Agenda Item:	**15.3**
Source:	**Siemens / Italtel**
Title:	**Measurements provided in Node B for TDD mode**
Document for:	**Approval**

1   Introduction

The present NBAP Specification [2] provides procedures for Radio Network Performance Measurements, but these measurements are mainly focused to FDD mode. However, the defined measurements were considered also applicable for TDD mode.
The intention of this input paper is to introduce an additional measurement that is necessary for TDD and that is to be supported by the NBAP procedures.

2   Measurements

All measurements already defined in [2] for the FDD mode are also useful and applicable for the TDD mode. However, in contrast to FDD, in TDD there is a TDMA component, i.e. each channel is defined by a combination of timeslots and spreading codes. Thus, the measurements in TDD have to be provided on timeslot basis and not continuously as in FDD.
Therefore, when indicating the Measurement Object, the timeslot the measurement shall be performed shall be included.

In addition, this document proposes in accordance with [1] to introduce an additional measurement for TDD only, that shall be supported by the NBAP procedures:

1. Received Interference Signal Code Power RxISCP
    This measurement is necessary for dynamic channel allocation (DCA) to have a measure for the interference on the UL timeslots.
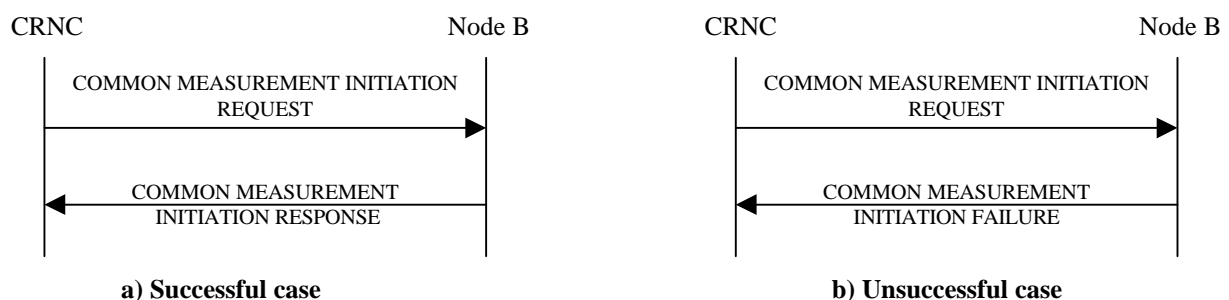
3   Proposed Changes to TS 25.433

Following changes are proposed to be modified in 25.433

3.1   Changes to 25.433 – Common Measurements

8.1.4.1 Measurement Request

For requesting measurements, the RNC use the following procedure:

a) Successful case   b) Unsuccessful case

Measurement Request Procedure

The COMMON MEASUREMENT INITIATION REQUEST message includes the following information:

- **Measurement Id:** This is a RNC defined identifier that uniquely identifies the measurement.

- **Measurement Object:** This defines on which resource the measurement should be performed. For example might this identifier point out a cell or a carrier within the Node B.

- **Measurement Type:** This defines what measurement that should be performed. This could for example be "interference on the uplink", "Undecoded RACH frames", or "DL Cell Power Load".

For TDD only the following measurement is added: "Received Interference Signal Code Power (RxISCP)".

- **Measurement Characteristics:** This defines how the measurements should be performed. For example measurement frequency, timing information, filtering information. *The exact structure and contents of this parameter is dependent on the Measurement Type and is FFS.*

- **Report Characteristics:** The reporting could be any of the following classes:

  – **Periodic:** Reports should be delivered in a periodic matter with some frequency. In this case the update frequency have to be specified.

  – **Event Triggered:** Reports should be delivered upon a specific event in Node B e.g Performance threshold crossing. In this case the event have to be specified.

  – **Immediate Reporting:** A report should be delivered immediately. Only one measurement report should be sent and after that the measurement is automatically cancelled.

The possibility to request several measurements for the same event is FFS.

9.2.1.21 Measurement Object
Defines on which resource the measurement should be performed, e.g. cell. If more detailed information is necessary the measurement shall be performed as e.g. the timeslot indication in case of TDD, this information belongs to the Measurement Object and is included within this information element.

4 References

[1] TS 25.225 V0.1.0, TSG RAN WG1, Physical layer – Measurements (TDD)

[2] TS 25.433 V1.2.0 – NBAP Specification