

Disabling Camera Of A Portable Electronic Device

Field of Invention

[0001] The present invention relates to disabling or disarming cameras of portable electronic devices. In particular, the invention relates to a device for temporarily disabling a camera function of a wireless communication device, such as a cell phone, in enforcing a no-photography rule.

Background

[0002] With the proliferation of portable wireless electronic devices with camera functions, such as cell phones and personal digital assistants (PDAs), there are growing concerns about inappropriate usage of camera function of such devices. Such concerns may include security issues, commercial espionage, invasion of privacy, and so on. Before entering the premises of institutions or organizations, for example, museums, art galleries, prisons, military bases and court houses, where no photography is permitted, users of such cell phones are required to surrender them to a security personnel. This creates inconveniences, for example, by depriving users of such cell phones of their communication channels.

[0003] Cell phones with camera functions are typically equipped with blue-tooth wireless technology. Attempts have been made to install blue-tooth transponders to detect the presence of such cell phones within the no-photography zones and to disable the detected cell phones. Such software-dependent solutions, such as the "Safe-Haven" by Iceberg Systems, "Mobile Guardian" by Credant Technologies, and systems disclosed in published US patent applications 2006/0019645 by Azimi, et al; and 2006/0088041 by Rockett. These prior art systems require appropriate softwares to be installed in such cell phones before the cell phones can communicate with the blue-tooth transponders. A limitation is that the security personnel must be knowledgeable

in the operations of a wide range of cell phones with camera functions and the compatible softwares. Another limitation is that a user may disable the blue-tooth wireless function of such devices such that the blue-tooth transponder would not detect a cell phone with camera function being brought into a no-photography zone.

[0004] It can thus be seen that there exists a need for another system for disabling a camera function of a portable wireless electronic device without depriving the owner from using the other functions of such devices. At the same time, the present invention aims to overcome the disadvantages of the existing prior art.

Summary

[0005] The following presents a simplified summary to provide a basic understanding of the present invention. This summary is not an extensive overview of the invention, and is not intended to identify key features of the invention. Rather, it is to present some of the inventive concepts of this invention in a generalised form as a prelude to the detailed description that is to follow.

[0006] One embodiment of the present invention provides a device for temporarily disabling a camera. The device comprises: an endless heat shrinkable band having a transparent/translucent portion and an opaque portion along the endless band, wherein the endless heat shrinkable band has a width, and the endless band is sleeved over the camera such that the opaque portion covers a lens of the camera when the heat shrinkable band is heat shrunk, and the camera is re-operable after removing the heat-shrunk band.

[0007] Another embodiment of the present invention provides a kit for temporary disabling a camera of an electronic device. The kit comprises: an endless heat shrinkable band having a transparent/translucent portion and an opaque portion along the endless

band, such that the endless band is operable to be sleeved over the electronic device and to cover a lens of the camera when the heat shrinkable band is heat shrunk, and the camera is re-operable after breaking the heat-shrunk band; and a heat shield with an aperture, such that, during use, the endless heat shrinkable band on the electronic device is in register with the aperture.

[0008] Another embodiment of the present invention provides a method of temporary disabling a camera of an electronic device in a no-photography zone. The method comprises: sleeving an opaque region of an endless heat shrinkable band over a lens of the camera before entering the no-photography zone; heat shrinking the endless band; and breaking the heat-shrunk band upon exiting the no-photography zone.

[0009] Yet another embodiment of the present invention provides a method of manufacture of the heat shrinkable band. The method comprises: moulding the heat shrinkable band in a two-feeding channel injection machine into a tubular form; and extruding the moulded tube into the required size of the band and thickness. In one embodiment, the one feeding channel forms a transparent/translucent region and the other feeding channel forms an opaque region. The other feeding channel may include feeding a plasticizer. In another embodiment, the method further comprises insert moulding a metal element in the opaque region or attaching a metal element on the opaque region after moulding and extruding.

[0010] In one embodiment of the heat shrinkable band, an inside surface of the endless heat shrinkable band, or part thereof, comprises a tacky or adhesive coating. In another embodiment, an outside surface of the opaque region comprises a security endorsement or sign-on area. The security sign-on area may be integrally moulded and extruded with the opaque region. In another embodiment, the opaque region comprises a metal element. The metal element may be a metal foil, a metal strip or a wire mesh. In another

embodiment, the heat shrinkable band comprises a perforated line across the width of the endless band or a notch or serrated edge along a circumferential edge of the band.

Brief Description of the Drawings

[0011] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0012] FIG. 1A illustrates a heat shrinkable band for disabling camera of a portable electronic device in accordance with an embodiment of the present invention;

[0013] FIG.1B-1F illustrates variations of the heat shrinkable band shown in FIG. 1 in accordance with other embodiments of the present invention;
FIG. 1G illustrates another view of the heat shrinkable band shown in FIG. 1B; and

[0014] FIG. 2 illustrates a heat shield for use with the present invention; and

[0015] FIG. 3A illustrates a use of the heat shrinkable band on a cell phone according to the present invention;
FIG. 3B illustrates a front view of the cell phone with a heat-shrunk band applied thereon, whilst FIG. 3C illustrates a rear view of the cell phone with the heat-shrunk band.

Detailed Description

[0016] One or more specific and alternative embodiments of the present invention will now be described with reference to the attached drawings. It shall be apparent to one skilled in the art, however, that this invention may be practised without such specific

details. Some of the details may not be described at length so as not to obscure the invention. For ease of reference, common reference numerals or series of numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0017] FIG. 1A shows a heat shrinkable band 10 according to an embodiment of the present invention. As shown in FIG. 1A, the heat shrinkable band 10 is an endless sleeve with a width W. The endless band or sleeve 10 has a transparent or translucent portion 20 and an opaque region 30. The band 10 may be made to various sizes and widths W.

[0018] In use, the opaque region 30 is arranged to cover a camera lens of a portable electronic device 100, such as a cell phone, a PDA, or a camera itself. When the band 10 is in position, heat is applied from a hot air blower 250 (as shown in FIG. 2) onto the band 10. As a result of the applied heat, the band 10 shrinks and tightens around the device or camera 100. The opaque region 30 prevents sufficient light from entering through the lens of the camera, thereby temporarily disabling the use of the camera. The transparent or translucent region 20 allows a user to see through the band 10, for example, at the device's monitor screen and/or buttons, thus allowing the user to use the other functions on one's portable device 100. With the present invention, the camera function of a user's portable electronic device can, thus, be temporarily disabled to comply with the no-photography rule without causing inconveniences to the user.

[0019] FIG. 1B shows a heat shrinkable band 10a according to another embodiment of the present invention. As shown in FIG. 1B, the heat shrinkable band 10a is a variation of the earlier band 10 but an inside of the band 10a is coated with a tacky material 40. In use, the tacky material 40 makes it more difficult for a user to slide the band 10a that is heat shrunk on the user's electronic device 100 to expose the camera lens and in any attempt to put the band 10a back into position.

[0020] In another embodiment of the heat shrinkable band 10a, the tacky material 40 may be an adhesive material. In yet another embodiment, the tacky or adhesive material 40 is applied on part of the inside surface of the band 10a, instead of the entire inside surface as in the earlier band 10. The tacky or adhesive portion 40 on the inside surface of the band 10a may cover the opaque region 30a, transparent/translucent region 20a, or both regions. Preferably, the tacky/adhesive portion 40 corresponds with a side edge of the electronic device to make it more difficult for a user attempting to slide the band 10a to expose the camera lens after it is heat shrunk onto the electronic device 100.

[0021] FIG. 1C shows a heat shrinkable band 10b according to another embodiment of the present invention. As shown in FIG. 1C, the heat shrinkable band 10b is similar to the band 10a of the previous embodiment but has an additional perforated line 50 along the width W direction. The perforated line 50 may be at the transparent/translucent region 20b or opaque region 30b. There may also be more than one perforated lines 50. In another embodiment, the perforated line 50 may be oblique to the width direction. In yet another embodiment, the perforated line 50 may be non-linear or arcuate.

[0022] By providing one or more perforated lines 50, one or more areas of weaknesses are provided at the circumference of the heat shrinkable band 10b. The weakened part of the band 10b at the perforated line 50 allows the security personnel to break the band 10b with ease. The ease of breaking the band is also a deterrent to discourage any user from tampering with the band 10b.

[0023] FIG. 1D shows a heat shrinkable band 10c according to another embodiment of the present invention. The heat shrinkable band 10c is a variation of the band 10a shown in FIG. 1B. As shown in FIG. 1D, the band 10c has a notch 60 on a circumferential edge of the band 10c. The notch 60 also provides an area of weakness at the circumference of the band 10c for ease of breaking the band after use or as a tamper

deterrent. The notch 60 may be V-shaped or part circular. There may also be two or more notches 60. Further, the notch(es) 60 may be on each of the two circumferential edges. The opposing notches on the two circumferential edges may be aligned with one another or they may be out of alignment. In addition, the notch(es) 60 may be in combination with the perforated line(s) 50.

[0024] FIG. 1E shows a heat shrinkable band 10d according to another embodiment of the present invention. As shown in FIG. 1E, the heat shrinkable band 10d has serrated circumferential edges 70. These serrated edges 70 also create areas of weakness along the circumferential edges of the band for ease of breaking the band after use or as a tamper deterrent. It is also possible that one circumferential edge 70 is serrated instead of both edges being serrated. In addition, one or more perforated lines 50 may be provided.

[0025] FIG. 1F shows a heat shrinkable band 10e according to another embodiment of the invention. As shown in FIG. 1F, the heat shrinkable band 10e has an addition metal element 80 disposed in or on the opaque region 30. In one embodiment, the metal element 80 is a metal foil or metal strip cut from a sheet. In another embodiment, the metal element 80 is a wire mesh. In one embodiment, the metal element 80 is inserted into the opaque region 30 during moulding. In another embodiment, the metal element 80 is attached, for example by means of adhesive, to the heat shrinkable band 10e after moulding and extruding into a tubular form. The purpose of the metal insert 80 is to reinforce the opaque region 30, for example as a sign-on area 90, which is described in the following paragraph. In addition, the metal insert 80 also makes it more difficult for a user to perforate the opaque region 30 in any attempt to use the camera function of the electronic device 100.

[0026] FIG. 1G shows another view of the heat shrinkable band 10a according the second embodiment of the present invention. As shown in FIG. 10F, an outside surface

of the opaque region 30a of the band 10a has a security endorsement or sign-on area 90. The sign-on area 90 is suitable as an endorsement area for the security personnel permitting a user to bring one's portable device 100 into the no-photography area. Such an endorsement area may be big enough to include an initial of the security personnel and/or a date of authorization. In one embodiment, the sign-on area 90 is white in colour. Alternatively, other colour or colours of light tones may be provided on the sign-on area 90. The sign-on area 90 may be smaller than the opaque region 30a, or it may be as big or bigger than the opaque region 30a. In another embodiment, the sign-on area 90 is coated or pigmented. In yet another embodiment, the sign-on area 90 is an integral part of the opaque region 30a. In a further embodiment, the sign-on area 90 is integrally moulded and extruded with the opaque region 30a and transparent region 20a in a form of a tube and the endless band is formed by cutting the tube into the desired widths W. In addition, the moulded opaque region 30a may be plasticised. The plasticised opaque region 30 is harder than the transparent region 20a and allows the security personnel to endorse on the sign-on area 90 after the band 10a is heat-shrunk on the electronic device 100.

[0027] FIG. 2 shows a shield 200 for use with the present invention. As shown in FIG. 2, the shield 200 has a base 210 that is connected to an upright portion 220 and a slant portion 230. The slant portion 230 makes an angle with the upright portion 220 or base 210 such that it is ergonomically orientated to the security personnel or operator. On the slant portion 230 is an aperture 240, behind which the electronic device 100 with the heat shrinkable band 10, 10a, 10b, etc. of the present invention is positioned. When the band 10, 10a, etc. is in register with the aperture 240, the shield 200 allows hot air from a hot-air gun 250 to go through the aperture 240 and shrink the band 10, 10a, etc. The shield 200 helps to minimize hot air from the hot-air gun 250 from heating up a large part of the electronic device 100. The shield 200 may, thus, help to reduce any damage to the electronic device 100.

[0028] FIG. 3A shows an application of the heat shrinkable band 10,10a, etc. on a cell phone 100a. As shown in FIG. 3A, the heat shrinkable band 10,10a, etc. is sleeved over the cell phone 100a with a camera function such that the opaque region 30,30a, etc. of the band 10,10a,etc covers the lens of the cell phone's camera. The band 10,10a, etc. is then heat shrunk with a hot-air gun, for example as shown in FIG. 2. FIG. 3B shows a front view of the cell phone 100a with the display screen and/or buttons still visible and operable through the transparent/translucent region 20,20a, etc. of the band 10,10a, etc. FIG. 3C shows a rear view of the cell phone 100a with the opaque region 30,30a, etc. covering the lens of the cell phone's camera. Also shown in FIG. 3C is the endorsement or sign-on area 90 at the opaque region 30,30a, etc.

[0029] Upon exiting the no-photography zone of a security sensitive area, a user with the heat shrinkable band 10,10a, etc. still intact on one's electronic device 100, presents it to the security personnel for the band to be removed, for example, by breaking or tearing the band 10,10a, etc. at the perforated line 50, notch 60 and/or serrated edge 70. Alternatively, the security personnel may cut the band with a pair of scissors. If the band 10,10a, etc. is tampered with, for example, the lens of the cell phone's camera is exposed or the band 10,10a, etc. is broken, the security personnel would interrogate the user and take necessary remedial actions.

[0030] The heat shrinkable band 10,10a, etc according to the present invention may be made of any known heat shrinkable material. Heat shrinkable bands with thin walls, low-temperature application, and/or low-shrinkage types are preferred.

[0031] While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the present invention.

CLAIMS:

1. A device for temporary disabling a camera, said device comprising:
an endless heat shrinkable band having a transparent/translucent portion and an opaque portion along the endless band;
wherein the endless heat shrinkable band has a width, and the endless band is sleeved over the camera such that the opaque portion covers a lens of the camera when the heat shrinkable band is heat shrunk, and the camera is re-operable after removing the heat-shrunk band.
2. A device according to claim 1, wherein an inside surface of the endless heat shrinkable band has a tacky or adhesive coating.
3. A device according to claim 2, wherein the tacky or adhesive coating is on part of the inside surface of the endless band.
4. A device according to any one of the preceding claims, wherein an outside surface of the opaque region has a security endorsement or sign-on area.
5. A device according to claim 4, wherein the security endorsement/sign-on area has a light colour and the security endorsement/sign-on area is integrally moulded and extruded with the opaque portion.
6. A device according to claim 4 or 5, wherein the opaque region further comprising a metal element.
7. A device according to claim 6, wherein the metal element is a metal foil, metal strip or wire mesh.

8. A device according to any one of the preceding claims, wherein the endless heat shrinkable band further comprises a perforated line for creating a line of weakness across the width of the endless band.
9. A device according to claim 8, wherein the perforated line is straight.
10. A device according to claim 8, wherein the perforated line is arcuate.
11. A device according to claim 8 or 9, wherein the perforated line is parallel to the width direction.
12. A device according to any one of claims 8-10, wherein the perforated line is at an angle to the width direction.
13. A device according to any one of the preceding claims, further comprising a notch or notches along a circumferential edge of the endless band.
14. A device according to any one of the preceding claims, wherein one or both circumferential edges of the endless heat shrinkable band is/are serrated.
15. A kit for temporary disabling a camera of an electronic device, said kit comprising any one of the following:
 - an endless heat shrinkable band having a transparent/translucent portion and an opaque portion along the endless band, such that the endless band is operable to be sleeved over the electronic device and to cover a lens of the camera when the heat shrinkable band is heat shrunk, and the camera is re-operable after breaking the heat-shrunk band; and
 - a heat shield with an aperture, such that, during use, the endless heat shrinkable band on the electronic device is in register with the aperture.

16. A method of temporary disabling a camera of an electronic device in a no-photography zone, said method comprising:

sleeving an opaque region of an endless heat shrinkable band over a lens of the camera before entering the no-photography zone;

heat shrinking the endless band; and

breaking the heat-shrunk band upon exiting the no-photography zone.

17. A method according to claim 16, wherein the endless heat shrinkable band also comprises a transparent or translucent region, said transparent/translucent region still allowing a user to read a display screen and to operate buttons on the electronic device.

18. A method according to claim 16 or 17, wherein the endless heat shrinkable band further comprising a tacky or adhesive coating on an inside surface of the endless band.

19. A method according to claim 18, wherein the tacky or adhesive coating is on part of the inside surface of the endless band.

20. A method according to claim 19, wherein the tacky/adhesive coating region contacts a side edge of the electronic device to make it more difficult for a user to uncover the camera lens.

21. A method according to any one of claims 16-20, further comprising an area of weakness at a circumferential edge of the endless band formed by a perforated line, a notch or serrated edge.

22. A method according to claim 21, wherein breaking the heat-shrunk band includes initiating a tear at the perforated line, notch or serrated edge.

23. A method of manufacture of the heat shrinkable band according to any one of claims 1-14, said method comprising:

moulding the heat shrinkable band in a two-feeding channel injection machine into a tubular form; and

extruding the moulded tube into the required size of the band and thickness.

24. A method of manufacture according to claim 23, wherein one feeding channel forms a transparent/translucent region and the other feeding channel forms an opaque region.

25. A method of manufacture according to claim 24, wherein the other feeding channel also includes feeding a plasticizer to the opaque region during moulding.

26. A method of manufacture according to claim 24 or 25, further comprising insert moulding a metal element in the opaque region.

27. A method of manufacture according to claim 24 or 25, further comprising attaching a metal element on the opaque region after moulding and extruding.

28. A method of manufacture according to claim 26 or 27, wherein the metal element is a metal foil, metal strip or wire mesh.