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(54) **METHOD FOR TRANSMITTING UPLINK SIGNALS**

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Related U.S. Application Data

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(30) **Foreign Application Priority Data**

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H04B 7/208   (2006.01)
(52) **U.S. Cl.** **370/344**; 370/319
(58) **Field of Classification Search** 370/206, 370/278, 344, 208, 252, 294, 295, 315, 319, 370/328, 329, 330, 335, 336, 338; 455/450, 455/509
See application file for complete search history.

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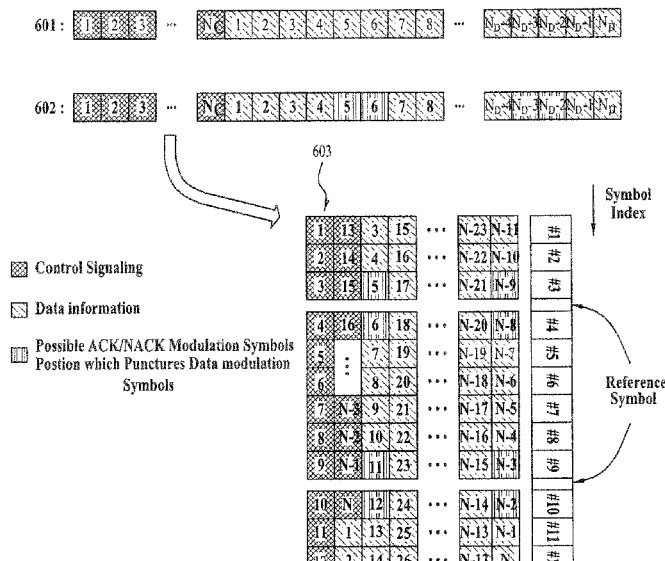*Primary Examiner* — Derrick Ferris
Assistant Examiner — Mang Yeung
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(57) **ABSTRACT**

A method for transmitting uplink signals, which include ACK/NACK signals, control signals other than the ACK/NACK signals, and data signals, is disclosed. The method comprises serially multiplexing the control signals and the data signals; sequentially mapping the multiplexed signals within a specific resource region in accordance with a time-first mapping method, the specific resource region including a plurality of symbols and a plurality of virtual subcarriers; and arranging the ACK/NACK signals at both symbols near symbols to which a reference signal of the plurality of symbols is transmitted. Thus, the uplink signals can be transmitted to improve receiving reliability of signals having high priority.
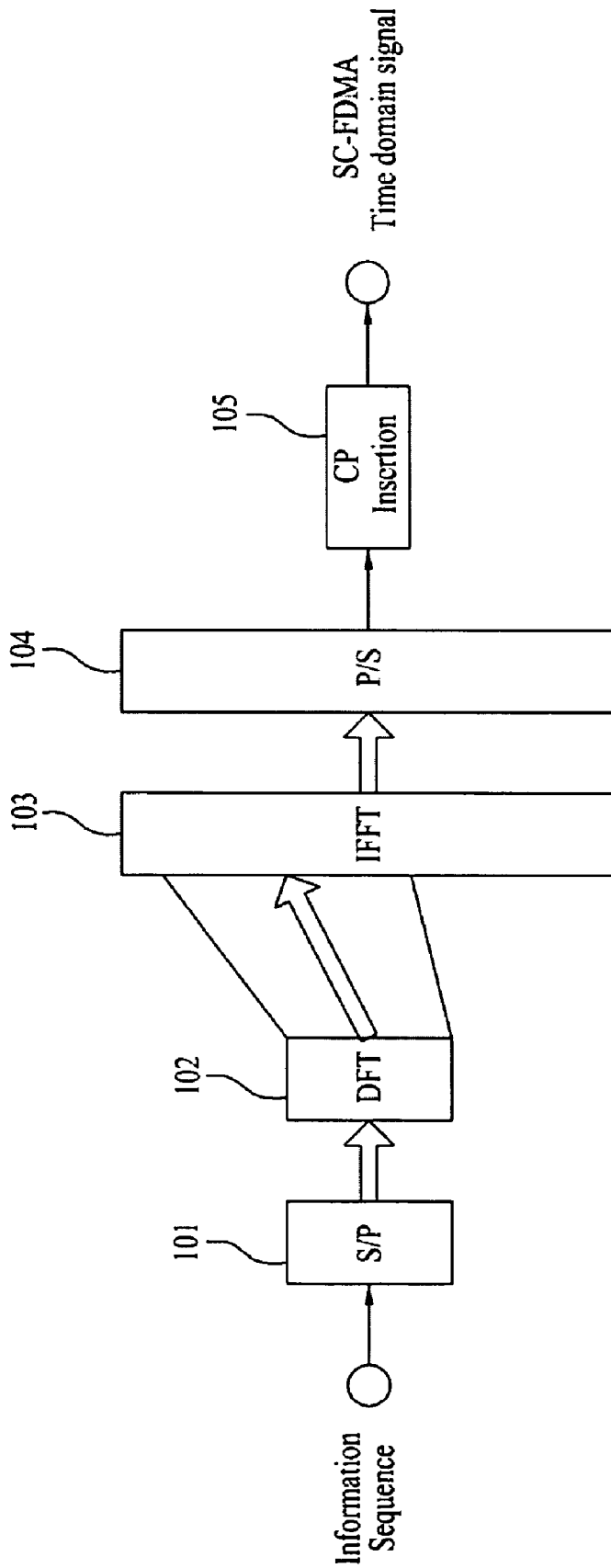
14 Claims, 9 Drawing Sheets

FIG. 1

FIG. 2

UL ACK/ NACK Signaling

S221

Channel Coding

Control Information
Channel Coding Chain

S211

Channel Coding

Rate Matched Multiplexing

S201

TB CRC Attachment

S202

Code Block Segmentation

S203

CB CRC Attachment

S204

Channel Coding

Rate Matching

Code Block Concatenation

Data Control Channel Rate Matched Multiplexing

Transport Block

DATA Transport Block
Channel Coding Chain

S205

S206

S230

UL ACK/ NACK & Data/ Control Punctured Multiplexing

S240

FIG. 3

1	2	3	4	5	...	N

1	13	25	37	...	N-23	N-11	#1
2	14	26	38	...	N-22	N-10	#2
3	15	27	39	...	N-21	N-9	#3

4	16	28	40	...	N-20	N-8	#4
5	17	29	41	...	N-19	N-7	#5
6	18	30	42	...	N-18	N-6	#6
7	19	31	43	...	N-17	N-5	#7
8	20	32	44	...	N-16	N-4	#8
9	21	33	45	...	N-15	N-3	#9

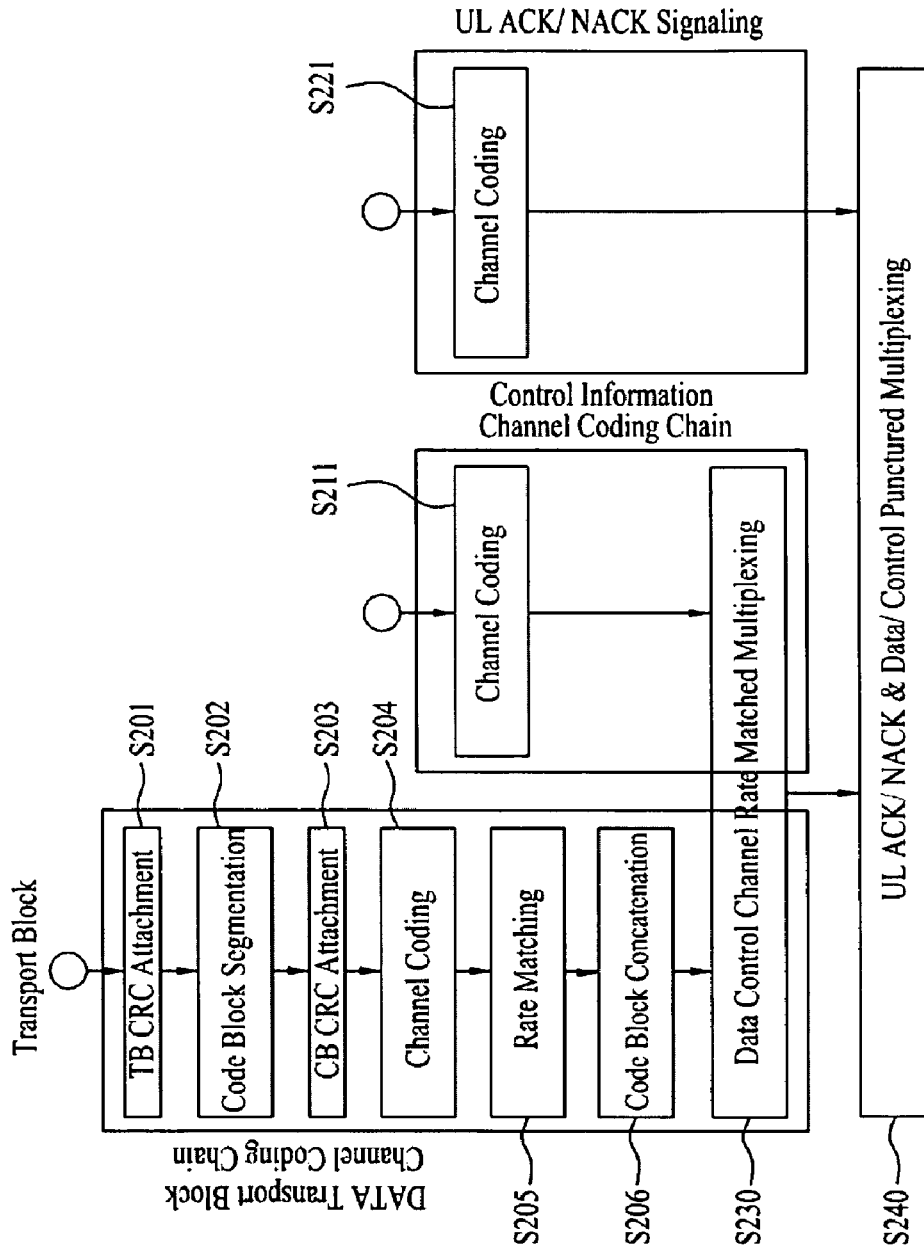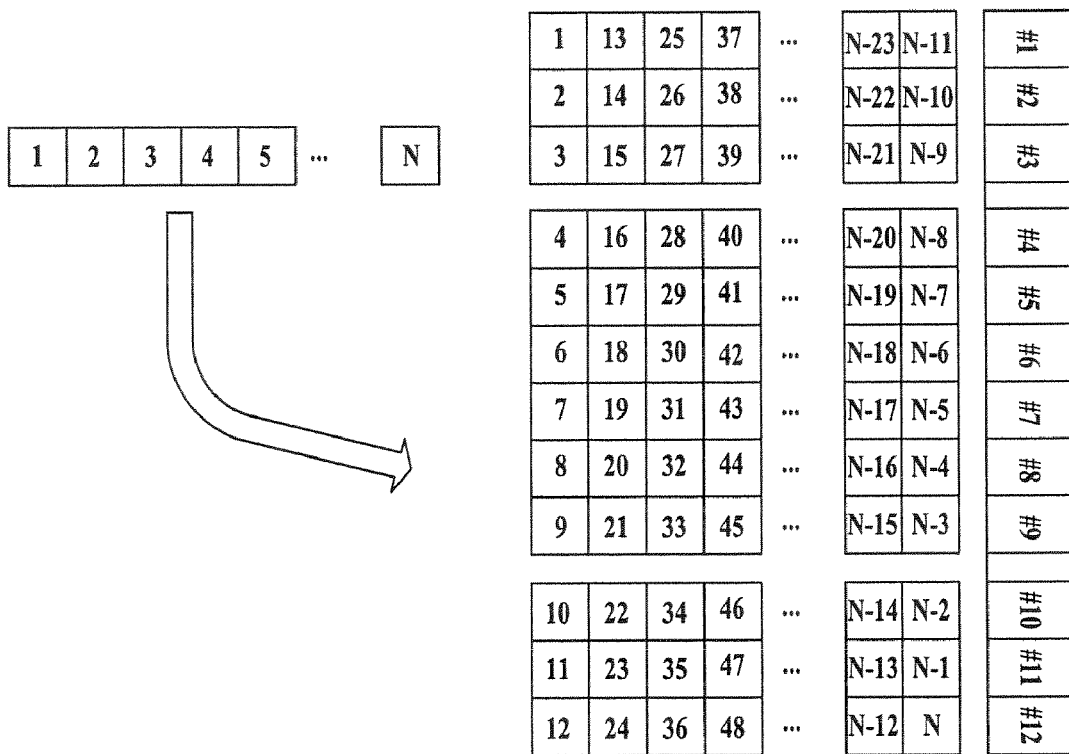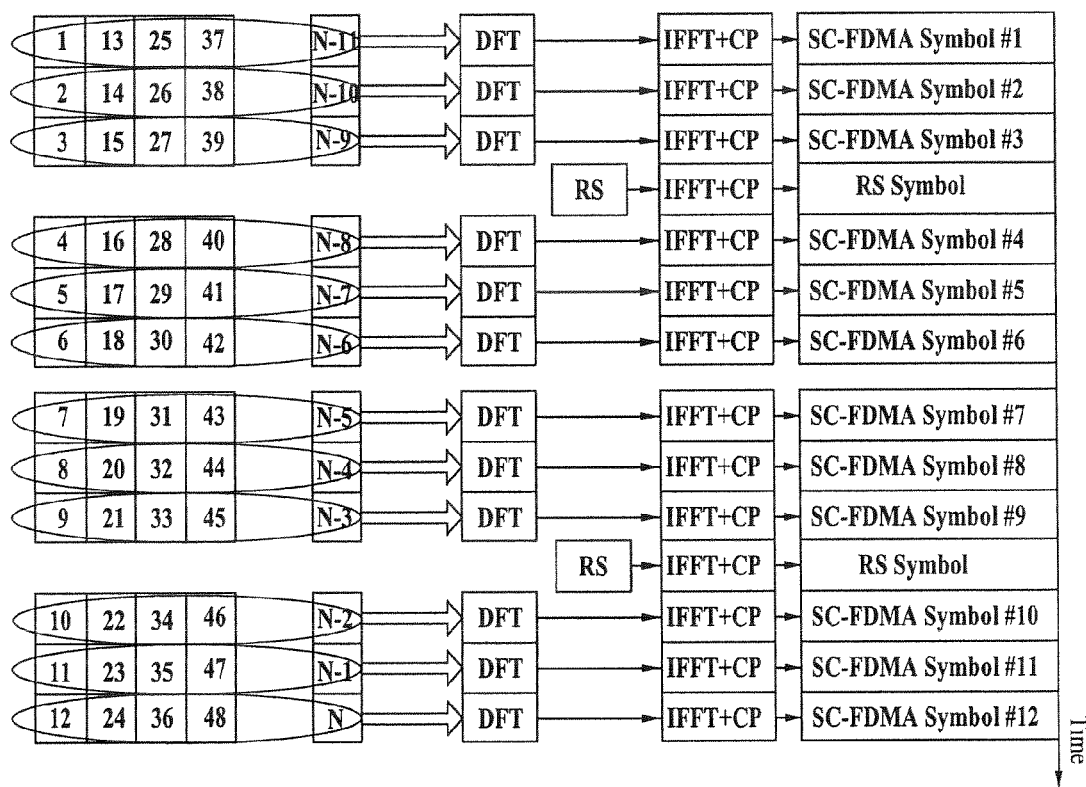| 10	22	34	46	...	N-14	N-2	#10
11	23	35	47	...	N-13	N-1	#11
12	24	36	48	...	N-12	N	#12

FIG. 4

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