CLAIMS

1. An alignment marker search method, wherein the method comprises:

receiving, by a first module, a first data stream transmitted by a second module, wherein the first data stream is obtained by multiplexing a plurality of second data streams at a reference granularity, any second data stream comprises an alignment marker (AM) and data from at least one forward error correction (FEC) codeword, the reference granularity is a quantity of bits corresponding to n symbols comprised in the FEC codeword, and n is a positive integer;

obtaining a first data segment from a first location in the first data stream at the reference granularity, wherein the first location is any location in the first data stream; and

performing AM search on the first data segment.

2. The method according to claim 1, wherein obtaining the first data segment from the first location in the first data stream at the reference granularity comprises:

demultiplexing the first data stream from the first location in the first data stream at the reference granularity, to obtain the first data segment.

3. The method according to claim 1, wherein obtaining the first data segment from the first location in the first data stream at the reference granularity comprises:

obtaining a first quantity of bits at an interval of first quantity of bits from the first location in the first data stream, and obtaining the first data segment based on a plurality of groups of first quantity of bits that are obtained, wherein the first quantity is determined based on the reference granularity.

4. The method according to any one of claims 1 to 3, wherein the method further comprises:

obtaining a second data segment from a second location in the first data stream at the reference granularity based on no AM being found in the first data segment, wherein the second location is different from the first location; and

performing AM search on the second data segment.

5. The method according to claim 4, wherein the second location is obtained by changing the first location by 1 bit.

6. The method according to any one of claims 1 to 5, wherein the AM comprises a common marker (CM) field, and the CM field is used to perform AM search on the first data segment.

7. The method according to any one of claims 1 to 6, wherein the FEC codeword is a Reed-Solomon (RS) codeword.

8. The method according to any one of claims 1 to 7, wherein a symbol of the FEC codeword comprises 10 bits, and n is 2 or 4 or 8 or 16.

9. The method according to claim 2, wherein the demultiplexing the first data stream from

the first location in the first data stream at the reference granularity, comprises:

demultiplexing the first data stream to 8 or 16 physical coding sublayer (PCS) lanes.

10. The method according to any one of claims 1 to 9, wherein the method further comprises:

based on the fact that the AM is not found in the first data segment, obtaining a second data segment from a second location in the first data stream at the reference granularity, wherein the second location is different from the first location;

performing AM search on the second data segment.

11. An alignment marker search method, wherein the method comprises:

obtaining, by a second module, a first data stream, wherein the first data stream is obtained by multiplexing a plurality of second data streams at a reference granularity, any second data stream comprises an alignment marker (AM) and data from at least one forward error correction (FEC) codeword, the reference granularity is a quantity of bits corresponding to n symbols comprised in the FEC codeword, and n is a positive integer; and

transmitting the first data stream to a first module, to cause the first module to obtain a first data segment from a first location in the first data stream at the reference granularity, wherein the first location is any location in the first data stream, and to perform AM search on the first data segment.

12. An alignment marker search apparatus, wherein the apparatus is used in a first module, and the apparatus comprises:

an obtaining unit, configured to receive a first data stream transmitted by a second module, wherein the first data stream is obtained by multiplexing a plurality of second data streams at a reference granularity, any second data stream comprises an alignment marker (AM) and data from at least one forward error correction (FEC) codeword, the reference granularity is a quantity of bits corresponding to n symbols comprised in the FEC codeword, and n is a positive integer, wherein

the obtaining unit is further configured to obtain a first data segment from a first location in the first data stream at the reference granularity, wherein the first location is any location in the first data stream; and

a search unit, configured to perform AM search on the first data segment.

13. The apparatus according to claim 12, wherein the obtaining unit is configured to demultiplex the first data stream from the first location in the first data stream at the reference granularity, to obtain the first data segment.

14. The apparatus according to claim 12, wherein the obtaining unit is configured to: obtain a first quantity of bits at an interval of first quantity of bits from the first location in the first data stream, and obtain the first data segment based on a plurality of groups of first quantity of bits that

are obtained, wherein the first quantity is determined based on the reference granularity.

15. The apparatus according to any one of claims 12 to 14, wherein the search unit is further configured to: obtain a second data segment from a second location in the first data stream at the reference granularity based on no AM being found in the first data segment, wherein the second location is different from the first location; and perform AM search on the second data segment.

16. The apparatus according to claim 15, wherein the second location is obtained by changing the first location by 1 bit.

17. The apparatus according to any one of claims 12 to 16, wherein the AM comprises a common marker (CM) field, and the CM field is used to perform AM search on the first data segment.

18. The apparatus according to any one of claims 12 to 17, wherein the FEC codeword is a Reed-Solomon (RS) codeword.

19. The apparatus according to any one of claims 12 to 18, wherein a symbol of the FEC codeword comprises 10 bits, and n is 2 or 4 or 8 or 16.

20. The apparatus according to claim 13, wherein the obtaining unit is configured to demultiplex the first data stream to 8 or 16 physical coding sublayer (PCS) lanes.

21. The apparatus according to any one of claims 12 to 20, wherein

based on the fact that the AM is not found in the first data segment, the obtaining unit is further configured to obtain a second data segment from a second location in the first data stream at the reference granularity, wherein the second location is different from the first location;

the search unit is further configured to perform AM search on the second data segment.

22. An alignment marker search apparatus, wherein the apparatus is used in a second module, and the apparatus comprises:

an obtaining unit, configured to obtain a first data stream, wherein the first data stream is obtained by multiplexing a plurality of second data streams at a reference granularity, any second data stream comprises an alignment marker (AM) and data from at least one forward error correction (FEC) codeword, the reference granularity is a quantity of bits corresponding to n symbols comprised in the FEC codeword, and n is a positive integer; and

a transmission unit, configured to: transmit the first data stream to a first module, to cause the first module to obtain a first data segment from a first location in the first data stream at the reference granularity, wherein the first location is any location in the first data stream, and to perform AM search on the first data segment.

23. A communication system, wherein the system comprises a first module and a second module, the first module is configured to perform the method according to any one of claims 1 to 10, and the second module is configured to perform the method according to claim 11.

24. A computer-readable storage medium, wherein the computer-readable storage medium stores at least one program instruction or code, the program instruction or the code is executed by a computer, the computer comprises a first module or a second module, and if the computer comprises the first module, when the program instruction or the code is executed by the computer, the computer is caused to implement the method according to any one of claims 1 to 10, or if the computer comprises the second module, when the program instruction or the code is executed by the computer, the computer is caused to implement the method according to claim 11.

25. A chip, wherein the chip comprises a processor, the processor comprises a first module or a second module, and if the processor comprises the first module, a device comprising the chip performs the method according to any one of claims 1 to 10, or if the processor comprises the second module, a device comprising the chip performs the method according to claim 11.