Claims

1. Method to descramble at least one video stream originating from at least one producer, having a producer ID, by an electronic descrambling device connected to a host device, said host device comprising a controller comprising a bulk pipe out and a bulk pipe in transfer, comprising the steps of, at the host device :

- for each producer, defining a chunk of data from the video stream,

- forming a chain of out transfer, the chain of out transfer comprising a chain out header (oqH) linked with a plurality of chain out descriptors (oqTD), the first chain out descriptor (oqTD1) pointing to a out description packet (oDP) containing the at least one producer ID, the second and subsequent chain out descriptor (oqTD2, oqTD3 … oqTDn) pointing to the chunk of data (DCo), each chunk of data being of a particular producer,

- forming, by the host device, a chain of in transfer, the chain of in transfer comprising a chain in header (iqH) linked with a plurality of chain in descriptors (iqTD), each chain in descriptor pointing to a descrambled chunk of data (DCi0, DCi1, DCi2 … DCin), and the last chain in descriptor (iqTDn) being configured to generate an interrupt,

- transferring the chain of out transfer by the controller to the electronic descrambling device, thus transferring to the electronic descrambling device the scrambled data chunk,

at the electronic descrambling device :

- receiving the description packet (oDP) by the electronic descrambling device and identifying by the electronic descrambling device key data associated with the at least one chunk,

- using the key data to descramble the scrambled data chunk,

- returning the descrambled data to the host device,

at the host device :

-receiving the chain of in transfer by the controller, thus waiting from the electronic descrambling device the chunk descrambled data,

- storing the received descrambled data chunk at an address indicated by the correspond chain in descriptor (iqTD),

- generating an interrupt by the reception of the last descrambled chunk.

2. The method of claim 1, wherein the key data are identified using the producer ID.

3. The method of claim 1, wherein the video stream is compliant with the MPEG standard.

4. The method of any of the claims 1 to 3, wherein the electronic descrambling device is a USB Dongle.

5. The method of claim 3 or 4, wherein the MPEG stream comprises a Multi Program transport stream (MPTS) comprising a plurality of sub-streams having each a program ID, and intended for a consumer, said method comprising the steps of :

- inserting in the transfer chain description packet the program ID of each sub-stream, the chain of in transfer containing at least one chunk for each consumer associated with each program ID,

- informing each consumer that the transferred chunk is descrambled.

6. The method of claim 3 or 4, wherein the MPEG stream is formed by a Single Program Transport Stream (SPTS) having one packet identifier PID.

7. The method of any of the claims 5 or 6, wherein at least a first and a second MPEG stream are transferred to the electronic descrambling device, each having a producer ID unique per MPEG stream, the method comprising the steps of :

- inserting in the first chain out descriptor (oqTD1) the producer ID of the first stream and the producer ID of the second stream,

- inserting in the second chain out descriptor (oqTD2) a chunk of data of the from the first MPEG stream and in the third chain out descriptor (oqTD3) a chunk of data of the from the second MPEG stream.

8. The method of claim 7, wherein a transfer chain can contain different type of producer selected among, SPTS, MPTS, or RAW mpeg, each identified using its producer ID.

9. The method of any of the claims 1 to 8, wherein the key data are transferred to the electronic descrambling device through a dedicated channel, each key data being dedicated to one packet identifier PID, the key data being used with the data chunk of that particular program.

10. The method of any of the claims 1 to 9, wherein the descrambled chunk is re-encrypted by a channel key shared between the host device and the electronic descrambling device.

11. Host device having an interface with an electronic descrambling device to transfer at least one video stream originating from at least one producer, having a producer ID, from the host device to the interface with the electronic descrambling device, said host device comprising a controller comprising a bulk pipe out and a bulk pipe in transfer, said controller being configured to:

- for each producer, define a chunk of data from the video stream,

- form a chain of out transfer, the chain of out transfer comprising a chain out header (oqH) linked with a plurality of chain out descriptors (oqTD), the first chain out descriptor (oqTD1) pointing to an out description packet (oDP) containing the at least one producer ID, the second and subsequent chain out descriptor (oqTD2, oqTD3 … oqTDn) pointing to the chunk of data, each chunk of data being of a particular producer,

- form a chain of in transfer, the chain of in transfer comprising a chain in header (iqH) linked with a plurality of chain in descriptors (iqTD), each chain in descriptor pointing to a descrambled chunk of data (DCi0, DCi1, DCi2 … DCin), and the last chain in descriptor being configured to generate an interrupt,

- transfer the chain of out transfer to the electronic descrambling device, thus transferring to the electronic descrambling device the scrambled data chunk,

-receive the chain of in transfer, thus waiting from the electronic descrambling device the chunk descrambled data,

- store the received descrambled data chunk at an address indicated by the correspond chain in descriptor (iqTD),

- generate an interrupt by the reception of the last descrambled chunk.

12. Host device of claim 11, wherein the video stream is compliant with the MPEG standard and comprises a Multi Program transport stream (MPTS) comprising a plurality of sub-streams having each a packet identifier PID, and intended for a consumer, the system being further configured to:

- insert in the transfer chain description packet the packet identifier PID of each program, the chain of in transfer containing at least one chunk for each consumer associated with each packet identifier PID,

- inform each consumer that the transferred chunk is descrambled.

13. Host device of claim 11 or 12, wherein a first and a second video stream are transferred to the electronic descrambling device, each having a producer ID unique per video stream, the system being configured to:

- insert in the transfer chain description packet the producer ID of the first stream and the producer ID of the second stream,

- insert in chain of out transfer a first consumer ID of the first stream and a second consumer ID of the second stream,

- configure at least two chunks in the chain of in transfer, one of the first stream and one for the second stream,

- inform the first and the second consumers that the transferred chunk is descrambled.

14. Host device of any of the claims 11 to 13, wherein it is configured to decrypt the descrambled chunk with a channel key shared between the host device and the USB dongle.