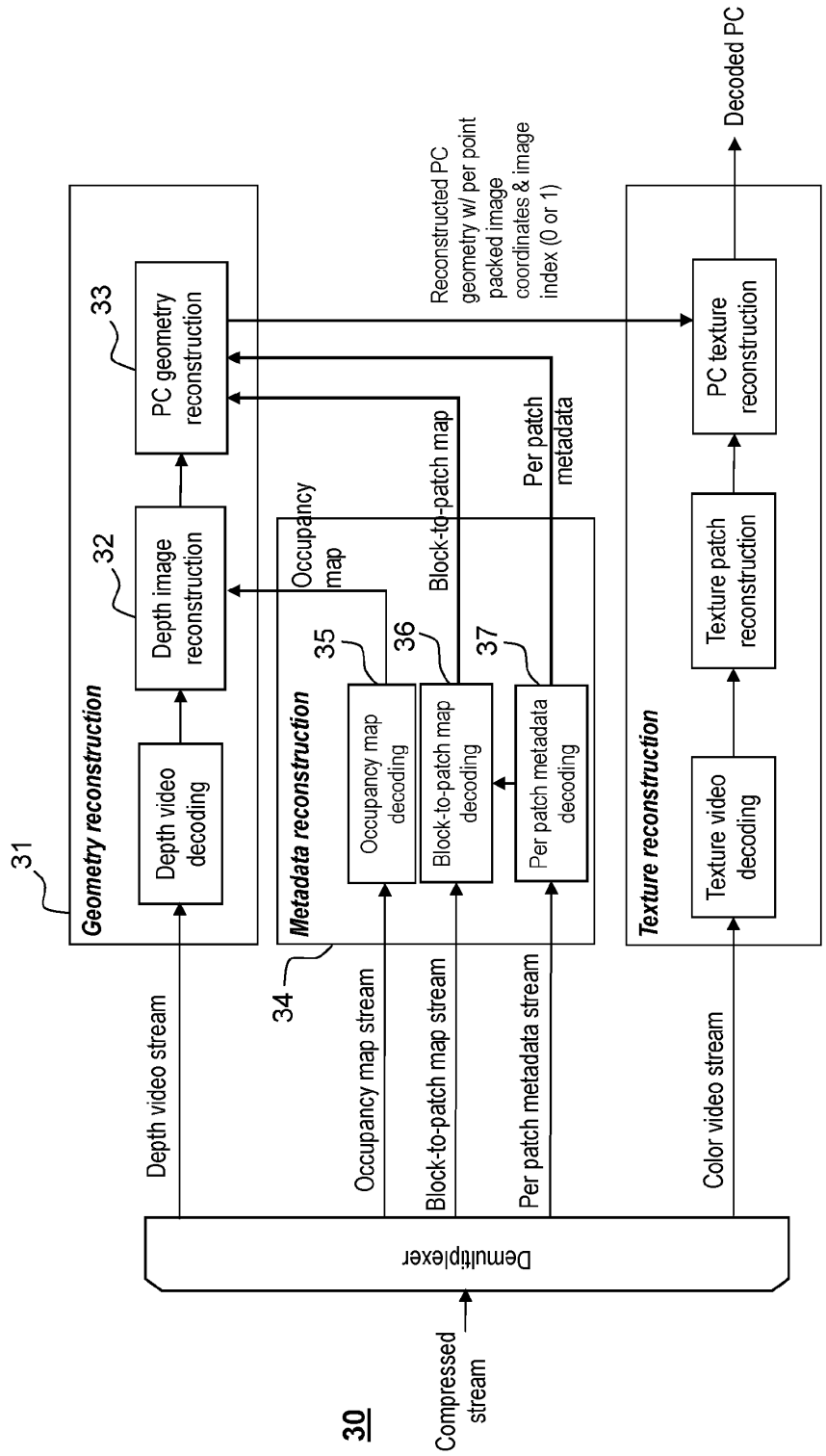
30
Compressed stream
Demultiplexer
Depth video stream
Occupancy map stream
Block-to-patch map stream
Per patch metadata stream
Color video stream
31
Geometry reconstruction
Depth video decoding
32
Depth image reconstruction
33
PC geometry reconstruction
34
Metadata reconstruction
Occupancy map decoding
35
Occupancy map
Block-to-patch map decoding
36
Block-to-patch map
Per patch metadata decoding
37
Per patch metadata
Texture reconstruction
Texture video decoding
Texture patch reconstruction
PC texture reconstruction
Reconstructed PC geometry w/ per point packed image coordinates & image index (0 or 1)
Decoded PC

FIG.5

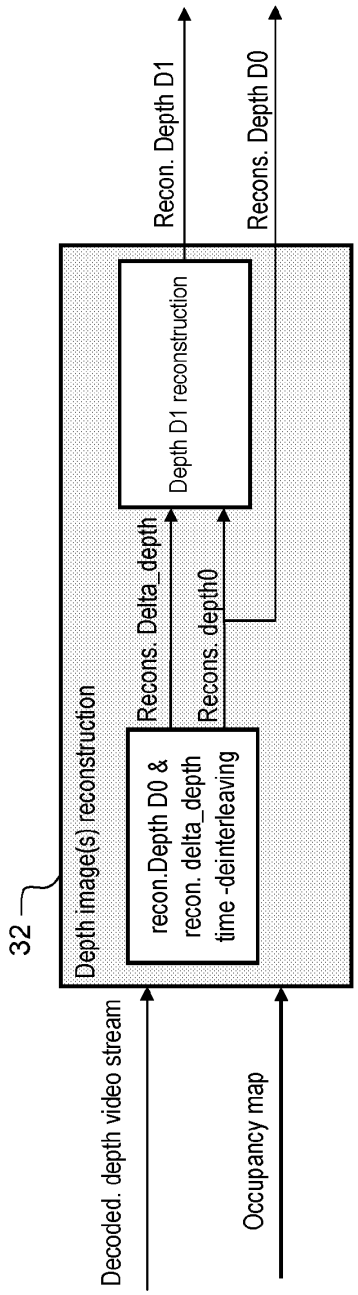
Recon. Depth D1
Recons. Depth D0
Depth D1 reconstruction
Recons. Delta_depth
Recons. depth0
Depth image(s) reconstruction
recon.Depth D0 &
recon. delta_depth
time -deinterleaving
32
Decoded. depth video stream
Occupancy map

FIG.6

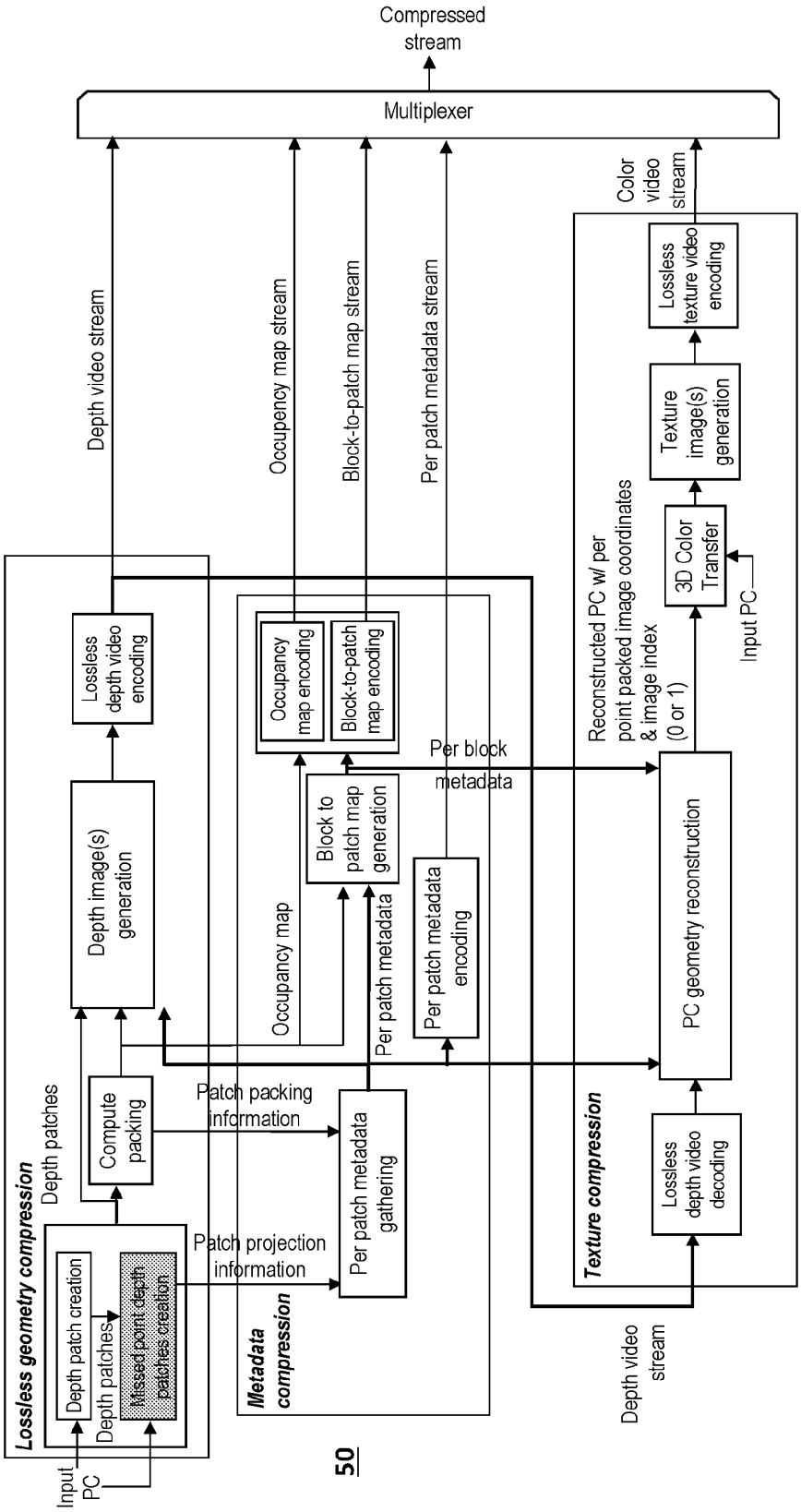
Compressed stream
Multiplexer
Depth video stream
Occupancy map stream
Block-to-patch map stream
Per patch metadata stream
Color video stream
Lossless texture video encoding
Texture image(s) generation
3D Color Transfer
Input PC
Reconstructed PC w/ per point packed image coordinates & image index (0 or 1)
PC geometry reconstruction
Lossless depth video decoding
Texture compression
Depth video stream
Lossless depth video encoding
Depth image(s) generation
Occupancy map encoding
Block-to-patch map encoding
Per block metadata
Block to patch map generation
Per patch metadata encoding
Occupancy map
Per patch metadata
Compute packing
Patch packing information
Per patch metadata gathering
Depth patches
Patch projection information
Lossless geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
Metadata compression
Input PC
50

FIG.7

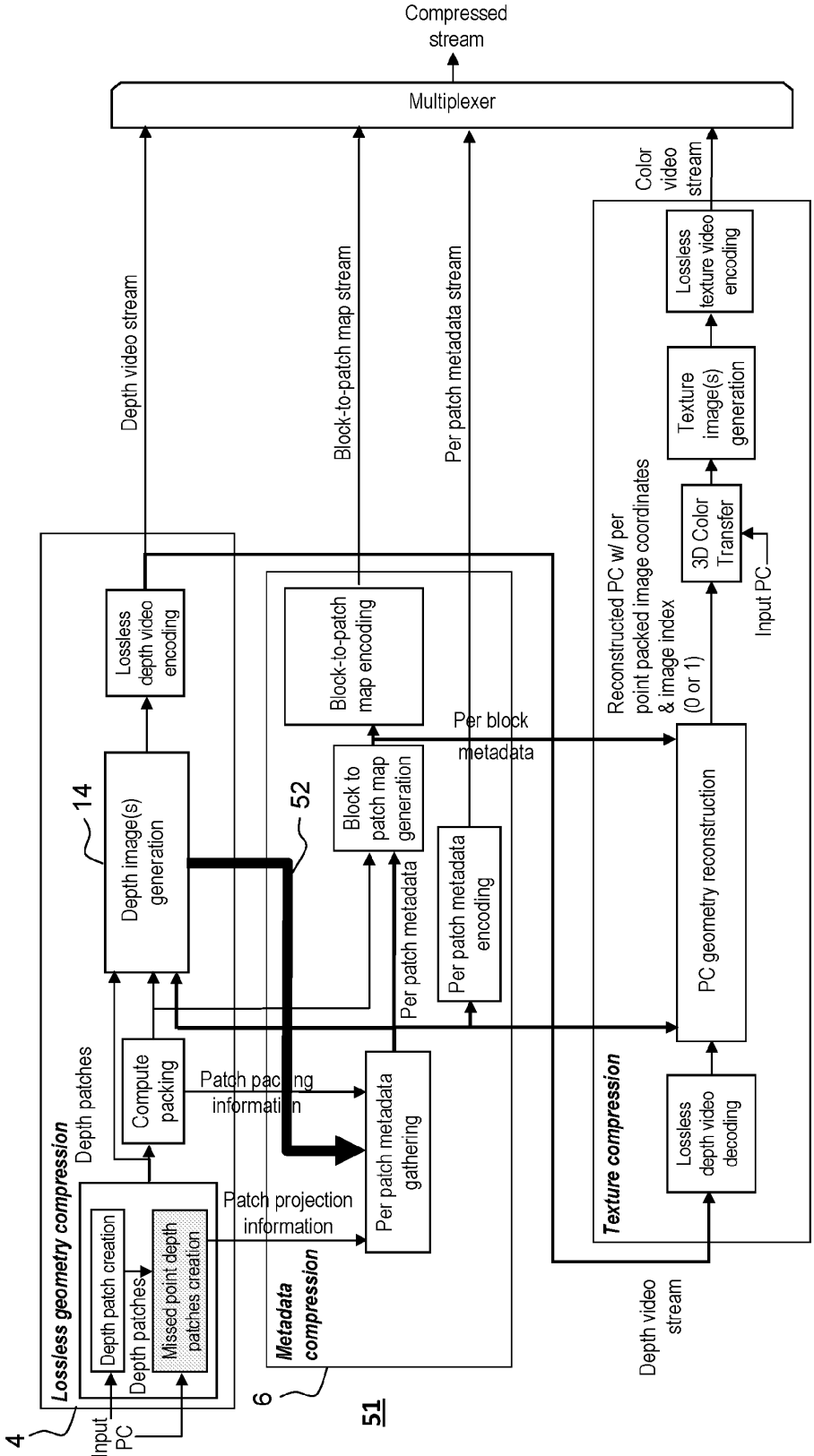
Compressed stream
Multiplexer
Depth video stream
Block-to-patch map stream
Per patch metadata stream
Color video stream
Lossless texture video encoding
Texture image(s) generation
3D Color Transfer
Input PC
Reconstructed PC w/ per point packed image coordinates & image index (0 or 1)
PC geometry reconstruction
Lossless depth video decoding
Texture compression
Depth video stream
Lossless depth video encoding
Block-to-patch map encoding
Per block metadata
Block to patch map generation
Per patch metadata
Per patch metadata encoding
Depth image(s) generation
14
52
Compute packing
Patch packing information
Depth patches
Per patch metadata gathering
Patch projection information
Lossless geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
Metadata compression
Input PC
4
6
51

FIG.8

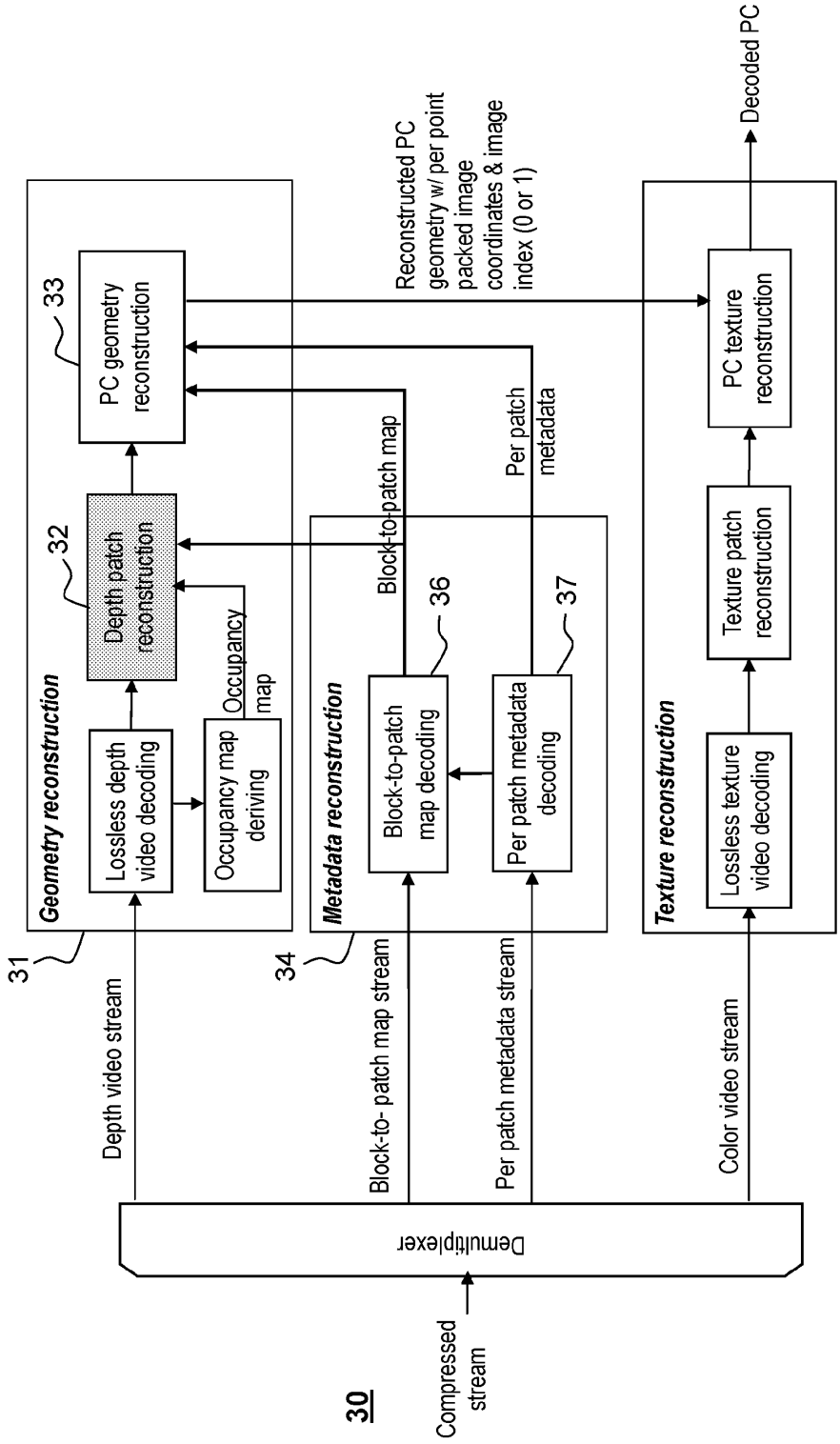
30
Compressed stream
Demultiplexer
Depth video stream
Block-to- patch map stream
Per patch metadata stream
Color video stream
31
Geometry reconstruction
Lossless depth video decoding
Occupancy map deriving
Occupancy map
32
Depth patch reconstruction
33
PC geometry reconstruction
34
Metadata reconstruction
Block-to-patch map decoding
36
Per patch metadata decoding
37
Block-to-patch map
Per patch metadata
Texture reconstruction
Lossless texture video decoding
Texture patch reconstruction
PC texture reconstruction
Reconstructed PC geometry w/ per point packed image coordinates & image index (0 or 1)
Decoded PC

FIG.9

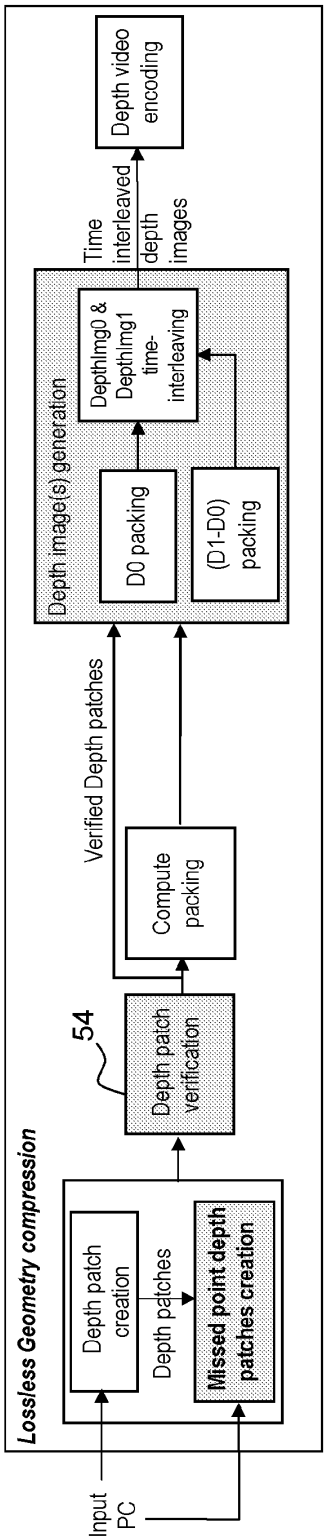
Lossless Geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
54
Depth patch verification
Compute packing
Verified Depth patches
Depth image(s) generation
D0 packing
(D1-D0) packing
DepthImg0 & DepthImg1 time-interleaving
Time interleaved depth images
Depth video encoding
Input PC

FIG.10

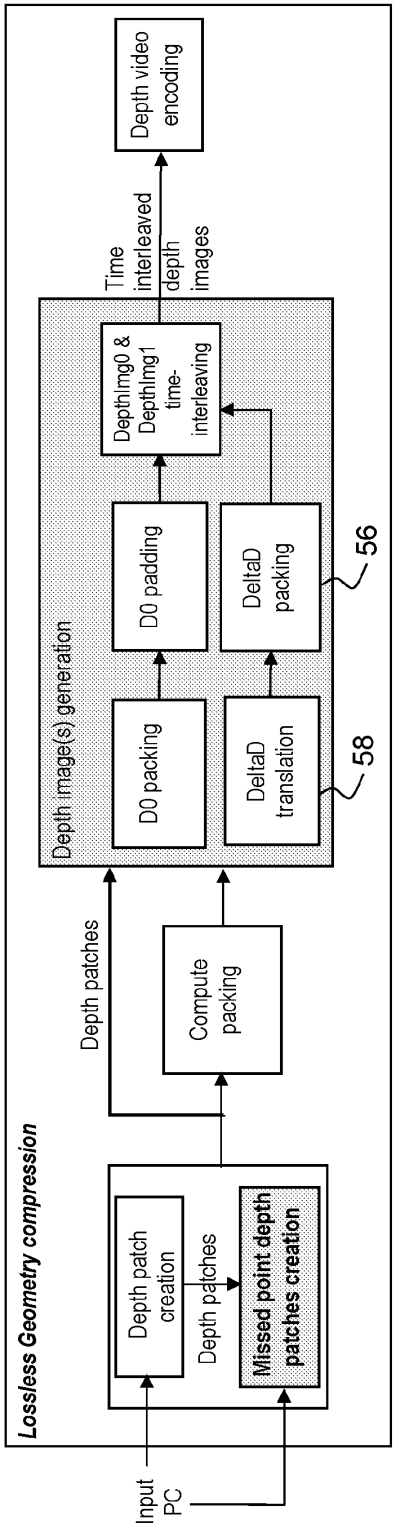
Lossless Geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
Compute packing
Depth patches
Depth image(s) generation
D0 packing
DeltaD translation
58
D0 padding
DeltaD packing
56
DepthImg0 & DepthImg1 time-interleaving
Time interleaved depth images
Depth video encoding
Input PC

FIG.11

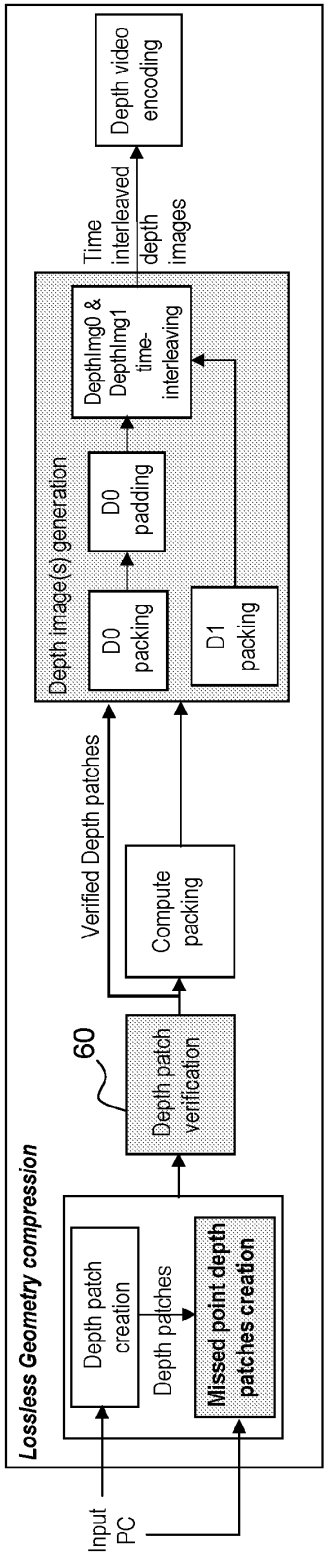
Input PC
Lossless Geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
60
Depth patch verification
Compute packing
Verified Depth patches
Depth image(s) generation
D0 packing
D1 packing
D0 padding
DepthImg0 & DepthImg1 time-interleaving
Time interleaved depth images
Depth video encoding

FIG.12

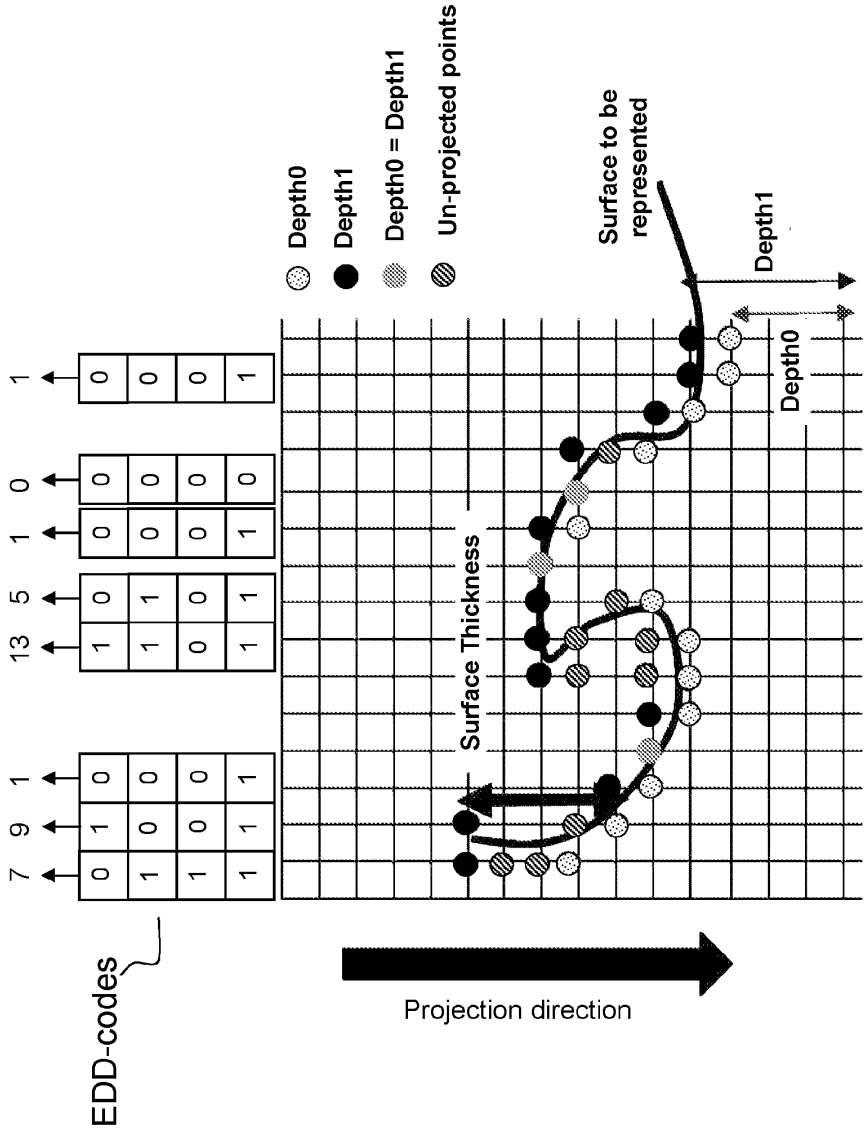
Depth0
Depth1
Depth0 = Depth1
Un-projected points
Surface to be represented
Depth1
Depth0
Surface Thickness
Projection direction
EDD-codes
7 9 1
13 5
1 0
1

FIG.13

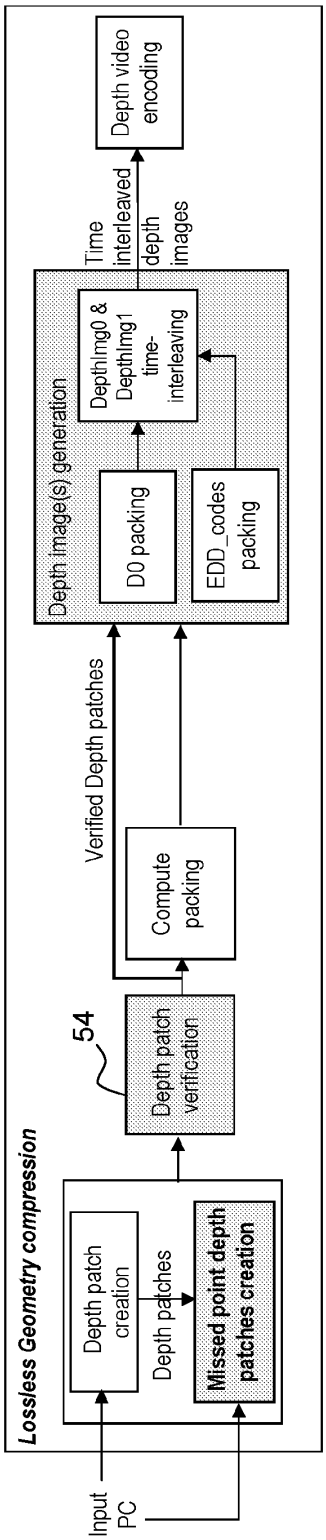
Lossless Geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
Input PC
54
Depth patch verification
Compute packing
Verified Depth patches
Depth image(s) generation
D0 packing
EDD_codes packing
DepthImg0 & DepthImg1 time-interleaving
Time interleaved depth images
Depth video encoding

FIG.14

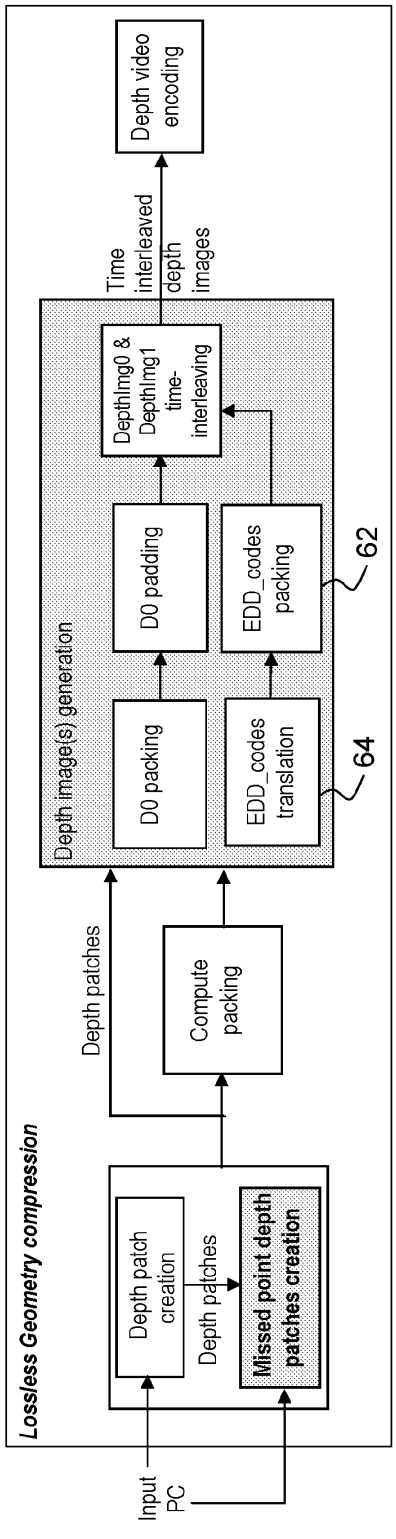
Lossless Geometry compression
Depth patch creation
Depth patches
Missed point depth patches creation
Input PC
Depth patches
Compute packing
Depth image(s) generation
D0 packing
EDD_codes translation
64
D0 padding
EDD_codes packing
62
DepthImg0 & DepthImg1 time-interleaving
Time interleaved depth images
Depth video encoding

FIG.15

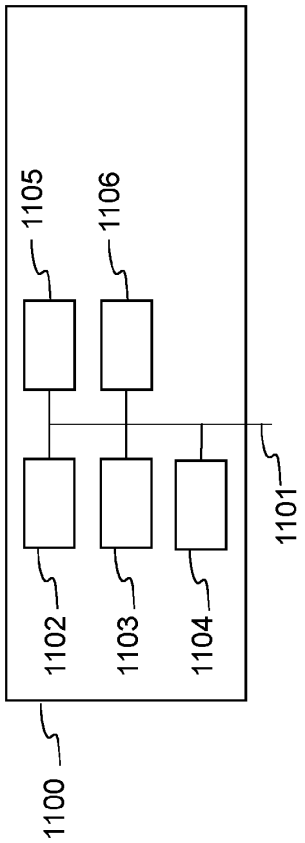

FIG.16

FIG.17

FIG.18