

CLAIMS

What is claimed is:

1. A data transmission device, comprising:

a TypeC interface, a wireless module;

5 a first data transformation chip;

a microprocessor; and

trigger device;

wherein the TypeC interface is connected with the first data transformation chip, the first data transformation chip is connected with the TypeC interface and the microprocessor, and

10 the microprocessor is connected with the wireless module;

wherein the TypeC interface comprises at least one pair of differential signal transmission pins configured to receive media data in DP protocol format, and the media data is media content presented on a terminal device, the TypeC interface further comprises:

a paring communication pin configured to transmit a first request signal; and

15 the first request signal is used for requesting the terminal device to transmit the media data in DP protocol format to the at least one pair of differential signal transmission pins;

wherein the first data transformation chip is configured to receive the media data in DP protocol format transmitted through the TypeC interface, and further have the media data encoded into video data in an MIPI format and/or audio data in an I2S format;

20 wherein the trigger device is configured to receive a first user operation; and the first user operation is a screen transmission trigger signal; and the first user operation is used for triggering the microprocessor to transform the video data in an MIPI format and/or the audio data in an I2S format into data in a second format, and for triggering the wireless module to transmit the data in the second format;

25 wherein the microprocessor is configured to receive the video data in an MIPI format and/or the audio data in an I2S format, further compress and encode the video data in an MIPI format and/or the audio data in an I2S format into data in a second format, the

microprocessor is further configured to discard the received data in DP protocol format prior to receiving the first user operation by the trigger device; and

wherein the paring communication pin is further configured to transmit a second request signal; the second request signal is used for requesting the terminal device to supply power

5 according to a power requirement of the data transmission device;

wherein the wireless module is configured to transmit the data in the second format to a data receiving device; and

wherein the procedure of transmitting the first request signal for requesting the terminal device to transmit the media data in DP protocol format to the at least one pair of differential

10 signal transmission pins is as follows:

after the data transmission device being powered on, the terminal device transmits a VDM signal, via a CC pin of USB-Type-C interface of the terminal device to the data transmission device;

15 after receiving the VDM signal, the data transmission device transmits a response to the terminal device via the CC pin in the TypeC interface thereon, the response containing information indicating that the current operation mode or the supported operation mode of the data transmission device is the DP protocol mode;

the terminal device, when recognizing that the current operation mode or the supported operation mode of the data transmission device is the DP protocol mode, 20 sets the USB-Type-C interface of the terminal device to operate in the DP protocol mode, invokes the DP driver pre-installed in operating system thereof; and

transmits media content including audio and video to the data transmission device via the at least one pair of differential signal transmission pins.

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2. The data transmission device according to claim 1;

wherein the data in the first format comprises video data in an MIPI format and/or audio data in an I2S format; and

wherein the data in the second format comprises video data in an H.264/H.265
5 format and/or audio data in an AAC format.

3. The data transmission device according to claim 1 or claim 2;

wherein the TypeC interface further comprises a USB2.0 data transmission pin connected with the microprocessor; and

10 wherein the wireless module is further configured to receive a touch signal from a communication network, and transmit the touch signal to the terminal device via the USB2.0 data transmission pins.

4. The data transmission device according to claim 3, wherein the microprocessor is
15 further configured to encapsulate the touch signal received by the wireless module from the communication network, into a signal in an HID format.

5. The data transmission device according to any one of the preceding claims, further comprising:

20 a memory connected with the microprocessor;

wherein the memory stores an executable program, the executable program is configured to run after being downloaded to the terminal device, and the executable program is further configured to trigger, when the terminal device is running, the terminal device to obtain the media content, and trigger the terminal device to compress and
25 encode the obtained media content into a USB2.0 data, and

wherein the microprocessor is configured to obtain the executable program from the memory when being triggered, and transmit the executable program to the terminal device; the microprocessor is further configured to transmit the received USB2.0 data through the wireless module.

6. The data transmission device according to any one of the preceding claims, further comprising a second data transformation chip through which the first data transformation chip is connected to the microprocessor.

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7. A method of transmitting data of a data transmission device wherein the data transmission device comprises a TypeC interface, a wireless module, a data transformation chip, a microprocessor and a trigger device, the TypeC interface is connected with the data transformation chip, the data transformation chip is connected with the TypeC interface and the microprocessor, and the microprocessor is connected with the wireless module, the TypeC interface comprises at least one pair of differential signal transmission pins, the method comprising:

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receiving, via a power pin of the TypeC interface, a base working power;

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receiving, by the data transmission chip, an inquiry data packet transmitted by the terminal device via the TypeC interface thereof;

transmitting, by the data transmission chip, a response to the terminal device via the TypeC interface, wherein the response carries information indicating capability of supporting for DP mode and information of specific range of supplied power of the data transmission device;

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receiving, by the data transformation chip, the media data in a DP protocol format via the at least one pair of differential signal transmission pins, wherein the media data comprises at least one of video data or audio data presented on the terminal device;

converting, by the data transformation chip, the media data in the DP protocol format into video data in an MIPI format and/or audio data in an I2S format;

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receiving, by the trigger device, a first user operation; wherein the first user operation is a screen transmission trigger signal; and the first user operation is used for triggering the microprocessor to transform the video data in an MIPI format and/or the audio data in an I2S format into data in an H.264/H.265 format and/or audio data in an AAC format, and for

triggering the wireless module to transmit the data in an H.264/H.265 format and/or audio data in an AAC format;

transmitting, by the data transformation chip, the video data in MIPI format and/or the audio data in I2S format to the microprocessor;

5 discarding, by the microprocessor, the received data in an MIPI format and/or the audio data in an I2S format prior to receiving the first user operation by the trigger device;

compressing, by the microprocessor, the video data in the MIPI format and/or the audio data in the I2S format into video data in an H.264/H.265 format and/or audio data in an AAC format; and

10 transmitting, by the microprocessor, the video data in the H.264/H.265 format and/or the audio data in the AAC format to a data receiving device;

wherein the procedure of receiving, by the data transmission chip, an inquiry data packet transmitted by a terminal device via the TypeC interface thereof and transmitting, by the data transmission chip, a response to the terminal device via the TypeC interface, is as follows:

15 after the data transmission device being powered on, the terminal device transmits a VDM signal, via a CC pin of USB-Type-C interface of the terminal device to the data transmission device;

after receiving a VDM signal, the data transmission device transmits a response to the terminal device via the CC pin in the TypeC interface thereon, the response
20 containing information indicating that the current operation mode or the supported operation mode of the data transmission device is the DP mode;

the terminal device, when recognizing that the current work mode or the supported work mode of the data transmission device is the DP mode, sets the USB-Type-C interface of the terminal device to operate in the DP mode, invokes the DP
25 driver pre-installed in operating system thereof; and

transmits media content including audio and video to the data transmission device via the at least one pair of differential signal transmission pins.