temperatures. In one implementation, the thermodynamic properties of liquid L may enable touch panel **32** to be used in any type of climate as well as at any elevation, for instance in aircraft in flight. Liquid L may be, for example, an oil-based liquid, such as an olive oil-based liquid. Other properties are possible. Any one or more of above-mentioned properties may be present in liquid L.

[0038] FIG. **2** illustrates a example of how ambient light that is angularly incident upon panel **24** may be reflected from the various interfaces between all the layers of the structure, as well as from the interfaces between liquid L and electrically conducting layers **18** and **22**. It should be appreciated that the given exemplary arrows indicating the various paths of light is a simplified representation and is not intended as a compete representation of all of the optic qualities (e.g., intensity, refraction, wavelength, etc.) inherent to any particular arrangement of touch panel **32**.

[0039] Clarity of images to be presented via display **30**, may be based on, at least in part, the number of reflections occurring (for a given photon) in touch panel **32**. Of particular interest here, for instance, are the reflections produced by the interfaces between first and second electrically conducting layers **18** and **22** and liquid L in chamber **20**.

[0040] In one implementation, optical properties of liquid L may include a refractive index that is greater than the refractive index of air. In other implementations, in which liquid L exhibits properties that reflect even less, the refractive index of liquid L may furthermore be matched to the refractive index of at least first electrically conducting layer **18** and, in one implementation, also to the refractive index of second electrically conducting layer **22**.

[0041] The reflection at an interface may be readily determined according to an equation (1) below, which specifies the reflection for incident light perpendicular to the upper side of first electrically conducting layer **18**:

$$R=(n_1-n_2)^2/(n_1+n_2)^2 \qquad \text{Eq. (1)}$$

where R is the reflectivity, n_1 is the refractive index of first electrically conducting layer **18**, and n_2 is the refractive index of liquid L.

[0042] In one implementation, the refractive index(es) may be chosen so that a suitably low reflectivity may be achieved. The refractive index of liquid L may be chosen, for example, within an interval (i.e., range) that provides reflection for incident light off liquid L in relation to first electrically conducting layer **18** that is at or below a predetermined amount. The reflectivity may be, for instance, less than 100 percent, for example, 50 percent or less, e.g., about forty, thirty, twenty, or ten percent. In some implementations, the predetermined reflectivity may be nine, eight, seven, six, five, four, three, two, or one percent, or any fraction thereof. In yet another implementation, the predetermined amount of reflectivity may be less than one percent. The reflectivity may be readily set based on Eq. (1), by selection of the properties of the refractive index n_1 of first electrically conducting layer **18**. For the ITO materials mentioned above, n_1 may be about 1.95. To obtain a reflectivity of below four percent, a corresponding refractive index n_2 of liquid L may be from between about 1.3 and 3.

[0043] The graph in FIG. **3** shows an exemplary plot of reflectivity as a function of refractive indexes n_2 for liquid L when the electrically conducting material is ITO having a refractive index n_1 of about 1.95. Table 1 below shows the different values for the refractive indexes and the various grades of reflectivity plotted in FIG. **3**.

TABLE 1

n_1	n_2	R
1.95	1	10%
1.95	1.1	8%
1.95	1.2	6%
1.95	1.3	4%
1.95	1.4	3%
1.95	1.5	2%
1.95	1.6	1%
1.95	1.7	0%
1.95	1.8	0%
1.95	1.9	0%
1.95	2	0%
1.95	2.1	0%
1.95	2.2	0%
1.95	2.3	1%
1.95	2.4	1%
1.95	2.5	2%
1.95	2.6	2%
1.95	2.7	3%
1.95	2.8	3%
1.95	2.9	4%
1.95	3	4%
1.95	3.1	5%
1.95	3.2	6%
1.95	3.3	7%
1.95	3.4	7%
1.95	3.5	8%
1.95	3.6	9%
1.95	3.7	10%
1.95	3.8	10%

[0044] According to the above-mentioned Eq. (1), the refractive index n_2 of liquid L may thus be selected within an interval for obtaining a desired reflectivity R for a material property n_1 according to the expression (2) below:

$$n_1*(1-\sqrt{R})/(1+\sqrt{R})<n_2<n_1*(1+\sqrt{R})/(1-\sqrt{R}) \qquad \text{Eq. (2)}$$

Eq. (2) is based on incident light that is perpendicular to the upper side of first electrically conducting layer **18**. It should be appreciated that Eq. (2) may be modified based on a modification of Eq. (1), which also considers other angles of incidence.

[0045] When the touch panel **32** is used, a user may press on an area of shielding layer **16**, which in turn may press down first electrically conducting layer **18** into contact with second electrically conducting layer **22**, while displacing liquid L substantially from between first and second electrically conducting layers **18** and **22**. The point of contact may then be registered electrically and operatively used in phone **10**.

[0046] Implementations of the present invention provide a number of advantages. If the liquid is better index matched to the conducting layer than air, the result will be a resistive touch panel, such as touch panel **32**, exhibiting comparatively fewer reflections. Thus, the display will appear clearer and exhibit sufficient contrast, for example, when the phone is used in bright sunshine. Another beneficial characteristic of various implementations according to the invention, is that distorting optical effects, such as Newton's Rings, are eliminated. Implementations of the invention also obviate the need for spacers and other elements designed to counter optical problems like diffusive anti-Newton's ring layers. As such, fine tuning of the optical characteristics of the chamber may be achieved. Because of the superior optical properties, the panel will not be rendered a grayish color when not being