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Consultation Directive 2002/95/EC
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Stakeholder Consultation on Adaptation to Scientific and Technical Progress Under Directive
2002/95/EC for the Purpose of a Possible Amendment of the Annex

Dear Sir/Madam,

Lucent Technologies welcomes the opportunity to contribute to the EC stakeholder consultation concerning exempted applications from the above EU Directive and would like to offer some answers to the Consultation with respect to the questions given in relation to item 3 in your section "4. Consultation of interested Parties":

3. Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications (with a view to setting a specific time limit for this exemption)

- *Do feasible substitutes currently exist in an industrial and/or commercial scale?*
Currently no feasible alternatives exist that can ensure the necessary reliability for this mission critical equipment.

Alternatives to lead soldering known today are not proven with respect to their capability to fulfil all network infrastructure equipment requirements among which high reliability over a long life time (10 to 20 years) is a major concern.

- *Do any restrictions apply to such substitutes?*
The concern with the applications listed against this item is the long term reliability of lead-free solders. Lead-free solders have been in use in a limited range of commercial products for only a few years. The long term reliability in service is not known. Accelerated tests indicate that lead-free solder joint performance is different to tin/lead solders but it is not yet possible to extrapolate accelerated life tests results to predict field behaviour and this will not be possible until products made with lead-free solders have been in use for at least 10 years.

Also the potential alternatives do require a higher soldering temperature and there has been very little research into the effect of the higher soldering temperature on the reliability of some components as they will be exposed to higher temperatures in the manufacturing process.

The uncertainties described above may be less of an issue for relatively short lived equipment used in benign office or home environments but has significant implications for the applications listed in this item which are in many cases mission critical for users who rely on

services being available at all times.

Once a fully qualified alternative becomes available sufficient time must be allowed for implementation by industry.

- *What are the costs and benefits and advantages and disadvantages of such substitutes?*
- See above

Kind regards,

[signature]

Arjen Salemink
Lucent Technologies