Comment #192

Original text:

97.10.1 General Safety

Motor vehicle equipment implementations in this clause shall conform to all applicable local or national motor vehicle standards or as agreed to between the customer and supplier All equipment subject to this clause that is not used in automotive applications shall conform to IEC 60950-1 for IT applications, or for-non IT applications, the relevant local or national codes

Proposed text:

97.10.1 General Safety

All equipment subject to this clause shall conform to IEC 60950-1 (for IT and motor vehicle applications) and to ISO 26262 (for motor vehicle applications only, if required by the given application). All equipment subject to this clause may be additionally required to conform to any applicable local or national motor vehicle standards or as agreed to between the customer and supplier.

Comment #187

Original text:

97.10.2 Network Safety

All cabling and equipment shall be installed in a workman like manor, mechanically and electrically secure. The designer is urged to consult the relevant local, national, and international safety regulations to ensure compliance with appropriate requirements. In automotive applications all cabling shall be routed to provide maximum protection by the vehicle sheet metal and structural components. As an example SAE J1292, Automobile, Truck-Tractor, Trailer, and Motor Coach Wiring, can be referred to for general recommendations and guidelines. Several other documents may also be considered as providing motor vehicle guidance, e.g. ISO 14229 Road Vehicles-Unified Diagnostic Services and ISO 15764 Road Vehicles-Extended data Link Security

Proposed text:

97.10.2 Network Safety

All cabling and equipment subject to this clause is expected to be installed professionally in a mechanically and electrically secure manner. In automotive applications, all 1000BASE-T1 cabling shall be routed in way to provide maximum protection by the motor vehicle sheet metal and structural components, following SAE J1292, ISO 14229, and ISO 15764.

Note: add SAE J1292, ISO 14229, and ISO 15764 to list of normative references

Comment #188

Original text:

97.10.3.1 Environmental Stresses

The 1000BASE T-1 PHY was originally designed to operate in the automotive environment. All equipment in this clause shall conform to the potential environmental stresses described in ISO 16750 with respect to their mounting location or

as agreed to between the customer and supplier. ISO 16750 is a 5-part specification with the Environmental loads defined as follows:

? Part 1: General

? Part 2: Electrical loads

? Part 3: Mechanical loads

? Part 4: Climatic loads

? Part 5: Chemical loads

Automotive environmental conditions are generally more severe than those found in many commercial environments. The targeted application environment(s) require careful analysis prior to implementation.

Proposed text:

97.10.3.1 Environmental Safety

The 1000BASE-T1 PHY is designed to operate in the automotive environment. All equipment subject to this clause shall conform to the potential environmental stresses with respect to their mounting location, as defined in the following specifications:

1. general loads: ISO 16750-1,

2. electrical loads: ISO 16750-2, ISO 7637-2:2008, and ISO 8820-1,

3. mechanical loads: ISO 16750-3, ASTM D4728, and ISO 12103-1,

4. climatic loads: ISO 16750-4 and IEC 60068-2-1/27/30/38/52/64/78,

5. chemical loads: ISO 167540-5 and ISO 20653

Automotive environmental conditions are generally more severe than those found in many commercial environments. The targeted application environment(s) require careful analysis prior to implementation.

Note: add ISO 16750-1, ISO 16750-2, ISO 7637-2:2008, ISO 8820-1, ISO 16750-3, ASTM D4728, ISO 12103-1, ISO 16750-4, IEC 60068-2-1/27/30/38/52/64/78, ISO 167540-5, and ISO 20653 to list of normative references

Comment #189

Original text:

97.10.3.2 Electromagnetic Compatibility

A system integrating the 1000BASE T-1 PHY shall comply with all applicable local and national codes, or as agreed to between the customer and supplier, for the limitation of electromagnetic interference. CISPR 25 test methods have been defined to measure the EMC cperformance of the PHY in terms of RF immunity and RF emission. Generally, motor vehicle EMC requirements are defined by CISPER 25 (radiated Emissions) and ISO 11452 (Radiated Immunity); however, exact test setup and test limit values may be adapted by each customer

Proposed text:

97.10.3.2 Electromagnetic Compatibility

A system integrating the 1000BASE-T1 PHY shall comply with all applicable local and national codes, or as agreed to between the customer and the supplier, for the limitation of electromagnetic interference. A 1000BASE-T1 PHY shall be tested according to IEC CISPR 25 test methods defined to measure the PHY's EMC performance in terms of RF immunity and RF emissions. When used in an automotive environment, a 1000BASE-T1 PHY shall meet the following motor vehicle EMC requirements:

1. Radiated/Conducted Emissions: CISPR 25, IEC 61967-1/4, and IEC 61000-4-21

2. Radiated/Conducted Immunity: ISO 11452, IEC 62132-1/4, and IEC 61000-4-21

3. Electrostatic Discharge: ISO 10605 and IEC 61000-4-2/3

4. Electrical Disturbances: IEC 62215-3 and ISO 7637-2/3

Exact test setup and test limit values may be adapted to each specific application, subject to agreement between the customer and the supplier.

Note: add CISPR 25, IEC 61967-1/4, IEC 61000-4-21, ISO 11452, IEC 62132-1/4, ISO 10605, IEC 61000-4-2/3, IEC 62215-3, and ISO 7637-2/3 to list of normative references

ASTM D4728 Standard Test Method for Random Vibration Testing of Shipping Containers
IEC 60068-2-1/27/30/38/52/64/78 Environmental testing
IEC 61000-4-2 Electromagnetic compatibility (EMC) – Part 4-2 : Testing and measurement techniques – Electrostatic discharge immunity test
IEC 61000-4-3 Electromagnetic compatibility (EMC) – Part 4-3 : Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
IEC 61000-4-21 Electromagnetic compatibility (EMC) – Part 4-21 : Testing and measurement techniques – Reverberation chamber test methods
IEC 61967-1 Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 1 : General conditions and definitions
IEC 61967-4 Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 4: Measurement of conducted emissions, 1 ohm/150 ohm direct coupling method
IEC 62132-1 Integrated circuits – Measurement of electromagnetic immunity, 150 kHz to 1 GHz – Part 1: General conditions and definitions
IEC 62132-4 Integrated circuits – Measurement of electromagnetic immunity, 150 kHz to 1 GHz – Part 4: Direct RF power injection method
IEC 62215-3 Integrated circuits – Measurement of impulse immunity – Part 3 : Non-synchronous transient injection method
IEC CISPR 25:2009 Vehicles, boats and internal combustion engines – radio disturbance characteristics – limits and methods of measurement for the protection of on-board receivers
ISO 7637-2:2008 Road vehicles – Electrical disturbances from conduction and coupling – Part 2: Electrical transient conduction along supply lines only
ISO 7637-3:2007 Road vehicles – Electrical disturbances from conduction and coupling – Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines
ISO 8820-1:2014 Road vehicles – Fuse-links – Part1: Definitions and general test requirements
ISO 10605:2008 Road vehicles – Test methods for electrical disturbances from electrostatic discharge
ISO 11452 Road vehicles – Component test methods for electrical disturbances from narrowband radiated electromagnetic energy (There are many parts to this. I did not list all the parts and dates.)
ISO 12103-1:1997 Road vehicles – Test dust for filter evaluation – Part 1: Arizona test dust
ISO 16750-1:2006 Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 1: General
ISO 16750-2:2012 Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 2: Electrical loads
ISO 16750-3:2012 Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 3: Mechanical loads
ISO 16750-4:2010 Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 4: Climatic loads
ISO 16750-5: 2010 Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 5: Chemical loads
ISO 20653:2013 Road vehicles – Degrees of protection (IP code) – Protection of electrical equipment against foreign objects, water and access
ISO 26262 – Road vehicles – Functional safety