Notes for the safety approval of Silver Telecom Ag2120S

All references are to UL1950 3rd edition

The Ag2120S is designed to provide an insulation barrier from its telephone port, which is classed as TNV, and various parts of the user's equipment. These are :-

1) A basic insulation barrier to unearthed accessible parts as required by 6.2.1.2

2) Insulation to earth as required by 6.3.3.1

3) Electrical separation as required by 6.4.1

The voltage across the barrier is TNV. The PCB material is unspecified so is taken as group IIIb according to Table 6 note 4.

For clearance calculations the working voltage is taken as the peak voltage (as specified in 2.2.7.3). From M.3.1.2 the maximum peak voltage is 200V.

From Table 5 the required clearance for basic insulation at 200V is 1.3mm.

For creepage calculations the working voltage is taken as DC voltage (as specified in 2.2.7.4 cadenced ringing is disregarded). From M.3.1.3 the maximum DC voltage is 56.5V.

From Table 6 the required creepage for basic insulation at 56.5V DC is 1.2mm.

The minimum creepage distance provided across the barriers marked on the PCB tracking drawings is 1.5mm.

The components bridging the barrier are:-

1) Transformer T1. Atech ATS324-A UL File E159603.

2) Opto coupler OC1. Cosmo KP4010S. UL File E169586

3) Opto coupler OC2. Cosmo KP1010S. UL File E169586

4) Resistors R25,26,27,28 Yageo RC06 or Dubilier RPC25.

Resistors across the barrier are permitted by 2.2.8.2. Two resistors in series are used with a minimum creepage distance of 1.50mm each.

Other safety barriers must be provided separately by the equipment designer. For example the insulation barrier required between the hazardous mains power voltage and the equipment must be provided in a separate power supply unit. The protection required against the overvoltage conditions of Annex NAC (USA only) must be provided by external current and voltage limiting devices and/or a fire enclosure.