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**Test method for user equipment of TD-LTE digital cellular
mobile telecommunication network (phase 1) - Part 2: Radio
transmission and reception performance test**

TD-LTE数字蜂窝移动通信网 终端设备测试方法 (第一阶段) 第2部分: 无线射频性能测试 含第1号、第2号和第3号修改单

(English Translation)

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1 Scope

This part specifies the test methods of the transmitter, receiver, performance, and channel state of the TD-LTE digital cellular mobile communication network user equipment (UE).

This part applies to all the phase 1 TD-LTE digital cellular mobile communication network user equipment.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this Standard.

3GPP TS36.101 User equipment (UE) radio transmission and reception

3GPP TS36.211 Physical channels and modulation

3GPP TS36.213 Physical layer procedures

3 Abbreviations

The following abbreviations apply to this document.

ACK. Acknowledgment

ACLR. Adjacent channel leakage ratio

ACS. Adjacent channel selectivity

4.1 Test environment description

The normal test environment refers to a combination of the conditions specified below. Except for the environmental adaptability test, the other test shall be performed in normal test environment, AND the reference test environment is as shown in Figure 1.

Instrument description. The main test instrument is the radio integrated tester (or system simulator), fading simulator (or the reduction signal generated from

IQ two ways of the baseband, sent to the integrated tester or simulator, AND then the fading signal is sent from the output end). The radio integrated test mainly simulates the base station equipment to perform communication with

UE AND measure the relevant indicators. The fading simulator mainly simulates various multi-fading modes on the channel.

4.2 Terminal information

Table 1 lists the information that the terminal manufacturer needs to provide before testing.

5.1 Overview

Unless otherwise stated, the characteristics of the transmitter are determined at the antenna interface of the user terminal equipment having a single transmission antenna.

Transient due to power step, OFF/ON, and ON/OFF transitions may occur at the boundaries of the time slot or symbol, the measurement period and whether or not to ignore the transient are described in the following chapters.

Unless otherwise stated, in order to measure the characteristics of the TDD transmitter, the test instrument shall be synchronized with the uplink signal.

5.2.1 Purpose of test

In order to ensure that the maximum output power does not exceed the range specified by nominal power and tolerance.

5.2.1.2 Test applicability

The test is applicable to all phase 1 TD-LTE digital cellular mobile communication network user equipment.

5.2.1.3 Minimum consistency requirements

The following UE power levels define the maximum output power for any transmission bandwidth within the channel bandwidth. The measurement period is at least one subframe (1ms).

5.2.1.5 Initial condition

The initial condition (Initial condition s) refers to the set of steps of the test configuration and system simulator (SS) required to make the UE reach the correct test state for purpose of UE test.

The initial test configuration contains the environmental conditions, the test frequency, and the channel bandwidth based on the E-UTRA working band as specified in Table 5.4.2.1-1 in 3GPP TS36.521-1. All of these configurations shall be tested by test parameters applicable to each channel bandwidth, as shown in Table 3.

5.2.1.6 Test requirements

The maximum transmit power derived from step 3 shall be within the range as determined by the nominal maximum output power and the tolerance which is specified in Table 4.

5.4.2-1 and Table 5.4.4-1 in 3GPP TS36.521-1), the maximum input power requirement can be widened,

AND the lower limit of the deviation may be reduced by 1.5dB.

5.2.4.1 Purposes of test

ENSURE that the UE output power does not exceed the maximum allowable uplink emission power P_{EMAX} as specified by E-UTRAN or the maximum allowable power P_{UMAX} as limited by the UE power level, whichever is smaller.

5.2.4.2 Test applicability

Configuration ID Bandwidth (MHz) Tolerance (dB)

The test is applicable to all phase 1 TD-LTE digital cellular mobile communication network user equipment.

5.2.4.3 Minimum consistency requirements

It is allowed for the UE to set its configured maximum output power P_CMAX, which must comply with the following requirements.

5.2.4.4 Test description

5.2.4.4.1

Initial conditions

The initial condition refers to the set of steps of the test configuration and system simulator (SS) required to make the user equipment (UE) reach the correct measurement state for purpose of user equipment (UE) test.

5.2.4.4.2

Test procedure

1) In accordance with Table 27, the system simulator or the mobile switching subsystem (SS) uses the downlink control information format 0 (DCI format 0) to send the uplink scheduling information to the cell radio network temporary identifier (C_RNTI) in the progress of each uplink hybrid automatic repeat request (UL HARQ), in order to schedule the uplink reference measurement channel (UL RMC).

5.2.4.4.3

Message contents

The contents of the information are based on clause 4.6 of 3GPP TS36.508, except for Table 28.

6.1 Overview

Unless otherwise specified, the receiver characteristics are determined at the antenna connector of the UE. For a UE with only one internal antenna, it is assumed that the gain for the reference antenna of each antenna port is 0dBi.

6.2 Diversity characteristics

This clause assumes that the receiver is equipped with two Rx ports as a baseline. The 4 ports are to be studied later. All requirements shall be verified using all antenna ports at the same time (except for clause 6.9).

6.3.1 Purpose of test

VERIFY the ability of a certain reference measurement channel to receive data under the low signal level, ideal propagation conditions, and no additional noise when the UE is at the specified average throughput.

6.3.2 Test applicability

The test is applicable to all phase 1 TD-LTE digital cellular mobile communication network user equipment.

6.3.3 Minimum consistency requirements

The throughput shall be greater than or equal to 95% of the maximum throughput of the reference measurement channel described in Appendix

A.2.2, A.2.3 and A.3.2 of 3GPP TS36.521-1 (downlink signal unilateral dynamic OCNG OP.