Remark: This paragraph is a new paragraph – bold characters are modifications done according to discussion during the 11th session of IWG ASEP

6.2.4. **Provisions against manipulation**

Any ~~actively~~ **electronically** controlled sound emission system shall be supervised for proper functioning. A defect, malfunction or manipulation shall be recognized by the system and an information be displayed to the driver.

6.2.4.1. **Software manipulation**

6.2.4.1.1. Any ~~actively~~ **electronically** controlled sound emission system shall be supervised for proper functioning. A defect, malfunction or manipulation shall be recognized by the system and an information be displayed to the driver.

6.2.4.1.2. Any component of the vehicle which is relevant for the exterior sound emission and is controlled by an electronic control computer unit shall include features to deter modification, except as authorised by the manufacturer.

Any reprogrammable computer codes or operating parameters shall be resistant to tampering and afford a level of protection at least as good as the provisions in *ISO 15031-7 (March 15, 2001)*. Any removable calibration memory chips shall be potted encased in a sealed container or protected by electronic algorithms and shall not be changeable without the use of specialized tools and procedures.

6.2.4.1.3. Computer-coded engine operating parameters shall not be changeable without the use of specialized tools and procedures (e.g. soldered or potted computer components or sealed (or soldered) enclosures).

6.2.4.1.4. Manufacturers using programmable computer code systems shall deter unauthorised reprogramming. Manufacturers shall include enhanced tamper protection strategies and write-protect features requiring electronic access to an off-site computer maintained by the manufacturer.

6.2.4.1.5. The Type Approval Authority may exempt a vehicle manufacturer from above requirements either in parts or completely for those vehicles which are unlikely to require protection. The rational for the exemption shall be documented.

6.2.4.2. **Hardware manipulation**

Any hardware component relevant for the ~~active~~ control of a sound emission system, shall be mounted to the vehicle in a way, that removal or replacement is only possible by special tools and expertise. This applies ~~especially~~ **in general** to control units for active systems ~~in general~~ and to components like exhaust or intake flaps, or to vacuum tubes controlling the flaps**,** **baffles, exit-cones and other parts whose primary function is as part of the silencing/expansion chambers**.

~~6.2.4.2.2. All exhaust or silencing systems shall be constructed in a way that does not easily permit removal of baffles, exit-cones and other parts whose primary function is as part of the silencing/expansion chambers. Where incorporation of such a part is unavoidable, its method of attachment shall be such that removal is not facilitated easily (e.g. with conventional threaded fixings) and should also be attached such that removal causes permanent/irrecoverable damage to the assembly.~~ *~~(copy from UN R41.04 paragraph 6.5.1.)~~*