

**3GPP TSG RAN WG1 Meeting #46bis
Seoul, Korea, 09 – 13 October, 2006**

R1-063013

Agenda item 3
Title: **Approved minutes of 3GPP TSG RAN WG1 #46 in Tallinn
(Tallinn, Estonia, 28 August – 01 September, 2006)**
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Notes:
All timestamps in this document are in GMT+3H unless otherwise noted.

Fact Summary

Meeting: **3GPP TSG RAN WG1 #46**
Dates: **28th August through 1st September, 2006**
Venue: **SOKOS Hotel VIRU, Tallinn, Estonia**
Host: **European Friends of 3GPP**
Attendees: **210 delegates**
Documents: **517 (including some withdrawn and post-meeting artefacts)**

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Executive summary

WG RAN1 #46 meeting took place in SOKOS Hotel - Tallinn, Estonia. The meeting started at 9:10 on Monday 28th August and finished at 17:00 on Friday 1st September.

On the first day, after treating liaison statement, CRs up to Rel-7, TDD Enhanced Uplink and MIMO Rel-7 were discussed. The set of CRs for 3.84 Mcps TDD and 7.68 Mcps TDD enhanced uplink were agreed by RAN1 and the work for RAN1 part was completed. Regarding MIMO Rel-7, during the week it was discussed offline and it could reach to the agreement on working assumption and address the item for future discussion.

From Tuesday, the LTE session started parallel in two rooms. The outputs from this meeting as for LTE were as followed:

- LTE Physical Layer Work Item Description was endorsed and also Physical layer specification structure and corresponding editors was agreed in R1-062117.
- As for numerology: Discussion on TTI length, DC Subcarrier, Resource block size and MBMS could reach to agreement on working assumption and way forward.
- Basic Access Procedures: Discussion on RACH and SCH could reach to agreement on working assumption and also address the item for further discussion. BCH and PCH were not discussed due to lack of time.
- Reference signals structure: Working assumption on DL/UL reference signal was agreed.
- MIMO, Tx Diversity and Beamforming: Discussion could reach to the agreement on codewords, pre-coding and UE feedback. Also the way forward for the left topics was addressed.
- The channel coding scheme for TrCH data (L3 information) was agreed to use Rel-6 Turbo code (mother code rate $R=1/3$) with contention free interleaver (e.g. ARP)
- As for topics related to the extension of the Study Item Phase, additional simulation results for DL/UL VoIP capacity and beamforming were presented and the corresponding CRs for TR25.814 were agreed. Additional enhancement techniques such as intercell interference coordination and cancellation, 4 antenna MIMO were discussed and the summary for these techniques were captured in agreed CR for TR 25.814. The RAN1 output is sent to RAN#33 by a liaison statement, R1-062443.

As the other items, Continuous Connectivity for Packet Data Users, Scope of Future FDD HSPA Evolution, and LCR TDD Enhanced Uplink were discussed and the discussion had a good progress.

The number of contribution documents for this meeting was 502 (without withdrawn documents), and those documents were categorized as followed.

Agenda Item		Input Document	Discussed Document
Liaison statement handling		15	15
Maintenance of R99, Rel4, Rel5, Rel6, Rel-7		11	11
TDD Enhanced Uplink		40	40
HSPA Evolution		67	58
E-UTRA/ UTRAN	Review of the LTE Physical Layer WI Description	5	5
	Numerology and Frame Structure	67	42
	Basic Access Procedures	83	20
	Reference signal structure	41	3
	MIMO, Transmit Diversity and Beamforming	73	29
	Channel Coding Scheme	20	16
	Topics related to the extension of the SI Phase	58	40
	Open Issues from discussion with RAN2	6	6

1. Opening of the meeting

28/08/2006 09:10

RAN1 Chairman, Mr. Dirk Gerstenberger and welcomed the participants to the RAN WG1 #46 meeting and opened the meeting at 09:10.

Mr. Robert Love from Motorola welcomed the delegates on behalf of the European Friends of 3GPP.

1.1 Call for IPR

28/08/2006 09:10

The Chairman drew attention to Members' obligations under the 3GPP Partner Organizations' IPR policies. Every Individual Member organization is obliged to declare to the Partner Organization or Organizations of which it is a member any IPR owned by the Individual Member or any other organization which is or is likely to become essential to the work of 3GPP.

The attention of the members of this Technical Specification Group is drawn to the fact **that 3GPP Individual Members have the obligation** under the IPR Policies of their respective Organizational Partners to **inform their respective Organizational Partners of Essential IPRs they become aware of.**

The members take note that they are hereby invited:

- to investigate in their company whether their company does own IPRs which are, or are likely to become Essential in respect of the work of the Technical Specification Group.
- to notify the Director-General, or the Chairman of their **respective** Organizational Partners, of all potential IPRs that their company may own, by means of the IPR Statement and the Licensing declaration forms (e.g. see the ETSI IPR forms <http://webapp.etsi.org/lpr/>).

2 Approval of the agenda

R1-061935 Draft Agenda

(RAN1 Chairman)

28/08/2006 09:15 Presented by Mr. Dirk Gerstenberger.

Discussion (Question / Comment):

Mr. Chairman explained the schedule on this week.

Regarding Spectrum mask, we will discuss on the Wednesday, so before that day we can get some feedback from RAN4.

Decision: **This document was approved.**

3. Approval of the minutes from previous meetings

R1-061936 Draft Report of RAN1#45 (MCC)

28/08/2006 09:20 Presented by Mr. Yoshikazu Ishii.

Discussion (Question / Comment):

Decision: This document was approved. Approved version is R1-062448.

R1-062448 Approved Report of RAN1#45 (MCC)

R1-061937 Draft Report of RAN1 LTE Ad Hoc (MCC)

28/08/2006 09:20 Presented by Mr. Yoshikazu Ishii.

Discussion (Question / Comment):

Decision: This document was approved. Approved version is R1-062449.

R1-062449 Approved Report of RAN1 LTE Ad Hoc (MCC)

R1-061938 Draft Report of RAN1/RAN2 Joint Session (MCC)

28/08/2006 09:20 Presented by Mr. Yoshikazu Ishii.

Discussion (Question / Comment):

Decision: After treating this document on Monday RAN1 meeting, the revision on agreement of Paging and BCCH was requested on the RAN2 LTE session and also on the e-mail reflector after the meeting. So the approved report captured these revisions in R1-062450.

R1-062450 Approved Report of RAN1/RAN2 Joint Session (MCC)

4. Liaison statement handling

**R1-061939 LS on Real Time Gaming Requirements (To: SA1, Cc: RAN1, RAN3, RAN4)
(RAN WG2, Cingular)**

28/08/2006 09:23 Presented by Mr. Sharat Chander.

Discussion (Question / Comment):

Decision: This document was noted.

**R1-061940 LS on verification of L1 parameters for new configurations with ‘flexible
TFCS’ (To: RAN1, Cc: RAN) (RAN WG2, Nortel)**

28/08/2006 09:15 Presented by Ms Sarah Boumendil.

Discussion (Question / Comment):

Decision: This document was just noted because this LS was already checked on the RAN1 reflector before RAN#32 and the corresponding CR was already approved.

**R1-061941 Reply LS on RAB and the error-delay-profile for the performance
characterization of VoIMS over HSDPA/EUL (To: SA4, Cc: RAN1)
(RAN WG2, Nokia)**

28/08/2006 09:xx Presented by Mr. Karri Ranta-aho.

Discussion (Question / Comment):

Decision: This document was noted.

**R1-061942 LS to RAN1 on additional RAB combinations (To: RAN1)
(RAN WG2, Qualcomm)**

28/08/2006 09:20 Presented by Mr. Serge Willenegger.

Discussion (Question / Comment):

Decision: This document was just noted because this LS was already checked on the RAN1 reflector before RAN#32 and the corresponding CR was already approved.

**R1-061943 Liaison Statement on Service Requirement for MBMS LTE (To: SA, Cc: SA1,
RAN1, RAN2, RAN3) (TSG RAN, Orange)**

28/08/2006 09:21 Presented by Dr. Thomas SALZER.

Discussion (Question / Comment):

This does not include the L1 specific topic.

Decision: This document was noted.

**R1-061944 Reply LS on RAB and the error-delay-profile for the performance
characterization of VoIMS over HSDPA/EUL (To: RAN1, Cc: RAN2, RAN4,
RAN5, SA1) (SA WG4, Qualcomm)**

28/08/2006 09:20 Presented by Mr. Serge Willenegger.

Discussion (Question / Comment):

Decision: This document was noted.

**R1-062396 LS to RAN WG1 & WG4 Clarification of power control behaviour with HS-
DPCCH (To RAN1, RAN4) (RAN WG5, Agilent)**

28/08/2006 09:25

Discussion (Question / Comment):

Mr. Chairman suggested the contact person (presenter) to provide more detail until Friday, and RAN1 to provide the LS in October.

Decision: It was decided to make draft response LS in R1-062403 (Philips) and Try to give feedback by end of this meeting, else in October.

**R1-062403 [Draft] Reply LS on Clarification of power control behaviour with HS-DPCCH
(Philips, Motorola, Nokia, Panasonic)**

01/09/2006 16:50 Presented by Mr. Matthew Baker

Discussion (Question / Comment):

Decision: This draft was agreed in R1-062447

R1-062415 Reply LS on feedback regarding the concepts for "Continuous connectivity for packet data users" (To: RAN1, Cc: RAN2, RAN4) (RAN WG3, Nokia)

Discussion (Question / Comment):

Decision: This document was noted.

R1-062426 LS on spectral emissions mask and coexistence (To: RAN1, Cc: RAN) (RAN WG4, Motorola)

30/08/2006 11:40 Presented by Mr. Robert Love

Discussion (Question / Comment):

Mr. Chairman pointed out the statement "Other system impacts have not been fully investigated such as the relationship between EVM, ACLR, peak rate and throughput." and asked the situation to RAN4 delegates. Nokia RAN4 delegates commended that in fact view is different depending on different companies and for less than 5MHz, almost company raised problem and for 5MHz Nokia don't have any problem. Ericsson RAN4 delegates commented that the investigation has not completed for all such that both system provided the max power and high peak rate in same time so the more investigation is needed and also he pointed out the investigation on spectrum mask is not completed and we see FCC requirement. In addition, as the RAN4 current status it was mentioned that RAN4 start to discuss on shaping method such as filter or windowing operation although it was not described in this LS.

Decision: This document was noted.

R1-062434 LS on Random-Access Related Issues in E-UTRAN (To: RAN1) (RAN WG2, Ericsson)

31/08/2006 11:40 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Mr. Chairman commented that the questions on this LS is much related to our RACH discussion so we continue to discussion our part considering this LS and feedback to RAN2 in the next meeting.

Decision: This document was noted.

Out going LS

R1-062443 LS on LTE SI conclusions (To: TSG RAN) (RAN WG1)
R1-062445 LS on RAN1 decisions for "Continuous Connectivity for packet data users" (RAN WG1)
(To: RAN2, RAN3, RAN4, Cc: RAN)
R1-062446 LS on UE ID for resource assignment (To: RAN2) (RAN WG1)
R1-062447 Reply LS on Clarification of power control behaviour with HS-DPCCH (RAN WG1)
(To: RAN5, Cc: RAN4)

5. Maintenance of R99, Rel4, Rel5, Rel6, Rel7

5.1 R99 CRs + shadow CRs

5.2 Rel4 CRs + shadow CRs

5.3 Rel5 CRs + shadow CRs

5.4 Rel6 CRs + shadow CRs

R1-062085 25.212 CR0239 (Rel-6, F) "Correction to the E-DCH HARQ rate matching for compressed mode" (Nokia)

28/08/2006 09:35 Presented by Mr. Karri Ranta-aho

Discussion (Question / Comment):

Decision: This CR was agreed

R1-062086 25.212 CR0240 (Rel-7, A) "Correction to the E-DCH HARQ rate matching for compressed mode" (Nokia)

28/08/2006 09:35 Presented by Mr. Karri Ranta-aho

Discussion (Question / Comment):

Decision: This CR was agreed

R1-062114 25.214 CR0422 (Rel-6, F) "Clarification of E-DPDCH gain factor quantization" (NEC Group, Philips)

28/08/2006 09:40 Presented by Ms. Nahoko Kuroda

Discussion (Question / Comment):

Rainer Bachl from Lucent ask to clarify the relation the quantization and compress mode on E-DPCH and at first the E-DPCCH is quantised and the compress mode is applied or visa versa. The answer was that quantization is under compress mode.

Juho Lee expressed his wonder about $\beta_{ed,k}$ on the last paragraph.

Decision: After the offline discussion, this CR was revised in R1-062404.

R1-062404 25.214 CR0422r1 (Rel-6, F) "Clarification of E-DPDCH gain factor quantization" (NEC Group, Philips, Panasonic)

01/09/2006 14:50 Presented by Ms. Nahoko Kuroda

Discussion (Question / Comment):

Decision: This CR was approved.

R1-062115 25.214 CR0423 (Rel-7, A) "Clarification of E-DPDCH gain factor quantization" (NEC Group, Philips)

28/08/2006 09:40 Presented by Ms. Nahoko Kuroda

Discussion (Question / Comment):

Decision: This CR was revised in R1-062405.

R1-062405 25.214 CR0423r1 (Rel-7, A) "Clarification of E-DPDCH gain factor quantization" (NEC Group, Philips, Panasonic)

01/09/2006 14:50 Presented by Ms. Nahoko Kuroda

Discussion (Question / Comment):

Decision: This CR was approved.

5.5 Rel7 CRs

R1-061972 25.215 CR170r3 (Rel-7, C) "Introduction of a Node B measurement for E-DCH RRM" (Siemens, Ericsson, Cingular, Three, Lucent)

28/08/2006 09:50 Presented by Dr. Joern Krause from Siemens

Discussion (Question / Comment):

Decision: This CR for 25.215 was agreed. This decision will be informed the other WGs offline.

R1-061974 Correction to Coding of PLCCCH (IPWireless)

28/08/2006 09:55 Presented by Dr. Huiheng Mai

Discussion (Question / Comment):

Matthew Baker (Philips) asked what the performance would be if different schemes had the same number of users. The answer was that the results would still be mainly the same. These users are multiplexed into a single timeslot and channelisation code, which is different to the multiuser detection scenario. It was clarified that this CR is just for Rel.7 so that we don't need to take care of the compatible issue to Rel.6.

Juho LEE (Samsung) expressed a wonder on the Figure 1 and 2 that the difference between schemes 2 and 4 and Mr. Chairman suggested the contributor to provide the simulation results on more right side for figure 1 and 2.

Decision: It was decided to provide the results to BER 10^{-2} (or lower) and produce a CR with CR number in R1-062408.

R1-062408 Correction to Coding of PLCCCH (IPWireless)

01/09/2006 14:50 Presented by Dr. Huiheng Mai

Discussion (Question / Comment):

Decision: This CR in this contribution was agreed.

R1-061975 25.224 CR0152 (Rel-7, F) "Release-7 Timing Advance (3.84Mcps and 7.68Mcps TDD)" (IPWireless)

28/08/2006 19:00 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This document was agreed.

5.6 Other

R1-062244 Further discussion on delay enhancements in Rel7 (Nokia)

28/08/2006 09:05 Presented by Mr. Karri Ranta-aho

Discussion (Question / Comment):

Juho LEE (Samsung) commented that it might be no gain on the power control on the cell edge user with. The answer was that it's good point and we are not able to do fast power control and fast CQI feedback on the cell edge user and they looking forward to more evaluation in the future meeting. Thanh Bui (NEC) asked how the power control acknowledgement is working. We don't propose the power control acknowledgment for cell FACH.

Decision: This document was noted.

6. TDD Enhanced Uplink

Overview of discussion and conclusion on this agenda item

1. 1.28 Mcps TDD Enhanced Uplink
 - Channel structure, Random access, HARQ timing, Scheduling, and power control were discussed.
 - 6 Text proposals were agreed to be included in TR 25.827.
 - The latest TR 25.827 is version 0.1.0
2. 3.84 Mcps TDD Enhanced Uplink
 - The coding of E-DCH was discussed and the corresponding text proposal was agreed to be included in TR 25.826.
 - The set of CRs for RAN1 TDD core specs was agreed.
 - TR 25.826 was endorsed as v2.0.0 and to be sent to RAN#33 for approval.
 - The RAN work for this work item was completed.
3. 7.68 Mcps TDD Enhanced Uplink
 - The set of CRs for RAN1 TDD core specs was agreed
 - The RAN work for this work item was completed.

6.1 1.28 Mcps TDD Enhanced Uplink

R1-062420 Summary of Discussion on 1.28 Mcps TDD Enhanced Uplink
(Ad Hoc Chairman)

01/08/2006 14:50 Presented by Dr. Sadayuki Abeta

Discussion (Question / Comment):

Decision: This document was endorsed.

R1-062327 TR 25.827 v0.0.1 (CATT)

Decision: This version was endorsed as v0.1.0 in R1-062432

R1-062432 TR 25.827 v0.1.0 (CATT)

Channel structure

R1-062165 LCR TDD: Structure and Coding for E-AGCH and E-PUCH (ZTE)

This document was revised before the presentation

R1-062400 LCR TDD: Structure and Coding for E-AGCH and E-PUCH (ZTE)

Decision: This document was noted.

R1-062331 LCR TDD: Structure and Coding for E-AGCH and E-HICH (CATT)

Decision: This document was noted.

R1-062332 Text Proposal about E-AGCH for TR 25.827 (CATT)

Decision: This TP was revised in R1-062418.

R1-062418 Text Proposal about E-AGCH for TR 25.827 (CATT)

Decision: This TP was agreed to be included in TR.

R1-062334 LCR TDD: Physical channel structure for E-PUCH (CATT)

Decision: This TP was agreed to be included in TR.

R1-062344 Text Proposal for E-PUCH structure (TD Tech)

Decision: This document was noted.

R1-062333 Text Proposal about E-HICH for TR 25.827 (CATT)

Decision: This document was noted.

R1-062330 LCR TDD: Structure and Coding for E-RUCCH (CATT)

Decision: This TP was agreed to be included in TR.

R1-062345 Proposal for E-RUCCH structure and coding for 1.28Mcps TDD EUL (TD Tech)

Decision: This document was noted.

Random access

R1-062336 Random access for 1.28Mcps TDD Enhanced Uplink (CATT, ZTE)

Decision: This TP was agreed to be included in TR

R1-062342 Consideration on random access processing for 1.28Mcps TDD EUL (TD Tech)

Decision: This document was noted.

HARQ scheme

R1-062329 HARQ timing aspects for 1.28Mcps TDD Enhanced Uplink (CATT)

Decision: This document was noted.

R1-062343 HARQ timing aspects for 1.28Mcps TDD Enhanced Uplink (TD Tech)

Decision: This document was noted.

Scheduling

R1-062166 20ms TTI Co-existence with 5ms TTI for E-DCH of LCR TDD (ZTE)

Decision: This document was noted.

R1-062167 LCR TDD: Non-Scheduled Traffic and Scheduled Traffic Transmissions (ZTE)

Decision: This document was noted.

R1-062328 Signaling Information for Node-B Controlled Uplink Scheduling and Text Proposal for TR 25.827 (CATT)

Decision: This TP was revised in R1-062419.

R1-062419 Signaling Information for Node-B Controlled Uplink Scheduling and Text Proposal for TR 25.827 (CATT)

Decision: This TP was agreed to be included in TR

R1-062337 Uplink Control Signalling for 1.28Mcps TDD Enhanced Uplink (CATT)

Decision: TP was agreed with changing the number of ID process to FFS in R1-062433

R1-062433 TP on Uplink Control Signalling for 1.28Mcps TDD Enhanced Uplink (CATT)

Power control

R1-062338 Power control for 1.28Mcps TDD Enhanced Uplink (CATT)

Decision: The TP was noted.

Withdrawn

R1-062168 Random Access for 1.28Mcps TDD Enhanced Uplink (ZTE)

R1-062335 Transport Block Sizes for LCR TDD EUL (CATT)

6.2 3.84 Mcps TDD Enhanced Uplink

R1-061976 Coding of E-DCH for TDD Enhanced Uplink (IPWireless)

28/08/2006 19:00 Presented by Dr. Huiheng Mai

Discussion (Question / Comment): TR text proposal is included

Decision: This text proposal was approved to be included in TR

R1-061977 Simulated Performance of E-UCCH for 3.84Mcps E-DCH (IPWireless)

28/08/2006 19:05 Presented by Dr. Huiheng Mai

Discussion (Question / Comment):

Decision: This document was noted.

R1-061978 25.201CR0024r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD" (IPWireless)

28/08/2006 19:10 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061979 25.221CR0137r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"
(IPWireless)

28/08/2006 19:10 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061980 25.222CR0128(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"
(IPWireless)

28/08/2006 19:10 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061981 25.223CR0039r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"
(IPWireless)

28/08/2006 19:10 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061982 25.224CR0151r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"
(IPWireless)

28/08/2006 19:10 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061983 25.225CR0082r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"
(IPWireless)

28/08/2006 19:10 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-062414 TR 25.826 v1.2.1 (IPWireless)

01/09/2006 14:50 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This version was endorsed and is to be submitted to RAN plenary as v 2.0.0 by rapporteur.

6.3 7.68 Mcps TDD Enhanced Uplink

R1-061984 25.201CR0025(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"
(IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061985 25.221CR0138(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"
(IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061986 25.222CR0129(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"
(IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061987 25.223CR0041(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"
(IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061988 25.224CR0153(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"
(IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-061989 25.225CR0083(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD" (IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson.

Discussion (Question / Comment):

Decision: This CR was approved.

R1-062116 25.202CR0001(Rel-7,B) "Introduction of E-DCH for 7.68Mcps TDD" (IPWireless)

28/08/2006 19:15 Presented by Mr. Nicholas Anderson

Discussion (Question / Comment):

Decision: This CR was approved.

7. HSPA Evolution

Overview of discussion and conclusion on this agenda item

1. MIMO in UTRA
 - Working assumption for future work was endorsed in R1-062437.
 - Open issue for future discussion was addressed in R1-062440 and to be discussed on the e-mail reflector.
2. Continuous Connectivity for Packet Data Users
 - 6 text proposals were agreed to be included in TR25.903.
 - RAN1 working assumption on the outline of the concept, to be communicated to the RAN WGs and used as basis for CR drafting was discussed and was sent to other RAN WGs in R1-062445
 - The latest TR25.903 is version 1.1.0.
3. Scope of Future FDD HSPA Evolution
 - Study Area and Way Forward were discussed.
 - The couple of simulation results of higher modulation for HSDPA/HSUPA were presented.
 - The improvement of Rel-6 MBMS, dedicated MBMS and TDD aspects was discussed.

7.1 MIMO in UTRA (Rel'7 work Item)

R1-062029 Summary of MIMO (FDD) impact on L1 specifications (Qualcomm Europe)

28/08/2006 11:10 Presented by Dr. Josef Blanz

Discussion (Question / Comment):

Bo (Ericsson) commented that symmetric code allocation could not be feasible because of very difficult CQI estimation.

Decision: This document was noted.

R1-062245 Impact of D-TxAA to TS25.214

(Nokia)

28/08/2006 11:20 Presented by Mr. Karri Ranta-aho

Discussion (Question / Comment):

Mr. Chairman commented that it is better to be harmonised to CPC and develop the CR together.

Matthew Baker (Philips) commented that on Figure X, the spreading and scrambling could be at an earlier stage to each stream to allow a different number of spreading codes to be used on each beam.

Decision: This document was noted.

R1-062246 Signalling needs for MIMO in UTRA

(Nokia)

28/08/2006 11:25 Presented by Mr. Karri Ranta-aho

Discussion (Question / Comment):

Matthew Baker (Philips) commented that they agree to the differential CQI and independent ACK/NACK but has a little bit wonder on independent HS-SCCH because independent HS-SCCH signalling increases overhead so that what is advantage.

Decision: This document was noted.

R1-062259 On UTRA MIMO

(Ericsson)

28/08/2006 11:35 Presented by Dr. Bo Göransson

Discussion (Question / Comment):

Evelyn Le Strat (Nortel) asked on HARQ operation if how is transition of one layer to two layer. The answer that block until transmission of one layer or need some mechanism.

Mark Harrison (Motorola) commented that we should take care of the robustness on the air condition.

Josef Blanz (Qualcomm) commented on HS-HCCH operation that some consensus is need for the separate operation of each layer considering the cell edge case. Also he commented on coupling the CQI and precoding that there is a case that the precoding is changed independently.

Decision: This document was noted.

R1-061954 CQI for Rel-7 FDD MIMO scheme

(Philips)

28/08/2006 11:50 Presented by Mr. Matthew Baker

Discussion (Question / Comment):

Evelyn Le Strat (Nortel) asked how the weighting is calculated. The answer was that UE has to need some assumption for how to calculate weights and also we need to take care of long term and medium term averaging.

Josef Blanz (Qualcomm) commented that the detail for the primary and secondary beams. The answer is the definition is for the clear assumption of signalling and the more discussion is for evaluation.
Some discussion is on the case that data does not exist on the one stream.

Decision: This document was noted.

Antenna feedback

R1-061951 Antenna weight feedback for Rel-7 FDD MIMO scheme (Philips)

28/08/2006 12:00 Presented by Mr. Matthew Baker

Discussion (Question / Comment):

Bo Göransson (Ericsson) commented on the first point that they agree principle and the based on antenna weight is not important but CQI estimation is important for this point.

Mark commented that we should see the simulation on the some different CQI mechanism.

Karri Ranta-aho (Nokia) commented on the first ranking based on FBI that it is more beneficial on every slot and we need more evaluation on this point.

Josef Blanz (Qualcomm) commented that the precoding should be depending on the higher stream in order to make the data maximized. And as for the third one, precoding on rank is every TTI and sometimes the coupling of the CQI and precoding information would be better.

Matthew Baker commented to these commented that we should discuss on the offline on the third point.

Decision: This document was noted.

R1-062031 HS-DPCCH in support of D-TxAA (Qualcomm Europe)

R1-062406 HS-DPCCH in support of D-TxAA (Power Point Version)
(Qualcomm Europe)

28/08/2006 12:15 Presented by Dr. Josef Blanz

Discussion (Question / Comment):

On the some discussions of the coupling transmission of the CQI and PC and what is the benefit combination.

Decision: This document was noted.

HS-HCCH antenna weighting indication

R1-061953 HS-SCCH signalling for Rel-7 FDD MIMO scheme (Philips)

28/08/2006 12:30 Presented by Mr. Matthew Baker

Discussion (Question / Comment):

$10 + 2 = 11$ bits on the conclusion is miscalculation should be 12bits (not new puncturing)

Decision: This document was noted.

R1-062032 HS-SCCH in support of D-TxAA (Qualcomm Europe)

R1-062407 HS-SCCH in support of D-TxAA (Power Point Version)
(Qualcomm Europe)

28/08/2006 12:40 Presented by Dr. Josef Blanz

Discussion (Question / Comment):

It was discussed whether SDM is allowed or not. As for code allocation, there are some case that 50 codes are allocated to one stream without allocating to the other stream and in the other case, the codes re divided to two streams equally.

Josef commented that from maximum capacity point of view SDM has additional capacity and also the cost of SDM is limited, just one indicator.

Karri Ranta-aho (Nokia) commented that their idea is SDM but they don't need the exclusive indicator.

Decision: This document was noted.

R1-061952 Fallback mode for Rel-7 FDD MIMO scheme (Philips)

28/08/2006 14:10 Presented by Mr. Matthew Baker

Discussion (Question / Comment):

It was clarified that it's a dual beam STTD.

It was asked how that the performance is on the certain case that feedback error and son on. The answer was that it was on the configuration matter so that it's later Study.

Karri Ranta-aho (Nokia) asked what kind of gain we can obtain by this scheme. The answer was that in fact the evaluation is needed and the motivation for proposed scheme is that the scheme could be interesting owing to that the element is diversity.

Matthew Baker clarified that the "fallback mode" refers to single-stream transmission while a UE is configured in MIMO mode; the proposal does not relate to the normal single stream behaviour when the UE is not configured in MIMO mode.

Decision: This document was noted.

R1-061955 F-DPCH transmission for Rel-7 FDD MIMO scheme (Philips)

28/08/2006 14:25 Presented by Mr. Matthew Baker

Discussion (Question / Comment):

There were some discussions on the Tx diversity option. Karri Ranta-aho commented that this proposal makes sense. Josef commented that we don't need the same Tx Div scheme for HS-PDSCH and F-DPCH.

Bo (Ericsson) commented that they agree in principle but also we could have the different Tx Div option and no Tx Div option.

In addition, as for common channel it was discussed why the common TrCH needs to be transmitted from two antennas.

Decision: This document was noted.

R1-062030 Analysis of Precoding codebook size (Qualcomm Europe)

28/08/2006 14:40 Presented by Dr. Josef Blanz

Discussion (Question / Comment):

It was clarified that one more bit is needed to indicate the column. It was clarified that 2 bits are used for the single case and one additional bit is used for two stream cases to transmit the which HS-HCCH is used and column.

Decision: This document was noted.

R1-062258 Performance of 4 Tx antenna operation in UTRA MIMO (Ericsson)

28/08/2006 14:50 Presented by Dr. Bo Göransson

Discussion (Question / Comment):

Decision: This document was noted.

After the presentation of all presentations, Mr. chairman commented that we try to see the conclusion until Friday by the offline discussion in some interested people and put the conclusion into the short document about the level of agreement. At this stage, we don't need a lot of details and also some points are very useful to the other WGs, e.g. HARQ point is related to RAN2. During the week, the off-line discussion took place and the discussion could reach the following conclusion.

R1-062437 Agreements on details in support of MIMO (FDD) for Rel-7 (Philips, Qualcomm, Nortel, Ericsson, Motorola, TI, Lucent, Nokia, T Mobile, ArrayComm)

01/09/2006 14:50 Presented by Dr. Josef Blanz

Discussion (Question / Comment):

Decision: Agreements are endorsed as working assumption for further work. Question on support of DPCH instead of only F-DPCH to be resolved by next meeting, discussion should start on the new email reflector.

R1-062440 Open issues on details in support of MIMO (FDD) for Rel-7 (Qualcomm Europe)

01/09/2006 14:55 Presented by Dr. Josef Blanz

Discussion (Question / Comment):

Qualcomm proposed to take this document as the starting point for further discussion and start on the e-mail reflector.

Decision: This document was noted. The further discussion will be on the e-mail reflector. MCC provides new WCDMA MIMO reflector

7.2 Continuous Connectivity for Packet Data Users

R1-062395 Uplink DPCH and HS-SCCH gating, general description (Nokia, Ericsson, Qualcomm Europe)

Decision: This document was noted.

R1-062248 Further link simulation results for UL DPCH gating, HARQ off (Nokia)

Decision: This document was noted.

R1-062249 Further link simulation results for UL DPCH gating, HARQ on (Nokia)

Decision: This document was noted.

R1-062260 TP for Additional UL DPCH Gating Link-Level Performance Results (Ericsson)

Decision: This TP was agreed to be included in TR.

R1-062261 TP for UL DPCCH Gating High-Velocity System-Level Performance
(Ericsson)

Decision: This TP was agreed to be included in TR

R1-062262 UL DPCCH Gating - Further Results on Impact of Gap Length (Ericsson)

Decision: This document was noted.

R1-062320 Link Simulations on Uplink DPCCH Gating with Long Gating Gap
(Huawei)

Decision: This TP was agreed to be included in TR with addition of DPCCH gap length = 1sec in the table. It is noted that from a BS complexity point of view, a long gap length may cause larger complexity for certain environments (e.g. more frequent change in propagation conditions)

R1-062319 Uplink DPCCH Gating with Long Gating Gap and Text Proposal
(Huawei, Qualcomm Europe)

Decision: TP was revised in R1-062423.

R1-062423 Uplink DPCCH Gating with Long Gating Gap and Text Proposal
(Huawei, Qualcomm Europe, Ericsson)

01/09/2006 15:00 Presented by Mr. Johan Bergman from Ericsson

Discussion (Question / Comment):

Decision: This TP was agreed.

R1-062384 UL VoIP capacity: SIR Target Reduction vs. DPCCH gating
(Lucent Technologies)

Decision: This document was noted.

R1-061994 Improving VoIP performance for HSDPA by reduced HS-SCCH or by in-band control signaling with grouping
(Motorola)

This document was revised before the presentation.

R1-062422 Improving VoIP performance for HSDPA by reduced HS-SCCH or by in-band control signaling with grouping
(Motorola)

Decision: This document was noted.

R1-062251 HSDPA VoIP capacity (Nokia)

Decision: This document was noted.

R1-062252 On HS-SCCH-less HSDPA operation (Nokia)

Decision: This document was noted. This contribution was captured in R1-062421.

R1-062025 Reduced Complexity HS-SCCH-less Operation (Qualcomm Europe)

Decision: This document was noted. This contribution was captured in R1-062025

R1-062421 TP on Reduced Complexity HS-SCCH-less Operation (Qualcomm Europe)

01/09/2006 15:05 Presented by Mr. Juan Montojo

Discussion (Question / Comment):

Decision: This TP was agreed.

R1-062109 Comments on the proposals to modify HS-SCCH for VoIP
(Revision of R1-061302) (NEC Group)

Decision: This document was noted.

R1-062263 Reduced HS-SCCH - DL VoIP Capacity Gain (Ericsson)

Decision: This document was noted.

R1-062380 DL VoIP capacity for regular HS-SCCH operation, HS-SCCH less operation and restricted HS-SCCH format
(Lucent Technologies)

Decision: This document was noted.

R1-062381 Restricted HS-SCCH operation to optimize VoIP over HSDPA
(Lucent Technologies)

Decision: This document was noted.

R1-062382 Text Proposal for Restricted HS-SCCH operation (Lucent Technologies)

01/09/2006 15:10 Presented by Dr. Rainer Bachl

Discussion (Question / Comment):

Decision: This TP was agreed.

R1-062383 On simulation parameters for comparison of DL VoIP capacity
(Lucent Technologies)

Decision: This document was noted.

R1-062027 25.212 CR0238 (Rel-7, B) "Support of CPC concepts"
(Qualcomm Europe, Nokia, Ericsson)

Decision: This document was noted.

R1-062028 25.214 CR0421 (Rel-7, B) "Support of CPC concepts"
(Qualcomm Europe, Nokia, Ericsson)

Decision: This document was noted.

R1-062242 Way forward on Continuous Connectivity for Packet Data Users (Siemens)

Decision: This document was noted.

R1-062243 Proposed solution for WI Continuous Connectivity for Packet Data Users
(Siemens)

Decision: This document was noted.

UL DPCCCH gating with DPCCCH preamble and DL F-DPCH gating
Rule based activity detection, CQI reporting reduction and DL DRX/UL DTX
HS-SCCH less initial transmission with modified HS-SCCH for retransmission
Decide on fast L1 or L2 entering/leaving of CPC, PC step size in CPC mode until October meeting

R1-062385 Considerations for a simple CPC uplink design
(Lucent Technologies)

Decision: This document was noted.

R1-061956 Way forward for Continuous Packet Connectivity (CPC) (Philips)

Decision: This document was noted.

Add new slot format (6pilots/4TPC) to the UL slot formats in 25.211

RAN1 working assumption on the outline of the concept, to be communicated to the RAN WGs and used as basis for CR drafting:

- UL DPCCCH gating with DPCCCH preamble [or 3 or 4 preambles e.g. 0, 2/3, 15 slots]
- DL F-DPCH gating
- Rule based activity detection, CQI reporting reduction and DL DRX/UL DTX
- Rel'6 type of HS-SCCH operation and HS-SCCH less initial transmission with modified HS-SCCH for retransmission
- L3 indication of slot format to be used during CPC, add new slot format (6pilots/4TPC) to the UL slot formats in 25.211
- Mandatory UE support tied to support of EDCH/HSDPA (actual "UE RX switch-off" during DRX is UE implementation)
- Decide on fast L1 or L2 entering/leaving of CPC, PC step size in CPC mode until October meeting
- Possibility to enter CPC mode directly with DCH setup, in addition the RNC can activate CPC mode anytime when in DCH state

RAN1 CRs should be agreed in October meeting.

Draft LS in Tdoc R1-062431 (Siemens)

R1-062431 Draft LS on RAN1 decisions for "Continuous Connectivity for packet data users"
(Siemens, Nokia, Ericsson, Qualcomm, Philips)

01/09/2006 15:15 Presented by Dr. Joern Krause from Siemens

Discussion (Question / Comment):

Decision: This draft LS was agreed in R1-062445

All agreed text proposals were captured in TR.

R1-062444 TR 25.903 v1.0.1 "Continuous Connectivity for packet data users"
(Editor, Siemens)

Decision: This document was endorsed as v1.1.0 in R1-062451

R1-062451 TR 25.903 v1.1.0 "Continuous Connectivity for packet data users"
(Editor, Siemens)

Not treated due to lack of time

R1-062021	Improvements on E-DPCCH for HSPA	(Qualcomm Europe)
R1-062022	Improved E-DPCCH coding	(Qualcomm Europe)
R1-062023	Improved E-DPCCH power setting as a function of the Handoff state	(Qualcomm Europe)
R1-062024	F-DPCH time alignment	(Qualcomm Europe)
R1-062110	TP on Clarification for HS-SCCH less operation	(Revision of R1-061303) (NEC Group)
R1-062111	TP on Clarification for Restricted HS-SCCH operation (Revision of R1-061304)	(NEC Group)
R1-062112	TP on further simplification for Restricted HS-SCCH operation (Revision of R1-061305)	(NEC Group)
R1-062152	Monitoring of HSUPA grant channels	(Qualcomm Europe)
Withdrawn		
R1-062026	TP for 25.903 on DTX/DRX concept	(Qualcomm Europe)
R1-062247	Uplink DPCCH gating, general description	(Nokia)
R1-062250	Uplink DPCCH gating performance with different gating patterns	(Nokia)

7.3 Scope of future FDD HSPA Evolution

R1-062000 Cingular Views on the Way Forward on HSPA Evolution(Cingular Wireless)

01/09/2006 09:30 Presented by Mr. Sharat Chander

Discussion (Question / Comment):

T-Mobile expressed a wonder on the AMR rate and suggested to keep quality.

Decision: This document was noted.

**R1-062001 Cingular Views on the “RAN Radio” Specific Aspects on HSPA Evolution
(Cingular Wireless)**

01/09/2006 09:40 Presented by Mr. Sharat Chander

Discussion (Question / Comment):

Decision: This document was noted.

R1-062033 Radio System related study areas for HSPA Evolution (Qualcomm Europe)

01/09/2006 09:45 Presented by Mr. Serge Willenegger

Discussion (Question / Comment):

Decision: This document was noted.

R1-062158 VoIP Performance Enhancements beyond CPC (InterDigital)

01/09/2006 09:50 Presented by Mr. Eldad Zeira

Discussion (Question / Comment):

Karri Ranta-Aho (Nokia) expressed a wonder that this proposal is scheduling and non-scheduling but they already proposed.

TI commented that it seems one HARQ process reserved for non scheduling but RAN2 perspective no

It was clarified by InterDigital that we don't have particular technical proposal here but we need evaluate beyond CPC because CPC has not defined fine

Decision: This document was noted.

R1-061995 Performance study of 64QAM for HSDPA (Motorola)

01/09/2006 10:00 Presented by Mr. Zhang Charlie

Discussion (Question / Comment):

Ericsson commented that in their results 64QAM is better than 16QAM in large cell size and almost similar results to this document.

Decision: This document was noted.

R1-062264 64QAM for HSDPA - Link-Level Simulation Results (Ericsson)

01/09/2006 10:10 Presented by Mr. Johan Bergman

Discussion (Question / Comment):

Decision: This document was noted.

R1-062265 64QAM for HSDPA - System-Level Simulation Results (Ericsson)

01/09/2006 10:15 Presented by Mr. Johan Bergman

Discussion (Question / Comment):

It was clarified that as for 3D antenna pattern it's simple way and antenna pattern has isolation between cells and also as for inter-cell interference just use P-Average parameter.

Karri (Nokia) asked if 64QAM target is for MIMO user or non MIMO user. The answer was that they can be together also with/without each other and

Decision: This document was noted.

R1-062266 16QAM for HSUPA - Link-Level Simulation Results (Ericsson)

01/09/2006 10:25 Presented by Mr. Johan Bergman

Discussion (Question / Comment):

Decision: This document was noted.

R1-062267 16QAM for HSUPA - System-Level Simulation Results (Ericsson)

01/09/2006 10:30 Presented by Mr. Johan Bergman

Discussion (Question / Comment):

Decision: This document was noted.

R1-062268 Dedicated MBMS Carrier Using Common Transmitted Waveforms (Ericsson)

01/09/2006 11:20 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

It was clarified by Ericsson that synchronous NW is assumed and for improving MBMS performance sync NW is very beneficial.

Tim (Philips) asked if this supports only MBMS or other services such as those using an UL. The answer was that is not associated with an UL. As for applying OFDM, Stefan commented that for OFDM we need a quite significant change, on the other hand for WCDMA we can obtain a quite effective improvement with just a small modification to the specification.

Serge Willegener (Qualcomm) commented that we don't need quite change and already is quite feasible so that we fully support to this contribution.

Decision: This document was noted

R1-062379 Physical Layer Improvements for TDD MBMS (IPWireless)

01/09/2006 11:40 Presented by Mr. Nicholas Anderson

Discussion (Question / Comment):

Stefan Parkvall commented that the result of spectrum efficiency is same range between this and previous document.

Decision: This document was noted.

At the end of session, Manook Soghomonian (3) commented that this HSPA evolution is very important item and they fully support to these contribution and encouraged all delegates to provide the technology and contribution in the future meeting. Sharat Chander (Cingular) supports 3's comment and he also encouraged all delegates to provide the contribution. Mr. Chairman commented that SI would be completed at the end of this year so our target is November meeting and make clear what can be achieved should be confirmed.

8. Evolved UTRA and UTRAN

Overview of discussion and conclusion on this agenda item

1. LTE Physical Layer Work Item Description

- LTE building blocks description and Work plan was discussed and RAN1 part was **endorsed**.
- Physical layer specification structure and corresponding editors was **agreed** in R1-062117.
 - Spec 0: LTE Physical Layer – General Description Editor: RAN1 chairman
 - Spec 1: Physical channels, and modulation Editor: Stefan Parkvall (Ericsson) and Sadayuki Abeta (NTT DoCoMo)
 - Spec 2: Multiplexing and channel coding Editor: Juan Montojo (Qualcomm)
 - Spec 3: Physical layer procedures Editor: Robert Love (Motorola)
 - Spec 4: Physical layer – Measurements Editor: Asbjörn Grovlen (Nokia)

2. Numerology

- TTI length: TTI length except for the LCR compatible TDD frame structure and MBMS where multiple TTIs may be concatenated, and way forward were **agreed** in R1-062441
- DC Subcarrier: **Working assumption was agreed**.
 - DL:** Central sub-carrier reserved. No provisions taken for additional DC carriers from other cells, no need to change number of sub-carrier in numerology for this proposal
 - UL:** Shifted by $\frac{1}{2}$ sub-carrier
- Resource Block size: RB size of 12 subcarriers (UL/DL), if number of available subcarriers does not divide with 12, then the remaining subcarriers would be utilized for transmission. DL RBs are not overlapping with the DC sub-carrier or are splitted by the DC sub-carrier.
- MBMS: Assume same sub-carrier spacing, CP length and sampling rate as for non-dedicated MBMS

3. Basic Access Procedures

- RACH: **Working assumption was agreed**.
 - Agreements a) b), c) (less bits for LCR compatible TDD frame structure) and class “C” from d) are endorsed. Sequence type is selected as ZC-ZCZ.
 - a) Random Access Channel Bandwidth:**
Non-synchronized random access occupies 1.25 MHz or minimum bandwidth. Additional random access opportunities may be supported by employing multiple 1.25 MHz regions. Remaining bandwidth can be used for UL-SCH.
 - b) Time-Frequency Region**
Simultaneous random access transmission in the same time-frequency regions across cells is difficult for FDD.
 - c. Number of Sequences**
Up to 64 preamble sequences required to carry 6 bits of information.
 - d) Sequence design for random access channel**
To meet coverage requirement in non-synchronized random access, it was agreed that only the preamble (with no explicit message) will be transmitted. Two possible sequences, Generalized Chirp-Like (GCL) and Zadoff-Chu (ZC), have been proposed with three different sequence designs –
 - GCL or ZC with zero-correlation zones
 - GCL or ZC with different carrier sequence indices
 - GCL or ZC with zero-correlation zones and different carrier sequence indices when the required number of zones cannot be generated
 - for 0.5ms minimum basic TTI (also in case of 0.5ms TTI as the single TTI): 1 short and 1 long sequence (for 0.5ms and 1.0ms), repetition for longer sequences
 - for 1ms TTI: 1 long sequence (for 1.0ms), repetition for longer sequences
 - CP to allow for FD processing in the NodeB
- SCH: **Agreement** on hierarchical SCH structure (P-SCH, S-SCH) supporting a hierarchical cell search procedure for initial acquisition. Confirm in October meeting whether hierarchical cell search procedure (or a part of it) based on the hierarchical SCH structure is also applicable for non-initial cell search. Signals to be used on P-SCH and S-SCH are FFS. Further issues to decide next were addressed as follows (email discussion should take place on these topics):
 - signals provided by the system for non-initial cell search
 - supported number of cell ids (as input sequence discussion)
 - WCDMA: 512 cell ids (indicated through the primary scrambling code on P-CPICH)
 - Should we assume same number of cell ids for LTE as in WCDMA?

- multiplexing of P-SCH and S-SCH
- signals/sequences for P-SCH, S-SCH

4. Reference signals structure

- Downlink Reference signal structure: **Working assumption was agreed.**
 - CDM of the RS for cells of the same eNodeB is the basic assumption. eNodeB with many cells shall be supported as well.
 - FDM of the RS from each antenna in case of MIMO. No data transmission on the subcarriers overlapping (in frequency and time) with the RS transmissions for another antenna.
- Uplink Reference signal structure: **Working assumption was agreed.**
 - RS sequences: conventional Zadoff-Chu sequences
 - Is Frequency domain scheduling supported for the UL? Yes. Distributed sounding RS for Frequency domain scheduling in UL. FFS whether to send them statically/dynamically, and how to multiplex.

Discuss need for Distributed transmission in uplink during email discussions.

5. MIMO, Tx Diversity and Beamforming

Agreement

- Regarding the maximum number of codewords that can be sent to a UE, *multiple codewords* were agreed for SU-MIMO, which does not automatically imply any specific receiver implementation.
- For both FDD (reconfirmed the decision from Shanghai for FDD) and TDD, the common reference signal, which can be used by some UEs for the downlink CQI estimation and/or the selection of the preferred pre-coding vector(s), should not be pre-coded (or beamformed).
- Both SU- and MU-MIMO are supported.
- Precoding for DL MIMO
 - Unitary precoding matrix is used for support of the SU-MIMO.
 - UE feedback is based on the codebook-based precoding for FDD.
- UE feedback
 - Transmission of a known signal pattern(s) to provide channel state information to support downlink MIMO transmission for TDD operation.
 - CQI report

6. Channel coding Scheme

Agreement

The channel coding scheme for TrCH data (L3 information) is

- Using Rel-6 Turbo code (mother code rate $R=1/3$)
- With contention free interleaver (e.g. ARP) - exact interleaver to be selected in future meeting
 - Consider 2x2 MIMO case in the interleaver selection
- Segmentation block size 5114 bits or (slightly larger?)
- Tailbiting (FFS)

7. Topics related to the extension of the Study Item Phase

- Additional simulation results for DL/UL VoIP capacity and beamforming were presented and the corresponding CRs for TR25.814 were agreed.
- Additional enhancement techniques such as intercell interference coordination and cancellation, 4 antenna MIMO were discussed and the summary for these techniques were captured in agreed CR for TR 25.814 and also the these RAN1 output for LTE SI concluded will be sent to RAN#33 in R1-062443.

8.1 Review of the LTE Physical Layer Work Item Description

R1-061945

3G Long-Term Evolution Feature level WI Description Sheet

(NTT DoCoMo, et al.)

28/08/2006 15:08 Presented by Mr. Takehiro Nakamura

Discussion (Question / Comment):

He explained the situation of the last RAN plenary meeting that the Feature level was approved and the building blocks level should be reviewed in each WG.

Decision: This document was noted.

R1-061946 3G Long-Term Evolution Building Blocks Description Sheet
(NTT DoCoMo, et al.)

28/08/2006 15:10 Presented by Dr. Sadayuki Abeta

Discussion (Question / Comment):

It was explained that the section will be updated according to the discussion for the TS structure. There was no request for the other modification.

Decision: This document was noted. The document was revised in R1-062411 according to the approval on the TS structure of R1-062117.

R1-062411 3G Long-Term Evolution Building Blocks Description Sheet
(NTT DoCoMo, et al.)

01/09/2006 15:20 Presented by Dr. Sadayuki Abeta

Discussion (Question / Comment):

Sadayuki Abeta asked delegates to contact him if company join to the supporting company.

Decision: This document was endorsed.

R1-061992 Proposed Work Plan for LTE
(Rapporteur, NTT DoCoMo)

28/08/2006 15:25 Presented by Dr. Sadayuki Abeta

Discussion (Question / Comment):

Mr. Chairman commented that we need some discussion about the parts related to the other WGs and if some parts is delayed, the other topic might be affected so that it have better to review this plan in each WG step by step. Also he commented as for MBMS part that RAN1 has not specific topic on this because some topics would be included in but need to discuss what point would be specified and maybe completed until March.

Takehiro Nakamura (LTE Rapporteur clarified that we actually need to clarify what kind of topic should be discussed on RAN1 as for MIMO and we will add this topic. Also he would capture the comment for each WG and modify it for the approval at the next RAN plenary and revise this WP at the every TSG meeting with status report. It was asked if Tx Div and beamforming should be separated from MIMO. Mr. Chairman commented that after the conclusion of MIMO, we would come back to this issue.

Decision: The RAN1 part was agreed and the rapporteur would add milestones for RAN plenary.

R1-062117 Physical layer specification structure proposal
(Rapporteur, NTT DoCoMo)

28/08/2006 15:30 Presented by Dr. Sadayuki Abeta

Discussion (Question / Comment):

Mr. Chairman commented that draft structure would be available on the reflector before the October meeting. Christian G (Alcatel) raise a concern that interference coordination should be included because we already confirm it would provide performance gain. Mr Chairman commented that that is not big issue and in fact we have many others issue same as Interference coordination. This is not skeleton TS and we just would approve the structure and title and editor. It is early to confirm the detail today and it should be done before October meeting. Serge Willenegger (Qualcomm) fully supported to Chairman's comment and commented that the most important thing is to specify the minimum specification and the specification is not the text book for operator.

Decision: RAN1 specification structure and corresponding editors were agreed.

Spec 0: LTE Physical Layer – General Description Editor: RAN1 chairman

Spec 1: Physical channels, and modulation Editor: Stefan Parkvall (Ericsson) and Sadayuki Abeta (NTT DoCoMo)

Spec 2: Multiplexing and channel coding Editor: Juan Montojo (Qualcomm)

Spec 3: Physical layer procedures Editor: Robert Love (Motorola)

Spec 4: Physical layer – Measurements Editor: Asbjörn Grovlen (Nokia)

8.2 Numerology and Frame Structure

TTI length

R1-062002 TTI Length Requirements for EUTRA
(Texas Instruments)

30/08/2006 09:15 Presented by Dr. Aris Papasakellariou

Discussion (Question / Comment):

Decision: This document was noted.

R1-062034 TTI for E-UTRA - DL link level analysis
(Qualcomm Europe)

30/08/2006 09:20 Presented by Mr. Juan Montojo

Discussion (Question / Comment):

Decision: This document was noted.

R1-062035 TTI for E-UTRA - UL link level analysis
(Qualcomm Europe)

30/08/2006 09:25 Presented by Mr. Juan Montojo

Discussion (Question / Comment):

Ericsson agreed to TDD structure on DL. It was clarified by Qualcomm that the whole band is used for interpolation.

Sarah (Nortel) pointed out about latency that TR 25.913 assumes the small packet for latency requirement so that L1 processing time is not increasing but if considering the large packet size, the processing time increase so we consider the packet size dependency.

For UL, interpolation scheme was discussed and some companies raised a wonder.

Decision: This document was noted.

R1-062036 Discussion on TTI for E-UTRA

(Qualcomm Europe)

30/08/2006 09:30 Presented by Mr. Juan Montojo

Discussion (Question / Comment):

It was clarified by Qualcomm that ACK/NACK is frequency multiplexed as well and the proposal is no issue for TDD case so that they propose 1ms for both TDD and FDD considering commonality.

Joon Kui Ahn asked how many number of transmission on HARQ processes is for 0.5ms and longer TTI case. It was clarified that the last number of HARQ is less in the longer case

Decision: This document was noted.

R1-062058 E-UTRA TTI size and Number of TTIs

(Motorola)

30/08/2006 09:55 Presented by Mr. Robert Love

Discussion (Question / Comment):

Joon Kui Ahn commented that in the latency analysis, why the same number of HARQ process is assumed for 0.5 and 1 ms is it's not same as EDCH case and 0.5 ms case could reduce the number.

Decision: This document was noted.

R1-062087 Views on TTI Length in E-UTRA

(NTT DoCoMo, Fujitsu, KDDI,

Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)

30/08/2006 10:10 Presented by Dr. Kenichi Higuchi from NTT DoCoMo

Discussion (Question / Comment):

Amitava Ghosh (Motorola) asked what the downsize of 2ms in DL is. The answer was that in we would reduce the test issue for terminal so we choose one TTI for UL and actually they agree to Motorola view but the necessity is for UL.

It was commented that the support of the longer TTI for UL provides some problem on the scheduling and degrade the cell edge throughput in DL. DoCoMo commented to this issue that the more resource is allocated to cell edge user, we can avoid the reduction of cell edge throughput.

Decision: This document was noted.

R1-062137 The impact of TTI length, speed, feedback period and feedback delay on the performance of downlink closed loop schemes for 4-branch LTE

(Nortel)

30/08/2006 10:20 Presented by Mr. Hua` Xu

Discussion (Question / Comment):

Middle is best for latency, control signalling OH.

Decision: This document was noted.

R1-062138 Impact of TTI length on user plane latency

(Nortel)

30/08/2006 10:30 Presented by Ms. Sarah Boumendil.

Discussion (Question / Comment):

Asbjorn Grolsen (Nokia) commented that considering UE processing such as ACK/NACK processing UE processing time has some time, not less than small TTI.

Mr. Chairman commented on the latency requirement that he understand Nortel proposal but the requirement will be different from practical one and this requirement should be discussed in the other group so we would not intend to send LS to RAN on this issue.

Farooq Khan (Samsung) expressed a wonder why 1ms case reduce OH control signalling because 1 ms case enable more schedule so that we need more signalling

Decision: This document was noted.

R1-062269 TTI length

(Ericsson)

30/08/2006 12:00 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Decision: This document was noted.

R1-062273 Link Budgets for E-UTRA

(Ericsson)

30/08/2006 12:00 Presented by Dr. Erik Dahlman

Discussion (Question / Comment):

It's a long discussion on the repetition approach on the case that TTI is different between DL and UL. Ericsson commented that we don't need 2.0 ms, 1.0 ms is sufficient but 0.5 ms is quite short.

Qualcomm expressed a wonder on the impact to TDD system in the case of different TTI for DL/UL.

Decision: This document was noted.

R1-062339 LTE TTI Length (Siemens)

This document was revised in R1-062428 before the presentation.

R1-062428 LTE TTI Length (Siemens)

30/08/2006 12:10 Presented by Dr. Thomas Chapman

Discussion (Question / Comment):

It was clarified by Siemens that if UL is 2.0ms DL is 2.0ms as well.

Decision: This document was noted.

R1-062304 Coverage enhancement by extended Tx time duration (LG Electronics)

30/08/2006 09:20 Presented by Dr. Joon Kui Ahn

Discussion (Question / Comment):

LGE clarified their preference that we should keep one TTI for DL and UL but currently there is no preference on actual length.

Decision: This document was noted.

R1-062212 Uplink ACK/NACK signalling considerations in relation to TTI length (Samsung)

30/08/2006 12:30 Presented by Dr. Farooq Khan

Discussion (Question / Comment):

It was clarified by Samsung that penetration mode is in line with TR and data and control (ACK/NACK) are assigned flexible in 6 blocks so when all block is assigned to control, there is no data throughput.

Motorola commented that they agree that FDM structure can provide more UL control coverage than TDM but if we need more coverage larger TTI is better

Decision: This document was noted.

Summary

1ms TTI only in UL/DL

- unclear how it fulfils the latency requirement (does not always fulfil requirements considering retransmissions)
- uplink coverage: Repetition could be used for ACK/NACK. Associated control signalling (if any)?
- simplifies TDD

0.5ms TTI (UL/DL) and 2ms TTI (in UL and possibly also DL)

- 0.5ms fulfils the latency requirement considering retransmissions
- 0.5ms has coverage issues in UL => solution: 2ms TTI
- more complex standardization process
- TDD requires coordination of TTI with UL/DL switching point

Discussion on Wednesday's session

Qualcomm commented that from the latency and UL coverage perspective, 1ms best choice and best trade off. Nortel supported Qualcomm comment and commented that 1ms is best trade off of latency and coverage and although 1ms could not reach and close to requirement of latency.

Ericsson mentioned their opinion that if control signaling is not considered 1.0 ms is OK but it's not good if considered.

As a solution of coverage problem, Samsung pointed out FDM for UL control signaling is

Mr. Chairman pointed out that 0.5/2.0ms make the implementation complexity of symmetric process and also TDD issue. Also Qualcomm pointed out that multiple TTI take more time to specify the other topics so that it should be one factor for selection. For TDD aspect, IPWireless commented that their document pointed out control aspect, pilot OH and switching point issue and that on-balance, they supported having a single fixed TTI that is common to FDD.

TI commented that right now from the latency requirement, 0.5ms is best and of course there OH and coverage issue and asked how we treat latency requirement (relax or not).

As for the requirement of latency, Mr. Chairman commented that the operator could provide the some information.

R1-062441 E-UTRA TTI Way forward (Ericsson, Nokia, Motorola, Qualcomm Europe, Samsung, Nortel, Siemens, LG Electronics, Lucent)

01/09/2006 09:20 Presented by Dr. Erik Dahlman

Discussion (Question / Comment):

Kenichi Higuchi (NTT DoCoMo) commented that their view is 0.5/2.0 ms for achieving short latency and good coverage, but for accelerating the 3GPP standardization they support to this way forward. In addition they commented that as the operator view point, supporting large coverage is very important so they would like to suggest continuing discussion on control signalling repetition and also we need the further study on second point. As for supporting larger cell size, Adam Pollard (Vodafone) pointed out that the repetition of control signalling is important.

Aris (TI) commented that the way forward is based on TTI 0.5ms so that the second point should be mandatory, not possibility. Also Mitsubishi and Motorola pointed out that the second point is very important so that we need further study in future meeting. Also they pointed out that TTI in this way forward can be applicable to MBMS. It was answered that 1ms is applicable to MBMS and may be concatenated for MBMS but not sure.

Serge Willenegger expressed fully support to this way forward and commented that RB size for single resource mapping is 12 is enough but as companies pointed out, if find any concern in future meeting, we must reconsider and we also consider MBMS aggregation

Hai Tang (CATT) asked what the definition of TTI is and expressed a concern that this way forward could be compatible to TDD frame structure. Some discussion took place on this topic but the definition is a little bit different on the different person so that Mr. Chairman commented that we could write this on the specification. Finally, Mr. Chairman commented that we would focus on the second bullet in future meeting so that he suggest continuing discussion on this topic and keeping this open for discussion.

Decision: This document was agreed. (Except for the LCR compatible TDD frame structure and MBMS where multiple TTIs may be concatenated).

DC subcarrier

R1-061950 DC offset avoidance techniques in E-UTRA uplink and downlink (Mitsubishi Electric)

30/08/2006 14:40 Presented by Dr. Loic Brunel

Discussion (Question / Comment):

The concern was raised strongly that the comparison between solution 1 and 2 for DL should be performed in the same spectrum efficiency, currently one is 301 and one is 303 and solution loss spectrum by puncturing.

Decision: This document was noted.

R1-062061 Uplink DC subcarrier distortion considerations in LTE (Motorola)

30/08/2006 14:55 Presented by Mr. Brian Classon

Discussion (Question / Comment):

It was asked how the subcarrier in center zone could be shifted in the case that each UE is allocated the different block size. The answer was that one solution is that all subcarrier is shifted

Nokia commented that symmetric assignment is the current numerology fro UL so that option 3 is not allowed.

Ericsson expressed a wonder that interference to DC in DL interface is identical in the both case option 3 and the

Decision: This document was noted.

R1-062113 DC sub-carrier and reserved sub-carriers in EUTRA (NEC Group, NTT DoCoMo)

30/08/2006 15:15 Presented by Mr. Thanh Bui.

Discussion (Question / Comment):

It was clarified by NEC that option 1 is quite similar to Ericsson puncturing and difference is before and after FFT

The concern raised on baseband processing if use DC suppression

Some concerns raised about puncturing. Ericsson commented that puncturing is not yellow problem as rate matching is already using puncturing.

Decision: This document was noted.

R1-062272 DC carrier (Ericsson)

30/08/2006 15:30 Presented by Dr. Erik Dahlman

Discussion (Question / Comment):

It was clarified that rate matting assumed for the whole band.

Decision: This document was noted.

Working assumption

DL: Central sub-carrier reserved. No provisions taken for additional DC carriers from other cells, no need to change number of sub-carrier in numerology for this proposal

UL: Shifted by $\frac{1}{2}$ sub-carrier

Discussion

For UL, it was discussed whether central DC sub carrier reserved or shifted by $\frac{1}{2}$ subcarrier. Some company raised a concern on puncturing at UE.

Resource block size, number of usable subcarriers

R1-061947 LTE Spectrum Requirements

(Vodafone, T-Mobile, Orange, KPN, China Mobile)

30/08/2006 16:20 Presented by Mr. Adam Pollard.

Discussion (Question / Comment):

Before the meeting started, on the e-mail reflector, China Mobile showed their supporting to the viewpoints in the contribution and hoped to be co-source company. They commented that 1.25MHz and 2.5MHz bandwidth are suitable allocations for re-farming existing spectrum. Furthermore, they fully agreed the conclusion in this contribution.

Mr. Chairman commented that the spectrum allocation has not much impact to L1 specification owing to OFDM feature and there is no difference even though BW is 1.25, 16. 2.5 MHz....

Decision: This document was noted.

R1-062060 LTE Node-B Spectral Mask Issues

(Motorola)

Decision: This document was noted without presentation

R1-062186 Spectral Mask Issues for the LTE Uplink

(Freescale Semiconductor)

30/08/2006 16:40 Presented by Dr. Wes McCoy

Discussion (Question / Comment):

It was pointed out that RAN4 did the same discussion and then windowing could not fulfill and the filtering is needed. The impact to frequency domain by windowing was asked.

Motorola commented that they have the same analysis for UL and we could have some margin in PSD by their scheme.

Decision: This document was noted

R1-062057 E-UTRA Numerology and OOB emissions

(Motorola)

30/08/2006 16:50 Presented by Mr. Robert Love

Discussion (Question / Comment):

Decision: This document was noted

R1-062360 Analysis of 1.25 MHz E-UTRA BS spectrum shaping requirements

(Nokia)

30/08/2006 16:55 Presented by Mr. Jari Lindholm

Discussion (Question / Comment): This document was submitted also for RAN4 meeting, R4-060742.

Decision: This document was noted

R1-062361 Analysis of 2.5 MHz E-UTRA BS spectrum shaping requirements

(Nokia)

30/08/2006 16:55 Presented by Mr. Jari Lindholm

Discussion (Question / Comment): This document was submitted also for RAN4 meeting, R4-060743.

Decision: This document was noted

R1-062362 Analysis of 5 MHz E-UTRA BS spectrum shaping requirements

(Nokia)

30/08/2006 16:55 Presented by Mr. Jari Lindholm

Discussion (Question / Comment): This document was submitted also for RAN4 meeting, R4-060744.

Rainer Bachl (Lucent) asked if there are any performance loss for long delay case because FIR filter consumes CP length. The answer was that for figure 3 case, the performance loss is not so big but it is true that CP is consumed by FIR filter.

Decision: This document was noted

R1-062363 Analysis of 10 MHz E-UTRA BS spectrum shaping requirements

(Nokia)

30/08/2006 16:55 Presented by Mr. Jari Lindholm

Discussion (Question / Comment): This document was submitted also for RAN4 meeting, R4-060745.

Decision: This document was noted

R1-062364 Considerations regarding specification of E-UTRA BS spectrum shaping
(Nokia)

30/08/2006 16:55 Presented by Mr. Jari Lindholm

Discussion (Question / Comment): This document was submitted also for RAN4 meeting, R4-060746.

Decision: This document was noted

R1-062386 On the number of used subcarriers for 5 MHz E-UTRA
(Lucent Technologies)

This document was revised before the presentation.

R1-062429 On the number of used subcarriers for 5 MHz E-UTRA
(Lucent Technologies)

30/08/2006 17:10 Presented by Dr. Rainer Bachl

Discussion (Question / Comment):

The main discussion was from BS side we don't need to specify the spectrum shaping in BS side.

Erik Dahlman (Ericsson) commented that it doesn't need to specify in RAN1 area but some specify is needed in testing case.

The relation between CP and delay on the evaluation was discussed.

Decision: This document was noted

R1-062209 Design of the occupied sub-carrier number for E-UTRA **(ZTE)**

30/08/2006 17:30 Presented by Ms. Yumin Hu

Discussion (Question / Comment):

It was asked if OFDM symbol timing in receiver is the same for with/without windowing and pointed out that that timing is very important so that the windowing could not be needed.

The number of subcarrier for 1.25 and 2.5 MHz in table 2 is larger than table 1 because using filtering for such case.

It was pointed that it wastes resource. It was asked what the degradation in figure 1 comes from. The answer was CP reduction but it was pointed that the channel for simulation (TU) provide any problem and window is fine.

Decision: This document was noted

R1-062088 Views on Resource Block Size **(NTT DoCoMo, Fujitsu, KDDI,**
Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)

30/08/2006 17:55 Presented by Dr. Kenichi Higuchi from NTT DoCoMo

Discussion (Question / Comment):

Brian Classon (Motorola) commented that the reference position is not kept in the same position and it could be different position depending on UE, cell, antenna, etc.. Also he commented that if RB for reference symbol is small, the number of reference sequence is limited. NTT DoCoMo commented that they agree to such comment and the number of sequence is limited so that the option may be Motorola proposal that assign wider BW for reference.

Decision: This document was noted

R1-062270 Resource block size **(Ericsson)**

30/08/2006 18:05 Presented by Dr. Erik Dahlman

Discussion (Question / Comment):

Alcatel supported this document and 12 is concatenated to 24.

Decision: This document was noted

R1-062206 Further Consideration on the Size of Physical Resource Block in EUTRA
(ZTE)

30/08/2006 18:20 Presented by Ms. Yumin Hu

Discussion (Question / Comment):

Big issue is the reference symbol discussion is not here.

Decision: This document was noted

R1-062340 LTE Resource Block size **(Siemens)**

30/08/2006 18:30 Presented by Dr. Thomas Chapman

Discussion (Question / Comment):

Christian G Gerlach (Alcatel) asked how delay could be expected for VoIP in pairing case delay and expressed a wonder that it needs a time to do symmetric for some user.

Erik Dahlman (Ericsson) expressed a wonder that in this proposal RB size is 12 in some case and 24 in the other case but identically 12 so what the definition of RB is. It was answered by Siemens that the definition of RB is granularity of mapping and in the proposal it can be 12 and 24.

Decision: This document was noted

30/08/2006 18:40 Presented by Mr. Robert Love

Ericsson pointed out the CQI OH is not effective to RB size

Decision: This document was noted

30/08/2006 18:45 Presented by Mr. Asbjörn Grövlén

It was clarified by Nokia that signalling OH in DL become more if UL is small RB.

Decision: This document was noted

30/08/2006 18:55 Presented by Dr. Konstantinos Dimou

It was clarified that the proposal of RB is 12. It was commented that the simulation results change depending on different BW. The subcarrier number in simulation condition was discussed 72, 73, 75...which value is fitted to RAN4 perspective. .

Decision: This document was noted

30/08/2006 17:05 Presented by Dr. Erik Dahlman

Mr. Chairman clarified that PAPER topics is discussed separately from numerology and would be in WI

Decision: This document was noted

RB size of 12 subcarriers (UL/DL), if number of available subcarriers does not divide with 12, then the remaining subcarriers would be utilized for transmission.

DL RBs are not overlapping with the DC sub-carrier or are splitted by the DC sub-carrier.

Mr. Chairman summarized after all presentation that from RAN4 perspective, subcarrier number is OK for 5MHz, higher BW is no problem, but lower BW is very interesting case so that we would like ask RAN4 to continue discussion. In this stage, we don't have absolutely sure number of subcarrier but we need to summarize our point, 12/24 or 15/30 or 25?

Ericsson commented that 12/24 is the good number from the majority. Mr. Chairman asked if 12 is OK or not. Motorola raised a concern that 15/30 is a potential compromised number for 12 and 25.

Qualcomm commented that even number has a serious problem considering UL short and long block size. Ericsson proposed that in this stage the exact subcarrier number for 1.25 and 2.5 MHz so that the smaller number is better.

After some offline discussion, Motorola agreed to 12 and proposed that the subcarrier are not divided by 12 can be utilized to transmission.

After agreement, some topic were discussed and clarified. Regarding the remaining subcarrier, Siemens proposed it is not specified for data or control signal and it should use the persistent scheduling not frequency scheduling, but some companies concerns the two should analysis control OH and so on.

In addition, it was clarified that DC does not include DC and RAN 4 type analysis does not matter to the future discussion. Also the subcarrier number for 1.25MHz, 72 or 75, RAN4 would be easy to take this issue.

30/08/2006 19:50 Presented by Mr. Hue Xu

Discussion (Question / Comment):

Mr. Chairman and ZTE raised a concern what the exact reason for reducing the subcarrier spacing is and from this contribution the reason we cannot see it.

Decision: This document was noted

R1-061998 Observations on Alternative L1 Parameters for E-MBMS (Motorola)

30/08/2006 20:10 Presented by Mr. Charlie Zhang

Discussion (Question / Comment):

It was clarified by MOTOROLA that in conclusion keep the L1 parameter.

Decision: This document was noted

R1-062201 Considerations on physical layer Parameters of MBMS on Dedicated Carrier (ZTE, China Mobile)

30/08/2006 20:15 Presented by Ms. Yumin Hu

Discussion (Question / Comment):

Decision: This document was noted

Mr. Chairman summarized the first and third documents and they were concluded to the second one, that is no change. Also he clarified that this discussion is a part of WI, not for the open issue of SI.

Conclusion

Assume same sub-carrier spacing, CP length and sampling rate as for non-dedicated MBMS

Not Treated due to lack of time

Downlink other

- R1-061957 Resource-Block mapping of Distributed Transmissions in E-UTRA downlink (Philips, Intel Corporation)**
- R1-061971 Alternative OFDM numerology for OFDMA downlink (Agere Systems)**
- R1-062089 Comparison between RB-level and Sub-carrier-level Distributed Transmission for Shared Data Channel in E-UTRA Downlink (Revision of R1-061182) (NTT DoCoMo, Ericsson, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)**
- R1-062213 Performance of DL distributed transmission (Samsung)**
- R1-062214 Distributed transmission on DL: subcarrier-wise vs RB-wise (Samsung)**
- R1-062285 RB-level Distributed Transmission Method for Shared Data Channel in E-UTRA Downlink (NTT DoCoMo, Fujitsu, KDDI, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)**
- R1-062062 10MHz E-UTRA Downlink Performance and numerology (Motorola)**
- R1-062064 Maximum Users/TTI and E-UTRA Downlink Performance (Motorola)**
- R1-062195 Partition Rule for Distributed Multiplexing in E-UTRA Downlink (ITRI)**
- R1-062322 Downlink Distributed Resource Block Mapping (NEC Group, NTT DoCoMo)**
- R1-062394 DL long-CP subframe (Fujitsu)**
- R1-062367 Impacts on channel estimation of Resource-Block Mapping of Distributed Transmissions in E-UTRA Downlink (Philips)**

Uplink other

- R1-062090 Minimum Transmission Bandwidth for Shared Data Channel in SC-Based E-UTRA Uplink (Revision of R1-061784) (NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp)**
- R1-062305 Localized and distributed SC-FDMA transmission in uplink (LG Electronics)**
- R1-062065 L1/L2 UL Control mapping and numerology (Motorola)**
- R1-062124 Uplink Numerology for E-UTRA (Huawei)**
- R1-062204 The New Sub-Frame Structure for EUTRA Uplink (ZTE)**
- R1-062207 Uplink numerology refinement, CP duration (ZTE)**
- R1-062123 25.814 CR0007 (Rel-7, F) "LTE Uplink CP duration" (ZTE)**

R1-062347	UL sub-frame format for long CP	(Nokia)
R1-062091	Investigations on Adaptive Control of Roll-off Factor for DFT-Spread OFDM Based SC-FDMA in E-UTRA Uplink (Revision of R1-061204)	(NTT DoCoMo, Ericsson, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)
R1-062303	Frequency hopping in uplink localized transmission	(LG Electronics)
Other		
R1-062416	Frequency selective scheduling performance with 30 subcarrier RB size	(Motorola)
R1-062059	E-UTRA Numerology and Frame Structure	(Motorola)
R1-062378	Frame structure for E-UTRA TDD mode	(IPWireless)
Withdrawn		
R1-062346	DL long-CP subframe	(Fujitsu)

8.3 Basic Access Procedures

Not Treated due to lack of time

R1-062286	Persistent Scheduling for E-UTRA	(NTT DoCoMo, NEC, Sharp)
R1-062318	Uplink resource request for uplink scheduling	(LG Electronics)

8.3.1 RACH

R1-062067	RACH sequence e-mail reflector summary	(Motorola)
31/08/2006 09:10 Presented by Dr. Amitava Ghosh		
Discussion (Question / Comment):		
Tang (CATT) commented that 6 bits of information is too much for LCR-TDD and they addressed this issue in their document (2bits).		
Decision: This document was noted.		

Working assumption:

- Agreements a) b), c) (less bits for LCR compatible TDD frame structure) and class “C” from d) are endorsed. Sequence type is selected as ZC-ZCZ.
- for 0.5ms minimum basic TTI (also in case of 0.5ms TTI as the single TTI): 1 short and 1 long sequence (for 0.5ms and 1.0ms), repetition for longer sequences
- for 1ms TTI: 1 long sequence (for 1.0ms), repetition for longer sequences
- CP to allow for FD processing in the NodeB

GCL or ZC

R1-062128	Generalized construction of ZCZ-GCL random access preambles (Huawei)	
31/08/2006 09:20 Presented by Dr. Oskar Mauritz		
Discussion (Question / Comment):		
Amitava Ghosh (Motorola) commented that they showed the comparison of ZC and GCL regarding sq planning, number of Sq and complexity in R1-062066 and ZC is better.		
Stefan Parkvall (Ericsson) commented that the complexity analysis in this document is time domain but their analysis in frequency domain show ZC better than GCL.		
Decision: This document was noted.		
R1-062066	Preamble sequence design for non-synchronized random access (Motorola)	
31/08/2006 09:25 Presented by Dr. Rapeepat Ratasuk,		
Discussion (Question / Comment):		
Oskar Mauritz (Huawei) commented that the number of sequence is depending on parameter as shown reflector and sequence planning could be simplified by using different time-frequency resources for random access in different cells.		

Regarding choice of GCL or ZC, finally, Huawei commented that they don't want to have argument so agree to choose ZC.

Decision: This document was noted.

Repetition or Extension

R1-062274 E-UTRA Scalability of Random Access Preamble with cyclic prefix (Ericsson)

31/08/2006 09:40 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Motorola commented that in fact as for the complexity, repetition is easy, but the frequency reuse is a little bit harder for repetition so number of sq is limited.

Dragan Vujcic (LGE) proposed compromise of repetition and extension.

Panasonic commented the their proposal is combination of repetition and extension by less or more 1ms

Ericsson raised a concern that such combination is a little bit confusing.

Dragan Vujcic (LGE) commented that the sequence length is depending on cell size so that what the reference size is. Mr. Chairman commented that it related to preamble and RAN2 discussion but some clarified is need. From LGE document (R1-062306), noise limited environment:

- 1 subframe around 10km
- 2 subframe around 15km
- 3 subframe around 20km

Nicholas Anderson (IPWireless) questioned whether a useful UL-SCH data rate could be achieved if it takes a preamble with length 3 sub-frames to transmit just 6 bits. He indicated that the cell range requirement from RAN was not a pathloss requirement, but was instead more of a signal delay requirement. The design of the preamble should be based upon the minimum data rate we wish to support at the edge of the cell for the uplink shared channel and on the signal delay, rather than on an assumed pathloss model.

Decision: This document was noted.

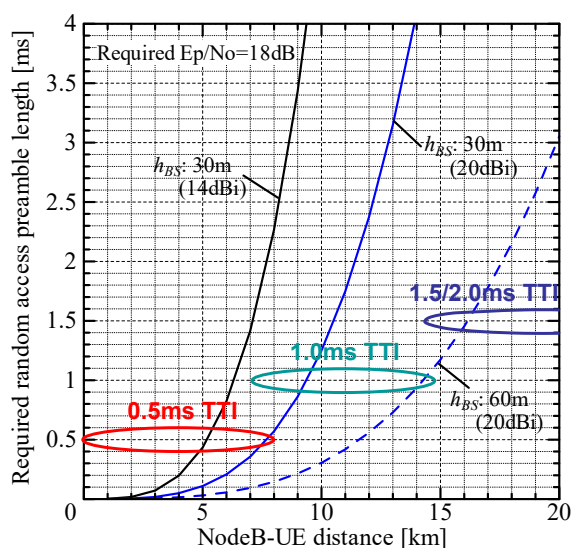
Proposal on sequence length extension

- Basic preamble sequences corresponding one subframe (containing the preamble) =" normal" cell size
- For larger cell sizes (Proposed three scheme)
 - o Define separate sequences corresponding to a preamble length of a multiple of subframe (extension)
 - o Repeat the basic preamble sequence to construct a preamble length corresponding to a multiple of subframes (repetition)
 - For 1ms TTI, 1 short (for 1ms) and 1 long sequence (for 2ms)
 - o Define one extended sequence (by extension) and use repetition of the extended sequence to create even longer sequence)
 - For 0.5ms TTI ; 1 short and 1 long sequence (for 0.5 and 1ms), repetition for longer sequences
 - For 1.0ms TTI ; 1 long sequence (for 1ms), repetition for longer sequences

Discussion on sequence length extension

Nokia commented that from implementation view, CP is to allow for FD processing in the NodeB and repetition is easier. Evelyne Le Strat (Nortel) commented that we must keep reuse factor in system level in mind. (Panasonic presented about this topic, R1-062175.)

Nicholas Anderson (IPWireless) reiterated the comment made on paper R1-062274 and said that designing the RACH preamble based upon assumed pathloss models for large cells is not a correct design procedure. He questioned whether any sequence length extension is required at all. The design should instead try to achieve appropriate coverage for both RACH and for UL-SCH whilst allowing for signal delay in large cells. Some understanding of the minimum required UL-SCH data rate would be useful when designing the RACH preamble.



R1-062175 Random access burst design for E-UTRA (Panasonic, NTT DoCoMo)

21/08/2006 10:20 Presented by Mr. Daichi Imamura

Discussion (Question / Comment):

Panasonic clarified that now they support 0.5/2.0 ms TTI length so that if TTI is 1ms then they need further study. For going ahead on the discussion of this, the relation to TTI was pointed out.

Ericsson commented that this proposal is very attractive solution and pointed out some issue high Doppler condition, CP...

Decision: This document was noted.

As for the further discussion on the next topics such as actual structure (CP, guard time...), after checking RAN2 LS and TTI discussion so on, we will come back here, it will be in upcoming meeting.

Not treated due to lack of time

- R1-061958 Asynchronous RACH preamble message design (Philips)
- R1-062003 Non-Synchronized Random Access Coverage Analysis for E-UTRA (Texas Instruments)
- R1-062004 Non-Synchronized Random Access Sequence Design for E-UTRA (Texas Instruments)
- R1-062005 Synchronized Random Access: Performance Comparison of Preamble-based and UL Sub-frame Structures (Texas Instruments)
- R1-062048 RACH sequence structure and evaluation (Qualcomm Europe)
- R1-062068 Non-synchronized random-access message (Motorola)
- R1-062092 Scheduling Request Transmission Method in E-UTRA Uplink (NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Sharp, Toshiba Corporation)
- R1-062125 Synchronized Random Access Purpose and Structure (Huawei)
- R1-062139 On the signal structure for non synchronised RACH (Nortel)
- R1-062174 Random access sequence comparison for E-UTRA (Panasonic, NTT DoCoMo)
- R1-062176 Collision probability analysis of RACH with control information (Panasonic, NTT DoCoMo)
- R1-062202 non-synchronized random access repetition and extension (ZTE)
- R1-062215 Synchronized Random Access Design for E-UTRA (Samsung)
- R1-062237 Physical Channel for Timing Synchronization (Mitsubishi Electric)
- R1-062275 Comparison of Zadoff-Chu and Zero Correlation Zone Codes for E-UTRA RACH (Ericsson)

R1-062293	On the preamble sequence design for non-synchronized RACH for E-UTRA TDD (CATT, RITT) This document was revised before the presentation.
R1-062430	On the preamble sequence design for non-synchronized RACH for E-UTRA TDD (CATT, RITT)
R1-062294	Consideration on the non-synchronized random access procedure for EUTRA TDD (CATT, Huawei, ZTE, RITT)
R1-062306	RACH Sequence Extension Methods for Large Cell Deployment (LG Electronics)
R1-062307	RACH Design for Large Cell Deployment (LG Electronics)
R1-062349	Random Access Design for E-UTRA TDD (Nokia, CATT) This document was revised before the meeting
R1-062401	Random Access Design for E-UTRA TDD (Nokia, CATT)
R1-062372	Considerations on E-UTRA Uplink Time Synchronization (Siemens)
R1-062387	RACH in support of high speed UEs (Lucent Technologies)
Withdrawn	
R1-062321	Random access contention resolution (Samsung)

8.3.2 SCH and Cell Search

- R1-062069 Synch sequence e-mail reflector summary** (Motorola)
31/08/2006 11:50 Presented by Dr. Amitava Ghosh
Discussion (Question / Comment):
Decision: This document was noted.
From summary table, almost companies propose hierarchical scheme so that at first checked the non hierarchical scheme.
Agreement on hierarchical SCH structure (P-SCH, S-SCH) supporting a hierarchical cell search procedure for initial acquisition. Confirm in October meeting whether hierarchical cell search procedure (or a part of it) based on the hierarchical SCH structure is also applicable for non-initial cell search. Signals to be used on P-SCH and S-SCH are FFS.

Further issues to decide next, email discussion should take place on these topics:

- signals provided by the system for non-initial cell search
- supported number of cell ids (as input sequence discussion)
WCDMA: 512 cell ids (indicated through the primary scrambling code on P-CPICH)
Should we assume same number of cell ids for LTE as in WCDMA?
- multiplexing of P-SCH and S-SCH
- signals/sequences for P-SCH, S-SCH

Non-hierarchical

- R1-062129 Non-hierarchical Cell Search with Symmetric and Periodic SCH Signals** (Huawei)
31/08/2006 12:00 Presented by Dr. Fredrik Berggren
Discussion (Question / Comment):
It was clarified by Huawei that investigation in this contribution is for initial cell search not for neighbouring cell search. It was commented that if considering the neighbouring cell search, inter-cell interference affects and then performance would degrade and never seen that sync NW is degraded.
It was clarified by TI that in figure1 uses averaging over multiple timing.
Decision: This document was noted.
- R1-062130 Additional Link-level Evaluations of Cell Search Times for Non-hierarchical and Hierarchical SCH Signals** (Huawei)
31/08/2006 12:25 Presented by Dr. Fredrik Berggren

Discussion (Question / Comment):

Asbjorn Grovlen (Nokia) expressed a wonder why there is no comparison with such as WCDMA scheme in Figure.

Decision: This document was noted.

R1-062131 System-level evaluation of cell search times for non-hierarchical and hierarchical SCH signals (Huawei)

31/08/2006 12:05 Presented by Dr. Jaap van de Beek.

Discussion (Question / Comment):

Nokia expressed a wonder on cell edge performance degradation. Huawei commented that we agree to cell edge performance degradation so we happy to provide the new results.

Amitava Ghosh (Motorola) raised a concern that in the particular cell search scheme non-sync NW is the faster search time but the normally should be low fig. 2. It was commented that hierarchical scheme is already operated quite well.

Decision: This document was noted.

R1-062197 Initial cell search performance comparison of one-SCH and two-SCH schemes with frequency offsets (ETRI)

31/08/2006 12:30 Presented by Dr. IL GYU KIM

Discussion (Question / Comment):

Decision: This document was noted.

R1-062198 Handover cell search performance comparison of one-SCH and two-SCH schemes (ETRI)

31/08/2006 12:35 Presented by Dr. IL GYU KIM

Discussion (Question / Comment):

It was clarified by ETRI that in simulation assumption the power in 2 SCH case is half of 1 SCH case and replicable correlation in the first step.

Nokia commented that the complexity different is very small with refer to Panasonic in Cannes meeting. Also TI commented that complexity is not issue for hierarchical case as showed in some contribution in this meeting.

Decision: This document was noted.

Hierarchical and Hybrid

R1-062096 Cell Search Time Performance of 3-step Cell Search Method in Multicell environment (Revision of R1-061663) (NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Toshiba Corporation)

31/08/2006 14:30 Presented by Dr. Kenichi Higuchi from NTT DoCoMo

Discussion (Question / Comment):

The following thing is clarified.

- Frequency offset not considering because even though for neighbouring cell search it's not big thank to AFC. Also in simulation, dopper is included.
- Definition of timing detection time : 1 ppm in detection accuracy timing
- Last CP is fixed in last frame, length is shorter one.
- In high SNR, we already discussed at last meeting and almost same but in lower SNR area, hierarchical is better and the difference is quite large in neighbouring search case so they choose hierarchical.
- FDM based FDM based primary and secondary multiplexing is proposed, but even TDM case, hierarchical is better than non- hierarchical.
- Geometry in fig. 6 assumes to accumulate power from neighbouring cell.

Decision: This document was noted.

Tang Hai proposed to present the hybrid method.

R1-062296 Hybrid SCH symbol timing detection for cell search (CATT)

31/08/2006 14:50 Presented by Mr. Hai Tang

Discussion (Question / Comment):

Asbjorn Grovlen (Nokia) asked if this scheme is proposed from reducing complexity. Yes.

Sharp mentioned that they also proposed the same scheme considering complexity.

Decision: This document was noted.

R1-062253 Hybrid Method for SCH Symbol Timing Detection for E-UTRA Cell Search (Revision of R1-061682) (Sharp)

31/08/2006 15:00 Presented by Mr. Hiroshi Katsuragawa

Discussion (Question / Comment):

This scheme is Hierarchical or non-hierarchical?

Decision: This document was noted.

Complexity issue

R1-062119 Cell search (timing) performance & complexity in large bandwidth system
(NEC Group)

31/08/2006 15:10 Presented by Mr. Thanh Bui.

Discussion (Question / Comment):

Decision: This document was noted.

R1-062120 Very Low Complexity Timing Cell Search
(NEC Group)

This document was revised before the presentation.

R1-062409 Very Low Complexity Timing Cell Search
(NEC Group)

31/08/2006 15:20 Presented by Mr. Thanh Bui.

Discussion (Question / Comment):

Eko (TI) commented that this is analysis just for first stage and as the channel estimation for the second stage uses the first step so that need the analysis for the second stage.

The concern was raised that in the case of frequency phasing, performance might be degraded

It was clarified by NEC that Channel mode is TU6 in Annex.

Decision: This document was noted.

Discussion whether hierarchical or non-hierarchical

Mr. Chairman proposed that considering that majority is hierarchical so we would to take hierarchical to the next step.

Huawei commented that evaluation of the cell edge performance makes issue so that they would like to prefer have a chance for evaluation. Erik Dahlman (Ericsson) commented that I don't see further study could solve anything so that we should take hierarchical at this stage.

Serge Willenegger (Qualcomm) commented that in fact our mobility cell search empty so need more discussion on the neighboring case. Asbjorn Grolven (Nokia) commented that we already discussed such topic in Hawaii, correctly Shanghai meeting. Serge actually we had some discussion on handover and mobility and it is sufficient but not confident so that they proposed more analysis for mobility related physical layer structure

Some discussion continued this issue and finally it was agreed that initial cell search is hierarchical and continue discussion that the hierarchical SCH structure is also applicable for non-initial (neighbouring) cell search.

20MHz frequency allocation

R1-062097 SCH and BCH Transmissions Considering UE
(NTT DoCoMo, NEC, Panasonic, Toshiba Corporation)

31/08/2006 17:00 Presented by Dr. Kenichi Higuchi from NTT DoCoMo

Discussion (Question / Comment):

It was clarified that receiving the other cell of control channel is basically BCH and possibly PCH.

It was clarified that SCH and primary BCH is 1.25 MHz and for 20MHz the structure is same.

It was clarified that minimum BW, 15 MHz is just for DL and UL is still 10MHz.

Some discussion about the decision of Cannes meeting about BCH reception in neighbouring cells

Cannes agreement "RAN1 to study the UE and system impact if UEs that are RRC connected in a cell would be required to read the BCH on (intra-frequency) neighbour cells. RAN2 to study the different handover scenarios

10.6 MHz case, Nokia commented that we don't need BCH and just SCH. NTT DoCoMo commented they assume to receive SCH and primary BCH.

Decision: This document was noted.

R1-062037 SCH structure for E-UTRA
(Qualcomm Europe)

31/08/2006 17:30 Presented by Mr. Juan Montojo

Discussion (Question / Comment):

Decision: This document was noted.

R1-062217 SCH structure considering EUTRA spectrum allocation
(Samsung)

31/08/2006 17:40 Presented by Dr. Joonyoung Cho

Discussion (Question / Comment):

There were quite long discussion on this paper, filtering issue power issue....

Thanh Bui (NEC) pointed out that (alternative 4) result in more overhead for SCH and it's not clear if it would result in similar overhead for BCH and PCH.

Samsung commented that the pass band filter is more complicated than base band filter so remove the pass band filter.

Regarding filter issue, as for Nokia Proposal, 10.6 MHz Nokia commented that not sure filtering dynamic filtering but complexity is not so big and can support the multiple band ,

Nokia raised a concern on 3 SCH from power point view. Qualcomm support to Samsung's proposal (alternative 4) an pointed out the complexity of filter and commented that if change BW, it's cause problem, absolutely 20MHz.

Erik Bahlman (Ericsson) pointed out the coverage issue for 3SCH, 20MHz case is 3 combining and 5 and 10MHz case 1 or 1.5 combining.

Thanh commented that we don't discuss here because non initial cell search is not concluded so we should this topic is October meeting.

NTT DoCoMo expressed a wonder that control OH is increasing. To this comment, Samsung answered that it is not necessary to send all (three) BCH and the worst case (Active mode) is two BCH. Also they commented that 3SCH case is easy implementation but might have BCH problem so that RAN1 take an assumption and ask RAN2 BCH overhead. In addition, Mr. Chairman commented that if we leave all open, we fall in some kind of loop.

Nicholas Anderson (IPWireless) commented that if the 3 SCH are to be transmitted at different times, it is important that they do no occupy any more sub-frames than in the non-20MHz case so that compatibility with TDD is retained without undue restriction on TDD framing possibilities.

Decision: This document was noted.

Working assumption Proposal with respect to SCH transmission in 20MHz allocation

- The 1.25 MHz BW SCHs are transmitted in the center of left/right 10 MHz useful band as well as in the center of the 20 MHz transmission band
 - The exact structure of the SCHs (P-SCH and S-SCH) in the center of the left/right 10Mhz band are subject to the conclusion of discussion on non-initial cell search
 - The three SCHs do not necessary be transmitted at the same time instants, but FFS whether they should be transmitted within the same subframe. (considering specific TDD aspects) (~~power limitation issues...~~)
- The SCH in the center of the 20 MHz band is used in initial cell search for all the UEs and are intended for neighbour cell search for 20 MHz capability UEs
- The SCHs in the center of the left/right 10 MHz band are intended for neighbour cell search for 10 MHz capability UEs
 - ~~Since these SCHs will not satisfy the frequency raster condition, they are not detected in initial cell search~~

Discussion on number of cell Ids

Amitava Ghosh (Motorola, Moderator of E-mail discussion) commented that this topic was not discussed much.

NTT DoCoMo asked if this number is Node B id, meaning that NB specific id 128 is number of NB and or including sector specific id. Related to this question, the definition of "cell id" in LTE was discussed. But the discussion could not reach to consensus so that Moderator, Amitava Ghosh proposed to continue discussion on the E-mail reflector to the next meeting.

Not treated due to lack of time

R1-062006	Proposal for DL SYNC channel (SCH) for E-UTRA Cell Search (Texas Instruments)
R1-062007	Comparing Hierarchical and Non-Hierarchical Cell Search (Texas Instruments)
R1-062008	Cell Search Performance in Tightly Synchronized Network for E-UTRA (Texas Instruments)
R1-062009	Design of Primary Synchronization Code (PSC) for E-UTRA Cell Search (Texas Instruments)
R1-062070	SCH Structure and Sequence for EUTRA Downlink (Motorola)

R1-062093	SCH Sequence Configuration for E-UTRA Downlink	(NTT DoCoMo, Fujitsu, Mitsubishi Electric, Panasonic, Sharp, Toshiba Corporation)
R1-062094	Multiplexing Method of SCH for E-UTRA Downlink	(NTT DoCoMo, Fujitsu, NEC, Panasonic, Toshiba Corporation)
R1-062095	Three-Step Cell Search Method for E-UTRA Downlink	(NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Toshiba Corporation)
R1-062140	SCH search performance with transmit diversity	(Nortel)
R1-062164	Channel Structure and Hybrid Detection for E-UTRA Cell Search	(InterDigital)
R1-062181	E-UTRA Initial Cell-Search: Performance of Blind Cell-ID Detection with Cell Common PSC Vs Coherent Cell- ID Detection with Sector Specific PSC	(Freescall Semiconductor)
R1-062188	Initial cell search and long-CP sub-frame structure	(Fujitsu)
R1-062205	Hierarchical Cell Search for E-UTRA	(ZTE)
R1-062216	Cell search procedure and channel structure	(Samsung)
R1-062254	Sector allocated SCH Structure in E-UTRA synchronized networks	(Sharp)
R1-062276	Hierarchical vs. Non-Hierarchical Cell Search	(Ericsson)
R1-062289	Hierarchical Cell-Search and SCH design	(ITRI)
R1-062295	Transmit diversity schemes for E-UTRA SCH	(CATT)
R1-062297	SCH Structure and Cell Search Method for E-UTRA TDD system	(CATT)
R1-062308	SCH Structure for Cell Search in E-UTRA	(LG Electronics)
R1-062309	SCH/BCH time structure	(LG Electronics)
R1-062341	SCH design	(Siemens)
R1-062350	Hierarchical Cell Search Performance (Resubmission of R1-061902)	(Nokia)
R1-062351	Cell Search for E-UTRA TDD	(Nokia)
This document was revised before the meeting.		
R1-062402	Cell Search for E-UTRA TDD	(Nokia, CATT)

8.3.3 BCH

Mr. Chairman commented we would take time for this topic after concluding SCH main open issue.

Not treated due to lack of time

R1-062038	Design and Performance of BCH for E-UTRA	(Qualcomm Europe)
R1-062126	BCH Location for E-UTRA Downlink	(Huawei)
R1-062141	BCH detection performance Evaluation	(Nortel)
R1-062191	Diversity schemes for BCH	(Toshiba Corporation)
R1-062199	Broadcast Channel Structure for Downlink E-UTRA	(ETRI)
R1-062200	Performance Comparison of BCH Soft-Combining Reception Schemes	(ETRI)
R1-062218	BCH time-frequency structure	(Samsung)
R1-062219	System information transmission and reception	(Samsung)
R1-062352	Broadcast Channel (BCH) structure and performance	(Nokia)
R1-062365	Comparison of efficiency of DL Interference Coordination schemes and view on measurements on intra-frequency neighbour cells	(Alcatel)
R1-062376	LTE BCH - performance analysis	(IPWireless)

8.3.4 PCH

Not treated due to lack of time

R1-062039	Paging structure	(Qualcomm Europe)
R1-062098	Paging Channel Structure for E-UTRA Downlink	(NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Toshiba Corporation)
R1-062310	Soft-combined synchronous PCH transmission	(LG Electronics)

8.4 Reference signal structure

8.4.1 Downlink reference signals

R1-062010	Summary of Reflector Discussions on EUTRA DL RS Design Issues	(Texas Instruments)
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01/09/2006 15:30 Presented by Dr. Aris Papasakellariou

Discussion (Question / Comment):

Decision: This document was noted.

Working assumptions:

- CDM of the RS for cells of the same eNodeB is the basic assumption. eNodeB with many cells shall be supported as well.
- FDM of the RS from each antenna in case of MIMO. No data transmission on the subcarriers overlapping (in frequency and time) with the RS transmissions for another antenna.

Supporting large number of cell was discussion for some time. Juho Lee (Samsung) commented that typical case is 3 cells in NodeB and DoCoMo proposal in R1-062100 is the first time in this meeting so we should study further. Erik Dahlman (Ericsson) commented that it's strictly 2.

As for the topic relate to frequency hopping, some companies commented to need more study and discussion so could not reach to agreement. Also as for the other points, Mr. Chairman suggested further work to conclude.

Multiplexing

R1-062223	DL reference signals of the intra Node B cells: CDM vs FDM	(Samsung)
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01/09/2006 16:10 Presented by Dr. Juho Lee

Discussion (Question / Comment):

Juho Lee commented that we are no longer to object to CDM.

Decision: This document was noted.

Not Treated due to lack of time

R1-061968	Reference Signals for Downlink Beamforming Matrix Validation	(Intel Corporation)
R1-062020	Reference Signal Design in Downlink MIMO	(Intel, NTT DoCoMo)
R1-062040	Design of DL Reference Signals	(Qualcomm Europe)
R1-062071	Downlink reference signal sequence design	(Motorola)
R1-062099	Orthogonal Reference Signal Structure for Sectorized Beams in E-UTRA Downlink	(Revision of R1-060300) (NTT DoCoMo, Fujitsu, Intel Corporation, KDDI, Mitsubishi Electric, NEC, Panasonic, Qualcomm, Sharp, Toshiba Corporation)
R1-062100	Orthogonal Reference Signal Design in E-UTRA Downlink	(NTT DoCoMo, Fujitsu, KDDI, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)

R1-062132	DL reference symbols with varying positions in frequency - system-level evaluation	(Huawei)
R1-062142	Discussion of pilot density for E-UTRA DL	(Nortel)
R1-062203	Reference signal sequence design for ETURA downlink	(ZTE, RITT)
R1-062220	DL reference signal structure: common vs dedicated	(Samsung)
R1-062221	Downlink reference signal: time-frequency averaging/interpolation	(Samsung)
R1-062222	Downlink reference signal: consideration on the control signaling	(Samsung)
R1-062277	Downlink reference signal structure	(Ericsson)
R1-062300	The downlink reference symbols design for EUTRA TDD	(CATT)
R1-062311	LGE's views on the various aspects of downlink reference signal design	(LG Electronics)
R1-062324	A Proposal for an Improved DL Reference Symbol Positioning in EUTRA	(Alcatel)
R1-062325	Considerations on the EUTRA DL reference signal structure and the DC sub-carrier	(Alcatel)

8.4.2 Uplink reference signals

R1-062011 Summary of Reflector Discussions on EUTRA UL RS Design Issues (Texas Instruments)

01/09/2006 15:35 Presented by Dr. Aris Papasakellariou

Discussion (Question / Comment):

It was asked that as for reference structure for SIMO case what the same band means. The answer was that the same band means the localised case.

As for power boosting, for the sentence "It is understood that a cell edge UE transmitting at maximum power may not be able to perform such power boosting", some companies expressed a wonder

Decision: This document was noted.

As for this document, Mr. Chairman discussed some points to reach to agreement for working assumption. As for sounding, some company commented that we need further discussion for statically or dynamically and multiplexing. Also as for frequency domain scheduling, FDM or CDM, it need more simulation for decision. Mr. Chairman clarified that whether localised or distributed transmission for the data transmission is the results from most (not all) is localised so that the localised is feasible. But Brian Classon (Motorola) commented that they have document for distributed so that ask further study. The further study on this point is decided on e-mail reflector.

Working assumptions:

- RS sequences: conventional Zadoff-Chu sequences
- Is Frequency domain scheduling supported for the UL? Yes. Distributed sounding RS for Frequency domain scheduling in UL. FFS whether to send them statically/dynamically, and how to multiplex.

Discuss need for Distributed transmission in uplink during email discussions.

Not Treated due to lack of time

R1-062012	Multiplexing of Distributed ("Sounding") Reference Signals for CQI Measurement and Scheduling in EUTRA Uplink	(Texas Instruments)
R1-062013	Reference Signal Overhead for TTIs Exceeding One Sub-Frame in EUTRA Uplink	(Texas Instruments)
R1-062014	Uplink Reference Signal Design in EUTRA Uplink	(Texas Instruments)

R1-062049	UL reference signal structure	(Qualcomm Europe)
R1-062072	Uplink Reference Signal Multiplexing Structures for E-UTRA	(Motorola)
R1-062073	E-UTRA SC-FDMA Uplink Pilot/Reference Signal Design	(Motorola)
R1-062101	Multiplexing Method for Orthogonal Reference Signals for E-UTRA Uplink (Revision of R1-061193)	(NTT DoCoMo, Ericsson, Fujitsu, KDDI, LG Electronics, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)
R1-062102	Orthogonal Reference Signal Structure for Uplink MIMO in E-UTRA (Revision of R1-061191)	(NTT DoCoMo, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)
R1-062103	Pilot Sequence Allocation Method in E-UTRA Uplink	(Revision of R1-061678) (NTT DoCoMo, Mitsubishi Electric, Panasonic, Sharp, Toshiba Corporation)
R1-062104	Group-wised Frequency Resource Allocation for Frequency Domain Channel-dependent Scheduling in SC-Based E-UTRA Uplink	(NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation)
R1-062121	Reference signal multiplexing for EUTRA uplink	(NEC Group, NTT DoCoMo)
R1-062127	Uplink Reference Signal Structure for E-UTRA	(Huawei)
R1-062211	Uplink Reference Design: Considering Reference Power Boost, Channel Measurement and Interference Mitigation (Resubmission of R1-061782)	(ZTE)
R1-062299	EUTRA SC-FDMA Uplink Reference Signal Design	(CATT)
R1-062312	Performance comparison between CDM and FDM pilot for SC-FDMA	(LG Electronics)
R1-062313	Uplink reference signal for channel quality measurement	(LG Electronics)
R1-062353	UL reference signal structure	(Nokia)
R1-062354	UL MIMO reference signal structure	(Nokia)
R1-062371	Discussion on UL pilot structure	(Nortel)
R1-062388	CAZAC Reference Signals for SC-FDMA	(Lucent Technologies)
R1-062389	Reference signals when no data is transmitted in uplink	(Lucent Technologies)
Withdrawn		
R1-062187	Dynamic Range Reduction Techniques and the Uplink Pilot Channel	(Freescale Semiconductor)
R1-062224	Uplink reference signal structure	(Samsung)

8.5 MIMO, Transmit Diversity and Beamforming

R1-062435 Summary of LTE MIMO session

(LTE MIMO session chairman)

01/09/2006 14:30 Presented by Dr. Juho Lee

Discussion (Question / Comment):

Hua Xu (Nortel) commented that as for codeword multi codeword is just for SU-MIMO case and not for MU-MIMO so should clarify the text on the agreement => the sentence is modified

ZTE ask if they would add TSTD in Rank 1 case of Tx diversity for control channel, PCH.

- 1) Rank 1
 - A. CDD (or PSD) (for both 2 tx and 4 tx antennas)
 - B. FSTD (for both 2 tx and 4 tx antennas)
 - C. TSTD

Decision: This document was endorsed. TSTD added as candidate to Rank 1 for Tx diversity schemes for control channels other than SCH

Agreements: (This agreement is for Downlink)

- 1) Regarding the maximum number of codewords that can be sent to a UE, *multiple codewords* were agreed for SU-MIMO, which does not automatically imply any specific receiver implementation.
- 2) For both FDD (reconfirmed the decision from Shanghai for FDD) and TDD, the common reference signal, which can be used by some UEs for the downlink CQI estimation and/or the selection of the preferred pre-coding vector(s), should not be pre-coded (or beamformed).
- 3) Both SU- and MU-MIMO are supported.
- 4) Precoding for DL MIMO
 - A. Unitary precoding matrix is used for support of the SU-MIMO.
 - B. UE feedback is based on the codebook-based precoding for FDD.
- 5) UE feedback
 - A. Transmission of a known signal pattern(s) to provide channel state information to support downlink MIMO transmission for TDD operation.
 - B. CQI report

The following minutes is captured from R1-062435. MIMO session is chaired by Juho LEE.

Way forward

The MIMO session suggests the followings as the way forward for the next meeting.

Prioritization of topics:

Discussion on the downlink part will be prioritized in the next meeting, taking into account the agreed time plan for RAN1 works.

Spatial multiplexing:

Comparisons between the layer permutation-based and the non-permutation-based approaches assuming the same CQI feedback overhead are invited to progress the discussion on the SU-MIMO scheme.

Contributions on the maximum number of codewords, which should be either 2 or 4, for 4 transmit antenna are invited aiming to make conclusion.

Transmit diversity scheme for SCH:

On the transmit diversity scheme for SCH, it is suggested to select one among

- 1) TSTD
- 2) FSTD
- 3) Precoding vector switching

Transmit diversity scheme(s) for the other common control channel(s) than SCH:

For the other common control channel(s) than SCH, the transmit diversity scheme(s) would be selected among

- 2) Rank 1
 - A. CDD (or PSD) (for both 2 tx and 4 tx antennas)
 - B. FSTD (for both 2 tx and 4 tx antennas)
 - C. TSTD
- 3) Rank 2
 - A. SFBC (only for 2 tx antennas)
 - B. SFBC + PSD (or CDD) (4 tx antennas)
 - C. SFBC + FSTD (4 tx antennas)

For the candidates listed above, the followings were observed.

- Single cell performance without correlated channel: (assuming TC)

- 2 tx antenna: SFBC slightly better (0.3 ~ 0.5 dB) than CDD
- 4 tx antenna: SFBC+CDD(or FSTD) slightly better (0.3 ~ 0.5 dB) than CDD
- o Single cell performance with correlated channel: (assuming TC)
 - 1 tx antenna
 - See below
 - 2 tx antennas
 - SFBC slightly better (0.3 ~ 1 dB depending on the channel) than CDD: SCM-C or suburban macro
 - FSTD slightly better (0.8 ~ 1 dB) than CDD: suburban macro
 - SFBC is about 0.5 worse than 1x2 configuration (same total Node B tx power assumed)
 - 4 tx antennas
 - SFBC+CDD slightly better (0.3 ~ 0.5 dB) than CDD: SCM-C
 - FSTD (or SFBC + FSTD) better (up to ~2 dB) than CDD: suburban macro
- o Detection of the antenna configuration and TxD scheme in the initial cell search
 - FFS
- o Depending on transmit behaviour, multiplex tx antennas does not necessarily appear as multiple antennas transmission from a UE perspective.

The following assumptions were agreed for further evaluation of different proposals:

- o No UE feedback regarding the selection of the TxD scheme
- o Correlated channel situation (antenna spacing = $4 \cdot \lambda$)
- o SCM
- o FDM reference signals between antennas
- o Intercell interference preferably should model system behaviour. (There could be cases that don't have a single dominant interferer).
 - This doesn't imply that system level simulation is necessarily required.
- o Target error rate = 1% for the serving cell
- o Convolutional coding with rate = 1/3 or less
- o 2 rx antennas
- o Realistic assumptions regarding channel estimation, intercell interference estimation etc.
- o Frequency reuse factor > 1 may be considered.
- o Reference case: 1x2 configuration

R1-062225 Summary of LTE MIMO email discussion (Samsung)
Decision: This document was noted.

General

Not treated due to lack of time

**R1-062105 Downlink MIMO scheme in E-UTRA (NTT DoCoMo, Fujitsu,
Institute for Infocomm Research, Mitsubishi Electric, NEC, Sharp)**

DL number of codewords

Single codeword

R1-061965 MLD vs SIC Complexity Analysis for 2x2 MIMO OFDM (Intel Corporation)

Decision: This document was noted.

R1-061966 Performance Comparison of MCW-SIC and SCW-MLD (Intel Corporation)

Decision: This document was noted.

R1-061990 Comparison between SCW and MCW with and without precoding (Intel Corporation)

Decision: This document was noted.

R1-062368 MIMO Performance using STTCC for E-UTRA Downlink (Philips)

Decision: This document was noted.

Multi codewords

R1-062015 Performance of Per Group Rate Control (PGRC) with Advanced MIMO Receiver (Texas Instruments)

Decision: This document was noted.

R1-062041 Link evaluation of DL MIMO with and without frequency selective scheduling - No precoding (Qualcomm Europe)

Decision: This document was noted.

R1-062044 Link analysis of DL MIMO - Sphere decoding vs. SIC receiver (Qualcomm Europe)

Decision: This document was noted.

R1-062045 System Analysis of DL Single User MIMO OFDMA (Qualcomm Europe)

Decision: This document was noted. This document was treated in 8.7.2

R1-062106 Investigation on Optimum Number of Codewords for MIMO Multiplexing in E-UTRA Downlink (NTT DoCoMo, LG Electronics, Mitsubishi Electric, NEC, Sharp)

Decision: This document was noted.

R1-062177 Discussion on MIMO Codeword (Panasonic)

Decision: This document was noted.

R1-062227 Link performance of SCW and MCW MIMO (Samsung)

Decision: This document was noted.

SU- and MU-MIMO

R1-062043 System operation of SU-MIMO and MU-MIMO (Qualcomm Europe)

Decision: This document was noted.

R1-062228 Dynamic Mode Switching between Single and Multi-User MIMO (Samsung)

Decision: This document was noted.

DL precoding

R1-061959 Beamforming for correlated channels (Philips)

Decision: This document was noted.

R1-062229 Performance Comparison of Unitary vs. Non-Unitary Precoding (Samsung)

Decision: This document was noted.

Not treated due to lack of time

R1-061967 Performance Benchmark for a New Unitary Precoding Scheme with Uniform MCS Allocation (Intel Corporation)

R1-061991 A low feedback scheme for precoding (Intel Corporation)

R1-062016 Codebook Design for E-UTRA MIMO Pre-Coding (Texas Instruments)

R1-062042 Link evaluation of DL MIMO with and without frequency selective scheduling - Precoding (Qualcomm Europe)

R1-062078 Proposal for Dedicated Pilots in Downlink Closed-Loop Beamforming (Motorola)

R1-062122 Link Analysis of Multi-rank beamforming (NEC Group)

R1-062163 Unified Precoder Architecture for LTE Downlink MIMO (InterDigital)

R1-062184 Link performance of codebook based precoded MIMO transmission schemes (Freescall Semiconductor)

R1-062189 Frequency Domain Adaptive Precoding for E-UTRA MIMO (Motorola)

R1-062208 Performance Evaluation of Codebook-based Precoding (ZTE)

R1-062284 System level comparison between MIMO and slow beamforming in OFDM DL for the installed 2x2 multi-antenna systems (Ericsson)

- R1-062290** Further consideration on the downlink reference symbols of beam-forming for EUTRA TDD (CATT)
R1-062291 Non-codebook based pre-coding for E-UTRA TDD Downlink (CATT)
R1-062292 Downlink reference signal aspects for non-codebook based pre-coding in TDD mode (CATT)
R1-062316 Precoding scheme for 2 tx antenna system (LG Electronics)
R1-062317 Precoding scheme with ACDD for 2tx and rank 1 (LG Electronics)
R1-062355 Linear Precoding for single stream transmission from 2TX antennas (Nokia)

DL TxD

- R1-061960** Repetitive Space Time Block Coding for Transmit Diversity in E-UTRA (Philips)
Decision: This document was noted.
R1-061963 System-level evaluation of open loop transmit diversity schemes without CQI feedback (Intel Corporation)
Decision: This document was noted.
R1-062279 Multi antenna transmission scheme for common control channels (Ericsson)
Decision: This document was noted.
R1-062255 Improved Performance of the Cyclic Shift Diversity Scheme in the E-UTRA Downlink (Sharp)
Decision: This document was noted.
R1-062356 On 2 Antenna Open Loop DL Transmit Diversity (Nokia)
Decision: This document was noted.
R1-061962 Link layer evaluation of downlink open loop transmit diversity schemes in the presence of co-channel interference (Intel Corporation)
Decision: This document was noted.
R1-062135 Comparison of downlink transmit diversity schemes with inter-cell interference (Huawei)
Decision: This document was noted.
R1-062190 Interference and Open Loop Transmit Diversity Reception (Motorola)
Decision: This document was noted.
R1-062302 Time varying CDD/CSD (Siemens)
Decision: This document was noted.
R1-062357 On 4 Antenna Open Loop DL Transmit Diversity (Nokia)
Decision: This document was noted.
R1-062172 Performance comparisons of open-loop transmit diversity techniques for four transmit antennas (Institute for Infocomm Research, NTT DoCoMo)
Decision: This document was noted.
R1-062226 Transmit diversity performance of CDD and block codes (Samsung)
Decision: This document was noted.

Not treated due to lack of time

- R1-061961** System-level evaluation of transmit diversity schemes with frequency-dependent scheduling (Intel Corporation)
R1-061964 Comparing downlink transmit diversity schemes for EUTRA (Intel Corporation)
R1-062107 Multi-Degree Cyclic Delay Diversity with Frequency-domain Channel Dependent Scheduling (Revision of R1-060991) (NTT DoCoMo)
R1-062314 Generalized CDD scheme for E-UTRA downlink MIMO (LG Electronics)
R1-062315 Generalized CDD Scheme with Channel Dependent Scheduling (LG Electronics)
R1-062326 Comparison of transmit diversity schemes for E-UTRA (Alcatel)

UE feedback

Not treated due to lack of time

- R1-062076 Uplink sounding for obtaining channel state information at Node B in EUTRA (Motorola)
- R1-062077 Direct channel feedback for obtaining channel state information at Node B in EUTRA (Motorola)
- R1-062133 Reduction of Signalling for MIMO Precoding (Huawei)
- R1-062134 Baseline uplink E-CQI message – content and size (Huawei)
- R1-062143 Study of the feedback overhead on the performance of closed loop schemes for 4-branch LTE (Nortel)
- R1-062178 Discussion on MIMO feedback (Panasonic)
- R1-062278 E-UTRA Incremental CQI Reporting Using DCT Coding (Ericsson)

MIMO for E-MBMS

Not treated due to lack of time

- R1-062298 Hierarchical MIMO scheme for E-MBMS (CATT)

DL Others

Not treated due to lack of time

- R1-062366 MIMO resource definition for E-UTRA (Philips, Ericsson)
- R1-062393 Generic Processing Chain for E-UTRA MIMO-OFDM Proposals (Alcatel, BenQ Mobile, Elektrobit, Ericsson, France Telecom, Siemens, Telefonica, Lucent)

UL SDMA

Not treated due to lack of time

- R1-062074 Link Simulation Results for UL Virtual MIMO (Motorola)
- R1-062075 Uplink System Performance with UL Virtual MIMO (Motorola)
- R1-062162 Uplink SDMA-MU-MIMO using Precoding for E-UTRA (InterDigital)
- R1-062196 Simultaneous Transmit Diversity and Spatial Multiplexing for E-UTRA Uplink Multiuser MIMO (ITRI)

UL SU-MIMO

Not treated due to lack of time

- R1-062159 Comparison of SCW and MCW for UL MIMO Using Precoding (InterDigital)
- R1-062160 Uplink MIMO Precoding Using Differential Feedback (InterDigital)
- R1-062161 PAPR Considerations for UL MIMO Using Precoding (InterDigital)

UL TxD

Not treated due to lack of time

- R1-062108 Low cost training for transmit antenna selection on the uplink (Mitsubishi Electric)
- R1-062192 Consideration on transmit diversity in E-UTRA uplink (Toshiba Corporation)
- R1-062287 Closed Loop-based Antenna Switching Transmit Diversity for E-UTRA Uplink (NTT DoCoMo, Institute for Infocomm Research, NEC, Panasonic, Sharp)

Withdrawn

- R1-062185 System performance of codebook based precoded MIMO transmission (Freescale Semiconductor)

R1-062323 25.814 CR0009 (Rel-7, F) "Generalized CDD scheme for E-UTRA downlink MIMO"
(LG Electronics)

8.6 Channel Coding Scheme

R1-062118 Summary of e-mail discussion on channel coding
29/08/2006 08:40 Presented by Dr. Kenichi Higuchi
(NTT DoCoMo)
Discussion (Question / Comment):
Decision: This document was noted.

Turbo coding based channel coding

R1-062079 Eliminating tail bits in LTE channel coding
29/08/2006 08:45 Presented by Mr. Brian Classon
(Motorola)
Discussion (Question / Comment):
Motorola commented that the next document address the complexity more and more important.
It was asked if the any problem for block size penalty. The answer was the penalty is expected to be very small.
Decision: This document was noted.

R1-062080 Eliminating memory contentions in LTE channel coding
29/08/2006 09:55 Presented by Mr. Brian Classon
(Motorola)
Discussion (Question / Comment):
This document is just for design so that no performance results so far. Some discussion was as for the implementation issue with relation to the more needed performance and it was commented that implementation problem is a driving factor. Motorola commented that it might reduce the last memory by sophisticated implementation.
Decision: This document was noted.

R1-062392 Issues with Replicating Turbo Decoders
29/08/2006 09:00 Presented by Mr. Brian Classon
(Motorola)
Discussion (Question / Comment):
Mitsubishi pointed out the memory problem from the viewpoint of the latency issues, e.g. HARQ and system aspect with related to MIMO SIC perspective.
Decision: This document was noted.

R1-062238 Concerns about Rel-6 Turbo decoder complexity for LTE
(Mitsubishi Electric)
29/08/2006 09:10 Presented by Dr. Wataru Matsumoto
Discussion (Question / Comment):
Decision: This document was noted.

R1-061973 Duo-Binary Turbo-codes for Evolved UTRA
(Orange, France Telecom, HighDimension Ltd.)
29/08/2006 09:15 Presented by Dr. Thomas SALZER from Grange.
Discussion (Question / Comment):
It was clarified that ARP based interleaver is assumed in this scheme.
Stefan Parkvall (Ericsson) asked how about the lower code case even though $\frac{1}{2}$ in this document.. The answer was that for $\frac{1}{3}$ the same complexity is confirmed and also the same performance results could be expected.
It was clarified that TC is Rel-6 TC without ARP so Brian Classon suggested comparing this scheme with TC with ARP.
Decision: This document was noted.

R1-062153 A network-oriented inter-block permutation to enhance Rel'6 channel coding throughput
(HighDimension Ltd., France Telecom, Orange)
29/08/2006 09:20 Presented by Dr. Thomas SALZER from Grange
Discussion (Question / Comment):
It was clarified that the document proposes the new type of interleaver, some kind of ARP interleaver.
Decision: This document was noted.

R1-062169 Extension of UTRA turbo channel coding for rates less than 1/3
29/08/2006 09:25 Presented by Mr. Yoshinori Tanaka
(Fujitsu)
Discussion (Question / Comment):

It was asked where the such a gain come from and it seems to come from just redundancy part insertion.
Asbjorn Grovlen (Nokia) asked if we need such lower coding rate from the system point of view. The answer was that such a lower rate coding is needed for the cell edge UE.
Brian Classon (Motorola) commented that this scheme is already captured in Rel-6 TC and we should be taking about a potential modification for TC.
Decision: This document was noted.

Comparison of coding scheme

R1-062210 Further clarification to the complexity comparison between high speed parallel turbo and LDPC codes (ZTE)

29/08/2006 09:40 Presented by Mr. Zhisong Zuo

Discussion (Question / Comment):

Decision: This document was noted.

R1-062288 Performance Comparison between Turbo Code and LDPC Code for Shared Data Channel in E-UTRA Downlink (Revision of R1-060037) (NTT DoCoMo, NEC, Toshiba Corporation)

This document was revised before the presentation.

R1-062410 Performance Comparison between Turbo Code and LDPC Code for Shared Data Channel in E-UTRA Downlink (NTT DoCoMo, NEC, Toshiba Corporation)

29/08/2006 09:50 Presented by Dr. Kenichi Higuchi from NTT DoCoMo

Discussion (Question / Comment):

Wataru Matsumoto (Mitsubishi) asked what difference on the computation complexity analysis is between this document and the joint proposal in Athens meeting although the results are different. The answer is due to mother code rate, $\frac{1}{2}$ to $\frac{3}{4}$ in the last joint contribution.

Decision: This document was noted.

R1-062239 Issues for channel coding (Mitsubishi Electric)

29/08/2006 10:00 Presented by Dr. Wataru Matsumoto

Discussion (Question / Comment):

Stefan Parkvall (Ericsson) express a wonder that in page 6 this is not timing, just channel coding timing and as for complexity analysis is not complete analysis e.g. need consider the routing complexity.

Mitsubishi commented that their proposal does not have a routing complexity.

Decision: This document was noted.

R1-062280 LTE Channel Coding (Ericsson)

29/08/2006 10:15 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Wataru Matsumoto (Mitsubishi) commented for slide 14 that the memory complexity for LDPC is depending on the assignment of the code for whole RB and they think that the memory needs just for the fixed maximum size. Mitsubishi pointed out the analysis related to channel interleaving, but it was commented that it's was not discussed and would be discussed at later stage.

Zhisong Zuo (ZTE) commented that why code rate $\frac{1}{3}$ is assumed to be as working assumption and also we consider the relation to the rate matching, the implementation for this aspect is easy on LDPC.

Stefan answered that code rate $\frac{1}{3}$ is main point for comparing the different code scheme and also we commented that there are some stress for complexity on LDPC and the main concern in this document is routing performance. Although they don't have any performance analysis on routing complexity, it's not negligible complexity but big.

Decision: This document was noted.

LDPC based channel coding

R1-062136 LDPC Codes supporting HARQ IR with low complexity (LG Electronics)

29/08/2006 11:15 Presented by Mr. Jaehoon Chung.

Discussion (Question / Comment):

Asbjorn Grovlen (Nokia) asked if the proposed code is similar to Zigzag code. The answer was that it is not similar.

Decision: This document was noted.

R1-062240 Performance improvement of the rate-compatible LDPC codes (Mitsubishi Electric)

29/08/2006 11:20 Presented by Dr. Wataru Matsumoto

Discussion (Question / Comment):

Decision: This document was noted.

R1-062241 Ordered transmission scheme for LDPC-coded symbols
(Resubmission of R1-061813) (Mitsubishi Electric)

29/08/2006 11:30 Presented by Mr. Yasuhiro Yano

Discussion (Question / Comment):

Stefan Parkvall (Ericsson) pointed out the concern on this scheme is the impact on control signalling so that we should be carefully consider the control signalling for this scheme. Mitsubishi commented that they agree to this point and now they are evaluating how many bit is needed for this scheme and also they clarified that this scheme is not the symbol to bits mapping by order but the mapping to recourse block.

Decision: This document was noted.

After the presentation of all documents, the selection of coding scheme (this meeting agenda point) was discussed and the following conclusion was agreed by RAN1.

Conclusion

The channel coding scheme for TrCH data (L3 information) is

- Using Rel-6 Turbo code (mother code rate $R=1/3$)
- With contention free interleaver (e.g. ARP) - exact interleaver to be selected in future meeting
 - o Consider 2x2 MIMO case in the interleaver selection
- Segmentation block size 5114 bits or (slightly larger?)
- Tailbiting (FFS)

Discussion for conclusion

At first, Mr. Chairman proposed the conclusion and explained his opinion that we should make a decision at this time and not postpone. Almost proposal pointed out the problem on the interleaving on TC and proposed the contention free interleaver structure for resolving the problem. The problem is not TC but interleaver structure, therefore we stick Rel-6 TC using contention free interleaver and would discuss the exact type of interleaver in some future meeting, i.e. main discussion for future should be the exact type of interleaver and also we don't need to keep the convolutional coding for L3 information. In addition, he clarified that code size should be similar on Rel99, around 5000.

Some companies commented to this Chairman's proposal.

Mitsubishi commented that we don't prefer not to include LDPC in the future analysis because our analysis showed the gain on complexity and performance provided by LDPC, therefore LDPC should be assumed as one option. To this comment, Mr. Chairman clarified that we should minimize the standard option from the view point of the standard classic for making the implementation issue much less.

Tim (Philips) commented that Tailbiting should be FFS. Serge (Qualcomm) and Sarah (Nortel) supported to chairman's proposal and pointed out that we should make sure no loss from based Rel-6 TC provided by any change. Asbjorn Grolven (Nokia) also supported chairman's proposal.

On the other hand, Zhisong Zuo (ZTE) asked to clarify that the only one scheme is selected and proposed that we should look at more scheme. Chairman clarified again that main point is not TC performance but interleaver problem so that I don't want to see any additional approach, possibility is just one.

Juho Lee (Samsung) commented that they support the selection of TC but need to clarify that the contention free interleaver is needed. As the answer, Stefan Parkvall (Ericsson) clarified that we need to update TC such ARP and most company favor for contention free interleaver, although we need to clarify the exact structure of that.

Mitsubishi raised a concern on MIMO case and commented that it should be clarify such condition for the selection of interleaver. It was clarified that the case is 2x2 MIMO.

Not treated

R1-062154 Channel coding hardware complexity (HighDimension Ltd.)
R1-062155 Throughput, latency and complexity estimation for the turbo decoder
(HighDimension Ltd.)

- ## 8.7 Topics related to the extension of the Study Item Phase

R1-061948 Summary of e-mail ad-hoc on additional evaluation results (Vodafone)

R1-062046 Initial characterization of E-UTRA DL VoIP capacity (Qualcomm Europe)

R1-062397 Initial characterization of E-UTRA DL VoIP capacity (Qualcomm Europe)

R1-062050 Initial characterization of E-UTRA UL VoIP capacity (Qualcomm Europe)

R1-062081 **VoIP minimum spectrum allocation** **(Motorola)**

R1-062179 VoIP System Performance for E-UTRA Downlink - Additional Results (Panasonic)

R1-062230 **LTE UL VoIP capacity** **(Samsung)**

28/08/2006 17:30 Presented by Ms. Youn Heo

AA/SWA Ex. 1021, p.51 of 100
American Airlines, et. al. v. Intellectual Ventures, et. al.
IPR2025-01509

Mr. Chairman commented that we need to clarify why the reason for the difference form in order to input them RAN TR.

Decision: This document was noted.

R1-062373 System Level Analysis of E-UTRA DL VoIP Capacity (Siemens)

28/08/2006 17:40 Presented by Mr. Mieszko Chmiel

Discussion (Question / Comment):

It was clarified by contributor that one RB is assigned for user in TTI and the maximum 3 users are on one TTI

Decision: This document was noted.

After the presentation of the document related VoIP capacity, Mr.Chairman suggested including the results to CR (Qualcomm proposal) and revise that CR. Juho Lee proposed to capture also their results in that CR but finally the results for smart scheduler (semi-static) were just captured. So it was decided to include results for “smarter” schedulers from R1-062397, R1-062050, R1-062081, and R1-062179 in a revision1 of CR 0004 (R1-062412).

R1-062054 25.814 CR0004 (Rel-7, F) "DL and UL VoIP capacity characterization for E-UTRA" (Qualcomm Europe)

Discussion (Question / Comment):

Decision: This CR was revised with addition of the results from the other contribution.

R1-062412 25.814 CR0004r1 (Rel-7, F) "DL and UL VoIP capacity characterization for E-UTRA" (Qualcomm Europe, Motorola, Panasonic)

01/09/2006 Presented by Mr. Serge Willenegger

Discussion (Question / Comment):

Decision: **This CR was agreed.** The CR category was changed to "B" by MCC when it was submitted to RAN#33.

R1-062235 DL system level performance results for LTE target fulfillment (Samsung)

This document was revised before the presentation

R1-062399 DL system level performance results for LTE target fulfillment (Samsung)

28/08/2006 09:50 Presented by Dr. Farooq Khan.

Discussion (Question / Comment):

It was clarified that 4x2 and 2x4 and 4x4 cases should be considered in 8.7.2.

Decision: This document was noted.

R1-062358 Updated Downlink LTE Evaluation Results (Revision of R1-061911) (Nokia)

28/08/2006 18:00

Discussion (Question / Comment):

It is clarified that the relative gain from HSDPA is 3.9 as show in table 6. Juho Lee expressed his wonder that it a quite big gain.

Decision: This document was noted.

R1-062281 25.814 CR0008 (Rel-7, F) "Inclusion of Beamforming Results" (Ericsson)

28/08/2006 16:55 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

It was clarified that 2x2 and 4 x 2 case is simulated.

The comment was raised on the TTI value for the beamfoming gain.

Decision: This CR was revised with addition of 2x2 results from R1-062358 and R1-062399 in R1-062413

R1-062413 25.814 CR0008r1 (Rel-7, F) "Inclusion of Beamforming Results" (Ericsson)

01/09/2006 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Decision: **This CR was agreed.** The CR category was changed to "B" by MCC when it was submitted to RAN#33.

Mr Chairman commented that these update should be also done for TR25.912.

8.7.2 Additional Enhancement Techniques

Mr. Sadayuki Abeta (RAN1 vice chairman) had chairing in this session.

R1-061949 Summary of e-mail ad-hoc on enhancement techniques for top-end performance (Vodafone)

29/08/2006 13:45 Presented by Mr. Adam Pollard.

Discussion (Question / Comment):

Decision: This document was noted.

R1-062427 Summary of Discussion on additional enhancement technique
(LTE SI Chair)

01/08/2006 14:15 Presented by Dr. Sadayuki Abeta

Discussion (Question / Comment):

Decision: This document was endorsed.

Downlink
Inter-cell Interference coordination and cancellation

R1-062017 Throughput Evaluation with MIMO and Interference Co-Ordination in
EUTRA Downlink (Texas Instruments)

This document was revised before the presentation

R1-062398 Throughput Evaluation with MIMO and Interference Co-Ordination in
EUTRA Downlink (Texas Instruments)

29/08/2006 09:xx Presented by Dr. Aris Papaskellariou

Discussion (Question / Comment):

Aris Papaskellariou (TI) proposed that some results from this contribution would be included in CR for TR25.814

It was clarified by TI that the same OH for both cases (reference case and E-UTRA) can be assumed in this comparison, also it was clarified by TI that this simulation assumes soft reuse.

Adam (Vodafone) asked why pretty much gain on 5% CDF can be obtained compared with the other proposals and raised a concern on the difference among the results when we input them to TR25.814. Aris answered that it thanks for the scheduling of coordination.

Erik Dahlman (Ericsson) commented to this issue that it is due to the some kind of assumption (implementation issue of scheduling) so they do not have any concern on the difference and we already obtain a potential gain by static they have all potential gain by static coordination so that main point is what we specify. Siemens supported to this comment

Decision: This document was noted.

R1-062150 Adaptive Fractional Frequency Re-use performance (Nortel)

29/08/2006 14:15 Presented by Mr. Jianming Wu

Discussion (Question / Comment):

It was clarified by Nortel that the communication between NB is on backhaul and in second. Asbjorn Grovlen

(Nokia) expressed a wonder that we already agreed the semi -static as assumption and it's in ten second period. Aris Papaskellariou (TI) raised a strong concern that the specified scheme should be flexible and what can we centralize.

The answer was that this scheme is more flexible as shown in 5% user coverage table.

Finally, Nortel proposed that we are try to do more evaluation and would provide more simulation results in upcoming meeting.

Decision: This document was noted.

R1-062301 Optimum combination of IF-coordination and cancellation (Siemens)

29/08/2006 14:35 Presented by Dr. Wolfgang Zirwas

Discussion (Question / Comment):

Adam asked if the antenna tilting is applicable to any systems so applicable to HSDPA. The answer was that antenna tilting is beneficial to all system and has gain for normal 3GPP system

Some discussions were on the exact combination of coordination and cancellation.

It was clarified by Siemens that two antennas is used just for cancellation and there are nay gain by space multiplex and beamforming.

Philips commented on the impact in the case higher modulation on this scheme.

Decision: This document was noted.

R1-062374 LTE Interference Coordination - Downlink System Simulation Results
(Siemens)

29/08/2006 14:55 Presented by Mr. Mieszko Chmiel

Discussion (Question / Comment):

Christian G. Gerlach (Alcatel) commented that in this scheme the typical cell edge user go up throughput and then the other down. Siemens agreed to this point.

Some company pointed out the gain is less by coordination in case of lower load system.

TI commented that two receive antenna case should be also evaluated.

Nicholas Anderson (IPWireless) commented that cell edge user throughputs are not so clear when the scheduler allocates large amounts of resources at a time to a single user (fat-pipe scheduling). This is because the available time/frequency resources are reduced when coordination is applied. Siemens agreed that this was the case.

Decision: This document was noted.

R1-062375 Downlink Interference Coordination (Siemens)

29/08/2006 15:05 Presented by Mr. Mieszko Chmiel

Discussion (Question / Comment):

Christian G (Alcatel) commented that we should not stick to the CQI based HO measurement. Mieszko commented that we can use both HO and performance measurement.

Erik (Ericsson) raised a wonder that in the last point on conclusion it is quite new and we don't decide to specify the coordination and any discussion on CQI and measurement. Siemens commented that they agree but static method almost could perform in current evaluation system

Decision: This document was noted.

After the presentation, Chairman summarized the discussion and conclusion from interference coordination topic. Mr. Chairman summarized that the common result from all documents that interference coordination can provide a gain cell edge throughput without any serious degradation on sector throughput and that gain can reach the target. Also some points from Siemens contribution should be agreed by RAN1. Finally the following conclusion was agreed by RAN1.

Conclusion

Agreed that Interference coordination provides system level benefits and should be a part of E-UTRA.
Also agreed

- No additional measurements and reporting is needed apart from CQI and handover measurements
- No additional Node B - UE signalling is required besides scheduling information for downlink data transmission

MIMO

R1-062145 DL adaptive MIMO performance Evaluation (Nortel)

29/08/2006 16:10 Presented by Jiaming Wu

Discussion (Question / Comment):

Qualcomm raises a concern that why SM and STTD should be combined because SM always outperform STTD. The answer was that this contribution discussed open loop and if closed loop of course, SM is better than STTD. Amitava Ghosh (Motorola) raised a concern on the table 5 that the gain is not correct in table even though they agree 10 to 20 % gain asked in table 5 is not correct.

It was clarified by Nortel that signalling from UE is just CQI and just SNR for STTD and the average SNR among tow antenna for SM. Qualcomm raised a concern on the selection mechanism of SM and STTD.

Comparison the LTE and HSDPA

Decision: This document was noted.

R1-062282 Schedule single vs. multiple beams per frame for E-UTRA (Ericsson)

29/08/2006 16:35 Presented by Dr. Bo Göransson

Discussion (Question / Comment):

It was clarified that beamforming is fixed and also in this document the multi-beamforming with coordination are not provided because it's completely difficult (assuming the centralised coordination)

Samsung raised a concern on channel model and the number of orthogonal beam (Ericsson clarified 4)

It was clarified that the receiver with interference cancellation is assumed so that one interference cane cancelled.

It was clarified that this contribution assumes the full buffer traffic.

The concerns was raised that user per sector in this contribution is quite small.

Decision: This document was noted.

R1-062146 Performance of STBC-HARQ for E-UTRA DL with Multiple Re-transmissions (Nortel)

29/08/2006 16:55 Presented by Mr. Hua Xu

Discussion (Question / Comment):

It was clarified by Nortel that in the case of high mobility there is no gain and the first transmission uses SM. If the second transmission is worse the performance is the same as chase.

Decision: This document was noted.

R1-062399 DL system level performance results for LTE target fulfillment (Samsung)

29/08/2006 09:50 Presented by Dr. Farooq Khan.

Discussion (Question / Comment): This contribution was treated also in AI 8.7.1

This document was discussed again just as for 4x2 and 4x4 MIMO topics

It was clarified that MIMO scheme is multi-user MIMO and precoding, including rank adaptation and precoding feedback is 2 bits, one is for matrix and one is vector.

Decision: This document was noted.

R1-062045 System Analysis of DL Single User MIMO OFDMA (Qualcomm Europe)

29/08/2006 17:15 Presented by Dr. Byoung-hoon Kim

Discussion (Question / Comment):

The specific discussion on the MIMO scheme, precoding and number of over head.

It was clarified by Qualcomm that they don't consider any frequency band scheduling so that the gain is very small.

Decision: This document was noted.

CR

R1-062053 25.814 CR0003(Rel-7, F) "DL MIMO evaluation" (Qualcomm Europe)

Decision: This CR was revised in R1-062424

This document was revised in R1-062424 with addition of the results for 4 antenna cases from Nokia (R1-062358), Samsung (R1-062399), Ericsson (R1-061865) and TI(2398). It was suggested that the new TR should be used (currently old version) and new section is created for 4 antenna case. Regarding the description of additional gain, it was clarified that the reference case should be 2x2 case and the relative gain from 2x2 case is described

R1-062424 25.814 CR0003r1(Rel-7, F) "DL MIMO evaluation" (Qualcomm Europe, Nokia, Ericsson, Samsung, TI)

01/09/2006 14:20 Presented by Dr. Byoung-hoon Kim

Discussion (Question / Comment):

Decision: This CR was agreed. The CR category was changed to "B" by MCC when it was submitted to RAN#33.

Uplink

Power control

R1-062018 A Method for Uplink Open Loop Power Control Based on Signal Strength Measurements from Multiple Cells/Sectors (Texas Instruments)

29/08/2006 17:40 Presented by Mr. Pierre Bertrand

Discussion (Question / Comment):

It was clarified that 18 UE per cell in this simulation.

Decision: This document was noted.

R1-062019 Enhancing the Uplink Cell Edge Throughput via Target SINR Adaptation (Texas Instruments)

29/08/2006 17:50 Presented by Mr. Pierre Bertrand

Discussion (Question / Comment):

Decision: This document was noted.

R1-062082 LTE Uplink System Performance using PC adaptation (Motorola)

29/08/2006 17:55 Presented by Dr. Amitava Ghosh

Discussion (Question / Comment):

Decision: This document was noted.

MIMO

R1-062052 UL system analysis with SDMA (Qualcomm Europe)

29/08/2006 17:57 Presented by Ms. Xiaoxia Zhang.

Discussion (Question / Comment):

It was clarified by Qualcomm that SDMA technique in this document maximise open loop MIMO capacity and two users is in the same block simultaneously. (see A.2)

Decision: This document was noted.

R1-062075 Uplink System Performance with UL Virtual MIMO (Motorola)

29/08/2006 18:00 Presented by Dr. Amitava Ghosh

Discussion (Question / Comment):

The discussion and concern were on the relation the gain and cell size mentioned by Qualcomm.

It was clarified that V-MIMO with SIC could provide more gain.

Decision: This document was noted.

R1-062144 Further UL multi-user MIMO performance (Nortel)

29/08/2006 18:10 Presented by Mr. Jianming Wu.

Discussion (Question / Comment):

It was clarified by Nortel that the simultaneous users are for MIMO and 8 for 4 antenna diversity. It was long discussion about the comparison fairness between two.

Decision: This document was noted.

Mr. Chairman commented that UL MIMO is not included in the request from RAN plenary, just DL so we don't discuss more in this stage including CR (R1-062055) and also adaptive PC and UL MIMO is already captured in the items for WI so that we would discuss more in WI phase. (no any conclusion).

Not treated

R1-062055 25.814 CR0005 (Rel-7, F) "UL system analysis with SDMA" (Qualcomm Europe)

Interference avoidance

R1-062183 Performance evaluation of uplink interference avoidance techniques (Freescale Semiconductor)

This document was revised before the presentation.

R1-062417 Performance evaluation of uplink interference avoidance techniques (Freescale Semiconductor)

29/08/2006 18:30 Presented by Dr. Wes McCoy

Discussion (Question / Comment):

Decision: This document was noted.

MBMS

R1-062232 Unicast/MBMS Superposition and Interference Cancellation: Link Performance with Realistic Channel Estimation (Samsung)

29/08/2006 18:35 Presented by Dr. Jiannan Tsai

Discussion (Question / Comment):

It was clarified that power boosting for broadcast pilot is based on unicast SNR and MBMS pilot is orthogonal so that there are any interference to unicast. It was clarified by Samsung that the same CP length is used for unicast and MBMS

Decision: This document was noted.

R1-062233 System Performance of Unicast/MBMS Superposition and Interference Cancellation (Samsung)

29/08/2006 18:45 Presented by Dr. Cornelius Van Rensburg

Discussion (Question / Comment):

Nokia express a wonder from viewpoint of the discussion about Resource aggregation in RAN4 that why we need such deployment scenario because there are already two different carrier available.

It was clarified by Samsung that ACK/NACK decoding is just for unicast so that there is no outer coding for MBMS.

Decision: This document was noted.

R1-062234 Draft CR to TR 25.912 on the MBMS/Unicast Superposition and Interference Cancellation (Samsung)

29/08/2006 19:05 Presented by Dr. Farooq Khan.

Discussion (Question / Comment):

Nokia commented that in fact we are approved L1 WI plan including MBMS in this meeting so that we would discuss this technique in the WI phase and we don't want to agree CR. Erik Dahlman (Ericsson) and Adam Pollard as well commented that this technique is very interesting but the request from RAN is the improvement technique specific to DL so that we focus on DL unicast. In addition, it was commented that the performance evaluation for MBMS was already captured in TR25.912. Also some companies raised wonder the detail technique, performance issue and impact on the Node B and terminal of this technique.

On the other hand, Samsung expressed their strong opinion that the agenda for this meeting mentioned we should discuss interference cancellation/coordination, additional antennas, **other techniques**, so that we should discuss this

technique also this technique can improve much spectrum efficiency for unicast and MBMS. After a long discussion, Mr. Chairman commented that we focus to discuss on the specific topic, DL unicast which requested by RAN and also this technique is very interesting so we would discuss more on e-mail reflector. As for this CR, in fact some companies raised objection, so it was not endorsed.

Decision: This document was noted.

R1-062369 UE-specific idle period for half-duplex communications
(Mitsubishi Electric, IPWireless)

29/08/2006 19:45 Presented by Dr. Loïc Brunel

Discussion (Question / Comment):

Nokia commented that from viewpoint of interference we need more study

Decision: This document was noted.

At the end of this session, Erik Dahlman (Ericsson) proposed that we had better provide the output from this session and need to inform it to the next RAN plenary. The content should be focus on DL because UL is not critical issue for close Study Item. Mr. Chairman suggested Vodafone to provided draft document.

R1-062425 Summary of downlink enhancement techniques over baseline LTE unicast performance
(Vodafone, Orange, Ericsson, Texas Instruments, Siemens, Alcatel, Sprint, Motorola, Nokia, T-Mobile, IPWireless, 3)

01/09/2006 12:30 Presented by Mr. Adam Pollard

Discussion (Question / Comment):

Sadayuki Abeta (NTT DoCoMo) commented that from this document we could confirm that LTE exceed top end performance so they would like to add the word in document "achieve the top end performance". Vodafone would not like and this text is very comfortable and correct word describing our results. Orange supported to Vodafone opinion.

Decision: This document was agreed and submitted also to RAN together with a CR for 25.912. (On e-mail discussion)

R1-062439 25.814 CR 0010 (Rel-7, F) "Summary of performance enhancement techniques"
(Vodafone)

01/09/2006 12:50 Presented by Mr. Adam Pollard

Discussion (Question / Comment):

Decision: This CR was agreed with modification in R1-062442. The CR category was changed to "B" by MCC when it was submitted to RAN#33.

R1-062442 25.814 CR 0010r1 (Rel-7, F) "Summary of performance enhancement techniques"
(Vodafone)

R1-062436 Draft LS on LTE SI conclusions (NTT DoCoMo, Alcatel, Cingular Wireless, CATT, Ericsson, Fujitsu, ITRI, LG Electronics, Lucent technologies, Mitsubishi Electric, Motorola, NEC, Nokia, Nortel, Panasonic, Samsung, Sharp, Siemens, Texas Instruments, and Toshiba Corporation)

01/09/2006 12:55 Presented by Dr. Sadayuki Abeta from NTT DoCoMo

Discussion (Question / Comment):

Adam Pollard (Vodafone) raised a concern on the last sentence on way forward and commented that we agreed R1-062525 and corresponding CR and we just confirmed the additional enhancement technique so the final decision should be done by TSG RAN.

Mr. Chairman commented that RAN1 should provide a good indication for the decision on the next RAN Plenary and we don't want to stop again work on LTE in the next RAN, therefore, recommendation for just RAN1 part is would be good, but "could" might be better "should".

So Adam proposed an offline discussion during lunch break.

Decision: This draft LS was agreed with modification provided from offline discussion in R1-062443

Not treated because these topic should be discussed in WI

R1-062147 Performance evaluation of downlink open loop schemes for 2 and 4-branch LTE
(Nortel)

- R1-062148** **Performance evaluation of downlink closed loop schemes for 4-branch LTE**
(Nortel)
- R1-062149** **Improvement of the performance of the open loop schemes by using sphere decoder as an efficient and moderate complexity receiver**
(Nortel)
- R1-062170** **Phase Adjustment Methods of Rotational CDM** (KDDI, NTT DoCoMo)
- R1-062171** **L1/L2 Control Channel Structure with CDM Based Multiplexing in E-UTRA Downlink**
(KDDI, NTT DoCoMo)
- R1-062370** **Adaptive Control of Roll-off Factor for SC-FDMA**
(Siemens)
- Withdrawn**
- R1-061993** **Study of VoIP persistent transmission considering ROHC and handover**
(Fujitsu)
- R1-062180** **System Level Simulation Results for Uplink semi-static inter-cell interference coordination-Case of Macro Cells**
(Panasonic)
- R1-062182** **Downlink Interference Avoidance and Optimum Resource Allocation**
(Freescale Semiconductor)

8.7.3 MBMS

- R1-061969** **Inter E-Node B node synchronization in LTE MBMS**
(Alcatel Shanghai Bell)

28/08/2006 18:15 Presented by Ms. Eliza Wong.

Discussion (Question / Comment):

It was commented that why use the cable option even though there are more simple way.

Decision: This document was noted.

- R1-062377** **Benefits Arising from Network Synchronisation** (IPWireless, Orange)

28/08/2006 18:25 Presented by Mr. Nicholas Anderson

Discussion (Question / Comment):

Mr. Chairman clarified that the current TR has no text for this aspect so that some input would be captured and send the LS to RAN3 asked what are we expecting for them.

Christian G Gerlach commented that interference avoidance is depending on the size of resource block and no so strong.

Asbjorn Grovlen (Nokia) pointed out that we also have this aspect on TR25.912 related to SFN operation so that the relation to TR25.912 is also considered.

Erik Dahlman (Ericsson) commented that what kind of level we need for the different option of interference mitigation.

At finally, it was not concluded that what topic should be captured in TR and sent to RAN3 so that the discussion would continue.

Decision: This document was noted.

- R1-061997** **Channel Model for SFN based E-MBMS** (Motorola)

28/08/2006 18:40 Presented by Mr. Zhang Charlie

Discussion (Question / Comment):

There were some discussions as for diversity.

Mr. Chairman commented that how we extend the SI mode and the current discussion seems to forget the connection to the SI model and even though we can agree the SFN mode how we report that to RAN and how we treat the other document to finalize SI and finally express his preference that we would postpone this issue to WI stage.

Decision: This document was noted.

Not treated due to lack of time

- R1-062047** **SFN channel model for E-MBMS** (Qualcomm Europe)

R1-062193	Simulation results of SNR distribution for SFN channel model	(Toshiba Corporation)
R1-062391	On a link-level channel model for SFN systems	(Lucent Technologies)
R1-061970	The processing of cell group in E-MBMS	(Alcatel Shanghai Bell)
R1-061996	Observations on 64QAM in SFN Mode for E-MBMS	(Motorola)
R1-061999	E-MBMS Performance with Repeaters	(Motorola)
R1-062083	E-MBMS with feedback	(Motorola)
R1-062194	Further Study on Reference Signal Structure for MBMS (Resubmission of R1-061855)	(Toshiba Corporation)
R1-062236	Improving Efficiency of MBMS by Inter-Cell Interference Coordination	(Samsung)
R1-062256	Improved Multi-cell MBMS performance using the Cyclic Shift Diversity sub-carrier grouping Method	(Sharp)
R1-062390	MIMO for E-MBMS in 5MHz LTE	(Lucent Technologies, China Mobile)
Withdrawn		
R1-062056	25.814 CR0006 (Rel-7, F) "E-MBMS channel model"	(Qualcomm Europe)

8.8 Open issues from discussions with RAN2

R1-062051 UE MAC ID and L1 TrCH Mux in E-UTRA (Qualcomm Europe)

31/08/2006 19:30 Presented by Mr. Juan Montojo.

Discussion (Question / Comment):

Nick (IPWireless) commented that it's good contribution and it's quite compatible to UTRA.

NTT DoCoMo supported to 16bits from operator view because how many users supported is important

Ericsson and Samsung supported 16 bits

Nokia expressed a wonder that all 16 bits are not needed on the control channel (see Nokia proposal)

Decision: This document was noted.

R1-062257 Short UE Identity for Downlink Scheduling Information (Sharp)

31/08/2006 19:40 Presented by Mr. Yamada.

Discussion (Question / Comment):

Juho Lee (Samsung) raised a concern that this proposal could cause the limitation of frequency scheduling freedom so why mention not serious problem.

Stefan Packvall raised a concern that this group could impact on performance and also scheduling is much complicated.

It was asked how we do grouping. The answer was that we don't have clear answer now but it would be operator set up.

It was discussed that how to reduce the bits on control signalling, the proposed scheme and joint coding.

Mr. Chairman commented that grouping is not work principal and would be discussed in RAN2.

Decision: This document was noted.

R1-062359 Size of UE ID for resource grant (Nokia)

19/08/2006 19:55 Presented by Mr. Asbjörn Grövlén

Discussion (Question / Comment):

You need signal for allocate id and, signalling and need bit s trade off

Juho Lee asked if how many bit for short id is and commented that if very short, it causes the scheduling problem and if around 10 there is no benefit by short id. The answer was that FFS. Sharp answered that 4 or 5 bits is for short id and commented that it's trade off scheduling freedom and reduction benefit. Some company raised a concern again about the scheduling limitation. The scheduling restriction causes RAN2 area problem. Finally, Mr. Chairman suggested sending LS to RAN2 about current RAN1 situation and asking RAN2 critical problem.

Decision: This document was noted.

LS to RAN2: For the higher layers, UE Id length of 16bit (CRNTI, as seen by the RRC) can be provided. Methods to reduce the actual signalling on the control channels (within the L1) will be considered when the structure and coding of the control channels is discussed.

R1-062438 [DRAFT] LS on UE ID for resource assignment

(Ericsson)

01/09/2006 15:30 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Decision: It was agreed in R1-062446

R1-062283 L1 Multiplexing in E-UTRA Downlink

(Ericsson)

31/08/2006 20:30 Presented by Dr. Stefan Parkvall

Discussion (Question / Comment):

Decision: This document was noted.

R1-062084 Segmentation and ACK/NACK Signaling for LTE

(Motorola)

31/08/2006 20:30 Presented by Mr. Brian Classon

Discussion (Question / Comment):

Decision: This document was noted.

This L1 multiplexing topic is not critical issue to current RAN1 main discussion point so that more discussion and decision were taken to the next meeting.

9. AOB

At the end of meeting, Mr. Chairman talked about RAN1 LTE work plan using R1-061992 and informed about January meeting in next year that we will have the meeting co-located with RAN2 in the week of 15th January and it will be in EU hosted by EF3.

10. Closing of the meeting:

01/09/2006 17: 00. RAN1 Chairman, Mr. Dirk Gerstenberger expressed his appreciation to the delegates and the host, the European Friends of 3GPP for their supports. The meeting was closed

Annex A: List of participants at RAN1 #46

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Annex B: TSG RAN WG1 meetings in 2006

TITLE	TYPE	DATES	LOCATION	CTRY
3GPPRAN LTE Ad Hoc	AH	23 - 25 Jan 2006	Helsinki	FIN
3GPPRAN1#44	WG	13 - 17 Feb 2006	Denver	USA
3GPPRAN1#44bis	WG	27 - 31 March 2006	Athens	GR
3GPPRAN1#45	WG	09 - 13 May 2006	Shanghai	China
3GPPRAN1 LTE Ad Hoc	AH	27-30 June 2006	Cannes	FR
3GPPRAN1#46	WG	28 Aug -01 Sept 2006	Tallinn	Estonia
3GPPRAN1#46bis	WG	09 -13 Oct 2006	Seoul	Korea
3GPPRAN1#47	WG	06 - 10 Nov 2006	Riga	Latvia

MEETING TYPES

AH = Ad Hoc	CM = Chairmen's meeting
JM = Joint	OR = Ordinary
PM = Preparatory Meeting	RG = Rapporteurs Group
RM = Resolution Meeting	SG = Steering Group
ST = Startup Meeting	TG = Task Group
WG = Working Group	XO = Extraordinary

Annex C: List of CRs agreed at RAN1#46

Spec	CR	R	Cat	Rel	R1 Tdoc	Title	Work Item
25.212	0239	-	F	Rel-6	R1-062085	Correction to the E-DCH HARQ rate matching for compressed mode	EDCH-Phys
25.212	0240	-	A	Rel-7	R1-062086	Correction to the E-DCH HARQ rate matching for compressed mode	EDCH-Phys
25.214	0422	1	F	Rel-6	R1-062404	Clarification of E-DPDCH gain factor quantization	EDCH-Phys
25.214	0423	1	A	Rel-7	R1-062405	Clarification of E-DPDCH gain factor quantization	EDCH-Phys
25.215	0170	3	C	Rel-7	R1-061972	Introduction of a Node B measurement for E-DCH RRM	EDCH-Phys
25.222	0130	-	F	Rel-7	R1-062408	Correction to Coding of PLCCH for 1.28 Mcps TDD	RANimp-RABSE- CodOptLCRTDD
25.224	0152	-	F	Rel-7	R1-061975	Release-7 Timing Advance (3.84Mcps and 7.68Mcps TDD)	TEI-7
25.201	0024	2	B	Rel-7	R1-061978	Introduction of E-DCH for 3.84Mcps TDD	EDCHTDD-Phys
25.221	0137	2	B	Rel-7	R1-061979	Introduction of E-DCH for 3.84Mcps TDD	EDCHTDD-Phys
25.222	0128	-	B	Rel-7	R1-061980	Introduction of E-DCH for 3.84Mcps TDD	EDCHTDD-Phys
25.223	0039	2	B	Rel-7	R1-061981	Introduction of E-DCH for 3.84Mcps TDD	EDCHTDD-Phys
25.224	0151	2	B	Rel-7	R1-061982	Introduction of E-DCH for 3.84Mcps TDD	EDCHTDD-Phys
25.225	0082	2	B	Rel-7	R1-061983	Introduction of E-DCH for 3.84Mcps TDD	EDCHTDD-Phys
25.201	0025	-	B	Rel-7	R1-061984	Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD	EDCHTDD-Phys RANimp-VHCRTDD- EDCH
25.221	0138	-	B	Rel-7	R1-061985	Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD	EDCHTDD-Phys RANimp-VHCRTDD- EDCH
25.222	0129	-	B	Rel-7	R1-061986	Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD	EDCHTDD-Phys RANimp-VHCRTDD- EDCH
25.223	0041	-	B	Rel-7	R1-061987	Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD	EDCHTDD-Phys RANimp-VHCRTDD- EDCH
25.224	0153	-	B	Rel-7	R1-061988	Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD	EDCHTDD-Phys RANimp-VHCRTDD- EDCH
25.225	0083	-	B	Rel-7	R1-061989	Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD	EDCHTDD-Phys RANimp-VHCRTDD- EDCH
25.202	0001	-	B	Rel-7	R1-062116	Introduction of E-DCH for 7.68Mcps TDD	RANimp-VHCRTDD- EDCH

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Spec	CR	R	Cat	Rel	R1 Tdoc	Title	Work Item
25.814	0003	1	F	Rel-7	R1-062424	DL MIMO evaluation	RANFS-Evo
25.814	0004	1	F	Rel-7	R1-062412	DL and UL VoIP capacity characterization for E-UTRA	RANFS-Evo
25.814	0008	1	F	Rel-7	R1-062413	Inclusion of Beamforming Results	RANFS-Evo
25.814	0010	1	F	Rel-7	R1-062442	Summary of downlink enhancement techniques over reference LTE unicast performance	RANFS-Evo

Annex D: List of Outgoing LSs from RAN1#46

NUMBER	TITLE	WI	To	Cc
R1-062443	LS on LTE SI conclusions	RANFS-Evo	RAN	-
R1-062445	LS on RAN1 decisions for "Continuous Connectivity for packet data users"	RANimp-CPC	RAN2, RAN3, RAN4	RAN
R1-062446	LS on UE ID for resource assignment	RANFS-Evo	RAN2	-
R1-062447	Reply LS on Clarification of power control behaviour with HS-DPCCH	HSDPA	RAN5	RAN4

Annex E: List of Tdocs at RAN1#46

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-061935	Draft Agenda for RAN1 #46	RAN1 Chairman	2		Approved
R1-061936	Draft Report of RAN1#45	MCC	3		Approved in R1-062448
R1-061937	Draft Report of RAN1 LTE Ad Hoc	MCC	3		Approved in R1-062449
R1-061938	Draft Report of RAN1/RAN2 Joint Session	MCC	3		
R1-061939	LS on Real Time Gaming Requirements (To: SA1, Cc: RAN1, RAN3, RAN4)	RAN WG2, Cingular	4	= R2-061798	Noted
R1-061940	LS on verification of L1 parameters for new configurations with 'flexible TFCS' (To: RAN1, Cc: RAN)	RAN WG2, Nortel	4	= R2-061799	Noted
R1-061941	Reply LS on RAB and the error-delay-profile for the performance characterization of VoIMS over HSDPA/EUL (To: SA4, Cc:RAN1)	RAN WG2, Nokia	4	= R2-061807	Noted
R1-061942	LS to RAN1 on additional RAB combinations (To:RAN1)	RAN WG2, Qualcomm	4	= R2-061809	Noted
R1-061943	Liaison Statement on Service Requirement for MBMS LTE(To: SA, Cc: SA1, RAN1, RAN2, RAN3)	TSG RAN, Orange	4	= RP-060428	Noted
R1-061944	Reply LS on RAB and the error-delay-profile for the performance characterization of VoIMS over HSDPA/EUL (To: RAN1, Cc: RAN2, RAN4, RAN5, SA1)	SA WG4, Qualcomm, Lucent	4	= S4-060293	Noted
R1-061945	3G Long-Term Evolution Feature level WI Description Sheet	NTT DoCoMo, et al.	8.1	= RP-060426	Noted
R1-061946	3G Long-Term Evolution Building Blocks Description Sheet	NTT DoCoMo, et al.	8.1	= RP-060427	Revised in R1-062411
R1-061947	LTE Spectrum Requirements	Vodafone, T-Mobile, Orange, KPN	8.2		Noted
R1-061948	Summary of e-mail ad-hoc on additional evaluation results	Vodafone	8.7.1		Noted
R1-061949	Summary of e-mail ad-hoc on enhancement techniques for top-end performance	Vodafone	8.7.2		Noted
R1-061950	DC offset avoidance techniques in E-UTRA uplink and downlink	Mitsubishi Electric	8.2		Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-061951	Antenna weight feedback for Rel-7 FDD MIMO scheme	Philips	7.1		Noted
R1-061952	Fallback mode for Rel-7 FDD MIMO scheme	Philips	7.1		Noted
R1-061953	HS-SCCH signalling for Rel-7 FDD MIMO scheme	Philips	7.1		Noted
R1-061954	CQI for Rel-7 FDD MIMO scheme	Philips	7.1		Noted
R1-061955	F-DPCH transmission for Rel-7 FDD MIMO scheme	Philips	7.1		Noted
R1-061956	Way forward for Continuous Packet Connectivity (CPC)	Philips	7.2		Noted
R1-061957	Resource-Block mapping of Distributed Transmissions in E-UTRA downlink	Philips, Intel Corporation	8.2		Not treated
R1-061958	Asynchronous RACH preamble message design	Philips	8.3.1		Not treated
R1-061959	Beamforming for correlated channels	Philips	8.5		Noted
R1-061960	Repetitive Space Time Block Coding for Transmit Diversity in E-UTRA	Philips	8.5		Noted
R1-061961	System-level evaluation of transmit diversity schemes with frequency-dependent scheduling	Intel Corporation	8.5		Not treated
R1-061962	Link layer evaluation of downlink open loop transmit diversity schemes in the presence of co-channel interference	Intel Corporation	8.5		Noted
R1-061963	System-level evaluation of open loop transmit diversity schemes without CQI feedback	Intel Corporation	8.5		Noted
R1-061964	Comparing downlink transmit diversity schemes for EUTRA	Intel Corporation	8.5		Not treated
R1-061965	MLD vs SIC Complexity Analysis for 2x2 MIMO OFDM	Intel Corporation	8.5		Noted
R1-061966	Performance Comparison of MCW-SIC and SCW-MLD	Intel Corporation	8.5		Noted
R1-061967	Performance Benchmark for a New Unitary Precoding Scheme with Uniform MCS Allocation	Intel Corporation	8.5		Not treated
R1-061968	Reference Signals for Downlink Beamforming Matrix Validation	Intel Corporation	8.4.1		Not treated
R1-061969	Inter E-Node B node synchronization in LTE MBMS	Alcatel Shanghai Bell	8.7.3		Noted
R1-061970	The processing of cell group in E-MBMS	Alcatel Shanghai Bell	8.7.3		Not treated
R1-061971	Alternative OFDM numerology for OFDMA downlink	Agere Systems	8.2		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-061972	25.215 CR170r3 (Rel-7, C)"Introduction of a Node B measurement for E-DCH RRM"	Siemens, Ericsson, Cingular, Three, Lucent	5.5		Agreed
R1-061973	Duo-Binary Turbo-codes for Evolved UTRA	Orange, France Telecom, HighDimension Ltd.	8.6		Noted
R1-061974	Correction to Coding of PLCCH	IPWireless	5.5	R1-062408	Revised in R1-062408
R1-061975	25.224 CR0152 (Rel-7,F) "Release-7 Timing Advance (3.84Mcps and 7.68Mcps TDD)"	IPWireless	5.5		Agreed
R1-061976	Coding of E-DCH for TDD Enhanced Uplink	IPWireless	6.2		TP was agreed
R1-061977	Simulated Performance of E-UCCH for 3.84Mcps E-DCH	IPWireless	6.2		Noted
R1-061978	25.201CR0024r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"	IPWireless	6.2		Agreed
R1-061979	25.221CR0137r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"	IPWireless	6.2		Agreed
R1-061980	25.222CR0128(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"	IPWireless	6.2		Agreed
R1-061981	25.223CR0039r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"	IPWireless	6.2		Agreed
R1-061982	25.224CR0151r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"	IPWireless	6.2		Agreed
R1-061983	25.225CR0082r2(Rel-7,B) "Introduction of E-DCH for 3.84Mcps TDD"	IPWireless	6.2		Agreed
R1-061984	25.201CR0025(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"	IPWireless	6.3		Agreed
R1-061985	25.221CR0138(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"	IPWireless	6.3		Agreed
R1-061986	25.222CR0129(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"	IPWireless	6.3		Agreed
R1-061987	25.223CR0041(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"	IPWireless	6.3		Agreed
R1-061988	25.224CR0153(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"	IPWireless	6.3		Agreed
R1-061989	25.225CR0083(Rel-7,B) "Introduction of E-DCH for 3.84Mcps and 7.68Mcps TDD"	IPWireless	6.3		Agreed

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NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-061990	Comparison between SCW and MCW with and without precoding	Intel Corporation	8.5		Noted
R1-061991	A low feedback scheme for precoding	Intel Corporation	8.5		Not treated
R1-061992	Proposed Work Plan for LTE	LTE Rapporteur, NTT DoCoMo	8.1		RAN1 part was agreed
~~R1-061993~~	~~Study of VoIP persistent transmission considering ROHC and handover~~	~~Fujitsu~~	~~8.7.2~~		Withdrawn
R1-061994	Improving VoIP performance for HSDPA by reduced HS-SCCH or by in-band control signaling with grouping	Motorola	7.2		Revised in R1-062422
R1-061995	Performance study of 64QAM for HSDPA	Motorola	7.3		Noted
R1-061996	Observations on 64QAM in SFN Mode for E-MBMS	Motorola	8.7.3		Not treated
R1-061997	Channel Model for SFN based E-MBMS	Motorola	8.7.3		Noted
R1-061998	Observations on Alternative L1 Parameters for E-MBMS	Motorola	8.7.3		Noted
R1-061999	E-MBMS Performance with Repeaters	Motorola	8.7.3		Not treated
R1-062000	Cingular Views on the Way Forward on HSPA Evolution	Cingular Wireless	7.3		Noted
R1-062001	Cingular Views on the "RAN Radio" Specific Aspects on HSPA Evolution	Cingular Wireless	7.3		Noted
R1-062002	TTI Length Requirements for EUTRA	Texas Instruments	8.2		Noted
R1-062003	Non-Synchronized Random Access Coverage Analysis for E-UTRA	Texas Instruments	8.3.1		Not treated
R1-062004	Non-Synchronized Random Access Sequence Design for E-UTRA	Texas Instruments	8.3.1		Not treated
R1-062005	Synchronized Random Access: Performance Comparison of Preamble-based and UL Sub-frame Structures	Texas Instruments	8.3.1		Not treated
R1-062006	Proposal for DL SYNC channel (SCH) for E-UTRA Cell Search	Texas Instruments	8.3.2		Not treated
R1-062007	Comparing Hierarchical and Non-Hierarchical Cell Search	Texas Instruments	8.3.2		Not treated
R1-062008	Cell Search Performance in Tightly Synchronized Network for E-UTRA	Texas Instruments	8.3.2		Not treated
R1-062009	Design of Primary Synchronization Code (PSC) for E-UTRA Cell Search	Texas Instruments	8.3.2		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062010	Summary of Reflector Discussions on EUTRA DL RS Design Issues	Texas Instruments	8.4		Noted
R1-062011	Summary of Reflector Discussions on EUTRA UL RS Design Issues	Texas Instruments	8.4		Noted
R1-062012	Multiplexing of Distributed ("Sounding") Reference Signals for CQI Measurement and Scheduling in EUTRA Uplink	Texas Instruments	8.4.2		Not treated
R1-062013	Reference Signal Overhead for TTIs Exceeding One Sub-Frame in EUTRA Uplink	Texas Instruments	8.4.2		Not treated
R1-062014	Uplink Reference Signal Design in EUTRA Uplink	Texas Instruments	8.4.2		Not treated
R1-062015	Performance of Per Group Rate Control (PGRC) with Advanced MIMO Receiver	Texas Instruments	8.5		Noted
R1-062016	Codebook Design for E-UTRA MIMO Pre-Coding	Texas Instruments	8.5		Not treated
R1-062017	Throughput Evaluation with MIMO and Interference Co-Ordination in EUTRA Downlink	Texas Instruments	8.7.2	R1-062399	Noted
R1-062018	A Method for Uplink Open Loop Power Control Based on Signal Strength Measurements from Multiple Cells/Sectors	Texas Instruments	8.7.2		Noted
R1-062019	Enhancing the Uplink Cell Edge Throughput via Target SINR Adaptation	Texas Instruments	8.7.2		Noted
R1-062020	Reference Signal Design in Downlink MIMO	Intel, NTT DoCoMo	8.4.1		Not treated
R1-062021	Improvements on E-DPCCH for HSPA	Qualcomm Europe	7.2		Not treated
R1-062022	Improved E-DPCCH coding	Qualcomm Europe	7.2		Not treated
R1-062023	Improved E-DPCCH power setting as a function of the Handoff state	Qualcomm Europe	7.2		Not treated
R1-062024	F-DPCH time alignment	Qualcomm Europe	7.2		Not treated
R1-062025	Reduced Complexity HS-SCCH-less Operation	Qualcomm Europe	7.2		Noted
R1-062026	TP for 25.903 on DTX/DRX concept	Qualcomm Europe	7.2		Withdrawn
R1-062027	25.212 CR0238 (Rel-7, B) "Support of CPC concepts"	Qualcomm Europe, Nokia, Ericsson	7.2		Noted
R1-062028	25.214 CR0421 (Rel-7, B) "Support of CPC concepts"	Qualcomm Europe, Nokia, Ericsson	7.2		Noted
R1-062029	Summary of MIMO (FDD) impact on L1 specifications	Qualcomm Europe	7.1		Noted
R1-062030	Analysis of Precoding codebook size	Qualcomm Europe	7.1		Noted
R1-062031	HS-DPCCH in support of D-TxAA	Qualcomm Europe	7.1		Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062032	HS-SCCH in support of D-TxAA	Qualcomm Europe	7.1		Noted
R1-062033	Radio System related study areas for HSPA Evolution	Qualcomm Europe	7.3		Noted
R1-062034	TTI for E-UTRA - DL link level analysis	Qualcomm Europe	8.2		Noted
R1-062035	TTI for E-UTRA - UL link level analysis	Qualcomm Europe	8.2		Noted
R1-062036	Discussion on TTI for E-UTRA	Qualcomm Europe	8.2		Noted
R1-062037	SCH structure for E-UTRA	Qualcomm Europe	8.3.2		Noted
R1-062038	Design and Performance of BCH for E-UTRA	Qualcomm Europe	8.3.3		Not treated
R1-062039	Paging structure	Qualcomm Europe	8.3.4		Not treated
R1-062040	Design of DL Reference Signals	Qualcomm Europe	8.4.1		Not treated
R1-062041	Link evaluation of DL MIMO with and without frequency selective scheduling - No precoding	Qualcomm Europe	8.5		Noted
R1-062042	Link evaluation of DL MIMO with and without frequency selective scheduling - Precoding	Qualcomm Europe	8.5		Not treated
R1-062043	System operation of SU-MIMO and MU-MIMO	Qualcomm Europe	8.5		Noted
R1-062044	Link analysis of DL MIMO - Sphere decoding vs. SIC receiver	Qualcomm Europe	8.5		Noted
R1-062045	System Analysis of DL Single User MIMO OFDMA	Qualcomm Europe	8.5		Noted
R1-062046	Initial characterization of E-UTRA DL VoIP capacity	Qualcomm Europe	8.7.1	R1-062397	Revised in R1-062397
R1-062047	SFN channel model for E-MBMS	Qualcomm Europe	8.7.3		Not treated
R1-062048	RACH sequence structure and evaluation	Qualcomm Europe	8.3.1		Not treated
R1-062049	UL reference signal structure	Qualcomm Europe	8.4.2		Not treated
R1-062050	Initial characterization of E-UTRA UL VoIP capacity	Qualcomm Europe	8.7.1		Noted
R1-062051	UE MAC ID and L1 TrCH Mux in E-UTRA	Qualcomm Europe	8.8		Noted
R1-062052	UL system analysis with SDMA	Qualcomm Europe	8.7.2		Noted
R1-062053	25.814 CR0003(Rel-7, F) "DL MIMO evaluation"	Qualcomm Europe	8.7.2		Revised in R1-062424
R1-062054	25.814 CR0004 (Rel-7, F) "DL and UL VoIP capacity characterization for E-UTRA"	Qualcomm Europe	8.7.1	R1-062412	Revised in R1-062412
R1-062055	25.814 CR0005 (Rel-7, F) "UL system analysis with SDMA"	Qualcomm Europe	8.7.2		Not treated
R1-062056	25.814 CR0006 (Rel-7, F) "E-MBMS channel model"	Qualcomm Europe	8.7.3		Withdrawn
R1-062057	E-UTRA Numerology and OOB emissions	Motorola	8.2		Noted
R1-062058	E-UTRA TTI size and Number of TTIs	Motorola	8.2		Noted
R1-062059	E-UTRA Numerology and Frame Structure	Motorola	8.2		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062060	LTE Node-B Spectral Mask Issues	Motorola	8.2		Noted
R1-062061	Uplink DC subcarrier distortion considerations in LTE	Motorola	8.2		Noted
R1-062062	10MHz E-UTRA Downlink Performance and numerology	Motorola	8.2		Not treated
R1-062063	Minimum Resource Allocation size and L1/2 Control Overhead	Motorola	8.2		Noted
R1-062064	Maximum Users/TTI and E-UTRA Downlink Performance	Motorola	8.2		Not treated
R1-062065	L1/L2 UL Control mapping and numerology	Motorola	8.2		Not treated
R1-062066	Preamble sequence design for non-synchronized random access	Motorola	8.3.1		Noted
R1-062067	RACH sequence e-mail reflector summary	Motorola	8.3.1		Noted
R1-062068	Non-synchronized random-access message	Motorola	8.3.1		Not treated
R1-062069	Synch sequence e-mail reflector summary	Motorola	8.3.2		Noted
R1-062070	SCH Structure and Sequence for EUTRA Downlink	Motorola	8.3.2		Not treated
R1-062071	Downlink reference signal sequence design	Motorola	8.4.1		Not treated
R1-062072	Uplink Reference Signal Multiplexing Structures for E-UTRA	Motorola	8.4.2		Not treated
R1-062073	E-UTRA SC-FDMA Uplink Pilot/Reference Signal Design	Motorola	8.4.2		Not treated
R1-062074	Link Simulation Results for UL Virtual MIMO	Motorola	8.5		Not treated
R1-062075	Uplink System Performance with UL Virtual MIMO	Motorola	8.5		Noted
R1-062076	Uplink sounding for obtaining channel state information at Node B in EUTRA	Motorola	8.5		Not treated
R1-062077	Direct channel feedback for obtaining channel state information at Node B in EUTRA	Motorola	8.5		Not treated
R1-062078	Proposal for Dedicated Pilots in Downlink Closed-Loop Beamforming	Motorola	8.5		Not treated
R1-062079	Eliminating tail bits in LTE channel coding	Motorola	8.6		Noted
R1-062080	Eliminating memory contentions in LTE channel coding	Motorola	8.6		Noted
R1-062081	VoIP Minimum Spectrum Allocation & Frequency Switching	Motorola	8.7.1		Noted
R1-062082	LTE Uplink System Performance using PC adaptation	Motorola	8.7.2		Noted
R1-062083	E-MBMS with feedback	Motorola	8.7.3		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062084	Segmentation and ACK/NACK Signaling for LTE	Motorola	8.8		Noted
R1-062085	25.212 CR0239 (Rel-6, F) "Correction to the E-DCH HARQ rate matching for compressed mode"	Nokia	5.4		Agreed
R1-062086	25.212 CR0240 (Rel-7, A) "Correction to the E-DCH HARQ rate matching for compressed mode"	Nokia	5.4		Agreed
R1-062087	Views on TTI Length in E-UTRA	NTT DoCoMo, Fujitsu, KDDI, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.2		Noted
R1-062088	Views on Resource Block Size	NTT DoCoMo, Fujitsu, KDDI, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.2		Noted
R1-062089	Comparison between RB-level and Sub-carrier-level Distributed Transmission for Shared Data Channel in E-UTRA Downlink	NTT DoCoMo, Ericsson, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.2	(R1-061182)	Not treated
R1-062090	Minimum Transmission Bandwidth for Shared Data Channel in SC-Based E-UTRA Uplink	NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp	8.2	(R1-061784)	Not treated
R1-062091	Investigations on Adaptive Control of Roll-off Factor for DFT-Spread OFDM Based SC-FDMA in E-UTRA Uplink	NTT DoCoMo, Ericsson, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.2	(R1-061204)	Not treated
R1-062092	Scheduling Request Transmission Method in E-UTRA Uplink	NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Sharp, Toshiba Corporation	8.3.1		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062093	SCH Sequence Configuration for E-UTRA Downlink	NTT DoCoMo, Fujitsu, Mitsubishi Electric, Panasonic, Sharp, Toshiba Corporation	8.3.2		Not treated
R1-062094	Multiplexing Method of SCH for E-UTRA Downlink	NTT DoCoMo, Fujitsu, NEC, Panasonic, Toshiba Corporation	8.3.2		Not treated
R1-062095	Three-Step Cell Search Method for E-UTRA Downlink	NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Toshiba Corporation	8.3.2		Not treated
R1-062096	Cell Search Time Performance of 3-step Cell Search Method in Multicell environment	NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Toshiba Corporation	8.3.2	(R1-061663)	Noted
R1-062097	SCH and BCH Transmissions Considering UE	NTT DoCoMo, NEC, Panasonic, Toshiba Corporation	8.3.2		Noted
R1-062098	Paging Channel Structure for E-UTRA Downlink	NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Toshiba Corporation	8.3.4		Not treated
R1-062099	Orthogonal Reference Signal Structure for Sectorized Beams in E-UTRA Downlink	NTT DoCoMo, Ericsson, Fujitsu, Intel Corporation, KDDI, Mitsubishi Electric, NEC, Panasonic, Qualcomm, Sharp, Toshiba Corporation	8.4.1	(R1-060300)	Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062100	Orthogonal Reference Signal Design in E-UTRA Downlink	NTT DoCoMo, Fujitsu, KDDI, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.4.1		Not treated
R1-062101	Multiplexing Method for Orthogonal Reference Signals for E-UTRA Uplink	NTT DoCoMo, Ericsson, Fujitsu, KDDI, LG Electronics, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.4.2	(R1-061193)	Not treated
R1-062102	Orthogonal Reference Signal Structure for Uplink MIMO in E-UTRA	NTT DoCoMo, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.4.2	(R1-061191)	Not treated
R1-062103	Pilot Sequence Allocation Method in E-UTRA Uplink	NTT DoCoMo, Mitsubishi Electric, Panasonic, Sharp, Toshiba Corporation	8.4.2	(R1-061678)	Not treated
R1-062104	Group-wised Frequency Resource Allocation for Frequency Domain Channel-dependent Scheduling in SC-Based E-UTRA Uplink	NTT DoCoMo, Fujitsu, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.4.2		Not treated
R1-062105	Downlink MIMO scheme in E-UTRA	NTT DoCoMo, Fujitsu, Institute for Infocomm Research, Mitsubishi Electric, NEC, Sharp	8.5		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062106	Investigation on Optimum Number of Codewords for MIMO Multiplexing in E-UTRA Downlink	NTT DoCoMo, LG Electronics, Mitsubishi Electric, NEC, Sharp	8.5		Noted
R1-062107	Multi-Degree Cyclic Delay Diversity with Frequency-domain Channel Dependent Scheduling	NTT DoCoMo	8.5	(R1-060991)	Not treated
R1-062108	Low cost training for transmit antenna selection on the uplink	Mitsubishi Electric	8.5		Not treated
R1-062109	Comments on the proposals to modify HS-SCCH for VoIP	NEC Group	7.2	(R1-061302)	Noted
R1-062110	TP on Clarification for HS-SCCH less operation	NEC Group	7.2	(R1-061303)	Not treated
R1-062111	TP on Clarification for Restricted HS-SCCH operation	NEC Group	7.2	(R1-061304)	Not treated
R1-062112	TP on further simplification for Restricted HS-SCCH operation	NEC Group	7.2	(R1-061305)	Not treated
R1-062113	DC sub-carrier and reserved sub-carriers in EUTRA	NEC Group, NTT DoCoMo	8.2		Noted
R1-062114	25.214 CR0422 (Rel-6, F) "Clarification of E-DPDCH gain factor quantization"	NEC, Philips	5.4	R1-062404	Revised in R1-062404
R1-062115	25.214 CR0423 (Rel-7, A) "Clarification of E-DPDCH gain factor quantization"	NEC, Philips	5.4	R1-062405	Revised in R1-062405
R1-062116	25.202CR0001(Rel-7,B) "Introduction of E-DCH for 7.68Mcps TDD"	IPWireless	6.3		Agreed
R1-062117	Physical layer specification structure proposal	LTE Rapporteur, NTT DoCoMo	8.1		Agreed
R1-062118	Summary of e-mail discussion on channel coding	NTT DoCoMo	8.6		Noted
R1-062119	Cell search (timing) performance & complexity in large bandwidth system	NEC Group	8.3.2		Noted
R1-062120	Very Low Complexity Timing Cell Search	NEC Group	8.3.2		Revised in R1-062409
R1-062121	Reference signal multiplexing for EUTRA uplink	NEC Group, NTT DoCoMo	8.4.2		Not treated
R1-062122	Link Analysis of Multi-rank beamforming	NEC Group	8.5		Not treated
R1-062123	25.814 CR0007 (Rel-7, F) "LTE Uplink CP duration"	ZTE	8.2		Not treated
R1-062124	Uplink Numerology for E-UTRA	Huawei	8.2		Not treated
R1-062125	Synchronized Random Access Purpose and Structure	Huawei	8.3.1		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062126	BCH Location for E-UTRA Downlink	Huawei	8.3.3		Not treated
R1-062127	Uplink Reference Signal Structure for E-UTRA	Huawei	8.4.2		Not treated
R1-062128	Generalized construction of ZCZ-GCL random access preambles	Huawei	8.3.1		Noted
R1-062129	Non-hierarchical Cell Search with Symmetric and Periodic SCH Signals	Huawei	8.3.2		Noted
R1-062130	Additional Link-level Evaluations of Cell Search Times for Non-hierarchical and Hierarchical SCH Signals	Huawei	8.3.2		Noted
R1-062131	System-level evaluation of cell search times for non-hierarchical and hierarchical SCH signals	Huawei	8.3.2		Noted
R1-062132	DL reference symbols with varying positions in frequency - system-level evaluation	Huawei	8.4.1		Not treated
R1-062133	Reduction of Signalling for MIMO Precoding	Huawei	8.5		Not treated
R1-062134	Baseline uplink E-CQI message – content and size	Huawei	8.5		Not treated
R1-062135	Comparison of downlink transmit diversity schemes with inter-cell interference	Huawei	8.5		Noted
R1-062136	LDPC Codes supporting HARQ IR with low complexity	LG Electronics	8.6		Noted
R1-062137	The impact of TTI length, speed, feedback period and feedback delay on the performance of downlink closed loop schemes for 4-branch LTE	Nortel	8.2		Noted
R1-062138	Impact of TTI length on user plane latency	Nortel	8.2		Noted
R1-062139	On the signal structure for non synchronised RACH	Nortel	8.3.1		Not treated
R1-062140	SCH search performance with transmit diversity	Nortel	8.3.2		Not treated
R1-062141	BCH detection performance Evaluation	Nortel	8.3.3		Not treated
R1-062142	Discussion of pilot density for E-UTRA DL	Nortel	8.4.1		Not treated
R1-062143	Study of the feedback overhead on the performance of closed loop schemes for 4-branch LTE	Nortel	8.5		Not treated
R1-062144	Further UL multi-user MIMO performance	Nortel	8.7.2		Noted
R1-062145	DL adaptive MIMO performance Evaluation	Nortel	8.7.2		Noted
R1-062146	Performance of STBC-HARQ for E-UTRA DL with Multiple Re-transmissions	Nortel	8.7.2		Noted
R1-062147	Performance evaluation of downlink open loop schemes for 2 and 4-branch LTE	Nortel	8.7.2		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062148	Performance evaluation of downlink closed loop schemes for 4-branch LTE	Nortel	8.7.2		Not treated
R1-062149	Improvement of the performance of the open loop schemes by using sphere decoder as an efficient and moderate complexity receiver	Nortel	8.7.2		Not treated
R1-062150	Adaptive Fractional Frequency Re-use performance	Nortel	8.7.2		Noted
R1-062151	Further discussion on the numerology for dedicated broadcast service	Nortel, CMCC	8.7.3		Noted
R1-062152	Monitoring of HSUPA grant channels	Qualcomm Europe	7.2		Not treated
R1-062153	A network-oriented inter-block permutation to enhance Rel'6 channel coding throughput	HighDimension Ltd., France Telecom, Orange	8.6		Noted
R1-062154	Channel coding hardware complexity	HighDimension Ltd.	8.6		Not treated
R1-062155	Throughput, latency and complexity estimation for the turbo decoder	HighDimension Ltd.	8.6		Not treated
R1-062156	Comparison between the ARP and the inter-block permutation interleaver	HighDimension Ltd.	8.6		Not treated
R1-062157	System impact of Rel'6 turbo coding tail-bits removal	HighDimension Ltd.	8.6		Not treated
R1-062158	VoIP Performance Enhancements beyond CPC	InterDigital	7.3		Noted
R1-062159	Comparison of SCW and MCW for UL MIMO Using Precoding	InterDigital	8.5		Not treated
R1-062160	Uplink MIMO Precoding Using Differential Feedback	InterDigital	8.5		Not treated
R1-062161	PAPR Considerations for UL MIMO Using Precoding	InterDigital	8.5		Not treated
R1-062162	Uplink SDMA-MU-MIMO using Precoding for E-UTRA	InterDigital	8.5		Not treated
R1-062163	Unified Precoder Architecture for LTE Downlink MIMO	InterDigital	8.5		Not treated
R1-062164	Channel Structure and Hybrid Detection for E-UTRA Cell Search	InterDigital	8.3.2		Not treated
R1-062165	LCR TDD: Structure and Coding for E-AGCH and E-PUCH	ZTE	6.1		Revised in R1-062400
R1-062166	20ms TTI Co-existence with 5ms TTI for E-DCH of LCR TDD	ZTE	6.1		Noted

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R1-062167	LCR TDD: Non-Scheduled Traffic and Scheduled Traffic Transmissions	ZTE	6.1		Noted
~~R1-062168~~	~~Random Access for 1.28Mcps TDD-Enhanced Uplink~~	~~ZTE~~	~~6.4~~		Withdrawn
R1-062169	Extension of UTRA turbo channel coding for rates less than 1/3	Fujitsu	8.6		Noted
R1-062170	Phase Adjustment Methods of Rotational CDM	KDDI, NTT DoCoMo	8.7.2		Not treated
R1-062171	L1/L2 Control Channel Structure with CDM Based Multiplexing in E-UTRA Downlink	KDDI, NTT DoCoMo	8.7.2		Not treated
R1-062172	Performance comparisons of open-loop transmit diversity techniques for four transmit antennas	Institute for Infocomm Research, NTT DoCoMo	8.5		Noted
R1-062173	Impact of resource block size on downlink VoIP performance	Panasonic, NTT DoCoMo	8.2		Noted
R1-062174	Random access sequence comparison for E-UTRA	Panasonic, NTT DoCoMo	8.3.1		Not treated
R1-062175	Random access burst design for E-UTRA	Panasonic, NTT DoCoMo	8.3.1		Noted
R1-062176	Collision probability analysis of RACH with control information	Panasonic, NTT DoCoMo	8.3.1		Not treated
R1-062177	Discussion on MIMO Codeword	Panasonic	8.5		Noted
R1-062178	Discussion on MIMO feedback	Panasonic	8.5		Not treated
R1-062179	VoIP System Performance for E-UTRA Downlink - Additional Results	Panasonic	8.7.1		Noted
~~R1-062180~~	~~System Level Simulation Results for Uplink semi-static inter-cell interference coordination Case of Macro Cells~~	~~Panasonic~~	~~8.7.2~~		Withdrawn
R1-062181	E-UTRA Initial Cell-Search: Performance of Blind Cell-ID Detection with Cell Common PSC Vs Coherent Cell-ID Detection with Sector Specific PSC	Freescale Semiconductor	8.3.2		Not treated
~~R1-062182~~	~~Downlink Interference Avoidance and Optimum Resource Allocation~~	~~Freescale Semiconductor~~	~~8.7.2~~		Withdrawn
R1-062183	Performance evaluation of uplink interference avoidance techniques	Freescale Semiconductor	8.7.2	R1-062417	Revised in R1-062183

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062184	Link performance of codebook based precoded MIMO transmission schemes	Freescale Semiconductor	8.5		Not treated
~~R1-062185~~	~~System performance of codebook based precoded MIMO transmission~~	~~Freescale Semiconductor~~	~~8.5~~		Withdrawn
R1-062186	Spectral Mask Issues for the LTE Uplink	Freescale Semiconductor	8.2		Noted
~~R1-062187~~	~~Dynamic Range Reduction Techniques and the Uplink Pilot Channel~~	~~Freescale Semiconductor~~	~~8.4.2~~		Withdrawn
R1-062188	Initial cell search and long-CP sub-frame structure	Fujitsu	8.3.2		Not treated
R1-062189	Frequency Domain Adaptive Precoding for E-UTRA MIMO	Motorola	8.5		Not treated
R1-062190	Interference and Open Loop Transmit Diversity Reception	Motorola	8.5		Noted
R1-062191	Diversity schemes for BCH	Toshiba Corporation	8.3.3		Not treated
R1-062192	Consideration on transmit diversity in E-UTRA uplink	Toshiba Corporation	8.5		Not treated
R1-062193	Simulation results of SNR distribution for SFN channel model	Toshiba Corporation	8.7.3		Not treated
R1-062194	Further Study on Reference Signal Structure for MBMS	Toshiba Corporation	8.7.3	= R1-061855	Not treated
R1-062195	Partition Rule for Distributed Multiplexing in E-UTRA Downlink	ITRI	8.2		Not treated
R1-062196	Simultaneous Transmit Diversity and Spatial Multiplexing for E-UTRA Uplink Multiuser MIMO	ITRI	8.5		Not treated
R1-062197	Initial cell search performance comparison of one-SCH and two-SCH schemes with frequency offsets	ETRI	8.3.2		Noted
R1-062198	Handover cell search performance comparison of one-SCH and two-SCH schemes	ETRI	8.3.2		Noted
R1-062199	Broadcast Channel Structure for Downlink E-UTRA	ETRI	8.3.3		Not treated
R1-062200	Performance Comparison of BCH Soft-Combining Reception Schemes	ETRI	8.3.3		Not treated
R1-062201	Considerations on physical layer Parameters of MBMS on Dedicated Carrier	ZTE, China Mobile	8.7.3		Noted
R1-062202	non-synchronized random access repetition and extension	ZTE	8.3.1		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062203	Reference signal sequence design for ETURA downlink	ZTE,RITT	8.4.1	= R1-061760	Not treated
R1-062204	The New Sub-Frame Structure for EUTRA Uplink	ZTE	8.2		Not treated
R1-062205	Hierarchical Cell Search for E-UTRA	ZTE	8.3.2		Not treated
R1-062206	Further Consideration on the Size of Physical Resource Block in EUTRA	ZTE	8.2		Noted
R1-062207	Uplink numerology refinement, CP duration	ZTE	8.2		Not treated
R1-062208	Performance Evaluation of Codebook-based Precoding	ZTE	8.5		Not treated
R1-062209	Design of the occupied sub-carrier number for E-UTRA	ZTE	8.2		Noted
R1-062210	Further clarification to the complexity comparison between high speed parallel turbo and LDPC codes	ZTE	8.6		Noted
R1-062211	Uplink Reference Design: Considering Reference Power Boost, Channel Measurement and Interference Mitigation	ZTE	8.4.2	= R1-061762	Not treated
R1-062212	Uplink ACK/NACK signalling considerations in relation to TTI length	Samsung	8.2		Noted
R1-062213	Performance of DL distributed transmission	Samsung	8.2		Not treated
R1-062214	Distributed transmission on DL: subcarrier-wise vs RB-wise	Samsung	8.2		Not treated
R1-062215	Synchronized Random Access Design for E-UTRA	Samsung	8.3.1		Not treated
R1-062216	Cell search procedure and channel structure	Samsung	8.3.2		Not treated
R1-062217	SCH structure considering EUTRA spectrum allocation	Samsung	8.3.2		Noted
R1-062218	BCH time-frequency structure	Samsung	8.3.3		Not treated
R1-062219	System information transmission and reception	Samsung	8.3.3		Not treated
R1-062220	DL reference signal structure: common vs dedicated	Samsung	8.4.1		Not treated
R1-062221	Downlink reference signal: time-frequency averaging/interpolation	Samsung	8.4.1		Not treated
R1-062222	Downlink reference signal: consideration on the control signaling	Samsung	8.4.1		Not treated
R1-062223	DL reference signals of the intra Node B cells: CDM vs FDM	Samsung	8.4.1		Noted
R1-062224	Uplink reference signal structure	Samsung	8.4.2		Withdrawn

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062225	Summary of LTE MIMO email discussion	Samsung	8.5		Noted
R1-062226	Transmit diversity performance of CDD and block codes	Samsung	8.5		Noted
R1-062227	Link performance of SCW and MCW MIMO	Samsung	8.5		Noted
R1-062228	Dynamic Mode Switching between Single and Multi-User MIMO	Samsung	8.5		Noted
R1-062229	Performance Comparison of Unitary vs. Non-Unitary Precoding	Samsung	8.5		Noted
R1-062230	LTE UL VoIP capacity	Samsung	8.7.1		Noted
R1-062231	LTE DL VoIP capacity	Samsung	8.7.1		Noted
R1-062232	Unicast/MBMS Superposition and Interference Cancellation: Link Performance with Realistic Channel Estimation	Samsung	8.7.2		Noted
R1-062233	System Performance of Unicast/MBMS Superposition and Interference Cancellation	Samsung	8.7.2		Noted
R1-062234	Draft CR to TR 25.912 on the MBMS/Unicast Superposition and Interference Cancellation	Samsung	8.7.2		Noted
R1-062235	DL system level performance results for LTE target fulfillment	Samsung	8.7.1	R1-062399	Revised in R1-062399
R1-062236	Improving Efficiency of MBMS by Inter-Cell Interference Coordination	Samsung	8.7.3		Not treated
R1-062237	Physical Channel for Timing Synchronization	Mitsubishi Electric	8.3.1		Not treated
R1-062238	Concerns about Rel-6 Turbo decoder complexity for LTE	Mitsubishi Electric, ITRI, ZTE	8.6		Noted
R1-062239	Issues for channel coding	Mitsubishi Electric	8.6		Noted
R1-062240	Performance improvement of the rate-compatible LDPC codes	Mitsubishi Electric	8.6		Noted
R1-062241	Ordered transmission scheme for LDPC-coded symbols	Mitsubishi Electric	8.6	= R1-061813	Noted
R1-062242	Way forward on Continuous Connectivity for Packet Data Users	Siemens	7.2		Noted
R1-062243	Proposed solution for WI Continuous Connectivity for Packet Data Users	Siemens	7.2		Noted
R1-062244	Further discussion on delay enhancements in Rel7	Nokia	5.6		Noted
R1-062245	Impact of D-TxAA to TS25.214	Nokia	7.1		Noted
R1-062246	Signalling needs for MIMO in UTRA	Nokia	7.1		Noted
R1-062247	Uplink DPCCH gating, general description	Nokia	7.2		Withdrawn

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062248	Further link simulation results for UL DPCCH gating, HARQ off	Nokia	7.2		Noted
R1-062249	Further link simulation results for UL DPCCH gating, HARQ on	Nokia	7.2		Noted
~~R1-062250~~	~~Uplink DPCCH gating performance with different gating patterns~~	~~Nokia~~	~~7.2~~		Withdrawn
R1-062251	HSDPA VoIP capacity	Nokia	7.2		Noted
R1-062252	On HS-SCCH-less HSDPA operation	Nokia	7.2		Noted
R1-062253	Hybrid Method for SCH Symbol Timing Detection for E-UTRA Cell Search	Sharp	8.3.2	(R1-061682)	Noted
R1-062254	Sector allocated SCH Structure in E-UTRA synchronized networks	Sharp	8.3.2		Not treated
R1-062255	Improved Performance of the Cyclic Shift Diversity Scheme in the E-UTRA Downlink	Sharp	8.5		Noted
R1-062256	Improved Multi-cell MBMS performance using the Cyclic Shift Diversity sub-carrier grouping Method	Sharp	8.7.3		Not treated
R1-062257	Short UE Identity for Downlink Scheduling Information	Sharp	8.8	(R1-061684)	Noted
R1-062258	Performance of 4 Tx antenna operation in UTRA MIMO	Ericsson	7.1		Noted
R1-062259	On UTRA MIMO	Ericsson	7.1		Noted
R1-062260	TP for Additional UL DPCCH Gating Link-Level Performance Results	Ericsson	7.2		Agreed
R1-062261	TP for UL DPCCH Gating High-Velocity System-Level Performance	Ericsson	7.2		Agreed
R1-062262	UL DPCCH Gating - Further Results on Impact of Gap Length	Ericsson	7.2		Noted
R1-062263	Reduced HS-SCCH - DL VoIP Capacity Gain	Ericsson	7.2		Noted
R1-062264	64QAM for HSDPA - Link-Level Simulation Results	Ericsson	7.3		Noted
R1-062265	64QAM for HSDPA - System-Level Simulation Results	Ericsson	7.3		Noted
R1-062266	16QAM for HSUPA - Link-Level Simulation Results	Ericsson	7.3		Noted
R1-062267	16QAM for HSUPA - System-Level Simulation Results	Ericsson	7.3		Noted
R1-062268	Dedicated MBMS Carrier Using Common Transmitted Waveforms	Ericsson	7.3		Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062269	TTI length	Ericsson	8.2		Noted
R1-062270	Resource block size	Ericsson	8.2		Noted
R1-062271	Reserved sub-carriers for LTE	Ericsson	8.2		Noted
R1-062272	DC carrier	Ericsson	8.2		Noted
R1-062273	Link Budgets for E-UTRA	Ericsson	8.2		Noted
R1-062274	E-UTRA Scalability of Random Access Preamble with cyclic prefix	Ericsson	8.3.1		Noted
R1-062275	Comparison of Zadoff-Chu and Zero Correlation Zone Codes for E-UTRA RACH	Ericsson	8.3.1		Not treated
R1-062276	Hierarchical vs. Non-Hierarchical Cell Search	Ericsson	8.3.2		Not treated
R1-062277	Downlink reference signal structure	Ericsson	8.4.1		Not treated
R1-062278	E-UTRA Incremental CQI Reporting Using DCT Coding	Ericsson	8.5		Not treated
R1-062279	Multi antenna transmission scheme for common control channels	Ericsson	8.5		Noted
R1-062280	LTE Channel Coding	Ericsson	8.6		Noted
R1-062281	25.814 CR0008 (Rel-7, F) "Inclusion of Beamforming Results"	Ericsson	8.7.1	R1-062413	Revised in R1-062413
R1-062282	Schedule single vs. multiple beams per frame for E-UTRA	Ericsson	8.7.2		Noted
R1-062283	L1 Multiplexing in E-UTRA Downlink	Ericsson	8.8		Noted
R1-062284	System level comparison between MIMO and slow beamforming in OFDM DL for the installed 2x2 multi-antenna systems	Ericsson	8.5		Not treated
R1-062285	RB-level Distributed Transmission Method for Shared Data Channel in E-UTRA Downlink	NTT DoCoMo, Fujitsu, KDDI, Mitsubishi Electric, NEC, Panasonic, Sharp, Toshiba Corporation	8.2		Not treated
R1-062286	Persistent Scheduling for E-UTRA	NTT DoCoMo, NEC, Sharp	8.3		Not treated
R1-062287	Closed Loop-based Antenna Switching Transmit Diversity for E-UTRA Uplink	NTT DoCoMo, Institute for Infocomm Research, NEC, Panasonic, Sharp	8.5		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062288	Performance Comparison between Turbo Code and LDPC Code for Shared Data Channel in E-UTRA Downlink	NTT DoCoMo, NEC, Toshiba Corporation	8.6	(R1-060037)	Revised in R1-062410
R1-062289	Hierarchical Cell-Search and SCH design	ITRI	8.3.2		Not treated
R1-062290	Further consideration on the downlink reference symbols of beam-forming for EUTRA TDD	CATT	8.5		Not treated
R1-062291	Non-codebook based pre-coding for E-UTRA TDD Downlink	CATT	8.5		Not treated
R1-062292	Downlink reference signal aspects for non-codebook based pre-coding in TDD mode	CATT	8.5		Not treated
R1-062293	On the preamble sequence design for non-synchronized RACH for E-UTRA TDD	CATT, RITT	8.3.1		Revised in R1-062430
R1-062294	Consideration on the non-synchronized random access procedure for EUTRA TDD	CATT, Huawei, ZTE, RITT	8.3.1		Not treated
R1-062295	Transmit diversity schemes for E-UTRA SCH	CATT	8.3.2		Not treated
R1-062296	Hybrid SCH symbol timing detection for cell search	CATT	8.3.2		Noted
R1-062297	SCH Structure and Cell Search Method for E-UTRA TDD system	CATT	8.3.2		Not treated
R1-062298	Hierarchical MIMO scheme for E-MBMS	CATT	8.5		Not treated
R1-062299	EUTRA SC-FDMA Uplink Reference Signal Design	CATT	8.4.2		Not treated
R1-062300	The downlink reference symbols design for EUTRA TDD	CATT	8.4.1		Not treated
R1-062301	Optimum combination of IF-coordination and cancellation	Siemens	8.7.2		Noted
R1-062302	Time varying CDD/CSD	Siemens	8.5		Noted
R1-062303	Frequency hopping in uplink localized transmission	LG Electronics	8.2		Not treated
R1-062304	Coverage enhancement by extended Tx time duration	LG Electronics	8.2		Noted
R1-062305	Localized and distributed SC-FDMA transmission in uplink	LG Electronics	8.2		Not treated
R1-062306	RACH Sequence Extension Methods for Large Cell Deployment	LG Electronics	8.3.1		Not treated
R1-062307	RACH Design for Large Cell Deployment	LG Electronics	8.3.1		Not treated
R1-062308	SCH Structure for Cell Search in E-UTRA	LG Electronics	8.3.2		Not treated
R1-062309	SCH/BCH time structure	LG Electronics	8.3.2		Not treated

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062310	Soft-combined synchronous PCH transmission	LG Electronics	8.3.4		Not treated
R1-062311	LGE's views on the various aspects of downlink reference signal design	LG Electronics	8.4.1		Not treated
R1-062312	Performance comparison between CDM and FDM pilot for SC-FDMA	LG Electronics	8.4.2		Not treated
R1-062313	Uplink reference signal for channel quality measurement	LG Electronics	8.4.2		Not treated
R1-062314	Generalized CDD scheme for E-UTRA downlink MIMO	LG Electronics	8.5		Not treated
R1-062315	Generalized CDD Scheme with Channel Dependent Scheduling	LG Electronics	8.5		Not treated
R1-062316	Precoding scheme for 2 tx antenna system	LG Electronics	8.5		Not treated
R1-062317	Precoding scheme with ACDD for 2tx and rank 1	LG Electronics	8.5		Not treated
R1-062318	Uplink resource request for uplink scheduling	LG Electronics	8.3		Not treated
R1-062319	Uplink DPCCCH Gating with Long Gating Gap and Text Proposal	Huawei, Qualcomm Europe	7.2	R1-062423	Revised in R1-062423
R1-062320	Link Simulations on Uplink DPCCCH Gating with Long Gating Gap	Huawei	7.2		Agreed with addition of some sentences
~~R1-062321~~	~~Random access contention resolution~~	~~Samsung~~	~~8.3.1~~		Withdrawn
R1-062322	Downlink Distributed Resource Block Mapping	NEC Group, NTT DoCoMo	8.2		Not treated
~~R1-062323~~	~~25.814 CR0009 (Rel 7, F) "Generalized CDD scheme for E-UTRA downlink MIMO"~~	~~LG Electronics~~	~~8.5~~		Withdrawn
R1-062324	A Proposal for an Improved DL Reference Symbol Positioning in EUTRA	Alcatel	8.4.1		Not treated
R1-062325	Considerations on the EUTRA DL reference signal structure and the DC sub-carrier	Alcatel	8.4.1		Not treated
R1-062326	Comparison of transmit diversity schemes for E-UTRA	Alcatel	8.5		Not treated
R1-062327	TR 25.827 v0.0.1	CATT	6.1		Endorsed as version 0.1.0 in R1-062432
R1-062328	Signaling Information for Node-B Controlled Uplink Scheduling and Text Proposal for TR 25.827	CATT	6.1	R1-062419	Revised in R1-062419
R1-062329	HARQ timing aspects for 1.28Mcps TDD Enhanced Uplink	CATT	6.1		Noted
R1-062330	LCR TDD: Structure and Coding for E-RUCCH	CATT	6.1		TP was agreed
R1-062331	LCR TDD: Structure and Coding for E-AGCH and E-HICH	CATT	6.1		Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062332	Text Proposal about E-AGCH for TR 25.827	CATT	6.1	R1-062418	Revised in R1-062418
R1-062333	Text Proposal about E-HICH for TR 25.827	CATT	6.1		Noted
R1-062334	LCR TDD: Physical channel structure for E-PUCH	CATT	6.1		TP was agreed
~~R1-062335~~	~~Transport Block Sizes for LCR TDD EUL~~	~~CATT~~	~~6.4~~		~~Withdrawn~~
R1-062336	Random access for 1.28Mcps TDD Enhanced Uplink	CATT, ZTE	6.1		TP was agreed
R1-062337	Uplink Control Signalling for 1.28Mcps TDD Enhanced Uplink	CATT	6.1		Revised in R1-062433
R1-062338	Power control for 1.28Mcps TDD Enhanced Uplink	CATT	6.1		Noted
R1-062339	LTE TTI Length	Siemens	8.2		Revised in R1-062428
R1-062340	LTE Resource Block size	Siemens	8.2		Noted
R1-062341	SCH design	Siemens	8.3.2		Not treated
R1-062342	Consideration on random access processing for 1.28Mcps TDD EUL	TD Tech	6.1		Noted
R1-062343	HARQ timing aspects for 1.28Mcps TDD Enhanced Uplink	TD Tech	6.1		Noted
R1-062344	Text Proposal for E-PUCH structure	TD Tech	6.1		Noted
R1-062345	Proposal for E-RUCCH structure and coding for 1.28Mcps TDD EUL	TD Tech	6.1		Noted
~~R1-062346~~	~~DL long CP subframe~~	~~Fujitsu~~	~~8.2~~		~~Withdrawn~~
R1-062347	UL sub-frame format for long CP	Nokia	8.2		Not treated
R1-062348	Considerations for physical resource block (PRB) size	Nokia	8.2		Noted
R1-062349	Random Access Design for E-UTRA TDD	Nokia, CATT	8.3.1		Revised in R1-062401
R1-062350	Hierarchical Cell Search Performance	Nokia	8.3.2	= R1-061902	Not treated
R1-062351	Cell Search for E-UTRA TDD	Nokia	8.3.2		Not treated
R1-062352	Broadcast Channel (BCH) structure and performance	Nokia	8.3.3		Not treated
R1-062353	UL reference signal structure	Nokia	8.4.2		Not treated
R1-062354	UL MIMO reference signal structure	Nokia	8.4.2		Not treated
R1-062355	Linear Precoding for single stream transmission from 2TX antennas	Nokia	8.5		Not treated
R1-062356	On 2 Antenna Open Loop DL Transmit Diversity	Nokia	8.5	= R1-061245	Noted
R1-062357	On 4 Antenna Open Loop DL Transmit Diversity	Nokia	8.5		Noted
R1-062358	Updated Downlink LTE Evaluation Results	Nokia	8.7.1	(R1-061911)	Noted
R1-062359	Size of UE ID for resource grant	Nokia	8.8		Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062360	Analysis of 1.25 MHz E-UTRA BS spectrum shaping requirements	Nokia	8.2	= R4-060742	Noted
R1-062361	Analysis of 2.5 MHz E-UTRA BS spectrum shaping requirements	Nokia	8.2	= R4-060743	Noted
R1-062362	Analysis of 5 MHz E-UTRA BS spectrum shaping requirements	Nokia	8.2	= R4-060744	Noted
R1-062363	Analysis of 10 MHz E-UTRA BS spectrum shaping requirements	Nokia	8.2	= R4-060745	Noted
R1-062364	Considerations regarding specification of E-UTRA BS spectrum shaping	Nokia	8.2	= R4-060746	Noted
R1-062365	Comparison of efficiency of DL Interference Coordination schemes and view on measurements on intra-frequency neighbour cells	Alcatel	8.3.3		Not treated
R1-062366	MIMO resource definition for E-UTRA	Philips, Ericsson	8.5		Not treated
R1-062367	Impacts on channel estimation of Resource-Block Mapping of Distributed Transmissions in E-UTRA Downlink	Philips	8.2		Not treated
R1-062368	MIMO Performance using STTCC for E-UTRA Downlink	Philips	8.5		Noted
R1-062369	UE-specific idle period for half-duplex communications	Mitsubishi Electric, IPWireless	8.7.2		Noted
R1-062370	Adaptive Control of Roll-off Factor for SC-FDMA	Siemens	8.7.2		Not treated
R1-062371	Discussion on UL pilot structure	Nortel	8.4.2		Not treated
R1-062372	Considerations on E-UTRA Uplink Time Synchronization	Siemens	8.3.1		Not treated
R1-062373	System Level Analysis of E-UTRA DL VoIP Capacity	Siemens	8.7.1		Noted
R1-062374	LTE Interference Coordination - Downlink System Simulation Results	Siemens	8.7.2		Noted
R1-062375	Downlink Interference Coordination	Siemens	8.7.2		Noted
R1-062376	LTE BCH - performance analysis	IPWireless	8.3.3		Not treated
R1-062377	Benefits Arising from Network Synchronisation	IPWireless, Orange	8.7.3		Noted
R1-062378	Frame structure for E-UTRA TDD mode	IPWireless	8.2		Not treated
R1-062379	Physical Layer Improvements for TDD MBMS	IPWireless	7.3		Noted
R1-062380	DL VoIP capacity for regular HS-SCCH operation, HS-SCCH less operation and restricted HS-SCCH format	Lucent Technologies	7.2		Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062381	Restricted HS-SCCH operation to optimize VoIP over HSDPA	Lucent Technologies	7.2		Noted
R1-062382	Text Proposal for Restricted HS-SCCH operation	Lucent Technologies	7.2		Agreed
R1-062383	On simulation parameters for comparison of DL VoIP capacity	Lucent Technologies	7.2		Noted
R1-062384	UL VoIP capacity: SIR Target Reduction vs. DPCCH gating	Lucent Technologies	7.2		Noted
R1-062385	Considerations for a simple CPC uplink design	Lucent Technologies	7.2		Noted
R1-062386	On the number of used subcarriers for 5 MHz E-UTRA	Lucent Technologies	8.2		Revised in R1-062429
R1-062387	RACH in support of high speed UEs	Lucent Technologies	8.3.1		Not treated
R1-062388	CAZAC Reference Signals for SC-FDMA	Lucent Technologies	8.4.2		Not treated
R1-062389	Reference signals when no data is transmitted in uplink	Lucent Technologies	8.4.2		Not treated
R1-062390	MIMO for E-MBMS in 5MHz LTE	Lucent Technologies, China Mobile	8.7.3		Not treated
R1-062391	On a link-level channel model for SFN systems	Lucent Technologies	8.7.3		Not treated
R1-062392	Issues with Replicating Turbo Decoders	Motorola	8.6		Noted
R1-062393	Generic Processing Chain for E-UTRA MIMO-OFDM Proposals	Alcatel, BenQ Mobile, Elektrobit, Ericsson, France Telecom, Siemens, Telefonica, Lucent	8.5		Not treated
R1-062394	DL long-CP subframe	Fujitsu	8.2		Not treated
R1-062395	Uplink DPCCH and HS-SCCH gating, general description	Nokia, Ericsson, Qualcomm Europe	7.2	(R1-062247)	Noted
R1-062396	LS to RAN WG1 & WG4 Clarification of power control behaviour with HS-DPCCH (To RAN1, RAN4)	RAN WG5, Agilent	4	= R5-052455	Noted
R1-062397	Initial characterization of E-UTRA DL VoIP capacity	Qualcomm Europe	8.7.1	(R1-062046)	Noted

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062398	Throughput Evaluation with MIMO and Interference Co-Ordination in EUTRA Downlink	Texas Instruments	8.7.2	(R1-062017)	Noted
R1-062399	DL system level performance results for LTE target fulfillment	Samsung	8.7.1	(R1-062235)	Noted
R1-062400	LCR TDD: Structure and Coding for E-AGCH and E-PUCH	ZTE	6.1	(R1-062165)	Noted
R1-062401	Random Access Design for E-UTRA TDD	Nokia, CATT	8.3.1	R1-062349	Not treated
R1-062402	Cell Search for E-UTRA TDD	Nokia, CATT	8.3.2	R1-062351	Not treated
R1-062403	[Draft] Reply LS on Clarification of power control behaviour with HS-DPCCH	Philips, Motorola, Nokia, Panasonic	4		Approved in R1-062447
R1-062404	25.214 CR0422r1 (Rel-6, F) "Clarification of E-DPDCH gain factor quantization"	NEC, Philips, Panasonic	5.4	(R1-062114)	Agreed
R1-062405	25.214 CR0423r1 (Rel-7, A) "Clarification of E-DPDCH gain factor quantization"	NEC, Philips, Panasonic	5.4	(R1-062115)	Agreed
R1-062406	HS-DPCCH in support of D-TxAA (Power Point version of R1-062031)	Qualcomm Europe	7.1		Noted
R1-062407	HS-SCCH in support of D-TxAA (Power Point version of R1-062032)	Qualcomm Europe	7.1		Noted
R1-062408	Correction to Coding of PLCCH including CR to TS25.222	IPWireless	5.5	(R1-061974)	CR was agreed
R1-062409	Very Low Complexity Timing Cell Search	NEC Group	8.3.2	(R1-062120)	Noted
R1-062410	Performance Comparison between Turbo Code and LDPC Code for Shared Data Channel in E-UTRA Downlink	NTT DoCoMo, NEC, Toshiba Corporation	8.6	(R1-062288)	Noted
R1-062411	3G Long-Term Evolution Building Blocks Description Sheet	NTT DoCoMo, et al.	8.1	(R1-061946)	Endorsed
R1-062412	25.814 CR0004 r1 (Rel-7, F) "DL and UL VoIP capacity characterization for E-UTRA"	Qualcomm Europe	8.7.1	(R1-062054)	Agreed
R1-062413	25.814 CR0008 (Rel-7, F) "Inclusion of Beamforming Results"	Ericsson	8.7.1	(R1-062281)	Agreed
R1-062414	TR 25.826 v.1.2.1	IPWireless	6.2		Endorsed. Sent to RAN#33
R1-062415	Reply LS on feedback regarding the concepts for "Continuous connectivity for packet data users" (To: RAN1, Cc: RAN2, RAN4)	RAN WG3, Nokia	4	= R3-061282	Noted
R1-062416	Frequency selective scheduling performance with 30 subcarrier RB size.	Motorola	8.2		Not treated
R1-062417	Performance evaluation of uplink interference avoidance techniques	Freescale Semiconductor	8.7.2	(R1-062183)	Noted

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NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062418	Text Proposal about E-AGCH for TR 25.827	CATT	6.1	(R1-062332)	Agreed
R1-062419	Signaling Information for Node-B Controlled Uplink Scheduling and Text Proposal for TR 25.827	CATT	6.1	(R1-062328)	Agreed
R1-062420	Summary of 1.28 Mcps TDD Uplink Enhancement	Ad Hoc Chairman	6.1		Endorsed
R1-062421	TP on reduced complexity HS-SCCH-less operation	Qualcomm Europe	7.2		Agreed
R1-062422	Improving VoIP performance for HSDPA by reduced HS-SCCH or by in-band control signaling with grouping	Motorola	7.2	(R1-061994)	Noted
R1-062423	Uplink DPCCH Gating with Long Gating Gap and Text Proposal	Huawei, Qualcomm Europe, Ericsson	7.2	(R1-062319)	Agreed
R1-062424	25.814 CR0003r1(Rel-7, F) "DL MIMO evaluation"	Qualcomm Europe	8.7.2	(R1-062053)	Agreed
R1-062425	Summary of downlink enhancement techniques over baseline LTE unicast performance	Vodafone, Orange	8.7.2		Agreed
R1-062426	LS on spectral emissions mask and coexistence (To: RAN1, Cc: RAN)	RAN WG4, Motorola	4		Noted
R1-062427	Summary of Discussion on additional enhancement technique	Ad Hoc Chairman	8.7.2		Endorsed
R1-062428	LTE TTI Length	Siemens	8.2	(R1-062339)	Noted
R1-062429	On the number of used subcarriers for 5 MHz E-UTRA	Lucent Technologies	8.2	(R1-062386)	Noted
R1-062430	On the preamble sequence design for non-synchronized RACH for E-UTRA TDD	CATT, RITT	8.3.1	(R1-062293)	Not treated
R1-062431	Draft LS on RAN1 decisions for "Continuous Connectivity for packet data users"	Siemens, Nokia, Ericsson, Qualcomm, Philips	7.2		Agreed in R1-062445
R1-062432	TR 25.827 v0.1.0	CATT	6.1		Endorsed version
R1-062433	TP on Uplink Control Signalling for 1.28Mcps TDD Enhanced Uplink	CATT	6.1		Agreed
R1-062434	LS on Random-Access Related Issues in E-UTRAN (To: RAN1)	RAN WG2, Ericsson	4		Noted
R1-062435	Summary of LTE MIMO session	LTE MIMO session chairman	8.5		Endorsed
R1-062436	Draft LS on LTE SI Conclusions	NTT DoCoMo...	8.7.2		Approved in R1-062443 with modification

NUMBER	TITLE	SOURCE	AGENDA ITEM	REVISED BY (From)	Conclusion
R1-062437	Agreements on details in support of MIMO (FDD) for Rel-7	Philips, Qualcomm, Nortel, Ericsson, Motorola, TI, Lucent, Nokia, T Mobile, ArrayComm	7.1		Agreements were endorsed
R1-062438	[DRAFT] LS on UE ID for resource assignment	Ericsson	8.8		Approved in R1-062446
R1-062439	25.814 CR 0010 (Rel-7, F) "Summary of downlink enhancement techniques over reference LTE unicast performance"	Vodafone	8.7.2	R1-062442	Revised in R1-062442
R1-062440	Open issues on details in support of MIMO (FDD) for Rel-7	Qualcomm	7.1		Noted
R1-062441	E-UTRA TTI Way Forward	Ericsson, Nokia, Motorola, Qualcomm Europe, Samsung, Nortel, Siemens, LG Electronics, Lucent	8.2		Agreed
R1-062442	25.814 CR 0010r1(Rel-7, F) "Summary of downlink enhancement techniques over reference LTE unicast performance"	Vodafone	8.7.2	(R1-062439)	Agreed
R1-062443	LS on LTE SI Conclusions	RAN WG1	4		Approved version
R1-062444	TR25.903 v1.0.1	Editor, Siemens	7.2		Endorsed as v1.1.0 in R1-062451
R1-062445	LS on RAN1 decisions for "Continuous Connectivity for packet data users"	RAN WG1	4		Approved version
R1-062446	LS on UE ID for resource assignment	RAN WG1	4		Approved version
R1-062447	Reply LS on Clarification of power control behaviour with HS-DPCCH	RAN WG1	4		Approved version
R1-062448	Approved Report of RAN1#45	MCC	3		Approved version
R1-062449	Approved Report of RAN1 LTE Ad Hoc	MCC	3		Approved version
R1-062450	Approved Report of RAN1/RAN2 Joint Session	MCC	3		Approved version
R1-062451	TR25.903 v1.1.0	Editor, Siemens	7.2		Endorsed version

Annex F: List of actions

1. MIMO Rel-7 E-mail discussion based on R1-062440
2. SCH e-mail discussion for further issues to decide next
 - signals provided by the system for non-initial cell search
 - supported number of cell ids (as input sequence discussion)
 - WCDMA: 512 cell ids (indicated through the primary scrambling code on P-CPICH)
 - Should we assume same number of cell ids for LTE as in WCDMA?
 - multiplexing of P-SCH and S-SCH
 - signals/sequences for P-SCH, S-SCH
3. Uplink reference signal: Discuss need for Distributed transmission in uplink during email discussions.