

3GPP TSG RAN WG1 Meeting #51 Jeju, South Korea, 5 – 11 November, 2007

R1-075054

Agenda item 3
Title: Report of 3GPP TSG RAN WG1 #50b v1.0.0
 (Shanghai, China, 8 – 12 October, 2007)
Document for: Approval
Source: MCC Support



Fact Summary

Meeting: 3GPP TSG RAN WG1 #50b
Dates: 8th through 12th October, 2007
Venue: Purple Mountain Hotel, Shanghai, CHINA
Host: Chinese Friends of 3GPP
Attendees: 179 delegates
Documents: 628 (including some withdrawn and post-meeting artefacts)

Patrick Mérias
ETSI Mobile Competence Center
F-06921 Sophia Antipolis Cedex
Tel: +33 4 92 94 42 06

Patrick.merias@etsi.org

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Executive summary

3GPP TSG WG RAN1 #50b meeting took place in Purple Mountain Hotel, Shanghai, CHINA.

The meeting started at 9:20 on Monday 8th October and finished at 16:30 on Friday 12th October 2007.

The week was scheduled as follows:

- Monday: Common session on Agenda items 1, 2, 3 and 4 – Parallel session (from the morning coffee break) for Agenda items 5, 7, 8, 9 and 10 chaired by Dirk Gerstenberger and discussions on 6.4.5 chaired by Juho Lee.
- Tuesday: Agenda items 6.1, 6.3, 6.4.2, 6.4.3 and 6.5.
- Wednesday: Agenda items 6.2.3 and 6.2.5 – Parallel session (from 5:30PM) for 6.2.7 and continuing discussions on 6.2.3 (chaired by Stefan Parkvall)
- Thursday: 8:00-9:30AM Continuing discussions on CQI (6.4.5 chaired by Juho Lee) – Parallel session for Agenda item 6.2.4 and continuing discussions on Power Control (6.4.2 chaired by Asbjörn Grovlen) – Common session on Agenda items 6.2.1, 6.2.2 and 6.2.6.
- Friday: Review of the parallel sessions results on CQI and Power Control. Agenda items 6.6, 6.4.1, 6.4.4 and 6.4.6.

The list of action points that required RAN1 close follow-up is listed in Annex F (end of document).

The number of contribution documents for this meeting was 602, and those documents were categorized as followed.

Agenda Item	Input Document	Discussed Document
Liaison statement handling	10	10
Maintenance of R99, Rel4, Rel5, Rel6, Rel7	24	24
Evolved UTRA and UTRAN	526	150
Combination of Higher Order Modulation and MIMO in HSDPA (FDD)	3	3
Enhanced Uplink for Cell_FACH State in FDD	9	9
Other Study Items	13	13

The following set of documents is missing. The corresponding contributions have not been handed over by companies.

R1-073983	Beamforming for E-UTRA	Motorola
R1-074004	HARQ Process Identity for SU-MIMO	Motorola
R1-074005	HARQ Error Conditions for Lost Grants	Motorola
R1-074083	Support of Re-Transmissions for Persistent Scheduling in E-UTRA UL	Samsung
R1-074107	UL code symbol interleaver	Samsung
R1-074212	Consideration on UL power control	LG Electronics

R1-074214	Separation of CQI report into indexes and values over PUSCH and PUCCH	LG Electronics
R1-074288	Transmission Method of Scheduling Request in E-UTRA Uplink	NTT DoCoMo
R1-074393	On the codeword to layer mapping issue for retransmission	Freescale Semiconductor
R1-074394	Remaining issues in DL MIMO	Freescale Semiconductor
R1-074395	Rank reporting for DL LTE MIMO	Freescale Semiconductor
R1-074481	E-UTRA Power Control Performance Comparison of Feedback Methods	InterDigital Communications LLC
R1-074515	A use case for the eNodeB Measurement "Maximum Tx Power per PRB relative to the rated output power"	Alcatel-Lucent, Orange, T-Mobile

1. Opening of the meeting

Mr. Dirk Gerstenberger (RAN1 Chairman) welcomed the participants to the 50th bis RAN WG1 meeting and opened the meeting at 09:20.

Miss Meng Zhao from Huawei Technologies welcomed the delegates on behalf of the Chinese Friends of 3GPP.

1.1 Call for IPR

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

R1-073895	Draft Agenda for RAN1#50b meeting	RAN1 Chairman
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Dirk Gerstenberger (Chairman) proposed the agenda for the meeting.

Discussion (Question / Comment):

Decision: The agenda was approved.

3. Approval of the minutes from previous meeting

R1-073896	Draft report of RAN1#50 meeting	MCC Support
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The document was presented by Patrick Mérias.

Discussion (Question / Comment): All Rel-7 and Rel-8 (LTE) specs have been made available following last plenary meeting.

Decision: The document is noted and approved.

R1-074447	Draft Report WS GERAN_RAN on GERAN E-UTRAN interworking	MCC
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The document was presented by Patrick Mérias for information.

Discussion (Question / Comment): Slight revision of the draft version sent over the email reflector prior to the meeting.

Decision: The document is noted.

4. Liaison statement handling

R1-073897	LS on eNodeB measurements	RAN3, Nokia Siemens Networks
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The document was presented by Joern Krause from NSN and proposes to concentrate the efforts in the field of eNodeB measurement standardisation on those being necessary to fulfil the nodes inter-working requirements of TS25.913.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073899	Response to LS on neighbour cell list in LTE	GERAN, Nokia Siemens Networks
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The document was presented by Joern Krause from NSN. As an action to RAN1, TSG GERAN requests more information on the available time for search of LTE cells in GERAN, both in idle and in connected mode and also if any parameters to be broadcast in the GERAN system information, in addition to the centre frequency of a neighbour cell, are required by the terminal in order to perform measurements on LTE cells.

Discussion (Question / Comment):

Decision: Document is noted. RAN1 will come back during the week on the LS reply to be prepared in R1-074451.

Friday 12th October

Decision is to postpone the reply LS to next meeting

R1-073900	LS on high quality criterion	RAN2, Nokia
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The document was presented by Asbjörn Grovlen from Nokia.

Discussion (Question / Comment): RAN1 decides to let RAN4 providing definition of "high quality criterion" to RAN2 for 36.304

Decision: Document is noted.

R1-073901	LS on introduction of radio bearers for MBMS PTP on HS in 34.108	RAN5, Ericsson
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The document was presented by Lars Lindbom from Ericsson.

Discussion (Question / Comment):

Decision: Document is noted. Companies are invited to provide their comments to contributor by Thursday. Reply LS shall then be in R1-074452.

Friday 12th October

R1-074452	Reply LS on introduction of radio bearers for MBMS PTP on HS in 34.108	RAN1, Ericsson
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The document was presented by Lars Lindbom from Ericsson.

Discussion (Question / Comment):

Decision: Document is agreed.

R1-073902	LTE Home NodeB mobility	RAN3, Vodafone
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The document was presented by Prakash Bha from Vodafone.

Discussion (Question / Comment): RAN1 decides to let RAN4 providing the reply to this LS

Decision: Document is noted.

R1-073903	Response LS on receiver Performance and Enhanced CELL_FACH state	RAN4, Ericsson
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The document was presented by Lars Lindbom from Ericsson and shows RAN4 response on UE receiver performance in enhanced cell FACH scenario. For information to RAN1.

Discussion (Question / Comment): No comment

Decision: Document is noted

R1-073904	Response to LS on Synchronization in Radio Access Networks	RAN3, Orange
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The document was presented by Thomas Sälzer from Orange. For information to RAN1.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073905	Handover and Cell Reselection Interruption time	RAN4, Nokia Siemens Networks
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The document was presented by Joern Krause from NSN and shows RAN4 plans to develop requirements for LTE handover and cell reselection requirements.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074243	MCCH multiplexing	Philips
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The document was withdrawn.

New Incoming LS received on Tuesday 9th October

R1-074480	Reply LS on Request to clarify LTE states for physical layer measurements	RAN2, Nokia Siemens Networks
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The document was presented by Joern Krause from NSN.

Discussion (Question / Comment):

Decision: Document is noted.

5. Maintenance of R99 - Rel-7

R1-074244	25.211 CR248 (Rel-7, F) Correction to transmit diversity specification in MIMO mode	Philips, NXP Semiconductors, Ericsson	
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The document was presented by Matthew Baker from Philips.

Discussion (Question / Comment):

Decision: Document is agreed.

R1-073950	25.213 CR091 (Rel-7, F) "Editorial changes in 25.213 for 16QAM specification"	Ericsson	
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The document was presented by Lars Lindbom from Ericsson.

Discussion (Question / Comment): Small typo modification is required (Motorola comment)

Decision: Document is noted and shall be revised in R1-074455.

Friday 12th October

R1-074455 is agreed.

R1-073951	On downlink sync criteria in case of UE DTX/DRX	Ericsson	
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The document was presented by Lars Lindbom from Ericsson and proposes to make the generation of downlink synchronization primitives independent of the value of UL_DTX_Active.

Discussion (Question / Comment): Comments from Philips w.r.t the impacts of the proposal (UE sleeping time may significantly reduced ...)

Based on the discussed topics, Mr Chairman suggested looking through them during the week and come back later on the proposal.

Decision: Document is noted and shall be revisited.

Friday 12th October

Further discussion still required until next meeting.

R1-074118	Combining Period interrupted by a DTX gap	Qualcomm Europe	
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The document was presented by Aziz Gholmieh from Qualcomm and shows how to handle the combining period when it is interrupted by a DTX gap.

Discussion (Question / Comment):

Decision: Document is noted and shall be revised in R1-074456 (to propose a clarification of the UE behaviour as intended in the current specs)

Friday 12th October

R1-074456 is withdrawn as no need for a CR has been identified.

R1-074119	25.214 CR463 (Rel-7,) Timing of CQI vs DTX priority change - Rel 7	Qualcomm Europe	
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The document was presented by Aziz Gholmieh from Qualcomm.

Discussion (Question / Comment):

Decision: Document is agreed.

R1-074121	25.214 CR465 (Rel-7,) Grant Monitoring clarification - Rel 7	Qualcomm Europe	
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The document was presented by Aziz Gholmieh from Qualcomm.

Discussion (Question / Comment):

Decision: Document is agreed.

R1-074123	E-DPCCH transmission in compressed frames	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and tries providing common understanding in E-DPCCH transmission in compressed frames.

Discussion (Question / Comment): Philips and Qualcomm to work together on the impacted specs.

Decision: Document is noted and off line discussion is required to clarify the specification(s). Intended behaviour is to send the whole E-DPCCH.

Friday 12th October

Related CRs are provided in R1-074518 and R1-074519 and agreed. MCC to remove the blank in “case s” (R1-074518)

R1-074518	25.211 CR0249 (Rel-6, F) "Correction to E-DPCCH transmission"	Philips, Nokia Siemens Networks, Nokia, Alcatel-Lucent
R1-074519	25.211 CR0250 (Rel-7, A) "Correction to E-DPCCH transmission"	Philips, Nokia Siemens Networks, Nokia, Alcatel-Lucent

R1-074364	25.214 CR467 (Rel-7,) Clarification on CQI tables in Rel-7	Alcatel-Lucent	
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The document was presented by Elisa Wong from Alcatel-Lucent.

Discussion (Question / Comment): Revision of the CQI tables is required. Include a table that addresses all cases.

Decision: Document is noted and shall be revised in R1-074462.

Friday 12th October

R1-074462	25.214 CR467r1 (Rel-7, F) Clarification on CQI tables in Rel-7	Alcatel-Lucent, Nokia, Nokia Siemens Networks, Ericsson, Philips
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The document was presented by Elisa Wong from Alcatel-Lucent.

Discussion (Question / Comment):

Decision: Document is agreed.

R1-073952	Clarification of UE measurements in case of Rx diversity	Ericsson	
R1-074298	UE Measurements and Rx Diversity	Nokia Siemens Networks, Nokia	
R1-074437	Proposed way forward on CPICH measurements with Rx diversity	Vodafone	

The above set of documents shall be revisited after off-line discussion during the week

Friday 12th October

RAN1 is informed that RAN4 discussed also these topics during the week. No further action required.

R1-074055	25.224 CR0170 (Rel-7,) "EUL power control improvements for 1.28Mcps TDD"	TD-Tech	
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The document was presented by (...) from TD-Tech and proposes that non-scheduled E-PUCH adopts DTX mechanism pretty much similar as that used for UL DPCH.

Discussion (Question / Comment): CATT required further off-line discussions

Decision: Document is noted and shall be revisited during the week.

Friday 12th October

Need for more discussions until next meeting

R1-074056	More improvement requirements on dedicated carrier for LCR TDD MBMS	CMCC	
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The document was presented by (...) from CMCC and gives a further consideration on the dedicated carrier physical structure to improve the performance for 1.28Mcps TDD MBMS.

Discussion (Question / Comment): IPWireless requested for clarification on the timeline to fulfil these improvements.

Decision: Document is noted.

R1-074111	More physical layer improvements on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, TD Tech, ZTE, Spreadtrum Communications, CATT	
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The document was presented by (...) from (...) and introduces an optimized timeslot. In addition, further analysis on spectrum efficiency, larger delay spread for large cell deployment, co-existence and compatibility issues is provided.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074112	25.201 CR037 (Rel-7,) More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, CATT, TD Tech, ZTE, Spreadtrum Communications	
R1-074113	25.221 CR148 (Rel-7,) More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, CATT, TD Tech, ZTE, Spreadtrum Communications	
R1-074114	25.222 CR141 (Rel-7,) More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, CATT, TD Tech, ZTE, Spreadtrum Communications	
R1-074115	25.223 CR049 (Rel-7,) More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, CATT, TD Tech, ZTE, Spreadtrum Communications	
R1-074116	25.224 CR171 (Rel-7,) More improvement on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, CATT, TD Tech, ZTE, Spreadtrum Communications	

R1-074117	Analysis of UE capabilities in 1.28 Mcps TDD MBSFN	CMCC, RITT, CATT, TD Tech, ZTE, Spreadtrum Communications	
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The document was presented by (...) from (...) and addresses the support of larger cell size MBMS transmission by analyzing the minimum UE capability parameters (for 1.28Mcps).

Discussion (Question / Comment): Further clarifications requested by IPWireless

Decision: Document is noted. Off-line discussions required during the week. The results shall then be revisited later on.

Friday 12th October

IPWireless, CMCC and the proponents should work together and try to solve the objections. Postponed until next meeting.

6. Evolved UTRA and UTRAN

R1-074064	Summary of email discussion on LTE MIMO	Samsung
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The document was presented by Juho Lee from Samsung. Despite the limited amount of email discussion on LTE MIMO before RAN1#50bis meeting, the document presents way forwards on topics for further study during the week including:

- CQI definition for support of DL MU-MIMO
- Information about the interfering vectors
- Enhancement of the downlink spatial multiplexing at high speed

Discussion (Question / Comment):

Decision: Document is noted.

6.1 TDD Frame Structure

R1-074432	TDD Frame Structure	IPWireless, NextWave Wireless	
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The document was presented by Nick Anderson from IPWireless and reconsiders the reasons why two frame structures arose in recent past. As a conclusion of this paper, proponents recommend that RAN1 contacts RAN4 to request investigating whether alignment of switching points between LTE and UTRA TDD is really necessary.

Should RAN4 conclude that timing alignment of switching points is deemed essential, it is suggested either that RAN1 retains the existence of both FS1 and FS2 or that timing alignment of switching points may be achieved for both UTRA TDD frame variants via the use of a single frame structure with a symbol-level-adjustable UL/DL switching point in conjunction with 5ms or 10ms TDD frames

Should RAN4 conclude that timing alignment of switching points with UTRA TDD is non-essential then RAN1 should focus on TDD FS1 as the common solution.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074459	On optimisation of LTE TDD based on FS2	CMCC, Vodafone, CATT, RITT, Ericsson, Nokia, Nokia Siemens Networks, ZTE, Huawei, Qualcomm Europe	(R1-074365)
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The document was presented by (...) from CMCC and proposes that work on an optimized LTE TDD mode based on frame structure type 2 takes Beam forming, UL coverage, Guard period flexibility, Periodicity and Overhead as areas for optimization.

Discussion (Question / Comment): Mr Chairman commented about the challenges trying to get these FS issues solved out within 2 WGs time frame and suggested to use this document as basis for further work. Starting point is definitely to identify the areas on which RAN1 should focus on.

Orange commented on the attractiveness of what the results of RAN1 work should show and highlighted that the coexistence with SCDMA and existence of beamforming was already a good start.

One commented on the necessity for compatibility with existing TDD modes; although it was not clearly stated in the last plenary minutes said Mr Chairman.

Decision: Document is noted.

Proposed conclusion:

- R1-074459 is agreed as the way forward for a single TDD FS based on FS2
 - IPWireless/Nextwave Wireless concerns are noted that

- there are aspects of FS2 that are not essential for a single TDD mode, e.g. switching point alignment can be achieved in other ways
- removal of TDD FS1 may provide no simplification as FDD FD/HD still uses FS1
 - this is questioned by RITT
- Consider also support for efficient implementation of FDD/TDD dual mode UEs and compatibility with existing UTRA TDD modes as cornerstones for the work
- FDD (full/half duplex) mode is not affected

Nick Anderson (IPWireless) indicated that his understanding of the conclusion was not that RAN1 is endorsing somehow a single frame structure based on FS2 given the concerns that have been raised above and also considering the proposals of R1-074432. Nick therefore requested that the first bullet of the proposed conclusion was clarified to read:

R1-074459 is agreed as the way forward for a single TDD FS **[if]** based on FS2

Although the text was not changed, Nick reconfirmed his previous understanding and requested that this was appropriately written in the minutes.

Friday 12th October

Mr Chairman strongly requested to start an email reflector ad-hoc discussion, moderated by CMCC (Liu Guangy). Document R1-074520 is going to be made available for information by the meeting end.

6.2 Finalization of TS 36.211

The following set of documents has not been treated.

R1-073906	Final details on CDD precoding	Qualcomm Europe	
R1-073937	Comparison Aspects of Fixed and Adaptive Beamforming for LTE Downlink	Alcatel-Lucent	
R1-074171	Summary of Reflector Discussions on TDD FS1: Framing allocations	IPWireless, NextWave Wireless	
R1-074177	Frame configurations for TDD frame structure type 1	IPWireless, NextWave Wireless	
R1-074307	Invariant PBCH Structure	Nokia Siemens Networks, Nokia, Motorola	
R1-074308	Capacity of D-BCH and Benefits of Time Diversity	Nokia Siemens Networks, Nokia	
R1-074309	DL UL allocation options for EUTRA TDD	Nokia, Nokia Siemens Networks	
R1-074394	Remaining issues in DL MIMO	Freescale Semiconductor	
R1-074429	Details on scrambling	Qualcomm Europe	

6.2.1 Downlink reference signals

R1-074066	Summary of Reflector Discussions on EUTRA DL RS	Samsung	
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The document was presented by Aris Papasakellariou from Samsung and summarizes the email discussions on DL RS, including:

- RS Power Boosting

- RS OS in MBSFN Sub-frames
- Number of RS sequences
- Dedicated RS

Discussion (Question / Comment):

Decision: Document is noted.

Conclusions from email discussion:

- RS Power boosting
 - RS power boosting is the same across the operating BW
 - Data/RS power should be signalled to the UE
 - The UE can derive the transmitted data/RS power ratio from the signalled data/RS power ratio in case of 64QAM (signalling need for 16QAM FFS) and/or in case of multiple codewords (SU-MIMO), i.e. no blind transmitted data/RS power ratio estimation in these cases
 - The same RS power boosting is applied to all antennas
- Number of RS Sequences
 - Define 168 pseudo-random sequences
 - Other number of sequences may be considered for closed subscriber groups (Home eNodeB's)
- Dedicated RS
 - The following is agreed as a way forward for dedicated reference signals for DL beamforming in LTE:
 - Define a single dedicated reference signal pattern for FS Type 1
 - The eNB can semi-statically configure a UE to use the dedicated reference signal as the phase reference for data demodulation of a single codeword
 - Dedicated RS are transmitted for a maximum of 1 stream
 - In the case when dedicated reference symbols are configured for a UE:
 - The UE needs to use a maximum of 2 common RS, corresponding to the first two antenna ports
 - Common reference symbols are the phase reference for PDCCH
 - FFS: Only the common reference signal corresponding to the first antenna port is used for deriving CQI
 - Relation to UE capabilities to be determined based on input e.g. from operators
 - At the moment the assumption is that the support of dedicated reference symbols is an optional UE capability, it can be made mandatory for certain UE categories in a later stage for Rel8.

R1-074506	Way forward for dedicated reference symbols for downlink beamforming	Philips, NXP Semiconductors, NTT DoCoMo, Vodafone, AT&T, NEC, Fujitsu, Mitsubishi, Arraycomm, Sharp, Ericsson, CMCC, CATT, RITT, Orange, T- Mobile, Qualcomm	(R1-074245)
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The document was presented by Matthew Baker from Philips.

Discussion (Question / Comment):

Decision: Document is noted.

The following set of documents has not been treated.

R1-073909	RS structure for MBSFN subframes	Qualcomm Europe	
R1-073955	RS Structure for Short CP MBSFN	Nortel	

R1-073956	Further Discussion on RS Structure Supporting Spatial Multiplexing for MBSFN	Nortel	
R1-073957	RE Mapping of SFBC+FSTD Based TxD for RS Power boosting	Nortel	
R1-073958	Link Level Evaluation on Adaptive Beaming Forming	Nortel	
R1-073959	TxD gain for correlated 8 Tx antennas	Nortel	
R1-073982	4x2 MIMO vs Beamforming Performance	Motorola	
R1-073983	Beamforming for E-UTRA	Motorola	
R1-073984	Dedicated Reference Signals for Beamforming	Motorola	
R1-074067	Downlink reference signal structure for TDD frame structure type 2	Samsung	
R1-074190	Further Consideration on RE Mapping for 4Tx PDSCH	LG Electronics	
R1-074246	Dedicated reference symbol pattern	Philips	
R1-074277	Views on Beamforming Using Dedicated RS for E-UTRA Downlink	NTT DoCoMo	
R1-074310	Issues regarding MBSFN subframes	Nokia, Nokia Siemens Networks	
R1-074311	On remaining MBSFN RS issues	Nokia, Nokia Siemens Networks	
R1-074312	Dedicated Reference Signal for TDD FS2	Nokia, Nokia Siemens Networks	
R1-074367	Downlink reference signal sequences	Ericsson	
R1-074445	Way Forward on Full use of Power and Bandwidth in DL PDSCH	Samsung, LGE	
R1-074450	Power Scaling and DL RS boosting	Samsung	(R1-074065)

6.2.2 Uplink reference signals

R1-074068	Summary of Reflector Discussions on EUTRA UL RS	Samsung	
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The document was presented by Aris Papasakellariou from Samsung and summarizes the email discussion on UL RS including the DM RS for the PUSCH and PUCCH and the SRS.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion from email discussion:

UL DM RS

- Computer Generated Sequences for 1-2 RBs
 - Way forward in R1-074509 (merge of all proposals) is agreed.
- PUCCH RS Sequence Hopping (same for ACK/NAK and/or CQI)
 - One bit in D-BCH indicates whether sequence hopping is enabled or not.
 - The selection applies to both PUCCH and PUSCH (not necessarily the same hopping pattern).
 - If hopping is disabled, the sequence group is indicated (5 bits for 30 groups).
 - If hopping is enabled, the signaling of the hopping pattern is FFS (e.g. on D-BCH or cell-specific).
- PUSCH Sequence Grouping
 - One sequence per group for allocations of up to 5 RBs

SRS

- SRS parameters
 - The D-BCH signals the sub-frames with SRS transmission
 - FFS what else is signalled, e.g. signal comb
 - The cyclic shift of the SRS sequence is indicated by 3 bits
- SRS position/symbol: one of the two alternatives to be selected (depends on RAN4 feedback on power ramping)
 - the 1st SC-FDMA sub-frame symbol
 - the last SC-FDMA sub-frame symbol

R1-074509	Way forward on computer generated DM RS sequencer	LGE, Motorola, Nokia, Nokia Siemens Networks, Qualcomm, Sharp, TI	
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The document was presented by Jari Lindholm from NSN1 and presents 1 PRB and 2 PRB sequence set proposal for LTE.

Discussion (Question / Comment):

Decision: Document is noted and way forward is agreed.

The following set of documents has not been treated.

R1-073910	CGS sequences for UL RS	Qualcomm Europe	
R1-073911	SRS multiplexing structure	Qualcomm Europe	
R1-073912	Hopping of UL DM-RS	Qualcomm Europe	
R1-073932	UL Sounding RS Control Signaling for Antenna Selection	Mitsubishi Electric	
R1-073934	Uplink Reference Signal Sequence Allocation	Toshiba	
R1-073938	Design of Non-CAZAC CG Sequences for Small RB Allocations in E-UTRA UL	SHARP	
R1-073939	A Proposed Way Forward for Selection of UL DM RS CG Sequences for Small RB Allocations in E-UTRA UL	SHARP	
R1-073960	UL RS for UL MU-MIMO	Nortel	
R1-073985	Proposal for UL DM RS for 1 and 2 RB Allocation	Motorola	
R1-073986	Evaluation of Proposals for UL DM RS for 1 and 2 RB Allocation	Motorola	
R1-073987	Multiplexing of SRS and PUSCH	Motorola	
R1-073988	Views on Remaining Issues on UL DM RS	Motorola	
R1-073989	Views on Remaining Issues on UL SRS	Motorola	
R1-074057	Sequence Grouping Method for UL RS	Huawei	
R1-074058	Resource-specific cyclic shift hopping	Huawei,ZTE	
R1-074069	Sounding RS Multiplexing in E-UTRA UL – Interaction with PUCCH	Samsung	
R1-074070	Link Adaptation Using DM RS for UL VoIP Transmissions	Samsung	
R1-074130	Design of of CG Sequences for Small RB Allocations in E-UTRA UL	Texas Instruments	
R1-074132	Uplink Reference Signal Sequence Assignments in E-UTRA	Texas Instruments	

R1-074133	Interference between Sounding Reference Signal and Random Access Preamble	Texas Instruments	
R1-074134	Uplink Reference Signals in Support of High-Speed UEs	Texas Instruments	
R1-074135	Sufficient Number of Sequences for PUSCH with Proposed High-Speed UE RS Structure	Texas Instruments	
R1-074183	Multiplexing of PUCCH and Sounding RS	Fujitsu	
R1-074191	Frequency hopping operation for UL sounding RS	LG Electronics	
R1-074192	Comparison of the proposals for CG UL DM RS	LG Electronics	
R1-074223	Multiplexing of Sounding RS and PUCCH	ZTE	
R1-074224	Hybrid combination of CG sequences for 1 and 2 RB UL DM RS	ZTE	
R1-074265	UL Sounding RS Design for E-UTRA	Alcatel-Lucent	
R1-074278	Sequence Hopping for Uplink RS	NTT DoCoMo	
R1-074279	Sounding RS Structure in E-UTRA Uplink	NTT DoCoMo	
R1-074280	Assignment Scheme for Sounding Reference Signals in E-UTRA Uplink	NTT DoCoMo	
R1-074281	Necessity of Multiple Bandwidths for Sounding Reference Signals	NTT DoCoMo	
R1-074282	Multiplexing Scheme of Sounding RS in E-UTRA Uplink	NTT DoCoMo	
R1-074313	Open SRS issues	Nokia Siemens Networks, Nokia	
R1-074314	On selection of computer generated DM RS sequences	Nokia Siemens Networks, Nokia	
R1-074315	Cyclic Shift Hopping and DM RS Signaling	Nokia Siemens Networks, Nokia	(R1-073644)
R1-074316	UL sounding reference signal for EUTRA TDD	Nokia, Nokia Siemens Networks	
R1-074332	Impact of prioritizing PUCCH ACK/NACK transmission over SRS	Nokia Siemens Networks, Nokia	
R1-074368	PUSCH sequence hopping patterns	Ericsson	
R1-074396	Comparison of Computer Generated sequences for E-UTRA uplink	Panasonic	
R1-074397	Further consideration on uplink RS hopping and grouping	Panasonic	
R1-074398	Frequency dependent PUSCH DM-RS generation method with considering eNB-specific allocation	Panasonic	
R1-074399	Sounding RS position and relation with PUCCH	Panasonic	
R1-074431	Bandwidth Allocation for the SRS	Freescale Semiconductor	
R1-074443	Comparison of Computer-Generated Sequence Proposals for UL DM RS	Texas Instruments	(R1-074131)
R1-074449	Computer Generated Sequence Comparison	Qualcomm Europe	
R1-074471	Coverage impact of shortened ACK/NACK format	Ericsson	
R1-074474	Summary of companies views regarding multiplexing between PUCCH and S-RS	LG Electronics	
R1-074486	F-QPSK based CG UL DM RS for 1RB and 2RB	LG Electronics	
R1-074503	RB mapping for odd number of RB	Motorola, Nokia, Nokia Siemens Networks, TI, Qualcomm, Philips, Samsung	

6.2.3 Downlink Control Signaling

R1-074369	E-mail summary taking you forward on downlink control signaling	Ericsson	
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The document was presented by Stefan Parkvall from Ericsson and provides a summary of e-mail discussion on downlink control signalling, that includes:

- PHICH coding for the case of 4 Tx antennas
- Relation between reference signals and control signaling for the multi-antenna case
- Association between PHICH and uplink transmission
- PHICH duration in MBSFN subframes
- PHICH configuration (“Chicken-and-egg problem”)
- CCE-to-RE mapping

Discussion (Question / Comment):

Decision: Document is noted.

Conclusions from email discussion:

PHICH coding for 4 Tx antennas

- SF=4 with modified TX diversity scheme as baseline
 - Discuss offline the proposals in R1-073961 and R1-074483
- Extended CP: FFS SF=2 or SF=4

Relation between RS and control signaling for multiple antenna ports

- The PCFICH/PDCCH/PHICH is transmitted on the same set of antenna ports as the PBCH, i.e., if N antenna ports are used for the PBCH, N antenna ports are used for L1/L2 control signaling.

Association between PHICH and uplink transmission

- Discuss in the ad hoc session

PHICH duration in MBSFN subframes, semi-statically configured

- Supported PHICH durations in MBSFN subframes: 1 and 2 OS
- Supported PHICH durations in non-MBSFN subframes: 1 and 3 OS

CCE-to-RE Mapping

- Indexing
 - Time-first indexing
- Interleaving
 - Include unused CCE in interleaving process
 - Interleaving method (candidates proposed: PBRI, QPP, CRRI, Costas)
 - BW agnostic interleaver design

- Based on a generic and compact description, applying to REs remaining after PCFICH and PHICH
- All CCE [from one control channel] should be approximately evenly distributed over 1st n OFDM symbols, i.e. proportionally to the number RE available for PDCCH
- If consensus cannot be reached on a interleaving scheme, agree on evaluation criteria (e.g. metrics (frequency diversity, interference randomization) and interleaving lengths). Selection interleaving scheme at next meeting.
- Don't make a too big affair out of this...

R1-074483	Downlink ACK/NACK Transmit Diversity	Samsung	(R1-074074)
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The document was presented by (...) from Samsung and extends previous discussions on CDM for ACK channel by introducing I/Q multiplexing, as well as the transmit diversity scheme of CDM+SFBC for 2Tx case. For 4 Tx case, the paper proposes to use rate $\frac{3}{4}$ orthogonal SFBC together with SF3 CDM, so that PA balance is satisfied for each repetition.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073961	Spread factor for 4 Tx PHICH	Nortel	
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The document was presented by (...) from Nortel and concludes that LTE downlink PHICH channel should adopt SF = 4 with modified SFBC+FSTD as transmit diversity for 4-tx system. The alternative PHICH mappings proposed should be used to map multiple PHICH channels in order to mitigate power imbalance on each antenna.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074199	DL PHICH structure	LG Electronics	
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The document was presented by Joon Kui Ahn from LGE and discusses antenna mapping of PHICH for 4 TxD case. The paper suggests selecting between spreading factor 2 and 4 for PHICH antenna mapping for 4 TxD case and proposes a frequency zone based PHICH to RE mapping approach

Discussion (Question / Comment):

Decision: Document is noted.

CCE to RE Mapping

R1-074226	Generic interleaver for PDCCH	Huawei	
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The document was presented by Mattias Wennström from Huawei and analyses four proposed interleavers for CCE to RE mapping. As a conclusion of the paper, it is proposed to adopt the Costas method for generating the interleaver sequence for the CCE to RE mapping.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073981	BCH/SCH Transmission for Odd number of RB	Motorola, Nokia, Nokia Siemens Network	
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The document was presented by Amitava Ghosh from Motorola and lays down a recommendation in which BCH (a transport channel) not be mapped to an integer number of RBs but just use the center subcarriers similar to SCH.

Discussion (Question / Comment):

Decision: Document is noted. Topic shall be revisited after off-line discussion.

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R1-074503	RB mapping for odd number of RB	Motorola, Nokia, Nokia Siemens Networks, TI, Qualcomm, Philips, Samsung	
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The document was presented by Amitava Ghosh from Motorola and proposes a revision of TS 36.211.

Discussion (Question / Comment):

Decision: Document is agreed.

TDD specific

R1-074081	Interpretation of CCFI for EUTRA TDD	Samsung	
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The document was presented by (...) from Samsung and lists a few way forwards addressing the interpretation of CCFI.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073914	DL Control channel span	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and discusses issues to transmit a PDCCH for different formats (30, 40 and 60-bits payload) for different number of CCE concatenations and for different power boosting schemes.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074186	CCFI contents for LTE TDD with FS2	CATT	
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The document was presented by (...) from CATT.

Discussion (Question / Comment):

Decision: Document is noted.

The following set of documents has not been treated.

R1-073913	PDCCH formats and contents	Qualcomm Europe	
R1-073915	Details on DL resource allocation	Qualcomm Europe	
R1-073916	On the size of the CCE	Qualcomm Europe	
R1-073917	PHICH details	Qualcomm Europe	
R1-073918	Issues with SU-1 transmissions	Qualcomm Europe	
R1-073919	D-BCH capacity	Qualcomm Europe	
R1-073940	Proposal of location of PHICH and CCE	SHARP	

R1-073990	Support of Precoding for E-UTRA DL L1/L2 Control Channel	Motorola	
R1-073991	Requirement for DL PMI Signaling	Motorola	
R1-073992	PHICH Transmission for 1 Tx Antenna	Motorola	
R1-073993	PCFICH Transmission for 1 Tx Antenna	Motorola	
R1-074488	Interleaver design for Mini-CCE to RE Mapping	Motorola	(R1-073994)
R1-073995	Downlink Resource Allocation Mapping for E-UTRA	Motorola	
R1-073996	Search Space definition for L1/L2 Control Channels	Motorola	
R1-073997	E-UTRA Downlink L1/L2 Control Channel Configurations	Motorola	
R1-073998	Efficient Structure for Aggregating 12[3]48 Downlink Control Channel Elements	Motorola	
R1-073999	PDCCH Formats for DL Scheduling Assignments	Motorola	
R1-074000	PDCCH Formats for UL Scheduling Grants	Motorola	
R1-074001	PMI Downlink Signaling for E-UTRA	Motorola	
R1-074002	MU-MIMO PHICH Assignment	Motorola	
R1-074003	LTE Control channel configuration signaling and DRX	Motorola	
R1-074004	HARQ Process Identity for SU-MIMO	Motorola	
R1-074005	HARQ Error Conditions for Lost Grants	Motorola	
R1-074006	Transport Block and MCS mapping for RB Allocation	Motorola	
R1-074059	Control Signaling of MBMS Single-Cell Transmission	Huawei	
R1-074060	UL index in UL schedule grant for LTE TDD	Huawei	
R1-074071	Downlink Link Adaptation and Related Control Signaling	Samsung	
R1-074072	Downlink PMI indication for SU-MIMO	Samsung	
R1-074073	PHICH linking to downlink CCE	Samsung	
R1-074075	Further Considerations of CDD Precoding for High-speed UEs	Samsung	
R1-074076	Subset selection for precoding	Samsung	
R1-074077	PHICH structure in MBSFN subframes	Samsung	
R1-074078	Configuration of PDCCH Monitoring Set	Samsung	
R1-074079	Comparison of Downlink Resource Allocation Indication Schemes	Samsung	
R1-074080	PHICH/PDCCH to RE mapping	Samsung	
R1-074082	Short UL Grant Size in E-UTRA	Samsung	
R1-074083	Support of Re-Transmissions for Persistent Scheduling in E-UTRA UL	Samsung	

R1-074084	Transmission of Scheduling Units in E-UTRA DL	Samsung	
R1-074085	CCFI to RE Mapping for One Transmitter Antenna	Samsung	
R1-074086	CCFI to RE mapping for multiple TX antennas	Samsung	
R1-074136	Choice of CRC Length for PDCCH	Texas Instruments, Nokia, Nokia Siemens Networks	
R1-074137	Consideration of Supportable TF for E-UTRA DL	Texas Instruments	
R1-074160	DL Control Channel Structure: CCE Aggregation and Blind Detections	NEC Group	
R1-074161	Compact DL Assignment and its Resource Allocation Signalling	NEC Group	
R1-074162	DL Unicast Resource Allocation Signalling using L1/L2 control channels	NEC Group	
R1-074163	Downlink ACK/NACK signalling for E-UTRA	NEC Group	
R1-074164	DL Multiplexing for Persistent and Dynamic scheduling	NEC Group	
R1-074165	Control channel format for DBCH, PCH and RACH response	NEC, Nokia, Nokia Siemens Networks, Motorola	
R1-074166	Low overhead PDCCH format for BCCH, PCH, RACH response	NEC Group	
R1-074167	Control Channel Multiplexing	NEC Group	
R1-074174	On the TDD UL Grant Channel	IPWireless, NextWave Wireless	
R1-074175	Dimensioning of TDD PHICH	IPWireless, NextWave Wireless	
R1-074176	Dimensioning of TDD Control Signalling	IPWireless, NextWave Wireless	
R1-074185	Signaling of MBSFN Subframe Allocations	Alcatel-Lucent	
R1-074194	Downlink control signaling for SU-MIMO	LG Electronics	
R1-074195	DL control channel configurations	LG Electronics	
R1-074196	Restriction of UL/DL subframe ratio considering PUCCH in TDD	LG Electronics	
R1-074197	Downlink PHICH repetition factor in 1 Tx case	LG Electronics	
R1-074198	Mapping Relation comparisons for PHICH	LG Electronics	
R1-074200	On the implementation of rank override using codeword DTX	LG Electronics	
R1-074201	Interference Randomization Techniques for PHICH	LG Electronics	
R1-074218	CCE allocation scheme in PDCCH for efficient blind detection	ZTE	
R1-074221	DL Resource Allocation Signaling Indication Scheme	ZTE	
R1-074225	Considerations on DL signaling for support of SU- and MU- MIMO	ZTE	
R1-074227	MIMO precoding information in PDCCH	Huawei	
R1-074236	Multiplexing of PDCCHs of Multiple UEs in E-UTRA Downlink	KDDI	
R1-074237	Hybrid FDM/CDM Based Multiplexing for ACK/NACK Signals in E-UTRA Downlink	KDDI	

R1-074238	Rotational CDM for L1/L2 Control Channel Signaling in E-UTRA Downlink	KDDI	
R1-074239	An Evaluation of the Rotational CDM for L1/L2 Control Channel	KDDI	
R1-074240	System-Level Evaluation of the Rotational CDM for L1/L2 Control Channel	KDDI	
R1-074247	Discussion of PDCCH message formats	Philips, NXP Semiconductors	
R1-074248	Proposal for resource allocation signalling on PDCCH	Philips, NXP Semiconductors	
R1-074249	Signalling for UL resource allocation	Philips, NXP Semiconductors	
R1-074250	PDSCH timing for power saving for paging in idle mode	Philips	
R1-074259	Signaling Resource Allocations in DL Control Channel	Alcatel-Lucent	
R1-074283	Investigation on Control Information Bits in PDCCH	NTT DoCoMo	
R1-074284	Semi-static Configuration of Non-adaptive and Adaptive ARQ in E-UTRA Downlink	NTT DoCoMo	
R1-074285	Investigation on PMI Indication Schemes for Single-User MIMO Precoding in E-UTRA Downlink	NTT DoCoMo	
R1-074317	Reducing the decoding complexity of the PDCCH	Nokia, Nokia Siemens Networks	
R1-074318	Control channel to RE mapping	Nokia, Nokia Siemens Networks	
R1-074319	Signaling PCH, RACH response and dynamic BCH	Nokia, Nokia Siemens Networks	
R1-074320	Considerations on the CCE sharing for uplink and downlink allocation grants	Nokia, Nokia Siemens Networks	
R1-074321	Downlink resource assignments structure for LTE	Nokia, Nokia Siemens Networks	
R1-074322	DL-CCH formats	Nokia, Nokia Siemens Networks	
R1-074323	Downlink Control signaling considerations for EUTRA TDD	Nokia, Nokia Siemens Networks	
R1-074324	Multi-TTI Uplink Grants for TDD	Nokia, Nokia Siemens Networks	
R1-074325	MBMS single-cell p-t-m related control signaling	Nokia, Nokia Siemens Networks	
R1-074360	UE and CCE specific scrambling codes for low complexity blind detection of downlink control signaling	Mitsubishi Electric	
R1-074370	CCE to RE Mapping	Ericsson	
R1-074371	MIMO related DL control signalling	Ericsson	
R1-074385	ACK/NACK Index Mapping for Uplink Transmission for E-UTRA	InterDigital Communications LLC	
R1-074393	On the codeword to layer mapping issue for retransmission	Freescale Semiconductor	
R1-074400	Transport format signalling and padding overhead	Panasonic	
R1-074401	PDCCH payload formats and sizes	Panasonic	
R1-074402	PDCCH Signalling for retransmission of downlink persistent scheduling	Panasonic	
R1-074403	Comparison between FDM and CDM+FDM for DL L1/L2 control channel multiplexing	Panasonic	
R1-074404	DL ACK/NACK modulation and UL HARQ behaviour	Panasonic	
R1-074405	Assignment of Downlink ACK/NACK channel	Panasonic	

R1-074406	System level analysis for CCE aggregation size dependent transport format signalling	Panasonic	
R1-074407	Resource allocation and transport format signaling	Panasonic	
R1-074434	Semi-static, dynamic and hybrid CCE aggregation	Panasonic	
R1-074463	Investigation on Throughput Performance of MU-MIMO in E-UTRA Downlink	NTT DoCoMo	(R1-074286)
R1-074469	MU-MIMO Codebook Selection and Signaling Considerations for E-UTRA	InterDigital Communications LLC	(R1-074386)
R1-074472	Interleaver Design for CCE-to-RE Mapping	LG Electronics	(R1-074193)

R1-074499	Outcome of off-line discussion on DL control signaling	Ericsson	
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The document was presented by Stefan Parkvall from Ericsson.

Discussion (Question / Comment):

Decision: Document is noted and endorsed. The alternative 1 as described on slide 5 of R1-074499 is in line with the working assumption on PHICH outside the interleaver.

R1-074505	Way forward on DL Control channel multiplexing	NEC, Nokia, Nokia Siemens Networks	
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The document was presented by Thanh Bui from NEC

Discussion (Question / Comment):

Decision: Document is noted. R1-074505 describes the alternative 2 as described on slide 5 of R1-074499 (PHICH being part of the interleaving process. It is decided to revisit this proposal at next meeting.

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R1-074508	Way forward on 4-Tx Transmit Diversity for PHICH Channel	Nortel, LGE, Alcatel-Lucent, Broadcom	
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The document was presented by (...) from Nortel.

Discussion (Question / Comment):

Decision: Document is noted and way forward is agreed.

6.2.4 Uplink Control Signaling

R1-074372	E-mail summary taking you forward on uplink control signaling	Ericsson	
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The document was presented by Stefan Parkvall from Ericsson and summarizes the results of e-mail discussion on uplink control signalling, including:

- Simultaneous transmission of ACK/NAK and CQI on PUCCH
- Scheduling request design
- PUCCH for TDD
- FS2-specific issues
- PUCCH resource indication
- Control on PUSCH

Discussion (Question / Comment):

Decision: Document is noted.

Control on PUSCH

R1-074331	Avoiding PUSCH error situations caused by DL allocation grant signalling failure	Nokia Siemens Networks, Nokia	
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The document was presented by Timo Lunttila from NSN and addresses the open question: how to avoid problems caused by the DL allocation grant failure.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074270	Multiplexing of PUCCH with PUSCH in E-UTRA UL Transmission	Alcatel-Lucent	
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The document was presented by Fang-Chen Cheng from Alcatel-Lucent and discusses the mapping of the UL Control Signalling and its impact to the performance degradation of the PUSCH.

Discussion (Question / Comment):

Decision: Document is noted. Discussion should continue over email and results expected at next meeting.

PUCCH A/N indication

R1-074009	UL ACK/NACK Implicit Mapping	Motorola	
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The document was presented by Nory Ravikiran from Motorola and provides several recommendations regarding the implicit mapping of UL ACK/NACK including accommodation for high-speed UEs.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion:

- For non-persistent scheduling, the ACK/NACK index is implicitly tied to the lowest CCE index used to construct the PDCCH
 - Relation between ACK/NACK index and CAZAC & cover sequence (TBD)
 - Discussion on which modifications needed for TDD should take place

PUCCH for TDD FS1

R1-074181	Maximum number of ACK/NAK per TTI for TDD FS1	IPWireless, NextWave Wireless	
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The document was presented by Huiheng Mai from NextWave Wireless and proposes to restrict the maximum number ACK/NAK per UE per TTI to be 8.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion:

- A maximum of 8 ACK/NAK bits per TTI per UE in TDD FS1
 - This is under the assumption that achievable DL user peak rate is not reduced

R1-074182	TDD PUCCH	IPWireless, NextWave Wireless	
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The document was presented by Huiheng Mai from NextWave Wireless and discusses methods of increasing the number of channel bits on PUCCH in order to overcome the current PUCCH physical channel structure limitation for carrying CQI with multiple ACK/NACK with reasonable coding rate.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion:

- A PUCCH structure with higher per-user channel capacity than the current 20-bit design is required for TDD to carry multiple ACK/NACK plus CQI

PUCCH for TDD FS2

- Hopping:
 - Hopping always enabled. Revisit decision after discussion on FS2 coverage optimisation.
- Hopping boundary (subframe split):
 - 5/4 and 4/4 split for normal and extended CP, respectively

Scheduling request

R1-074333	Scheduling Request supporting High Doppler	Nokia Siemens Networks, Nokia	(R1-073654)
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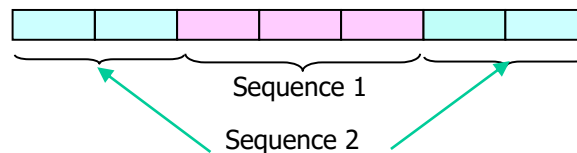
The document was presented by Jari Lindholm from NSN

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion on transmission of scheduling request

- Size of the scheduling request
 - 2 states: Either UE requests to be scheduled or (in case of no transmission) does not request to be scheduled
- On-Off Keying based on ACK/NACK design
 - The length 7 sequence is split into two orthogonal sequences, length 3 and length 4



- Compatibility with ACK/NACK transmission from different UEs
- Different cyclic shifts or orthogonal covers can be assigned for scheduling requests and ACK/NACK

R1-074097	Multiplexing CQI and ACK/NAK Transmission in E-UTRA UL	Samsung	
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The document was presented by Aris Papasakellariou from Samsung and considers ACK/NAK and CQI multiplexing options for simultaneous transmission in the PUCCH.

Discussion (Question / Comment):

Decision: Document is noted.

The following set of documents has not been treated.

R1-073907	UL control details for TDD	Qualcomm Europe	
R1-073920	Joint coding of CQI and ACK	Qualcomm Europe	
R1-073921	Support of ACK repetition in the UL of E-UTRA	Qualcomm Europe	
R1-073935	CAZAC sequence allocation for PUCCH	Toshiba	
R1-073941	Improved Flexibility/Performance CQI+ACK/NACK coding in the E-UTRA uplink	SHARP	R1-074493
R1-073942	Different target quality for rank	SHARP	
R1-073962	Further discussion on DL/UL signaling channel supporting rank adaptation for high mobility UE	Nortel	
R1-074007	PUCCH Transmission with SRS	Motorola	
R1-074008	UL ACK/NACK Resource Provisioning	Motorola	
R1-074010	Uplink transmission of CQI and Ack/Nack	Motorola	
R1-074011	Repetition of UL ACK/NACK on PUCCH	Motorola	
R1-074012	Scheduling Request Mechanism for EUTRA Uplink	Motorola	
R1-074013	CQI Coding Schemes	Motorola	
R1-074014	Multiplexing of Ack/Nack and data for UL	Motorola	
R1-074015	Persistent Scheduling of PUCCH resources	Motorola	
R1-074016	Uplink Control Signaling with Persistent Scheduling	Motorola	
R1-074061	Multiplexing of scheduling request indicator	Huawei	
R1-074062	PUCCH channel structure of TDD FS 2	Huawei	
R1-074063	Relation between UL ACK/NACK and DL CCE	Huawei	
R1-074087	SU-MIMO PMI feedback and Compression	Samsung	
R1-074088	CQI Reporting for MU-MIMO	Samsung	
R1-074089	Performance of single CQI feedback for 2CW SU-MIMO	Samsung	
R1-074091	Selection of orthogonal cover Walsh codes for high speed UL ACK/NACK channels	Samsung	
R1-074092	Slot-level UL ACK/NACK Cyclic Shift/Orthogonal Cover Remapping	Samsung	
R1-074093	Simultaneous UE transmission of UL ACK/NAK and CQI	Samsung	
R1-074094	Cyclic shift and orthogonal cover allocations for UL ACK/NACK	Samsung	
R1-074095	UL ACK/NACK resource indication for DL persistent scheduling	Samsung	

R1-074096	UL RB mapping and slot level re-mapping for ACK/NACK and CQI	Samsung	
R1-074098	ACK/NAK Repetitions in E-UTRA UL	Samsung	
R1-074138	Separate Rank and CQI Feedback in PUCCH	Texas Instruments	
R1-074139	Simultaneous ACK/NAK and SR Transmission in Uplink	Texas Instruments	
R1-074140	ACK/NAK Performance in PUCCH with Timing Offset and Near-Far Effect	Texas Instruments	R1-074487
R1-074141	Simultaneous CQI and ACK/NAK Transmission in Uplink	Texas Instruments	
R1-074142	Sounding Reference Signal In Support of Scheduling Request in E-UTRA	Texas Instruments	
R1-074168	CQI + ACK/NACK transmission in PUCCH	NEC Group	
R1-074169	PUCCH allocation for ACK/NACK transmission	NEC Group	
R1-074170	Detail of ACK/NACK and CQI transmission without data transmission	NEC Group	
R1-074187	PUCCH details for ACK transmission LTE TDD with FS2	CATT	
R1-074188	PUCCH details for CQI transmission LTE TDD with FS2	CATT	
R1-074202	Methods for PUCCH and SRS simultaneous transmission	LG Electronics	
R1-074203	Way forward on PUCCH and SRS simultaneous transmission	LG Electronics	
R1-074204	Error case handling in case of DL control channel failure	LG Electronics	
R1-074205	Scheduling Request (SR) design considering PUCCH structure	LG Electronics	
R1-074206	Considerations on UL ACK/NACK operation	LG Electronics	
R1-074207	Control signalling error requirement depending on eNode B DTX detection	LG Electronics	
R1-074228	Completing the 2 TX codebook	Huawei	
R1-074241	Uplink Data-non-associated Control Signaling in E-UTRA	KDDI	
R1-074242	Scheduling Request Channel in E-UTRA Uplink	KDDI	
R1-074251	Vector quantisation with successive refinement for MIMO feedback	Philips	
R1-074252	CQI reporting for TDD	Philips	
R1-074267	Adaptivity for UL HARQ Transmissions	Alcatel-Lucent	
R1-074268	On the Time Duration Field in the Uplink Scheduling Grant	Alcatel-Lucent	
R1-074271	On the Need for VoIP Coverage Enhancement for the E-UTRA UL	Alcatel-Lucent	
R1-074272	Multiplexing ACK/NAK with CQI	Alcatel-Lucent	
R1-074276	Multiplexing the Scheduling Request in the Uplink	Alcatel-Lucent	
R1-074287	On ACK/NACK and CQI Transmission Method in PUCCH	NTT DoCoMo	
R1-074288	Transmission Method of Scheduling Request in E-UTRA Uplink	NTT DoCoMo	
R1-074289	Basic Method for CQI Feedback in E-UTRA	NTT DoCoMo	

R1-074290	Investigation on Performance of PUCCH in Coverage-limited Conditions	NTT DoCoMo	R1-074464
R1-074326	Comparison of single-sequence and multi sequence modulation on PUCCH	Nokia Siemens Networks, Nokia	
R1-074327	ACK/NACK+CQI transmitted on PUCCH	Nokia Siemens Networks, Nokia	
R1-074328	Benefits of resource-specific cyclic shift randomization on PUCCH	Nokia Siemens Networks, Nokia	
R1-074329	ACK/NACK Channelization	Nokia Siemens Networks, Nokia	
R1-074330	Implicit Mapping of ACK/NACK resources	Nokia Siemens Networks, Nokia	
R1-074334	On CQI coding in PUCCH	Nokia Siemens Networks, Nokia	(R1-073660)
R1-074335	Repeated transmission of ACK in TDD FS2 PUCCH	Nokia, Nokia Siemens Networks	
R1-074336	Multiple ACK transmission in PUCCH for TDD FS2	Nokia, Nokia Siemens Networks	
R1-074337	CQI and CQI+ACK transmission in PUCCH for TDD FS2	Nokia, Nokia Siemens Networks	
R1-074373	Control Signalling for Half Duplex FDD in LTE	Ericsson	
R1-074408	Ack/Nack repetition and Implicit Resource Allocation for PUCCH	Panasonic	
R1-074410	Mapping position of control channel for Uplink Shared Channel	Panasonic	
R1-074411	Cyclic shift hopping patterns for uplink ACK/NACK	Panasonic	
R1-074412	Ordering of the implicit resource allocation table for UL ACK/NACK	Panasonic	
R1-074413	Variable Phase Definition of the Reference Signal for CQI in PUCCH	Panasonic	
R1-074414	Clarification of Implicit Resource Allocation of Uplink ACK/NACK Signal	Panasonic	
R1-074435	Signaling of Frequency Hopping for UL Transmission	Alcatel-Lucent	
R1-074438	PUCCH details for TDD FS2	Nokia, Nokia Siemens Networks	
R1-074464	Investigation on Performance of PUCCH in Coverage-limited Conditions	NTT DoCoMo	(R1-074290)
R1-074487	ACK/NAK Performance in PUCCH with Timing Offset and Near-Far Effect	Texas Instruments	(R1-074140)
R1-074493	Improved Flexibility/Performance CQI+ACK/NACK coding in the E-UTRA uplink	SHARP	(R1-073941)

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R1-074491	Proposed way forward on ACK/NACK channelization	Panasonic, Nokia, Nokia Siemens Networks, Samsung, Texas Instruments	(R1-074409)
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The document was presented by Seigo Nakao from Panasonic and proposes the allocation of cyclic shift and orthogonal cover for UL ACK/NACK for the case of 18 ACK/NACK channels in an RB.

Discussion (Question / Comment):

Decision: Document is noted and the way forward is agreed. Table 1 is an example for the ACK/NACK channelization. Table 2 is to be included in TS 36.211.

6.2.5 Mapping of virtual resource blocks to physical resource blocks

R1-074019	Downlink DVRB email reflector summary	Motorola	
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The document was presented by Brian Classon from Motorola and provides feedback from email discussion w.r.t open issues for the DL including:

- how to assign the Nd PRB-pairs a VRB-pair is mapped to
- which mapping to use for Nd=3
- should we remove Nd=3

Discussion (Question / Comment):

Decision: Document is noted and following statement is agreed:

- Mapping#1 agreed for Nd=3

R1-074417	VoIP capacity comparison between Nd=2 and Nd=3 for DL distributed transmission	Panasonic	
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The document was presented by Akihiko Nishio from Panasonic and provides a system level comparison for the VoIP capacity between Nd=2 and Nd=3.

The paper concludes that 8~9% VoIP capacity gain of Nd=3 vs. Nd=2 is observed and justifies the necessity of Nd=3.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073922	PDSCH distributed transmissions	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and shows the performance difference for a narrowband VoIP application (7.95kbps) requiring a single RB pair as a resource allocation. It provides a comparison of the DL VoIP capacity for Nd=2 and Nd=12 with the assumption that the results for Nd=3 are expected to be in between those.

The paper concludes that the VRB to PRB mapping option with Nd=3 does not provide any additional value.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion: The two previous contributions showed quite different results and opposite conclusions and the discussion didn't bring any in light how this could be explained. Status quo situation!!

R1-074021	Uplink SCH Hopping Configuration email reflector summary	Motorola	
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The document was presented by Brian Classon from Motorola.

Discussion (Question / Comment):

Decision: Document is noted. Some additional discussions are still required to check whether Intra-subframe hopping should be able to be turned off on a UE specific basis.

R1-074495	Way forward for LFDMA with hopping in PUSCH	Samsung, Qualcomm	
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The document was presented by Miss Heo Youn from Samsung

Discussion (Question / Comment):

Decision: Document is noted. Way forward shall be revisited after off-line discussion.

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R1-074517	Way forward for LFDMA with hopping in PUSCH	Samsung, Qualcomm, Ericsson, LGE, Motorola, NEC, Nortel, NTT DoCoMo, Nokia, Nokia Siemens Networks, Panasonic, ZTE	(R1-074495)
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The document was presented by Miss Heo Youn from Samsung

Discussion (Question / Comment):

Decision: Document is noted.

Agreement on the way forward for Uplink LFDMA hopping as follows:

- The indication to a particular UE to transmit in FSS (not hopped) or FH mode signalled in uplink grant (1bit)
 - 0 : No hopping, 1 : Hopping
- Semi-static configuration of two hopping modes on a cell specific basis (signalled by D-BCH)
 - Inter-subframe hopping only
 - both intra and inter-subframe hopping
- N is the maximum amount of bandwidth (resources) which can be allocated to a hopping UE
 - $N = N_{RB} / M$
 - N_{RB} = total number of RBs used for PUSCH transmission.
 - Maximum M value is [2-4].
- UE can change RB(s) with uplink grant in (re)transmission
 - FFS if it can be done without obeying hopping sequence
 - Additional bits related to hopping may be included in the UL grant (FFS)
- Hopping schemes : FFS
 - Cyclic shift hopping + mirroring (R1-074209, LGE)
 - Sub-band hopping (R1-074157, NEC)
 - Pattern based hopping (R1-074222, ZTE, CATT, Huawei)
 - Combination of mirroring and hopping (R1-074495, Qualcomm, Samsung)
 - ...

The following set of document has not been treated.

R1-073923	UL hopping for frequency diverse scheduling	Qualcomm Europe	
R1-073963	On the need of $N_d=3$ for the diversity VRB mapping	Nortel	
R1-073964	UL RB hopping for PUSCH	Nortel	
R1-074017	DL Distributed Transmission for $N_d=3$	Motorola	
R1-074018	A simple example of dynamic DVRB signaling	Motorola	

R1-074020	UL Resource Allocation for Frequency-diverse (hopping) Allocations	Motorola	
R1-074099	UL LFDMA with hopping in PUSCH	Samsung	
R1-074100	Uplink time domain hopping for E-UTRA TDD	Samsung	
R1-074154	Cell-specific Mapping of VRBs to PRBs for Downlink Distributed Transmission	NEC Group	
R1-074155	DL Distributed Resource Signalling for EUTRA	NEC Group	
R1-074156	Performance Evaluation of FH Schemes for EUTRA Uplink	NEC Group	
R1-074157	Frequency Hopping Pattern for EUTRA Uplink	NEC Group	
R1-074208	DL LVRB allocation approach	LG Electronics	
R1-074209	Frequency hopping method for PUSCH	LG Electronics	
R1-074219	Distributed Transmission in E-UTRA Downlink	ZTE	
R1-074222	The Intra-TTI frequency hopping scheme in PUSCH	ZTE, CATT, Huawei	
R1-074229	Performance evaluation of cell-specific mapping of distributed virtual resource blocks in downlink	Huawei	
R1-074253	DVRB to PRB mapping for EUTRA downlink	Philips	
R1-074258	Distributed Virtual Resource Block Mapping for Persistent Resource Allocation as VoIP	Alcatel-Lucent	
R1-074275	VRB addressing for localized and distributed DL transmission	Alcatel-Lucent	
R1-074291	Usage of Remaining Resource Elements in Resource Blocks Multiplexed with PBCH and SCH	NTT DoCoMo	
R1-074292	Control Signaling for Uplink Frequency Hopping in E-UTRA	NTT DoCoMo	R1-074465
R1-074338	On the impact of LTE DL distributed transmission	Nokia, Nokia Siemens Networks	
R1-074361	Distributed VRB mapping over 3 PRBs	Mitsubishi Electric	
R1-074416	DVRB-pair to PRB-pair assignment and signaling for DL distributed transmission	Panasonic	
R1-074418	Views on mapping within distributed PRB-pair for $N_d=3$	Panasonic	
R1-074419	Mapping within distributed PRB-pair for $N_d=3$	Panasonic	
R1-074465	Control Signaling for Uplink Frequency Hopping in E-UTRA	NTT DoCoMo	(R1-074292)

6.2.6 SSC, PSC

R1-074022	Cell Search E-mail Reflector Summary	Motorola	
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The document was presented by Amitava Ghosh from Motorola and summarizes the email discussions on following 3 topics:

- Radio frame timing detection
- Choose the number of codes for SCH1 and SCH2 so that the number of hypothesis is 340.
- Choose the scrambling sequence based on (II).

Discussion (Question / Comment):

Decision: Document is noted.

R1-074498	Way Forward for Secondary SCH Mapping and Scrambling	TI, Motorola, Huawei, LGE, Nortel, Qualcomm, Sharp, ETRI	
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The document was presented by Eko Onggosanusi from TI.

Discussion (Question / Comment):

Decision: Document is noted and way forward is agreed.

The following set of documents has not been treated.

R1-073924	Scrambling of SSC	Qualcomm Europe	
R1-073925	Details for SSC specification	Qualcomm Europe	
R1-073943	Proposed Scrambling sequences for S-SCH with embedded frame timing derivation	SHARP	
R1-073944	System information mapping for the SSC	SHARP	
R1-073965	Scrambling code design for SSCH	Nortel	
R1-073966	Short Sequences for S-SCH	Nortel	
R1-074023	Optimisation of P-SCH Indices for Synchronous Network Operation	Motorola, Nokia, Nokia Siemens Network	
R1-074024	Evaluation of Scrambling Methods for S-SCH	Motorola	
R1-074025	Indication of Frame Boundary Using S-SCH	Motorola	
R1-074052	Comparison of S-SCH mapping Methods	ETRI	
R1-074053	S-SCH Scrambling Methods	ETRI	
R1-074143	Secondary SCH Mapping and Scrambling	Texas Instruments	
R1-074211	Flexibility of detecting 40ms P-BCH boundary	LG Electronics	
R1-074220	Remaining Issues on SSC Design	ZTE, RITT, CATT	
R1-074230	Scrambling and information encoding for the S-SCH	Huawei	
R1-074293	Investigation on P-SCH Specific Scrambling Sequences for S-SCH	NTT DoCoMo	
R1-074339	Transmission of P-BCH, P-SCH and S-SCH on dedicated MBMS carrier	Nokia, Nokia Siemens Networks	
R1-074374	Scrambling of the Secondary Synchronization Signal	Ericsson	
R1-074433	P-BCH TTI boundary detection using BPSK on S-SCH	InterDigital Communications LLC	
R1-074485	SSCH Mapping to Group ID and Frame Timing	Marvell Semiconductor	(R1-073898)
R1-074502	SSC mapping and scrambling method	LG Electronics	(R1-074210)

6.2.7 RACH

R1-074026	Random Access E-mail Reflector Summary	Motorola	
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The document was presented by Amitava Ghosh from Motorola

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion:

- Root Zadoff-Chu allocation (Revisit after **offline discussion**)
 - Pair-wise allocation with the selection method [...]
- PRACH slot configuration for FDD indicated with 4 bits as in the table below:

RA slot configuration	RA period (sub-frames)	RA sub-frames
0	20	1
1	20	4
2	20	7
3	10	1
4	10	4
5	10	7
6	5	1
7	5	2
8	5	3
9	10	1, 4, 7
10	10	2, 5, 8
11	10	3, 6, 9
12	2	0
13	2	1
14	1	0
15	20	9

- PRACH slot configuration for TDD FS1 indicated with 3 bits as in the table below:

Slot allocation #	M_T	N_F	$f_{PRACH}(P=5m)$	$f_{PRACH}(P=10ms)$
0	1	1	1 / 5.0ms	1 / 10ms
1	1	2	1 / 2.5ms	1 / 5.0ms
2	1	3	1 / 1.7ms	1 / 3.3ms
3	1	5	1 / 1.0ms	1 / 2.0ms
4	1	10	1 / 0.5ms	1 / 1.0ms
5	2	1	1 / 10ms	1 / 20ms
6	3	1	1 / 15ms	1 / 30ms
7	4	1	1 / 20ms	1 / 40ms

- FFS what to do with the 4th bit
- For TDD (FS1, FS2) multiple PRACH frequency access slots in one sub-frame are supported

- FFS where to place the PRACH in the subframe
- Exact cyclic shift values
 - Working assumption in the table below

N_{CS} Configuration	Set 2
0	13
1	15
2	18
3	22
4	26
5	32
6	38
7	46
8	59
9	76
10	93
11	119
12	167
13	279
14	419
15	839

- PRACH for 1.4 MHz
 - Solution (e.g. changed numerology, ACK/NAK avoidance) to be decided at next meeting, based on inputs.
- Cyclic shift restriction: Not multiples of N_{CS}
- Start of random access burst for FDD
 - For FDD, the start of the random access burst shall be aligned with the start of an uplink sub-frame.

R1-074494	Proposed way forward for PRACH sequence ordering discussion	Panasonic, TI, Huawei, LGE, NTT DoCoMo	(R1-074420)
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The document was presented by Pierre Bertrand from TI

Discussion (Question / Comment):

Decision: Document is noted.

R1-074180	PRACH Slot Configuration for TDD FS1	IPWireless, NextWave Wireless	
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The document was presented by Nick Anderson from IPWireless and addresses TDD specific design aspects and proposes a configuration scheme for TDD FS1.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074147	Cyclic Shift Values for E-UTRA PRACH	Texas Instruments, LG Electronics	
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The document was presented by Pierre Bertrand from TI.

Discussion (Question / Comment):

Decision: Document is noted.

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R1-074514	Way forward proposal on PRACH sequence ordering	TI, LGE, Huawei, Alcatel-Lucent, Nokia, Nokia Siemens Networks, Panasonic, NTT DoCoMo	
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The document was presented by Miss Jing Jiang from TI.

Discussion (Question / Comment):

Decision: Document is noted and way forward is agreed.

The following set of documents has not been treated.

R1-074027	RACH Slot Configurations for FS1	Motorola	
R1-074028	RACH for 1.4MHz System Bandwidth	Motorola	
R1-074029	Comparison of Different Proposals for Ncs	Motorola	
R1-074101	Cyclic Shift Restrictions for RACH in Small, Medium and Large Cells	Samsung	
R1-074102	Determination of the Cyclic Shift Amount, Ncs	Samsung	
R1-074144	Random Access Slot Configurations	Texas Instruments	
R1-074145	Sequence ordering for PRACH in E-UTRA	Texas Instruments, LG Electronics, Huawei	
R1-074146	Comparison of Hybrid methods for PRACH sequence ordering	Texas Instruments	
R1-074148	Cyclic Shift Configuration and Sequence Ordering in Support of High-Speed Random Access	Texas Instruments	
R1-074231	Comparison of proposals for values of cyclic shift increment Ncs	Huawei	
R1-074294	On PRACH Structure for 1.4-MHz System Bandwidth	NTT DoCoMo	
R1-074295	PRACH Multiplexing Method and Slot Configuration for E-UTRA Uplink	NTT DoCoMo	
R1-074340	Sequence ordering and other RACH issues	Nokia Siemens Networks, Nokia	
R1-074392	Specification of Formula for Restricted Cyclic shift Set	LG Electronics, Nokia, Nokia Siemens Networks, Texas Instruments	
R1-074421	PRACH sequence index ordering	Panasonic	
R1-074422	Limitation of RACH sequence allocation for high mobility cell	Panasonic	

6.3 Finalization of TS 36.212

CRC

R1-074441	CRC Bit Order: Way Forward	Nokia Siemens Networks, Nokia, Motorola, Ericsson, Samsung	
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The document was presented by Thomas Chapman from NSN and proposes that the LTE specification 36.212 is simplified by adopting natural CRC bit order.

Discussion (Question / Comment):

Decision: Document is noted and proposed way forward agreed.

R1-074341	CRC Bit Order: Simulation Results	Nokia Siemens Networks, Nokia	
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Decision: Document is noted as an attachment to R1-074441.

R1-074473	TB CRC generator polynomial	Ericsson, ETRI, ITRI, LGE, Motorola, Nokia, Nokia Siemens Networks, Nortel, Qualcomm, Samsung, ZTE	(R1-074105)
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The document was presented by Zhouyue Pi from Samsung and proposes to use different CRC generator polynomials for calculating the CB CRC and the TB CRC.

Discussion (Question / Comment): Concerns on the reliability and accuracy of the proposal CRC generator polynomials

Decision: Document is noted and agreed as working assumption, but it shall be revisited if it is found that second polynomial is not needed.

R1-074375	Error Detection Reliability of CRC	Ericsson	
R1-074448	Generator Polynomial for Transport Block CRC	Qualcomm Europe	

Decision: Documents are noted as attachments to R1-074473.

R1-074376	ID specific CRC on DL-SCH/UL-SCH	Ericsson	
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The document was presented by Stefan Parkvall from Ericsson and proposes to include the MAC identity in the CRC calculation for DL-SCH and UL-SCH.

Discussion (Question / Comment):

Decision: Document is noted. Off-line discussion required (to be revisited)

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Discussion should continue until next meeting

Interleaving and multiplexing

R1-074468	Way forward on Physical Channel Segmentation	Motorola, Nokia, Nokia Siemens Networks, Broadcom, TI, Qualcomm, Nortel, Freescale	
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The document was presented by Brian Classon from Motorola and proposes a way forward to overcome the “equal-size” rule that did not take multiple antenna scenarios into consideration. Proposal is that an equal-size rule with even number of modulation symbols per CB be adopted for TBs mapped to multiple layers.

Discussion (Question / Comment):

Decision: Document is noted and way forward agreed.

R1-074030	Physical Channel Segmentation Considering Multiple Antennas	Motorola	
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Decision: Document is noted as an attachment to R1-074468.

TDD HARQ

R1-074173	Summary of Reflector Discussions on TDD FS1: HARQ related	IPWireless, NextWave Wireless	
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The document was presented by Huiheng Mai from NextWave Wireless and summarizes the email discussion on number of HARQ processes and HARQ timing, and corresponding way forward.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion:

- Way forward for UL and DL is agreed.
- Discussion on actual DL/UL allocations is not restricted by this.
- If eNodeB processing times change for FDD, this should be revisited for TDD as well.

R1-074446	TDD HARQ timing	IPWireless, NextWave Wireless	(R1-074179)
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The document was presented by Huiheng Mai from NextWave Wireless.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074345	HARQ in TDD (FS 1)	Nokia, Nokia Siemens Networks	
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The document was presented by Che Xiangguang from Nokia and discusses the processing time requirements that relate to efficient HARQ operation with FS1 in TDD.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074346	HARQ in TDD (FS 2)	Nokia, Nokia Siemens Networks	
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The document was presented by Che Xiangguang from Nokia and discusses the processing time requirements that relate to efficient HARQ operation with FS2 in TDD.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074178	Implementation of Idle Period in TDD FS1	IPWireless, NextWave Wireless	
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The document was presented by Huiheng Mai from NextWave Wireless and proposes to adopt method B (as described in paper) to implement the IP for TDD FS1. This method matches the coded bits only to the channel bits that are not in the IP and thereby provides equal error protection amongst all code blocks.

Discussion (Question / Comment):

Decision: Document is noted and proposal is agreed.

Number of HARQ processes

R1-074269	Number of HARQ Processes	Alcatel-Lucent	
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The document was presented by Henry Ye from Alcatel-Lucent and addresses the question whether the eNode B's processing time should be chosen as 2 ms or 3 ms and proposes to adopt 7 HARQ processes in order to shorten the total round trip HARQ delay.

Discussion (Question / Comment): Nokia had concerns with 2ms processing time and asked whether having 7 or 8 HARQ processes makes a difference from user perspective.

Decision: Document is noted.

R1-074466	Views on Number of Hybrid ARQ Processes in E-UTRA	NTT DoCoMo, AT&T, KDDI, Mitsubishi Electric, Orange, Sharp, T-Mobile	(R1-074296)
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The document was presented by (...) from NTT DoCoMo and presents the contributor's view on the number of HARQ processes in the E-UTRA FDD from the operator viewpoint and then, proposes to add an option with 6 HARQ processes to achieve short latency.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074344	Number of HARQ processes for FDD	Nokia, Nokia Siemens Networks	
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The document was presented by Asbjörn Grovlen from Nokia and discusses the processing times for eNB. The paper recommends that the number of HARQ processes in the UL should be 8 with 8 ms between retransmissions.

Discussion (Question / Comment):

Decision: Document is noted. Mr Chairman suggests revisiting this topic at the next meeting and continuing discussion until then.

The following set of documents has not been treated.

R1-073926	Details of control and data multiplexing in PUSCH	Qualcomm Europe	
R1-073927	RE mapping for PDSCH and PUSCH	Qualcomm Europe	
R1-073967	MCS selection for LTE	Nortel	
R1-074031	RV definition	Motorola	
R1-074032	On supporting 1st stage turbo code rate matching	Motorola	
R1-074033	Soft Buffer size per HARQ Process	Motorola	
R1-074034	Bit Scrambling Per Code Block	Motorola	
R1-074103	Performance of orthogonal Hybrid ARQ for multi-user MIMO in E-UTRA uplink	Samsung	
R1-074104	Redundancy Version (RV) Definition for Turbo code Rate Matching	Samsung	
R1-074106	RV starting point in UL HARQ	Samsung	
R1-074108	HARQ symbol to RE mapping	Samsung	

R1-074184	Adoption of 2-stage Rate Matching and Modified IR-HARQ	Fujitsu	
R1-074342	RV Definition	Nokia Siemens Networks, Nokia	
R1-074343	BCH Interleaving	Nokia Siemens Networks, Nokia	
R1-074478	One generator polynomial for both transport block CRC and code block CRC	Broadcom	

6.4 Finalization of TS 36.213

6.4.1 Timing synchronization

R1-074109	Radio link monitoring for E-UTRA	Samsung	
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The document was presented by Juho Lee from Samsung and takes consideration on how to check the synchronisation status of radio link for E-UTRA taking into account the case of WCDMA. Both the synchronisation primitives and radio link failure procedure are addressed.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074377	On monitoring radio problem detection	Ericsson	
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The document was presented by Lars Lindbom from Ericsson and discusses on how the combination of several physical signals and channels might be used for indicating downlink radio problem detection in order to speed up the radio link detection in particular when UEs operates in DRX mode.

Discussion (Question / Comment):

Decision: Document is noted.

The following document has not been treated.

R1-074035	Timing and HARQ	Motorola	
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6.4.2 UL/DL Power Control

R1-074439	Summary of Power Control E-mail Discussion	Nokia Siemens Networks	
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The document was presented by Jari Lindholm from NSN and summarizes the outcomes of email discussion on UL PC.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusion:

PUSCH formula:

- P_0 proposed dynamic range is agreed on [-126dBm, 24dBm]
- Δ_i (accumulation): Off-line discussion is required
- Δ_i (absolute): Off-line discussion is required

PUCCH formula:

- Po proposed dynamic range is agreed on [-130dBm, -96dBm]
- delta_i: Off-line discussion is required

P-PUSCH

- It is agreed that PUSCH formula is used for persistent PUSCH

R1-074041	UE Transmit Power Adjustment for LTE	Motorola	
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The document was presented by Nory Ravikiran from Motorola and outlines options that enable LTE UEs to accurately adjust transmission power. As a conclusion, two options are compared and it is proposed that RAN1/4 investigate various alternatives that further define how option 2 can be specified in the E-UTRA specifications.

Discussion (Question / Comment):

Decision: Document is noted. Draft LS to RAN4 shall be made in R1-074484 (Motorola) on transient behaviour for power adjustment in a slot in different subframes.

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R1-074484	LS on UE transmission power adjustments	RAN1, Motorola, Panasonic	
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The document was presented by Robert Love from Motorola

Discussion (Question / Comment):

Decision: Document is agreed. LS can be sent to RAN4.

R1-073930	Details on UL Power Control	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and covers open issues related to the specification of UL power control for E-UTRA.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074039	Power setting for persistent scheduled PUSCH	Motorola	
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The document was presented by (...) from Motorola and proposes power control scheme for persistent PUSCH.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074470	Uplink Power Control for E-UTRA – Comments on Open Issues	Ericsson	(R1-074378)
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The document was presented by Erik Dahlman from Ericsson.

Discussion (Question / Comment):

Decision: Document is noted. Off-line discussion should go on.

R1-074348	Power control headroom reports for EUTRAN uplink	Nokia Siemens Networks, Nokia	(R1-073676)
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The document was presented by Jari Lindholm from NSN and underlines the importance of power control headroom reports, especially in relation to the allocation of the uplink transmission bandwidth and MCS to the different users.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074038	Path loss and power headroom report for uplink power control	Motorola	
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The document was presented by (...) from Motorola.

Discussion (Question / Comment):

Decision: Document is noted. Off-line discussion should go on.

R1-074479	Way forward on DL power control	NEC, Ericsson, Fujitsu, Marvell Semiconductor, Motorola, Panasonic, Philips, Qualcomm, ZTE	(R1-074158)
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The document was presented by Thanh Bui from NEC.

Discussion (Question / Comment): Nokia didn't contribute but agrees with the proposed way forward.

Decision: Document is noted. Off-line discussion should go on.

The following set of documents has not been treated.

R1-073968	UL Power Control with Fractional Frequency Reuse for E-UTRA	Nortel	
R1-074037	Sounding Reference Signal Power Setting	Motorola	
R1-074040	EPRE Downlink Requirements	Motorola	
R1-074212	Consideration on UL power control	LG Electronics	
R1-074266	UL Power Control Parameter Values in PUSCH Power Control	Alcatel-Lucent	
R1-074274	Power Control for RACH	Alcatel-Lucent	
R1-074347	Closed loop power control corrections for PUSCH	Nokia Siemens Networks, Nokia	(R1-073675)
R1-074387	E-UTRA Power Control Performance Comparison of Feedback Methods	InterDigital Communications LLC	
R1-074388	Uplink Power Control Procedures and Text Proposal for E-UTRA	InterDigital Communications LLC	
R1-074423	Power control: Function split between Specifications	Panasonic	

R1-074511	Summary of Power Control Discussion	Nokia	
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The document was presented by Asbjörn Grovlen from Nokia.

Discussion (Question / Comment):

Decision: Document is endorsed.

6.4.3 Inter-cell Interference Coordination

R1-074477	Way forward on UL ICIC/overload indicator for LTE	Nokia Siemens Networks, Nokia, Ericsson, Alcatel-	
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		Lucent, T-Mobile	
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The document was presented by Joern Krause from NSN.

Discussion (Question / Comment): Comment done stating that multiple simulations from different companies have been performed and results made available for the proposed frame work for further progress.
 Motorola and Qualcomm did complain on the retained approach. Due to lack of time, Mr Chairman decided to stop the discussion.

Decision: Document is noted. Off-line discussion is required to understand Motorola concerns. The topic shall be revisited during the week.

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Discussion should go on until next meeting

The following set of documents has not been treated.

R1-073969	Discussion on the DL interference coordination	Nortel	
R1-074042	Uplink Inter-Cell Power Control: X2 Messages	Motorola	
R1-074235	Improving Inter-Sector Handover User Throughput by Combined Interference Coordination and softer Handover in E-UTRA Downlink	CHTTL	
R1-074264	Support for Semi-Static Inter cell Interference Coordination	Alcatel-Lucent, Nortel Networks	
R1-074349	Overload Indicator handling for LTE	Nokia Siemens Networks, Nokia	
R1-074350	Low load scenarios with CQI-based interference coordination	Nokia, Nokia Siemens Networks	
R1-074379	Reactive and Pro-active Use of Uplink Overload Indication in LTE	Ericsson	
R1-074444	On Inter-cell Interference Coordination Schemes without/with Traffic Load Indication	Ericsson	(R1-074380)
R1-074475	Semi-Static Interference Coordination Method	Alcatel-Lucent	(R1-074263)

6.4.4 RACH timing and preamble sequence selection

R1-074172	Summary of Reflector Discussions on TDD FS1: RACH Timing	IPWireless, NextWave Wireless	
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The document was presented by Huiheng Mai from NextWave Wireless but presentation was stopped due to laptop battery failure and RAN1 running out of time.

Discussion (Question / Comment):

Decision: Document should be presented at next meeting.

6.4.5 UE Procedures for downlink shared channel

R1-074501	Summary of CQI Ad-Hoc	Ad-Hoc Chairman	
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The document was presented by Juho Lee from Samsung and provides the results of the parallel sessions on CQI.

Discussion (Question / Comment):

Decision: Document is endorsed.

Here below are the documents that have been treated under this Agenda Item during the parallel sessions and the related conclusions:

CQI generic structure

R1-074047	Way Forward for CQI Reporting	Motorola	
R1-074352	CQI format to facilitate eNode-B link adaptation	Nokia Siemens Networks, Nokia	
R1-074381	Aperiodic CQI reporting	Ericsson	
R1-074424	Discussion on CQI Report Metric (SINR vs TBS)	Panasonic	
R1-074453	Proposed way forward for CQI reporting	Nokia Siemens Networks, Ericsson, Huawei, Nokia, CATT	(R1-074383)

Conclusion:

- CQI index is defined in terms of TBS, MS (QPSK, 16QAM, 64QAM) per n PRBs
 - Value of n is fixed and FFS.
 - Other parameters are FFS.
- A single CQI index corresponds to an index pointing to a value in the CQI table.
 - How many CQI indices per m subframe(s) will be sent to the Node B is FFS.
- What equivalent SINR step size is assumed in the CQI table?
 - Minimum step size = 1dB
 - Other values for the step size FFS.
- Number of entries in the CQI table for single TX antenna = 32
- Reporting can be periodic or aperiodic.

	Periodic	Aperiodic
Frequency non-selective	PUCCH PUSCH (only when scheduled)	PUSCH
Frequency selective	PUCCH PUSCH (only when scheduled)	PUSCH

- Aperiodic reporting
 - The Node B order for the aperiodic reporting is sent in downlink as part of the UL grant.
 - Having maximum 1 bit indication is the working assumption. Having more than 1 bit is FFS.
 - Aperiodic report per one Node B order is sent using PUSCH.
 - The aperiodic CQI report is treated as the separate L1 signalling.
 - Not preclude the possibility of repeating over FFS (0, 1, 2,...) subframes for coverage improvement.

- Aperiodic report size and message format can be flexible in terms of size and contents but format needs to be configured by the eNB and reported to UE (e.g. via RRC).
- In case both periodic and aperiodic reporting would occur in the same subframe, only the aperiodic report is transmitted in that subframe.
- Minimum reporting periodicity for CQI and PMI is 1 subframe.

CQI-1TX

R1-074090	Uplink CQI report format	Samsung	
R1-073933	Selection of CQI reporting scheme	Mitsubishi Electric	
R1-073931	Enhanced CQI Feedback with Reduced Overhead for E-UTRA	Icera Semiconductor	
R1-073945	Adaptive Best-M Based Scheme for CQI Reporting in the LTE UL	SHARP	
R1-074153	CQI Feedback Reduction Scheme for E-UTRA	Texas Instruments	
R1-074232	Performances of CQI feedback schemes on PUSCH	Huawei	
R1-074234	Optimal bitmap compression for CQI feedback	Huawei	
R1-074261	Incremental CQI Feedback Scheme and Simulation Results	Alcatel-Lucent	
R1-074389	Performance Evaluation of E-UTRA CQI Schemes with Restricted Reporting Periods	InterDigital Communications LLC	
R1-074415	Selected sub-band CQI reporting	Panasonic	
R1-074490	CQI compression - starting point	CQI Ad-Hoc Chair	
R1-074496	Proposal for CQI way forward	Nokia, Nokia Siemens Networks, Ericsson, TI, Huawei, Samsung, Qualcomm, ZTE, CATT, Nortel	

Conclusion:

- Subband is a set of contiguous k PRBs
 - k can be configured by the Node B

Conclusions for single codeword transmission

- The eNB should have the possibility to semi-statically restrict the set of subbands a UE should use in CQI reporting.

Conclusion for CQI signalling using PUSCH

(The feedback of second codeword CQIs, PMIs on PUSCH and rank feedback is FFS.)

- A UE is configured by the eNB to feed back CQI on PUSCH using one of the following types.
 - Wideband feedback
 - One wideband CQI value is reported.
 - Node B-configured subbands feedback

- One CQI for each subband in the set of subbands semi-statically configured by the Node B (see above bullet point) is reported.
- Additionally, one wideband CQI value may be reported.
- A differential compression method (with TBD bits (including fractional number of bits) per subband) is used and may comprise e.g.
 - Differential with respect to some reference value, e.g. wideband CQI.
 - Differential with respect to neighbouring subbands
- <= TBD PRBs should be used to carry Node B-configured subbands feedback
- UE-selected subbands feedback
 - The UE selects the M best subbands within the subbands configured by the Node B and reports the positions of these M subbands using e.g. a compressed label or bitmap.
 - If a compressed label scheme is adopted, the parameter M is configured by the eNodeB/network. The possible values for M are FFS.
 - One CQI value is reported assuming transmission only over the M selected subbands.
 - Additionally, one wideband CQI value is reported.
 - The best- M CQI value is reported differentially relative to the wideband CQI. The details are FFS.

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R1-074512	Way forward on Multiple Antenna Transmission for high-mobility UE	Samsung, LGE, Nortel, AT&T	(R1-074458)
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The document was presented by (...) from Samsung

Discussion (Question / Comment): A few companies raised concerns not having sufficient time for reviewing the proposed way forward.

Decision: Document is noted. Mr Chairman advises for more discussions between companies and postpones decision to next meeting.

The following set of documents has not been treated.

R1-073908	Calibration procedures for TDD beamforming	Qualcomm Europe	
R1-073928	Details on CQI format	Qualcomm Europe	
R1-073936	Evaluation of Delta CQI Scheme	Alcatel-Lucent	
R1-073946	Proposal for the expression of sub band position for Best-M based CQI reporting	SHARP	
R1-073947	Consideration of CQI, PMI, and rank report feedback interval	SHARP	
R1-073948	Transmission mechanism for CQI reporting	SHARP	
R1-073949	Proposal for CQI feedback reconfiguration	SHARP	
R1-073970	Discussion on the Improvement of the Blind Detection of the antenna configuration	Nortel	
R1-073971	Discussion on Rank Adaptation Based on Shadowing for High Speed UEs	Nortel	
R1-073972	Further discussion on rank adaptation for high speed UE	Nortel	

R1-073973	System level simulation of adaptive MIMO for high speed UE	Nortel	
R1-073974	Performance evaluation of CL MIMO performance under different UE speed	Nortel	
R1-073975	Evaluation of Spatial Multiplexing for MBSFN including Line of Sight Considerations	Nortel	
R1-073976	Update on HARQ performance enhancement	Nortel	
R1-073977	Rank-1 and Rank-2 Transmission for High Mobility UE	Nortel	
R1-073978	MIMO feedback channel design (PMI, CQI and rank)	Nortel	
R1-074043	CQI Feedback Schemes for E-UTRA	Motorola	
R1-074044	Performance of CQI Feedback Schemes	Motorola	
R1-074045	Joint feedback for E-UTRA downlink precoding and CQI	Motorola	
R1-074046	MU-MIMO for E-UTRA	Motorola	
R1-074149	Design Aspects of UE Feedback	Texas Instruments	
R1-074150	Rank and PMI Feedback Rate – Analysis	Texas Instruments	
R1-074151	CQI/PMI Feedback Rate – System Simulation	Texas Instruments	
R1-074152	Rank Feedback Rate – System Simulation	Texas Instruments	
R1-074159	CQI, PMI and rank reporting issues for EUTRA	NEC Group	
R1-074213	Spatial Delta CQI in SU-MIMO	LG Electronics	
R1-074214	Separation of CQI report into indexes and values over PUSCH and PUCCH	LG Electronics	
R1-074215	Investigation on tradeoff between PMI overhead and performance	LG Electronics	
R1-074216	Consideration on Open-loop SM Transmission Mode	LG Electronics	
R1-074233	CQI and PMI resource management	Huawei	
R1-074254	Codebook for MU-MIMO	Philips, NXP Semiconductors	
R1-074255	CQI definition for MU-MIMO	Philips, NXP Semiconductors	
R1-074262	Application of the Incremental CQI Feedback Scheme	Alcatel-Lucent	
R1-074351	On CQI measurements and compression for eNode-B RRM support	Nokia Siemens Networks, Nokia	
R1-074353	CQI Trigger Mechanism	Nokia Siemens Networks, Nokia	(R1-073680)
R1-074354	Channel Quality Indicator for LTE MU-MIMO	Nokia, Nokia Siemens Networks	
R1-074355	Effect of Precoding Granularity on LTE Multiuser MIMO	Nokia, Nokia Siemens Networks	
R1-074356	CQI and MIMO feedback for LTE	Nokia Siemens Networks, Nokia	
R1-074363	Inconsistence of signalling overhead and resource indication value function	ZTE	
R1-074382	Extending Codeword to layer mapping for efficient support of retransmissions	Ericsson	
R1-074390	Binary Differential Feedback Using Existing Codebooks for E-UTRA	InterDigital Communications LLC	

R1-074391	E-UTRA PUCCH: ACK/NACK, CQI, PMI, and RI Issues	InterDigital Communications LLC	
R1-074395	Rank reporting for DL LTE MIMO	Freescale Semiconductor	
R1-074425	CQI transmission methods for large reports on PUCCH	Panasonic	-
R1-074426	Rank feedback in downlink MIMO	Panasonic	
R1-074427	Control signalling aspects of MU-MIMO	Panasonic	
R1-074430	Baseline CQI format	Qualcomm Europe	
R1-074436	Down Link Rank Adaptation with 4 Tx antennas for Open Loop MIMO at High Doppler	LSI Corporation	
R1-074458	Way forward on Multiple Antenna Transmission for high-mobility UE	Samsung, LGE, Nortel	
R1-074467	Necessity of Time Diversity for D-BCH	NTT DoCoMo	(R1-074297)
R1-074476	Transmission mode for BCCH	Ericsson	

6.4.6 UE Procedures for uplink shared channel

R1-073979	Further discussion on UL closed-loop adaptive antenna switching	Nortel	
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The document was presented by (...) from Nortel and discusses the control channel for antenna switching transmit diversity issues.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074357	DL signaling for close loop antenna selection in LTE UL	Nokia Siemens Networks, Nokia	
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The document was presented by Asbjörn Grovlen from Nokia and discusses an option for Closed Loop antenna switching transmit diversity DL signaling.

Discussion (Question / Comment):

Decision: Document is noted. The discussion should go on for deciding between R1-073979 and R1-074357. Mr Chairman requests proponents for providing all details to include the proposal into the specifications.

The following set of documents has not been treated.

R1-073929	Details on scheduling requests	Qualcomm Europe	
R1-074217	UL synchronous HARQ procedure and UE behaviour after ACK/NACK detection	LG Electronics	
R1-074256	UE procedure for ACK/NACK detection	Philips, NXP Semiconductors	
R1-074273	Power Offsets to Maintain QoS for Persistent Allocations in the Presence of Control Channel Multiplexing for the E-UTRA Uplink	Alcatel-Lucent	

6.5 Finalization of TS 36.214

R1-074358	Measurement states for inter-RAT UE measurements	Nokia Siemens Networks, Nokia	
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The document was presented by Joern Krause from NSN and brings correction to TS 36.214 about the states in which the specified inter-RAT UE measurements can be applied.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074482	36.214 CR001 (Rel-8, F) "RRC state correction for LTE UE measurements	Nokia Siemens Networks, Nokia	
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The document was shortly introduced by Joern Krause from NSN

Discussion (Question / Comment):

Decision: Document is noted. The topic shall be revisited at next meeting. CR for 36214 shall also be prepared if no concerns raised meanwhile.

R1-074260	A use case for Max Tx Power per PRB as a eNodeB Measurement	Alcatel-Lucent	
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The document was presented by Rainer Bachl from Alcatel-Lucent and discusses the definition of the Maximum Transmitted power per RB measurement. The paper defines the use case for eNodeB measurement standardization.

Discussion (Question / Comment):

Decision: Document is noted and shall be revisited after **off-line discussion**.

6.6 UE Categories

R1-074504	Summary of the e-mail discussion on UE category	NTT DoCoMo	(R1-074500)
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The document was presented by Sadayuki Abeta from NTT DoCoMo.

Discussion (Question / Comment):

Decision: Document is noted.

Conclusions from email discussion:

- Limitation of RB size
 - An explicit RB size limit should not be defined as part of UE categories.
- Support of MIMO as mandatory in other UE classes (UE class 2 -5)
 - MIMO is mandated for UE classes 2-5. RAN4 requirements below 1GHz including antenna are FFS for RAN4.

R1-074048	Further comments on UE capabilities and Soft Memory Size	Motorola	
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The document was presented by Kenneth Stewart from Motorola and outlines a set of UE classes in terms of downlink and uplink peak rates and soft memory sizes.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074359	UE Categories	Nokia, Nokia Siemens Networks	
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The document was presented by Asbjörn Grovlen from Nokia and discusses the different aspects of defining the physical layer parts of the UE classes and gives a proposal for the FDD UE classes.

Discussion (Question / Comment):

Decision: Document is noted.

- Peak rate for each UE class: Agreement reached for classes 2 to 5 as shown in below table. Discussions still required for class 1.

			Class 1	Class 2	Class 3	Class 4	Class 5
Peak rate (Mbps)	DL	Nokia, NSN	5	50	100	150	300
		Motorola	20.3	38.9	77.8	155.5	293.8
		Ericsson, Qualcomm, Samsung	10	50	100	150	300
	UL	Nokia, NSN	2	25	50	50	75
		Motorola	11.9	11.9	23.8	47.7	47.7
		Ericsson, Qualcomm, Samsung	5	25	50	50	75

- Support of DL 64QAM in UE class 1
 - If class 1 is selected as 5/2 (DL/UL), then DL 64QAM support is optional for class 1.

R1-073980	On Support of 2x2 MIMO for Class 1 UE	Nortel	
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The document was presented by (...) from Nortel and discusses on whether class 1 UE (low end UE) should support 2x2 MIMO transmission or not.

Discussion (Question / Comment):

Decision: Document is noted.

- Support of MIMO as mandatory in UE class 1
 - MIMO support with multiple code words to one UE optional for UE class 1.
 - Support for MU-MIMO is FFS
 - UE support for single code word transmission with 1, 2 or 4 TX antennas at the eNB is mandatory.

R1-074362	UE category with single Rx antenna	NXP, Philips	
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The document was presented by Gunnar Nitsche from NXP and focuses on UE category class 1, in particular on the number of Rx antennas.

Discussion (Question / Comment):

Decision: Document is noted.

- Support for UE RX diversity for UE class 1
 - RX diversity mandated for UE class 1, UE performance requirements to be decided by RAN4 (especially considering band dependence)

R1-074428	UE capability and time diversity	Panasonic	
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The document was not presented but Mr Chairman recommended delegates to read it.

Friday 12th October: 15:30

R1-074516	Draft LS on UE Categories	RAN1, NTT DoCoMo
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The document was presented by Sadayuki Abeta from NTT DoCoMo.

Discussion (Question / Comment): Document shall only report topics on which RAN1 has good view and remove the “TBD” parts.

Decision: Document is noted. LS has been reviewed and is agreed in **R1-074521** for sending to relevant WGs.

7. Combination of Higher Order Modulation and MIMO in HSDPA (FDD)

R1-073953	CQI for the combination of MIMO and 64QAM	Ericsson	
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The document was presented by Bo Göransson from Ericsson.

Discussion (Question / Comment):

Decision: Document is noted. CQI tables agreed as baseline for preparing CRs until next meeting.

R1-074299	25212CR (R8, B) HS-SCCH information field mapping for 64QAM MIMO	Nokia, Nokia Siemens Networks, Ericsson, Philips	
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The document was presented by Arto Lehti from Nokia as a draft CR to Rel-8.

Discussion (Question / Comment):

Decision: Document is agreed.

R1-074384	Modulation & Channelization Signaling for MIMO and 64-QAM	InterDigital	
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The document was presented by Eldad Zeira from InterDigital.

Discussion (Question / Comment):

Decision: Document is noted.

8. Enhanced Uplink for Cell_FACH State in FDD

R1-074300	Enhanced CELL_FACH state with E-DCH	Nokia, Nokia Siemens Networks	
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The document was presented by Antti Hiltunen from Nokia.

Discussion (Question / Comment):

Decision: Document is noted. Mr Chairman decided to look at the applications that are illustrated in following document.

R1-074301	Applications of Enhanced Uplink for CELL_FACH State in FDD	Nokia, Nokia Siemens Networks	
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The document was presented by Antti Hiltunen from Nokia and shows two use cases highlighting the gain mechanisms of the feature: typical HTTP requests and keep-alive inquiries.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074302	CELL_FACH state E-DCH – coverage comparison	Nokia, Nokia Siemens Networks	
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The document was presented by Antti Hiltunen from Nokia and compares RACH and E-DCH data transmission capabilities from coverage point of view via link level simulations in order to assess the feasibility of using E-DCH instead of RACH for delivering messages from the UE to the network in the CELL_FACH state.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074303	Resource assignment for E-DCH access in CELL_FACH state	Nokia, Nokia Siemens Networks	
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The document was presented by Karri Ranta-aho from NSN and shows an overview for the concept of direct E-DCH access in Cell-FACH state focused on how resource assignment could be done.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074126	L1/L2 aspects for enhanced UL for CELL_FACH	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and addresses some of the high level design aspects, both from a Layer 1 and Layer 2 perspective to allow for the operation of the enhanced uplink in the CELL_FACH state.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074127	Link analysis of HS-RACH	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm for information only and provides simulation results of the link analysis on the enhanced uplink performance in the CELL_FACH state.

Discussion (Question / Comment):

Decision: Document is noted.

R1-073954	Enhanced Uplink for CELL_FACH	Ericsson	
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The document was presented by Lars Lindbom from Ericsson and outlines a concept for activating E-DCH transmission in CELL_FACH, in which common E-DCH resources are broadcasted in a cell.

Discussion (Question / Comment):

Decision: Document is noted.

As result of the different contributions, working assumption on high level concept is:

- RACH preamble ramping as in R99 with AICH acknowledgement
 - Distinguishable preambles for RACH & Cell_FACH E-DCH
- NB can control physical resources for F-DPCH and E-DCH in Cell FACH
- Resource assignment indicated from NodeB to UE (FFS how)
- Collision resolution (FFS in RAN2)
- Transition to E-DCH transmission in Cell FACH
 - 10ms TTI, support of 2ms TTI FFS
 - max TB size FFS
 - Limited set of E-TFCs
- Resource release (FFS in RAN2/3)
- Possibility to seamlessly transfer to cell DCH

It is also decided to prepare LS in R1-074460 informing RAN2.

Friday 12th October: LS is agreed in **R1-074522**

9. Study Item on Synchronized E-DCH

R1-074128	Considerations for operation of sync E-DCH	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and discusses some of the design and practical issues related to the operation of Synchronized E-DCH on the uplink. The link performance of Synchronized E-DCH is discussed in R1-074129.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074129	Link analysis of sync E-DCH	Qualcomm Europe	
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The document was presented by Juan Montojo from Qualcomm and provides the results and conclusions on the performed simulation of synchronized E-DCH assuming that the dominant paths of all the users are perfectly aligned at the NodeB receiver.

Performance is evaluated for both 2ms TTI and 10ms TTI UEs in AWGN, PA3, PB3, VA30 and VA120 channels. Furthermore, evaluation is performed for both QPSK and 16-QAM modulation schemes.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074304	Synchronised E-DCH: Issues to be considered	Nokia Siemens Networks, Nokia	
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The document was presented by Thomas Chapman from NSN and discusses issues associated with operating the uplink using OVSF codes that should be addressed in order to assess the performance and understand the signalling requirements in the context of Release 8 HSPA.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074305	Synchronised E-DCH: Initial link simulations	Nokia Siemens Networks, Nokia	
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The document was presented by Thomas Chapman from NSN and shows the first results from the link level investigations on the performance of the OVSF separation.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074306	Draft TR skeleton for synchronised E-DCH	Nokia Siemens Networks, Nokia	
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The document was presented by Karri Ranta-aho from NSN and proposes the document structure for reporting the Study Item issues.

Discussion (Question / Comment): Although the draft TR content as shown may not be exhaustive, no comments on the feasibility and signalling listed requirements for introducing a synchronised E-DCH to Release 8.

TR number may be required (action point to MCC).

Decision: Document is noted and shall be revised in R1-074461.

Friday 12th October: TR skeleton is agreed in R1-074461

10. Study Item on Scope of future HSPA Evolution for 1.28Mcps TDD

R1-074049	Analysis of Enhancement to CELL_FACH State for 1.28Mcps TDD	ZTE	
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The document was presented by (...) from ZTE and investigates the CELL_FACH enhancement in 1.28Mcps TDD. It also outlines the work baseline that should be followed during the WI phase.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074050	Analysis of Continuous Packet Connectivity for 1.28Mcps TDD	ZTE	
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The document was presented by (...) from ZTE.

As a conclusion, the following aspects are listed as the assumptions to further studies on CPC in 1.28Mcps TDD during the WI phase.

- Remove the associated DPCH in HSDPA
- Assign non-scheduled E-DCH resources for each packet data user
- Introduce DRX and DTX conception
- Introduce HS-SCCH-less for downlink VoIP traffic and use non-scheduled transmission for uplink VoIP traffic

Discussion (Question / Comment):

Decision: Document is noted.

R1-074051	64QAM Simulation Results for 1.28Mcps TDD HSDPA	ZTE	
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The document was presented by (...) from ZTE and shows some of the potential benefits of introducing 64QAM modulation in the link-level downlink of 1.28Mcps TDD system. System-level simulation focuses on by using 64QAM in the indoor micro-cell scenarios.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074054	Cell Throughput Comparison for 2x2 MIMO: PARC, S-PARC and D-TxAA	TD-Tech	
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The document was presented by (...) from TD-Tech.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074189	Link Level Results of 2x2 MIMO Schemes for 1.28Mcps TDD	CATT	
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The document was presented by Ke Wang from CATT.

Discussion (Question / Comment):

Decision: Document is noted.

R1-074457	Draft TR for 1.28Mcps TDD HSPA evolution	TD-Tech	(R1-074440)
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The document was presented by (...) from TD-Tech.

Discussion (Question / Comment):

Decision: Document is noted and the proposed skeleton of the TR is agreed.

11. Closing of the meeting

RAN1 Chairman, Mr. Dirk Gerstenberger expressed his appreciation to the delegates and the host, the Chinese Friends of 3GPP for their supports.

He also welcomed the completion on SCH discussions achieved during the week and encouraged the delegates for joining on-going email discussions and solving the lump of remaining issues.

The meeting was closed at 16:30.

Annex A: List of participants at RAN1 #50b

Please see excel file attached to this report

Annex B: TSG RAN WG1 meetings in 2008

TITLE	TYPE	DATES	LOCATION	CTRY
3GPPRAN1#51bis	WG	14 – 18 Jan 2008	Sevilla	SP
3GPPRAN1#52	WG	11 – 15 Feb 2008	Sorrento	IT
3GPPRAN1#52bis	WG	31/03 – 4 April 2008	Shenzhen	CHINA
3GPPRAN1#53	WG	05 – 09 May 2008	TBD	
3GPPRAN1#53bis	WG	30/06 – 4 July 2008	TBD	
3GPPRAN1#54	WG	18 – 22 Aug 2008	TBD	
3GPPRAN1#55	WG	10 – 14 Nov 2008	TBD	

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

[illegible]

Annex D: List of Outgoing LSs from RAN1#50b

R1	Response to (lc LS)	To	Cc	Title	Contact	Ref'd /Attachd Tdoc	Release	WI
R1-074452	R5-072580 (R1-073901)	R5	R2	Response LS on introduction of radio bearers for MBMS PTP on HS in 34.108	Ericsson		Rel-8	-
R1-074484		R4		LS on UE transmission power adjustments	Motorola, Panasonic		Rel-8	LTE-RF
R1-074521		R2, R4		LS on UE categories	NTT DoCoMo		Rel-8	LTE
R1-074522		R2, R3		LS on RAN1 conclusions on Enhanced Uplink for CELL_FACH state in FDD	Nokia Siemens Networks		Rel-8	Enhanced Uplink for CELL_FACH State in FDD

Annex E: List of Tdocs at RAN1 #50b

Please see excel file attached to this report

Annex F: List of actions

1. Outgoing LS.

R1-074451 has been postponed to next meeting

Prepare the reply LS on neighbour cell list in LTE (Nokia Siemens Network) as response to R1-073899.

xxx

2. Text proposal for TS and TR

Deadline for below action points is until 30th october.

MCC to provide TR numbers for Study Items:

- Synchronized E-DCH
- Scope of future HSPA Evolution for 1.28Mcps TDD

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