CLAIMS

1. A laminate comprising the combination of:

a base laminate including resin impregnated woven glass fabric sheet material having a first planar surface, a second planar surface, the woven glass fabric sheet having an original thickness of from 10 to 30 microns; and

at least one copper foil sheet that is adhered to a planar surface of the woven glass fabric sheet material by a cured resin wherein the base laminate thickness is from 25 to 45 microns [1.0 to 1.75 mils] and wherein the laminate has an average minimum dielectric thickness of no less than 19 microns [0.75 mils] and an average maximum dielectric thickness of no greater than 38 microns [1.5 mils], wherein the dielectric thickness refers to the range between the measured minimum and maximum thicknesses of the resin impregnated woven fabric material portion of the laminate and does not include the thickness of any copper layer associated with the laminate, and

wherein the base laminate thickness differs by no more than 20% when measured at the center and each of four corners of a 46 cm by 61 cm [18 inch by 24 inch] rectangular laminate sheet.

2. The laminate of claim 1 wherein the laminate has an average minimum dielectric thickness of no less than 20 microns [0.8 mils] and an average maximum dielectric thickness no greater than 30 microns [1.2 mils].

3. The laminate of claim 1 having a base laminate thickness of from 33 to 41 microns [1.3 to 1.6 mils].

4. The laminate of claim 1 wherein the copper foil has a thickness of from 15 to 40 microns or from 15 to 25 microns.

5. The laminate of claim 1 wherein the resin includes a flow control agent.

6. The laminate of claim 5 wherein the flow control agent is a phenoxy resin that is present in the resin in an amount ranging from more than 0 wt. % to 2 wt. % on a dry resin basis.

7. The laminate of claim 1 wherein the woven glass fabric has no more than 2 glass filaments stacked over and under wherein the glass filaments have a diameter of from 3 microns to 5 microns.

8. The laminate of claim 7 wherein the woven glass fabric has a filament diameter of 4

microns.

9. The laminate of claim 1 wherein the woven glass fabric sheet has a thickness of from 25 to 38 microns [1.0 to 1.5 mils].

10. The laminate of claim 1 wherein a copper foil sheet is adhered to each of the first and second base laminate planar surfaces by the cured resin wherein the laminate has an average minimum dielectric thickness of no less than 20 microns [0.8 mils] and an average maximum dielectric thickness of no greater than 30 microns [1.2 mils] wherein the woven glass fabric has no more than 2 glass filaments stacked over and under.

11. A method for manufacturing an ultrathin laminate material comprising the steps of:

placing a first copper foil sheet having a b-staged resin layer on at least one planar surface of the first copper foil sheet into contact with a first planar surface of a woven glass fabric sheet having a thickness of from 10 to 30 microns such that the planar surface of the woven glass fabric sheet contacts the resin coating to form a layup;

applying pressure and/or heat to the layup to cause the b-staged resin associated with the resin coated copper layer to penetrate into the woven glass fabric sheet; and

curing the b-staged resin for a time sufficient to cure the resin to form a laminate sheet having a dielectric thickness of from 19 microns [0.75 mils] to no greater than 38 microns [1.5 mils], wherein the dielectric thickness refers to the range between the measured minimum and maximum thicknesses of the resin impregnated woven fabric material portion of the laminate and does not include the thickness of any copper layer associated with the laminate, and

wherein the b-staged resin has a gel-time of 40-50 seconds and a viscosity of 15-25 Pascal seconds.

12. The method of claim 11 wherein a second copper sheet is placed into contact with a second planar surface of the woven glass fabric sheet before applying pressure and heat to the layup wherein the woven glass fabric sheet is impregnated with a resin or a layer of resin lies between the second copper foil sheet and the fabric sheet second planar surface or both.

13. The method of claim 11 wherein the laminate has an average minimum dielectric thickness of no less than 20 microns [0.80 mils] and an average maximum dielectric thickness of no greater than 30 microns [1.2 mils].

14. The method of claim 11 wherein the first copper foil sheet includes a b-staged resin layer having a thickness of from 10 to 25 microns.