CLAIMS

1. A system for estimating the elevation angle of one or more objects surrounding a user terminal, the system comprising:

a camera device for capturing an image of the sky; and

a display device for displaying the image of the sky captured by the camera device;

wherein one of the camera device and the display device generates an elevation limit marking on the image of the sky displayed by the display device;

wherein the elevation limit marking defines an elevation angle above a horizon of the earth that all the one or more objects in a field of view of the camera device must remain below so that the user terminal has an unobstructed view of the sky in all azimuthal directions.

2. The system of claim 1, wherein the elevation angle defined by the elevation limit marking comprises a maximum elevation angle.

3. The system of claim 1 or claim 2, wherein the camera device includes an image sensor for capturing the image of the sky.

4. The system of any of claims 1-3, wherein the camera device includes an optical system for focusing light on the image sensor, the light representing the sky and the one or more objects in the field of view of the camera device.

5. The system of claim 4, wherein the optical system includes a reticle that generates the elevation limit marking that is superimposed on the image of the sky displayed on the display device.

6. The system of any of claims 1-4, wherein the camera device includes image processing and communication electronics, the image processing and communication electronics includes firmware, hardware, software, or any combination thereof, for image acquisition and wireless or wired transmission the image of the sky to the display device.

7. The system of claim 6, wherein the image of the sky is a real-time video image or a still image generated by the image processing and communication electronics.

8. The system of claim 6 or 7, wherein the image processing and communication electronics adds the elevation limit marking to the image of the sky displayed on the display device.

9. The system of any of claims 1-4, or 6-8, wherein the display device comprises a portable or a mobile device having a display screen for displaying the image of the sky captured by the camera device.

10. The system of any of claims 1-4, or 7-9, wherein the display device includes firmware, hardware, software, or any combination thereof, for wireless or wired reception of the image of the sky transmitted by the camera device.

11. The system of any of claims 1-4, or 7-10, wherein the display device includes firmware, hardware, software, or any combination thereof, that adds the elevation limit marking to the image of the sky displayed on the display device.

12. The system of any of claims 1-11, wherein the elevation limit marking comprises a circle.

13. The system of any of claims 1-12, wherein if the one or more objects is substantially outside the elevation limit marking, the one or more objects are estimated to be below the elevation angle.

14. The system of any of claims 1-13, wherein if a portion of the one or more objects is substantially inside the elevation limit marking, the one or more objects are estimated to be above the elevation angle.

15. A user terminal comprising a housing, an antenna associated with the housing, and the camera device of any of claims 1-4, or 6-8 disposed on or integrated into the housing.

16. A user terminal comprising a housing, an antenna associated with the housing, and the system of any of claims 1-14 disposed on or integrated into the housing.

17. A camera device for estimating the elevation angle of one or more objects surrounding a user terminal, the camera device comprising:

an image sensor capturing an image of the sky;

wherein the camera device generates an elevation limit marking in the image of the sky that will be displayed by a display device;

wherein the elevation limit marking defines an elevation angle above a horizon of the earth that all of the one or more objects in a field of view of the camera device must remain below so that the user terminal has an unobstructed view of the sky in all azimuthal directions.

18. The camera device of claim 17, wherein the elevation angle defined by the elevation limit marking comprises a maximum elevation angle.

19. The camera device of claim 17 or claim 18, wherein the camera device includes an image sensor for capturing the image of the sky.

20. The camera device of any of claims 17-19, wherein the camera device includes an optical system for focusing light on the image sensor, the light representing the sky and the one or more objects in the field of view of the camera device.

21. The camera device of claim 20, wherein the optical system includes a reticle that generates the elevation limit marking that is added to the image of the sky displayed on the display device.

22. The camera device of any of claims 17-19, wherein the camera device includes image processing and communication electronics, the image processing and communication electronics including firmware, hardware, software, or any combination thereof, for image acquisition and wireless or wired transmission the image of the sky to the display device.

23. The camera device of claim 22, wherein the image of the sky is a real-time video image or a still image generated by the image processing and communication electronics.

24. The camera device of claim 22 or 23, wherein the image processing and communication electronics adds the elevation limit marking to the image of the sky displayed on the display device.

25. A display device for estimating the elevation angle of one or more objects surrounding a user terminal, the display device comprising:

a display screen for displaying an image of the sky captured by a camera device; and

a processor;

wherein the display device includes a software application, which when executed by the processor adds an elevation limit marking to the image of the sky displayed on the display screen; and

wherein the elevation limit marking defines an elevation angle above a horizon of the earth that all the one or more objects in a field of view of the camera device must remain below so that the user terminal has an unobstructed view of the sky in all azimuthal directions.

26. A display device for estimating the elevation angle of one or more objects surrounding a user terminal, the display device comprising:

a display screen for displaying an image of the sky captured by a camera device;

wherein the display device includes firmware, hardware, software, or any combination thereof, that adds an elevation limit marking to the image of the sky displayed on the display screen; and

wherein the elevation limit marking defines an elevation angle above a horizon of the earth that all the one or more objects in a field of view of the camera device must remain below so that the user terminal has an unobstructed view of the sky in all azimuthal directions.

27. A method for estimating the elevation angle of one or more objects surrounding a user terminal, the method comprising:

capturing an image of the sky with a camera device that is disposed on, attached to, disposed in, or disposed adjacent, to the user terminal;

superimposing an elevation limit marking on the image of the sky, the elevation limit marking defining an elevation angle above a horizon of the earth that all the one or more objects in a field of view of the camera device must remain below so that the user terminal has an unobstructed view of the sky in all azimuthal directions; and

displaying the image of the sky on a display device to ascertain the location of each of the one or more objects in the image relative to the elevation limit marking.

28. The method of claim 27, wherein if all the one or more objects are substantially outside the elevation limit marking, the one or more objects are estimated to be below the elevation angle, and wherein if a portion of the one or more objects is substantially inside the elevation limit marking, the portion of the one or more objects is estimated to be above the elevation angle.