TSG-RAN Working Group 4 (Radio) meeting #8
Sophia Antipolis, France 26-29 October 1999

TSG R4#7 (99)696

Agenda Item:

Source: Ericsson & Nokia

Title: Test environment for 25.141

Document for: Approval

---

1. Introduction

This document proposes changing of the existing Test Environment at subclause 4.4 inside the TS25.141. The intention of proposal is to have a more general test method and reference to the IEC-standards.

2. Text proposal

4.4 Test Environment

For each test in the present document, the environmental conditions under which the BS is to be tested are defined:

4.4.1 Normal test environment

When a normal test environment is specified for a test, the test should be performed within the minimum and maximum limits of the conditions stated in table below:

Table x: Limits of conditions for Normal Test Environment

Condition	Minimum	Maximum
Barometric pressure	86 kPa	106 kPa
Temperature	15°C	30°C
Relative Humidity	20%	85%
Power supply	Nominal, as declared by the manufacturer	
Vibration	Negligible	

The ranges of barometric pressure, temperature and humidity represent the maximum variation expected in the uncontrolled environment of a test laboratory. If it is not possible to maintain these parameters within the specified limits, the actual values shall be recorded in the test report.

Note: This may, for instance, be the case for measurements of radiated emissions performed on an open field test site.

4.4.2 Extreme test environment

The manufacturer shall declare one of the following:

1) The equipment class for the equipment under test, as defined in the IEC 60 721-3-3[1].
2) The equipment class for the equipment under test, as defined in the IEC 60 721-3-4[2].
3) The equipment that dose not comply to the mentioned classes, the relevant classes from IEC 60 721 documentation for Temperature, Humidity and Vibration shall be declared.

Note: Reduced functionality for conditions that fall out side of the standard operational conditions are not tested in the present document. These may be stated and tested separately.

4.4.2.1 Extreme temperature

When an extreme temperature test environment is specified for a test, the test shall be performed at the standard minimum and maximum operating temperatures defined by the manufacturer's declaration for the equipment under test.

Minimum temperature:

The test shall be performed with the environment test equipment and methods including the required environmental phenomena into the equipment, conforming to the test procedure of IEC 60 068-2-1[3].

Maximum temperature:

The test shall be performed with the environmental test equipment and methods including the required environmental phenomena into the equipment, conforming to the test procedure of IEC 60 068-2-2[4].

Note: It is recommended that the equipment is made fully operational prior to the equipment being taken to its lower operating temperature.

4.4.3 Vibration

When vibration conditions are specified for a test, the test shall be performed while the equipment is subjected to a vibration sequence as defined by the manufacturer's declaration for the equipment under test. This shall use the environmental test equipment and methods of inducing the required environmental phenomena in to the equipment, conforming to the test procedure of IEC 60 068-2-6[5]. Other environmental conditions shall be within the ranges specified in subclause 4.4.1 Normal test environment.

Note: The higher levels of vibration may induce undue physical stress in to equipment after a prolonged series of tests. The testing body should only vibrate the equipment during the RF measurement process.

4.4.4 Power supply

When extreme power supply conditions are specified for a test, the test shall be performed at the standard upper and lower limits of operating voltage defined by manufacturer's for the equipment under test

Upper voltage limit

The equipment shall be supplied with a voltage equal to the upper limit declared by the manufacturer (as measured at the input terminals to the equipment). The tests shall be carried out at the steady state minimum and maximum temperature limits declared by the manufacturer for the equipment, to the methods described in IEC 60 068-2-1[1] Test Ab/Ad and IEC 60 068-2-2[2] Test Bb/Bd: Dry Heat.

Lower voltage limit

The equipment shall be supplied with a voltage equal to the lower limit declared by the manufacturer (as measured at the input terminals to the equipment). The tests shall be carried out at the steady state minimum and maximum temperature limits declared by the manufacturer for the equipment, to the methods described in IEC 60 068-2-1[1] Test Ab/Ad and IEC 60 068-2-2[2] Test Bb/Bd: Dry Heat.

4.4.5 Acceptable uncertainty of measurement equipment

The maximum acceptable uncertainty of measurement is specified separately for each test, where appropriate. The measurement equipment shall enable the stimulus signals in the test case to be adjusted to within the specified tolerance, and the conformance requirement to be measured with an uncertainty not exceeding the specified values. All tolerances and uncertainties are absolute values, unless otherwise stated.

Pressure	±5 kPa
Temperature	±2 degrees
Relative Humidity	±5%
DC Voltage	±1.0%
AC Voltage	±1.5%
Vibration	±10%
Vibration frequency	0.1 Hz

The above values shall apply unless the test environment is controlled and the specification for the control of the test environment specifies the uncertainty for the parameter.

References:

[1] IEC 60721-3-3 (1994-12)
Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities -
Section 3: Stationary use at weather protected locations

[2] IEC 60721-3-4 (1995-01)
Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities -
Section 4: Stationary use at non-weather protected locations

[3] IEC 60068-2-1 (1990-05)
Environmental testing - Part 2: Tests. Tests A: Cold

[4] IEC 60068-2-2 (1974-01)
Environmental testing - Part 2: Tests. Tests B: Dry heat

[5] IEC 60068-2-6 (1995-03)
Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)