of the response at the sensor location is influenced by the boundary conditions at the edge, in the vicinity of the sensor; and (4) The sensor transducer itself may be implemented to measure the response of different physical quantities. Examples include velocity, force, in-plane stress, and curvature. These physical parameters are not generally in-phase, and depending on which parameter is measured, different phase factors may be introduced.

[0129] The action of a phase factor is to change the shape of the reconstructed impulse. The resulting impulses are still time-aligned and similar in shape after reconstruction. However, their similarity to an impulse may be compromised by such an arbitrary phase factor. For this reason, the method of impulse reconstruction as described above may be extended to include correction for a constant phase in addition to the phase associated with the first arrival distance. This may be chosen to improve the sharpness of the reconstructed impulse shape.

[0130] Impulse reconstruction may be used for purposes other than for contact location confirmation. For example, impulse reconstruction may be employed to determine the strength (z-axis sensitivity) of touches to a touch sensitive plate. Z-axis sensitivity refers to the ability to detect the strength of a touch. To some extent, this is possible with the raw pickup signals. Course differentiation of a hard versus soft contact may be achieved by comparison of the voltage levels generated. For example, a hard contact will generate a larger RMS voltage level than a soft contact.

[0131] Reference is now made to **FIGS. 30-32**. **FIG. 30** shows the location of two contacts on a touch sensitive panel. The resulting pickup signals for the two contacts are shown in **FIG. 31**, where the four traces for each contact are shown in overlaid fashion. The traces of the second contact clearly show greater voltage levels. However, the shapes of the signals differ due to the different amount of dispersion associated with the contact/sensor separation. Detailed quantification of the relative level requires comparison of the impulse reconstructed traces, as shown in **FIG. 32**.

[0132] The impulse reconstructed signals shown in **FIG. 32** allow the strength of touch to be determined with considerably greater accuracy than is possible using only the dispersed pickup signals. It is noted that the traces shown in **FIG. 32** have been corrected for both the phase factor and square root amplitude decay with distance, whereas previous graphs were only corrected for phase factor. This full correction both aligns the impulses in time and also the overall amplitude. The relative strength of the impulses in this illustrative example is approximately a factor of two in voltage (6 dB).

[0133] The foregoing description of the various embodiments of the invention has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the above teaching. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

What we claim is:

**1**. A method for use with a touch sensitive device comprising a touch plate to which a plurality of sensors are coupled, the method comprising:

generating, in response to a touch to the touch sensitive device, sensor signals exhibiting dispersion;

correcting for the dispersion in the sensor signals to produce dispersion corrected signals;

determining a location of the touch using the dispersion corrected signals;

reconstructing impulses representative of impulses generated by the touch to the touch sensitive device; and

confirming the location of the touch using the reconstructed impulses.

**2**. The method of claim 1, wherein reconstructing the impulses further comprises determining a dispersion relation of the touch plate.

**3**. The method of claim 1, wherein reconstructing the impulses further comprises determining dimensions of the touch plate.

**4**. The method of claim 3, wherein determining the dimensions of the touch plate comprises using an excitation transducer coupled to the touch plate and the plurality of sensors to determine the dimensions of the touch plate.

**5**. The method of claim 4, wherein determining the dimensions of the touch plate comprises:

applying an excitation signal generated by the excitation transducer to the touch plate and sensing the excitation signal by each of the sensors;

determining a transfer function of an input at the excitation transducer to an output at each of the sensors;

determining, for each of the sensors, a dispersion corrected impulse response using the transfer function; and

determining the dimensions of the touch plate using the respective dispersion corrected impulse responses.

**6**. The method of claim 1, wherein reconstructing the impulses comprises:

determining a separation distance between the touch location and each of the sensors;

developing, for each of the sensors, an inverse phase factor using the respective separation distances; and

applying the inverse phase factor to the sensor signals to reconstruct the impulses.

**7**. The method of claim 1, wherein confirming the location of the touch comprises assessing similarity of one or more features of the reconstructed impulses.

**8**. The method of claim 7, wherein assessing similarity of the reconstructed impulses comprises:

confirming the touch location as valid in response to the similarity assessment achieving a threshold; and

considering the touch location as invalid in response to the similarity assessment failing to achieve the threshold.

**9**. The method of claim 1, wherein confirming the location of the touch comprises assessing synchronicity of the reconstructed impulses.

**10**. The method of claim 1, wherein confirming the location of the touch comprises assessing time of arrival and shape of each of the reconstructed impulses.

**11**. The method of claim 1, wherein confirming the location of the touch comprises:

computing an average of the reconstructed impulses to emphasize a particular feature of the reconstructed impulses; and