CLAIMS

1. A decoder comprising:

circuitry; and

a memory connected to the circuitry,

wherein the circuitry, in operation, acquires, from a bitstream, an image, and a first parameter associated with the image, and a second parameter associated with the image,

the first parameter including modality information indicating an image type of the image, and

the second parameter including wavelength information indicating a wavelength band of light emission of the image.

2. The decoder according to claim 1, wherein

the second parameter includes flag information indicating whether the wavelength information is described in the bitstream, and

when the flag information indicates that the wavelength information is described in the bitstream, the circuitry acquires information indicating a minimum value and a maximum value of the wavelength band from the bitstream.

3. The decoder according to claim 2, wherein

when the flag information indicates that the wavelength information is not described in the bitstream, the minimum value and the maximum value are not defined.

4. The decoder according to claim 2, wherein

the information indicating the minimum value includes information indicating mantissa of the minimum value and information indicating an exponent in exponential representation using a determined base, and

the information indicating the maximum value includes information indicating mantissa of the maximum value and information indicating an exponent in exponential representation using a determined base.

5. The decoder according to claim 4, wherein

the information indicating the mantissa of the minimum value has three or more significant decimal digits, and

the information indicating the mantissa of the maximum value has three or more

significant decimal digits.

6. The decoder according to claim 4, wherein

when the information indicating the mantissa of the minimum value indicates "0", the minimum value is not defined, and

when the information indicating the mantissa of the maximum value indicates "0", the maximum value is not defined.

7. The decoder according to claim 2, wherein

the minimum value is set to be equal to or greater than a shortest wavelength of the image type indicated by the modality information, and

the maximum value is set to be equal to or less than a longest wavelength of the image type indicated by the modality information.

8. The decoder according to claim 1, wherein

the circuitry acquires the first parameter and the second parameter from a determined header region of the bitstream in the acquisition of the first parameter and the second parameter, and

the determined header region including SEI.

9. The decoder according to claim 1, wherein

the bitstream has a multi-layer configuration including a plurality of image layers, and

in the acquisition of the image, the circuitry acquires, from the plurality of image layers, a plurality of the images, each of the plurality of images being different in terms of the wavelength band.

10. The decoder according to claim 9, wherein

the bitstream with the multi-layer configuration is a bitstream in which an output signal from a multispectral camera is encoded.

11. An encoder comprising:

circuitry; and

a memory connected to the circuitry,

wherein the circuitry, in operation, encodes, into a bitstream, an image, a first parameter associated with the image, and a second parameter associated with the image,

the first parameter including modality information indicating an image type of the image, and

the second parameter including wavelength information indicating a wavelength band of light emission of the image.

12. The encoder according to claim 11, wherein

the second parameter includes flag information indicating whether the wavelength information is described in the bitstream, and

the circuitry encodes information indicating a minimum value and a maximum value of the wavelength band into the bitstream, and in such a case, sets the flag information indicating that the wavelength information is described in the bitstream.

13. The encoder according to claim 12, wherein

the circuitry does not define the minimum value and the maximum value, and in such a case, sets the flag information indicating that the wavelength information is not described in the bitstream.

14. The encoder according to claim 12, wherein

the information indicating the minimum value includes information indicating mantissa of the minimum value and information indicating an exponent in exponential representation using a determined base, and

the information indicating the maximum value includes information indicating mantissa of the maximum value and information indicating an exponent in exponential representation using a determined base.

15. The encoder according to claim 14, wherein

the information indicating the mantissa of the minimum value has three or more significant decimal digits, and

the information indicating the mantissa of the maximum value has three or more significant decimal digits.

16. The encoder according to claim 14, wherein

the circuitry does not define the minimum value, and in such a case, sets the information indicating the mantissa of the minimum value to "0", and

the circuitry does not define the maximum value, and in such a case, sets the information

indicating the mantissa of the maximum value to "0".

17. The encoder according to claim 12, wherein

the circuitry sets the minimum value to be equal to or greater than a shortest wavelength of the image type indicated by the modality information, and

sets the maximum value to be equal to or less than a longest wavelength of the image type indicated by the modality information.

18. The encoder according to claim 11, wherein

the circuitry encodes the first parameter and the second parameter into a determined header region of the bitstream in the encoding of the first parameter and the second parameter, and

the determined header region includes SEI.

19. The encoder according to claim 11, wherein

the bitstream has a multi-layer configuration including a plurality of image layers, and

in the encoding of the image, the circuitry encodes into the plurality of image layers, a plurality of the images, each of the plurality of images being different in terms of the wavelength band.

20. The encoder according to claim 19, wherein

the circuitry generates the bitstream with the multi-layer configuration by encoding an output signal from a multispectral camera.

21. A decoding method comprising, by a decoder:

acquiring, from a bitstream, an image, a first parameter associated with the image, and a second parameter associated with the image,

wherein the first parameter including modality information indicating an image type of the image, and

the second parameter including wavelength information indicating a wavelength band of light emission of the image.

22. An encoding method comprising, by an encoder:

encoding, into a bitstream, an image, a first parameter associated with the image, and a second parameter associated with the image,

wherein the first parameter including modality information indicating an image type of

the image, and

the second parameter including wavelength information indicating a wavelength band of light emission of the image.