3GPP TSG RAN Meeting #21 RP-030472
Frankfurt, Germany, 16 - 19 September 2003

3GPP TSG-RAN WG3 Meeting #37 **R3-031247**
Budapest, Hungary, 25th – 29th August 2003

Title:	LS on RAN Work Item "Control of Remote Electrical Tilting Antenna" and possible impact on TSG SA 5
Response to:	-
Release:	Rel-6
Work Item:	**Remote Control of Electrical Tilting Antennas**
Source:	TSG RAN WG 3
To:	TSG SA WG 5
Cc:	TSG RAN, TSG SA

Contact Person:
Name: **Andreas Hauser, Vodafone Group**
Tel. Number: **+49-172-2161910**
E-mail Address: Andreas.Hauser@vodafone.com

Attachments: R3-031238: TR 25.802 v0.2.0 Remote Control of Electrical Tilting Antennas
RP-030193: WI proposal approved at RAN#19

---

1. Overall Description:

A new work item "Remote Control of Electrical Tilting Antennas" has been approved at TSG RAN#19 to specify a standardised open interface to enable local Remote Electrical Tilting (RET) antenna-controlling functionality situated in the Node B to allow the RET antenna system to be provided by a third party vendor.

TSG RAN WG 3 would like to inform TSG SA WG 5 and TSG SA about this work item and the work already started on this work item within TSG RAN WG 3. This is because according to the work item sheet, some of the work should be undertaken by TSG SA WG 5.

The results of the work item are captured in the technical report TR 25.802. The current version 0.1.1 of this TR was approved at TSG RAN WG3 #37 and includes requirements agreed by TSG RAN WG 3. TSG RAN WG 3 kindly asks TSG SA WG 5 to study these requirements in order to clarify the work split between TSG RAN WG 3 and TSG SA WG 5. TSG RAN WG 3 would like to aks SA5 to consider if a new SA work item is needed in order to complete the overall work on RET

2. Actions:

To SA5 group:

ACTION: RAN3 kindly asks SA5 to consider the SA5 impact according to the attached work item description and the requirements in TR 25.802 v0.2.0. Furthermore, SA5 is kindly asked to indicate whether a new SA work item is needed in order to complete the overall work on RET.

3. Date of Next TSG RAN WG 3 Meetings:

TSG RAN WG 3 Meeting #38	6 – 10 October 2003, Sophia Antipolis, France
TSG RAN WG 3 Meeting #39	17 – 21 November 2003, San Diego, CA, USA

Work Item Description

Title: Remote Control of Electrical Tilting Antennas

1 3GPP Work Area

X	Radio Access
	Core Network
	Services

2 Linked work items

None identified

3 Justification

Because of the interference limitation property of the CDMA based UTRAN, the tilting of antennas is essential for the successful operation and optimisation of UMTS network coverage. It would be very beneficial if it were possible to remotely control the tilting of antennas in order to optimise radio coverage areas.

The ability for the operator to control the electrical tilt of the antennas remotely from the O&M Network is currently possible via the implementation-specific interfaces between Node B Element Manager and Node B. A "remote control" mechanism would decrease the costs incurred on the operator for site visits to change the tilt of the antennas manually and simplify the redeployment of antennas in a large network.

Remote electrical tilting (RET) solutions to date are proprietary and hence interfacing a mix of antennas and Node Bs from different vendors is not possible without a standardised interface. Therefore, in order to enable flexibility for the operator in choosing their antenna supplier(s), a new interface is required between RET antenna and Node B to control the electrical tilting.

Additionally, RET functionality in the UTRAN accompanied by an appropriate set of signalling commands and control parameters from the Network Manager over the Ift-N interface would allow the operator to optimise the whole network using consistent commands – even in a multi-vendor environment.

4 Objective

The objectives of this work item are:

- Specifying a standardised open interface to enable local RET antenna-controlling functionality situated in the Node B to allow the RET antenna system being provided by a third party vendor .
- Be able to control the antenna from the Network Manager, so that the operator is able to control the RET antenna remotely and consistently across the network.

5 Service Aspects

None

6 MMI-Aspects

None

7 Charging Aspects

None

8 Security Aspects

None

9 Impacts

Affects:	USIM	ME	AN	CN	Others
Yes			X		X
No	X	X		X	
Don't know					

a) Work for TSG RAN WG 3

- Definition and inclusion of the relevant items in the TSG RAN WG3 specification in order to control electrical tilting antennas

b) Work for TSG SA WG 5

- Provision of the parameters / functionality across the Itf-N interface needed for a network wide controlling of RET antenna devices

10 Expected Output and Time scale (to be updated at each plenary)

New specifications						
Spec No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
TR 25.xyz	Remote control of Electrical Tilting Antennas	RAN3		RAN#21	RAN#22	

Affected existing specifications				
Spec No.	CR	Subject	Approved at plenary#	Comments
25.401		UTRAN architecture description; stage 2	RAN#22	

11 Work item rapporteur

Andreas Hauser, Vodafone D2 GmbH, Düsseldorf, Germany

12 Work item leadership

TSG-RAN WG 3

13 Supporting Companies

Vodafone Group, **3,** Lucent Technologies, Nortel Networks, Siemens AG, Telefonica, Telecom Italia, Alcatel

14 Classification of the WI (if known)

	Feature (go to 14a)
	Building Block (go to 14b)
X	Work Task (go to 14c)

14a The WI is a Feature: List of building blocks under this feature

(list of Work Items identified as building blocks)

14b The WI is a Building Block: Parent Feature: RAN Improvement

14c The WI is a Work Task: parent Building Block

(one Work Item identified as a building block)

3GPP TR 25.802 V0.2.0 (2003-08)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group TSG RAN;
Remote Control of Electrical Tilting Antennas;
(Release 6)

Keywords
<keyword[, keyword]>

3GPP

Postal address

3GPP support office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet
http://www.3gpp.org

Contents

Foreword 4
1 Scope 4
2 References 4
3 Definitions, symbols and abbreviations 5
3.1 Definitions 5
3.2 Symbols 5
3.3 Abbreviations 5
4 Introduction 5
5 Requirements 5
5.1 General 5
5.2 UTRAN Architecture 6
5.3 Protocols 6
5.4 Network wide Control of RET Antennas 6
6 Study Areas 6
6.1 UTRAN Architecture Aspects 6
6.2 Interface Aspects 6
6.3 Functions of Interface 6
6.4 Protocol Structure 6
6.5 Application Protocol signalling procedures 6
7 Agreements and associated Contributions 7
8 Specification Impact and associated Change Requests 7
9 Project Plan 7
9.1 Schedule 7
9.2 Work Task Status 7
History 8
Annex A: Change history 9

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document is for the Release 6 work item "Remote Control of Electrical Tilting Antennas" (see [1]).

The objectives of this work item are the specification of a standardised open interface to enable local RET antenna-controlling functionality situated in the Node B to allow the RET antenna system being provided by a third party vendor and to enable the control of the antenna from the Network Manager, so that the operator is able to control the RET antenna remotely and consistently across the network.

The purpose of the present document is to record the required changes of the specifications and to gather all information in order to trace the history and the status of the Work Task in RAN WG3. It is not intended to replace contributions and Change Requests, but only to list conclusions and make reference to agreed contributions and CRs. When a solution for the remote control of electrical tilting antennas is sufficiently stable, the needed CRs can be issued.

Therefore, this document identifies the affected specifications with related Change Requests.

It also describes the schedule of the Work Task.

This document is a ‘living’ document, i.e. it is permanently updated and presented to TSG-RAN meetings.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[<seq>] <doctype> <#>[([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

[1] 3GPP TD RP-030193: "Work Item Description for Remote Control of Electrical Tilting Antennas".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the [following] terms and definitions [given in ... and the following] apply.

<defined term>: <definition>

3.2 Symbols

For the purposes of the present document, the following symbols apply:

<symbol> <Explanation>

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

RET Remote Electrical Tilting

4 Introduction

Because of the interference limitation property of the CDMA based UTRAN, the tilting of antennas is essential for the successful operation and optimisation of UMTS network coverage. It would be very beneficial if it were possible to remotely control the tilting of antennas in order to optimise radio coverage areas.

The ability for the operator to control the electrical tilt of the antennas remotely from the O&M Network is currently possible via the implementation-specific interfaces between Node B Element Manager and Node B. A “remote control” mechanism decreases the costs incurred on the operator for site visits to change the tilt of the antennas manually and simplify the redeployment of antennas in a large network.

Remote electrical tilting (RET) solutions to date are proprietary, and hence interfacing a mix of antennas and Node Bs from different vendors is not possible without a standardised interface. Therefore, in order to enable flexibility for the operator in choosing their antenna supplier(s), a new interface is required between RET antenna and Node B to control the electrical tilting.

Additionally, RET functionality in the UTRAN accompanied by an appropriate set of signalling commands and control parameters from the Network Manager over the Ift-N interface would allow the operator to optimise the whole network using consistent commands – even in a multi-vendor environment. TSG SA WG 5 should provide the parameters and functionality across the Itf-N interface needed for a network wide controlling of RET antenna devices.

5 Requirements

5.1 General

- Specification of open interfaces between RET and Node B to ensure multi-vendor operability with a mix of antennas and Node Bs from different vendors
- Support of error and alarm handling

- Align with already existing solutions as much as possible
- Control of downtilt settings and variations remotely both from Network Management system and locally from the Node B

5.2 UTRAN Architecture

- Minimise impact on existing UTRAN architecture and network/element management architecture

5.3 Protocols

- Interface protocols terminate at Node B and RET antenna
- Protocol Stack needs to be standardised
- Efficient protocol means shall be provided to enable the simultaneous control of several RET antennas

5.4 Network wide Control of RET Antennas

- Centralised and network wide remote control of RET antennas with downtilt settings and variations of the downtilt
- Downtilt variations should be controllable from NMS in such a way that downtilt profiles for certain areas can be managed directly by the Node B Element Manager or automatic downtilt adjustments are possible by the network manager according to predefined traffic requirements and/or according to a scheduling provided by a higher level application (e.g. network optimisation)

6 Study Areas

6.1 UTRAN Architecture Aspects

Editor's note: This subsection should capture architectural issues

6.2 Interface Aspects

Editor's note: This subsection should capture interface related issues

6.3 Functions of Interface

Editor's note: This subsection should capture issues regarding the functions of the interface

6.4 Protocol Structure

Editor's note: This subsection should capture issues regarding the protocol structure

6.5 Application Protocol signalling procedures

Editor's note: This subsection should capture issues regarding the Application Protocol signalling

7 Agreements and associated Contributions

8 Specification Impact and associated Change Requests

9 Project Plan

9.1 Schedule

Date	Meeting	Scope	[expected] Input	[expected]Output
December 2003	RAN#22	RAN Approval		TR approved

9.2 Work Task Status

	Planned Date	Milestone	Status
1.			
2.			

History

Document history		
Date	**Version**	**Comment**
2003-04	V0.0.1	First proposed version
2003-05-22	V0.1.0	First version approved at RAN3#36
2003-08-28	V0.1.1	Input for Requirement section approved at RAN3#37
2003-08-29	V0.2.0	Approved version with Requirements

Rapporteur for 3G TR 25.802 is:

Andreas Hauser, Vodafone D2 GmbH
Tel. : +49-211-533-3277
Fax : +49-211-533-2834
Email : Andreas.Hauser@vodafone.com

This document is written in Microsoft Word version.

Annex A:
Change history

It is usual to include an annex (usually the final annex of the document) for reports under TSG change control which details the change history of the report using a table as follows:

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New