

Agenda Item: 8.11.3
Source: Nortel Networks
Title: Proposed update of SI description for the analysis of OFDM for UTRAN enhancement

Document for: Discussion & approval

4 Analysis of OFDM for UTRAN enhancement

Study Item Description

Title: Feasibility Study for the analysis of OFDM for UTRAN enhancement

1 3GPP Work Area

X	Radio Access
	Core Network
	Services

2 Linked study items

Feasibility Study considering the viable deployment of UTRA in additional and diverse spectrum arrangements

3 Justification

As the mobile radio systems evolve and become more integrated with daily activities, there is an increasing requirement for services requiring very high bit rates and higher system capacity for such services. These include services to individuals as well as multimedia broadcast services. OFDM (Orthogonal Frequency Division Multiplexing) is one of the technologies that are proving themselves well suited to mobile radio access for high rate and multimedia services (i.e. DAB, DVB-T, 802.11a). Given the availability of this radio technology, its applicability to UTRAN and its potential to enhance UTRAN should be studied.

4 Objective

The objective of this Study Item is to study the applicability of OFDM in UTRAN and its potential to enhance UTRAN.

It should be possible to use OFDM in a 5MHz spectrum allocation. As a starting point, OFDM will be considered in the downlink only.

The use of OFDM should have minimal impact on the signalling as well as physical layer, changes be limited to those needed to support a new modulation in UTRAN.

The following list provides examples of areas that may be considered in the study:

- Throughput for data services. To be compared with throughput of current UTRAN releases
- Complexity aspects of multimode ~~Various options of UEs receiving supporting both~~ OFDM carrier in combination with and Release 99/Release 5 UMTS
- ~~– Support for MIMO and other advanced antenna array techniques~~
- ~~– Support for personal, multimedia and broadcast services~~
- ~~– Deployment scenarios, including frequency reuse aspects, within diverse spectrum allocations~~

The study should consider performance aspects, aspects linked to the evolution of UMTS (high level architecture, diverse spectrum arrangements and allocations), impact on signalling in UTRAN, aspects of capacity/cost/complexity/ coverage and aspects of co-existence with the existing UTRAN releases.

The output of the study item will be a Technical Report containing an analysis of the feasibility and potential benefits of introducing OFDM in UTRAN and a comparison of OFDM performance with HSDPA. The analysis of OFDM performance, and its comparison with reference HSDPA performance, should be based on a basic OFDM design (referred often as textbook OFDM). Consideration of more elaborate OFDM techniques (MIMO, advanced OFDM modulations, etc) should not be considered and may be subject to later consideration.

5 Service Aspects

No

6 MMI-Aspects

No

7 Charging Aspects

No

8 Security Aspects

No

9 Impacts

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

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		RAN1 WG1	RAN WG4	22	24	
Affected existing specifications						
Spec No.	CR	Subject		Approved at plenary#	Comments	

11 Work item raporteurs

Sarah Boumendil (Nortel Networks)

12 Work item leadership

RAN1

13 Supporting Companies

TSG RAN
(Nortel Networks, Wavcom, France Telecom, Alcatel, Philips, Samsung)

14 Classification of the WI (if known)

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

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

14b The WI is a Building Block: parent Feature

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