UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

TELEFONAKTIEBOLAGET LM ERICSSON,
Patent Owner

U.S. PATENT NO. 9,300,432

DECLARATION OF FRIEDHELM RODERMUND IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 9,300,432

TABLE OF CONTENTS

I, Friedhelm Rodermund, do hereby declare as follows:

I. INTRODUCTION AND ENGAGEMENT

1. I have been retained in this matter by Apple Inc. ("Petitioner" or "Apple") to provide testimony regarding 3GPP's standard business practices for record keeping and publishing technical specifications, change request proposals, reports, and other documents developed during the course of standards activities carried out by the 3rd Generation Partnership Project ("3GPP") and the European Telecommunications Standards Institute ("ETSI").

2. I have been asked to provide my opinions regarding the authenticity and dates of public accessibility of the following 3GPP documents:

- T-doc R1-074426, which represents a document with the title "Rank feedback in downlink MIMO" (hereinafter "R1-074426", APPLE-1006)
- Version 7.4.0 of technical report 3GPP TR 21.905 ("Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications (Release 7)") (hereinafter "TR 21.905 v7.4.0", APPLE-1010)
- Version 7.4.0 of technical specification 3GPP TS 25.211 ("Technical Specification Group Radio Access Network; Physical channels and

mapping of transport channels onto physical channels (FDD) (Release 7)") (hereinafter "TS 25.211 v7.4.0") (APPLE-1013)

- Version 7.4.0 of technical specification 3GPP TS 25.214 ("Technical Specification Group Radio Access Network; Physical layer procedures (Release 7)") (hereinafter "TS 25.214 v7.4.0") (APPLE-1005)
- Version 7.4.0 of technical specification 3GPP TS 25.302 ("Technical Specification Group Radio Access Network; Services provided by the physical layer (Release 7)") (hereinafter "TS 25.302 v7.4.0") (APPLE-1014)
- Version 7.4.0 of technical specification 3GPP TS 25.331 ("Technical Specification Group Radio Access Network; Radio Resource Control (RRC); Protocol specification (Release 7)") (hereinafter "TS 25.331 v7.4.0", APPLE-1004)

3. As an ETSI Project Manager and Secretary, from June 1998 to December 2004, I have personal knowledge of 3GPP's standard business and records keeping practices. I continued following 3GPP's work ever since. Thus, based on my experience, personal knowledge, and review of 3GPP's business records, I am able to testify regarding the authenticity of certain documents published by 3GPP and the timing of their publication.

4. I am also knowledgeable about document management practices and the usage of email reflectors in TSG RAN WG1 and WG2. This is due to the fact that all 3GPP working groups used the same document repository on http://ftp.3gpp.org and all working groups use the same email exploder tool. Thus, I'm able to testify regarding the availability and authenticity of any 3GPP documents and any 3GPP exploder emails.

5. I am being compensated for my time spent on this matter at my usual rate of €450 per hour. My fee is not contingent on the outcome of this or any matter, or on the content of any of the testimony I give in this declaration. I have no financial interest in Petitioner.

6. I have been informed that Ericsson (hereinafter referred to as "Patent Owner") alleges ownership and is the current assignee of U.S. Patent No. 9,300,432 ("the '432 Patent") (APPLE-1001). I have no financial interest in the Patent Owner or the '432 patent.

II. BACKGROUND AND QUALIFICATIONS

7. I have more than 20 years of experience working with standards development organizations including the Third Generation Partnership Project ("3GPP"), the European Telecommunications Standards Institute ("ETSI"), and the Open Mobile Alliance ("OMA"). I have particular experience with the development of standards related to cellular telecommunications, including the

standards for the Universal Mobile Telecommunications System ("UMTS"), Long Term Evolution ("LTE"), and 5G, which are all standards developed by the 3GPP. A true and correct copy of my curriculum vitae (C.V.) is attached as Appendix A.

8. I attended the University of Technology Aachen in Aachen, Germany, where I performed graduate studies in Electrical Engineering with a focus on telecommunications technologies ("Dipl.-Ing. TH" degree). I also attended the University of Technology Trondheim in Trondheim, Norway, and completed my Diploma thesis, "Design of a dual processor computer for digital signal processing in power electronics," in 1993.

9. From December 1993 to June 1998, I worked at Mannesmann Mobilfunk as a System Engineer and Project Manager in Quality Assurance and Technical Standards. One of my responsibilities was to ensure by managing and performing related test activities that cellular network equipment was compatible with the Global System for Mobile Communications ("GSM") standard developed by ETSI. During that time, I also started working as a standards delegate. I attended my first ETSI meeting in 1996 (although I was already following ETSI developments from 1992 during my studies).

10. From June 1998 to December 2004, I worked at ETSI as a project manager for various ETSI Special Mobile Group ("SMG") and 3GPP working groups. First, I served as a secretary of SMG4 "Data Services" and SMG8 "Base

Stations Testing." Then, as a project manager with the ETSI Mobile Competence Center ("MCC"), I supported establishing 3GPP as the new international standards development organization for cellular telecommunications. One of my roles was acting as Secretary for 3GPP's Technical Specifications Group Terminals, Working Group ("T2"), the group which played a leading role in the creation of standards for Multimedia such as the Multimedia Messaging Service ("MMS").

11. Later, I was a secretary of the highest-level Technical Specifications Group Terminals which was besides other things responsible for the development of test specifications including tests for the radio interface.

12. I edited all technical specifications produced by my working groups and presented results to the parent body for approval. I attended all meetings (apart from some sub-working group meetings) and was also responsible for compiling meeting reports, for handling all the meeting documents, and managing the work plan. It was also my role to guide the groups and to advise the chairmen regarding 3GPP working methods and procedures including document handling, and to make sure delegates were aware of their company's obligations under the 3GPP Intellectual Property Right policy.

13. As part of my responsibilities at ETSI, I acted as a 3GPP custodian of records by personally managing 3GPP's public File Transfer Protocol (ftp) folders, which I used to make publicly accessible various 3GPP documents, including

versions of 3GPP specifications, technical reports, liaison statements, change requests, contributions, agendas, meeting reports, and other 3GPP documents from my working groups. I am also knowledgeable about document management practices used in other working groups and within 3GPP in general with regard to making documents publicly accessible through the same, public ftp server of 3GPP.

14. Since I left ETSI as a staff member in 2005, I have been continuously involved in standardization activities, including with Open Mobile Alliance, ETSI, and 3GPP. Since 2017, I also have been attending the ETSI IPR Special Committee, which is responsible for the maintenance of the ETSI IPR Policy.

15. After I left ETSI, I worked from January 2005 to October 2014 at Vodafone, first as a Project Manager for Mobile Broadcast Standards, and then as Vice Chairman of the Device Management working group of the Open Mobile Alliance, and then as a Senior Standards Strategist, all with responsibilities as described on my C.V. At Vodafone, I was deeply involved in standards work with ETSI and 3GPP and other standards setting organizations, including as a delegate to 3GPP SA1 "Services." As part of my responsibilities, I attended selected 3GPP meetings, submitted documents to 3GPP, used 3GPP resources (including 3GPP's ftp server) extensively, and remained knowledgeable about 3GPP policies and procedures with regard to document management and public accessibility. I was

also involved in the creation of patents, defense activities related to patent litigations, and patent evaluation, mostly in the context of standards development.

16. Since leaving Vodafone in 2014, I have performed consulting work regarding Internet of Things (IoT) and Machine to Machine (M2M) technology and standards, first at Friedhelm Rodermund Consulting and then as the Founder and Director of IOTECC GmbH. In connection with my work, I regularly deal with standards such as OMA's Lightweight M2M, 3GPP's LTE, Narrowband IoT (NB-IoT) and 5G standards. And I have extensively used 3GPP resources and have remained knowledgeable about 3GPP policies and procedures with regard to document management and public accessibility.

17. I also provide consulting services related to patents, in particular around 3GPP Standard Essential Patents ("SEPs"), and I have been working as an expert witness on a number of occasions. I continue to closely follow the maintenance of the ETSI IPR Policy as a delegate to the ETSI IPR Special Committee. Furthermore, I'm conducting a seminar on SEPs and the Internet of Things at the Technical University of Ilmenau, Germany.

18. At the time of writing this declaration, I am following – including attending selected meetings - the following standards committees: ETSI oneM2M, ETSI IPR Special Committee, Open Mobile Alliance, and 3GPP.

19. A copy of my curriculum vitae, which includes a detailed description of my experience and education, is attached as Appendix A. A list of litigation matters on which I have worked over the last five years is also included in my curriculum vitae.

III. SUMMARY OF MY OPINIONS

20. It is my opinion that R1-074426 (APPLE-1006) is an authentic 3GPP T-doc and would have been publicly accessible through ftp.3gpp.org no later than October 2, 2007.

21. It is my opinion that TR 21.905 v7.4.0 (APPLE-1010) is a technical report published by 3GPP and would have been publicly accessible through ftp.3gpp.org as of June 21, 2007.

22. It is my opinion that TS 25.211 v7.4.0 (APPLE-1013) is a technical specification published by 3GPP and would have been publicly accessible through ftp.3gpp.org as of December 1, 2007.

23. It is my opinion that TS 25.214 v7.4.0 (APPLE-1005) is a technical specification published by 3GPP and would have been publicly accessible through ftp.3gpp.org as of March 22, 2007.

24. It is my opinion that TS 25.302 v7.4.0 (APPLE-1014) is a technical specification published by 3GPP and would have been publicly accessible through ftp.3gpp.org as of July 16, 2007.

25. It is my opinion that TS 25.331 v7.4.0 (APPLE-1004) is a technical specification published by 3GPP and would have been publicly accessible through ftp.3gpp.org as of April 6, 2007.

IV. PUBLICATION OF 3GPP SPECIFICATIONS AND RELATED DOCUMENTS

A. General Practices

26. Unless otherwise noted, the following is an accurate description of 3GPP general practices from 1998 to the present, regardless of whether I use the present or past tense to describe those practices.

27. 3GPP was established in 1998 by a group of telecommunications standard development organizations from Japan, Korea, China, Europe, and the United States to jointly develop worldwide standards for mobile telecommunications. Today, 3GPP consists of seven partners: Association of Radio Industries and Businesses, Japan ("ARIB"), Alliance for Telecommunications Industry Solutions, USA ("ATIS"), China Communications Standards Association ("CCSA"), European Telecommunications Standards Institute ("ETSI"), Telecommunications Standards Development Society, India ("TSDSI"), Telecommunications Technology Association, Korea ("TTA"), Telecommunication Technology Committee, Japan ("TTC"). In addition to being one of the founding partners, ETSI hosts the Mobile Competence Centre ("MCC"),

which provides administrative and technical support to the day-to-day work of 3GPP. Furthermore, ETSI manages 3GPP's IT services such as the 3GPP website, ftp server, and email exploders.

28. 3GPP is the world's leading organization for developing and maintaining cellular telecommunications standards, which it has done since its foundation in 1998. As noted above and in my C.V., I began working for 3GPP, as part of my work at ETSI, the European-based organizational partner of 3GPP.

29. In the ordinary course of its regularly conducted business activities, and pursuant to its standard business practices, 3GPP publishes technical specifications, proposals, reports, and other documents related to the development of cellular telecommunications standards. Such documents are published for the purposes of discussion and establishment of industry standards for cellular telecommunications. This has been 3GPP's ordinary course of business since when I began working at ETSI in 1998.

30. In the ordinary course of 3GPP's regularly conducted business activities, and pursuant to its standard business practices, all draft technical specifications, proposals, reports, and other temporary documents to be discussed or considered in relation to 3GPP's telecommunications standards activities were, and continue to be, assigned a temporary document number and made publicly available, including on the ftp server associated with the 3GPP website, currently

residing at ftp.3gpp.org. Such documents are referred to as "T-docs." Final versions of the technical specifications also were, and continue to be, publicly available from that same ftp server.

31. The names and the structure of 3GPP working groups can be found below[1]:

Project Co-ordination Group (PCG)		
TSG RAN Radio Access Network	**TSG SA** Service & System Aspects	**TSG CT** Core Network & Terminals
RAN WG1 Radio Layer 1 spec	SA WG1 Services	CT WG1 User Equipment to Core Network protocols
RAN WG2 Radio Layer 2 spec Radio Layer 3 RR spec	SA WG2 Architecture	CT WG3 Interworking with external networks
RAN WG3 Iub spec, Iur spec, Iu spec UTRAN O&M requirements	SA WG3 Security SA3-LI SA3 subgroup on Lawful Interception	CT WG4 Core Network Protocols
RAN WG4 Radio Performance Protocol aspects	SA WG4 CODECs	CT WG6 Smart Card Application Aspects
RAN WG5 Mobile Terminal Conformance Testing	SA WG5 Telecom Management	
	SA WG6 Mission-critical applications	

[1] See https://www.3gpp.org/specifications-groups

32. Each Technical Specification Group (TSG) or Working Group adopts a structured numbering system for the documents associated with their meetings, and those systems typically follow a consistent numbering system as shown in the following example: xminnzzzz. The numbering system normally comprises five logical elements: (1) x: a single letter corresponding to the TSG; where in 2007/2008 x was one of R (Radio Access Network), C (Core and Terminals), S (Service and System Aspects), or G (GSM/EDGE Radio Access Network); (2) m: A single character corresponding to the Working Group identity (typically 1, 2, 3, etc.) or, in the case of the TSG itself, the letter "P"; (3) i: Normally the hyphen character "-"; (4) nn: the calendar year of the meeting to which the document was submitted; (5) zzzz: a running number (some Working Groups use 5 digits).

33. In the ordinary course of 3GPP's regularly conducted business activities, and pursuant to its standard business practices, from December 1998 onwards, 3GPP published all of its T-docs and all final versions of its technical specifications on its ftp server, which has always been easily and publicly accessible from its website and currently resides at ftp.3gpp.org.

34. As early as December 1998, 3GPP's ftp server was freely accessible to the general public with no login, password, or membership requirement.

35. By 1999, at least 100 companies were members of 3GPP (by December 2020: 719 companies), ranging from Bosch to Ericsson to Nokia to

Samsung and generally including those interested in the discussion, creation, and adoption of cellular telecommunications standards, including UMTS. Each of these companies typically delegated multiple individuals to regularly participate in 3GPP meetings. Further, pursuant to 3GPP's standard business practices, 3GPP working groups sent emails notifying these individuals as soon as new or additional documents had been uploaded to 3GPP's ftp server. Thus, not only did the general public have access to the documents on the ftp server, but some of the most interested members of the public—those working to develop standards for cellular telecommunication or working to implement the standards—were personally informed of their availability by email. Based on my experience with 3GPP and the telecommunications industry, I would expect any person implementing a cellular network or device, e.g., an 5G network or device, to consult the corresponding specifications on the 3GPP ftp server, as well as other related documents. The whole purpose of 3GPP creating and making these specifications available was so that engineers and other individuals would have ready access to them when developing and implementing cellular networks and devices.

36. 3GPP specifications bear a specification number consisting of four or five digits, e.g., 09.02 or 29.002. The first two digits define the specification series which are defined to group the different aspects of the 3GPP system into e.g. requirements, service aspects, radio aspects codecs, security aspects, and test

specifications. The series digits are followed by two additional digits for the 01 to 13 series or three further digits for the 21 to 55 series. The subjects of the individual specification series are explained on 3GPP's website at https://www.3gpp.org/specifications/specification-numbering, and reproduced below:

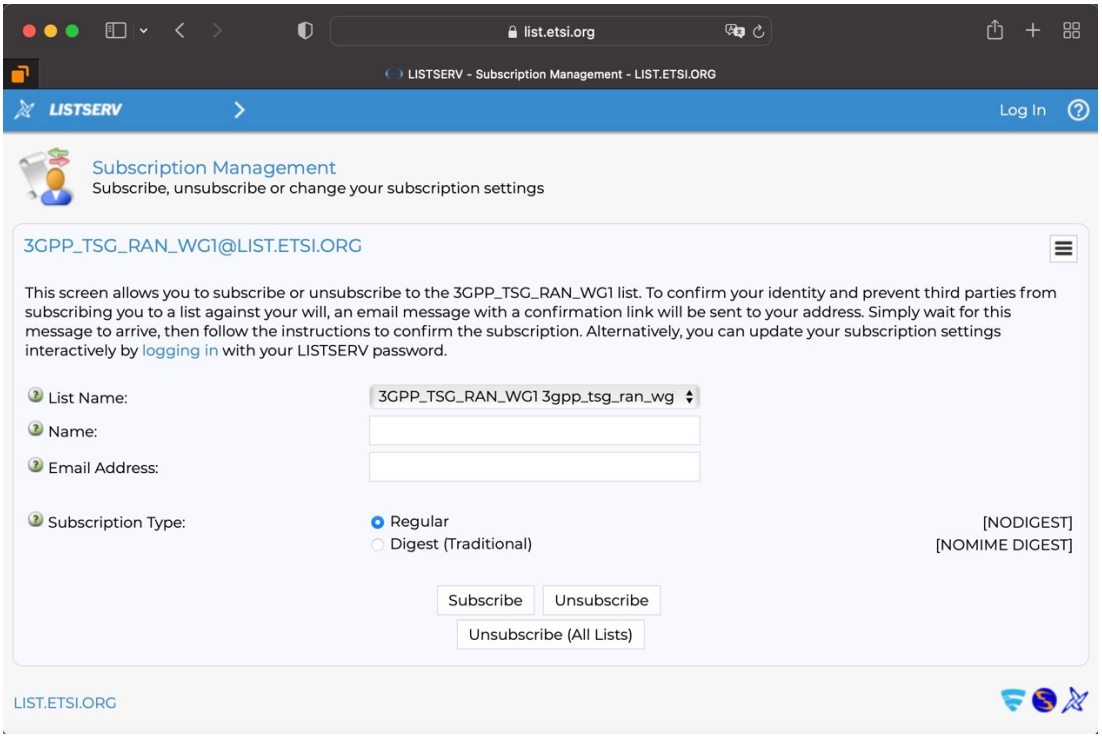
Subject of specification series	3G and beyond / GSM (R99 and later)	GSM only (Rel-4 and later)	GSM only (before Rel-4)
General information (long defunct)			00 series
Requirements	21 series	41 series	01 series
Service aspects ("stage 1")	22 series	42 series	02 series
Technical realization ("stage 2")	23 series	43 series	03 series
Signalling protocols ("stage 3") - user equipment to network	24 series	44 series	04 series
Radio aspects	25 series	45 series	05 series
CODECs	26 series	46 series	06 series
Data	27 series	47 series (none exists)	07 series
Signalling protocols ("stage 3") -(RSS-CN) and OAM&P and Charging (overflow from 32.- range)	28 series	48 series	08 series
Signalling protocols ("stage 3") - intra-fixed-network	29 series	49 series	09 series
Programme management	30 series	50 series	10 series
Subscriber Identity Module (SIM / USIM), IC Cards. Test specs.	31 series	51 series	11 series
OAM&P and Charging	32 series	52 series	12 series
Access requirements and test specifications		13 series (1)	13 series (1)
Security aspects	33 series	(2)	(2)
UE and (U)SIM test specifications	34 series	(2)	11 series
Security algorithms (3)	35 series	55 series	(4)
LTE (Evolved UTRA), LTE-Advanced, LTE-Advanced Pro radio technology	36 series	-	-
Multiple radio access technology aspects	37 series	-	-
Radio technology beyond LTE	38 series	-	-

37. For instance, the radio aspects of the 3GPP UMTS standard are covered in the "25 series" and are further subdivided into separate sections or specifications. The UMTS radio specification series starts at TS 25.053 and ends at TR 25.999. Excluding withdrawn specifications, the UMTS radio standard consists of more than 200 specifications. Each specification can span from a few pages to hundreds of pages. One full version of the UMTS standard is massive, spanning tens of thousands of pages.

38. In the ordinary course of 3GPP's regularly conducted business activities, and pursuant to its standard business practices, T-docs are usually uploaded to 3GPP's ftp server and website before the meeting where they are to be discussed. Documents created or revised during the course of a meeting are normally uploaded at the latest during the week following the meeting (e.g., the meeting report of the meeting is usually published for review during the week following the meeting).

39. In the ordinary course of 3GPP's regularly conducted business activities, and pursuant to its standard business practices, 3GPP maintains archives that include different versions of the specifications, as well as email communications to its membership, including emails announcing the uploading of new or additional documents to 3GPP's ftp server. These archives are created at the time the emails are initially sent. At least as early as July 1999, all of 3GPP's

email archives, including the dedicated email list for TSG RAN WG1 and TSG RAN WG2 were freely accessible to the general public with no login, password, or membership requirement. The screenshot below represents the subscription page of the 3GPP RAN WG1 email list demonstrating that this webpage is publicly available and that only email address and name have to be entered to join the email list. Alternatively, everyone interested can obtain a LISTSERV password for managing subscriptions interactively without email confirmations. I can confirm that this webpage looked similar in 2007 and that subscription was already possible for every interested individual since the early days of 3GPP in 1999.



40. Each of 3GPP's member companies typically assigned one or more individuals to regularly participate in these email lists. Thus, not only did the general public have access to the emails in 3GPP's email archives, but some of the most interested members of the public–those working to develop standards for cellular telecommunication–personally received copies of such emails through their participation in the email lists.

41. By June 1999, 3GPP's email archives were well-known to persons in the cellular telecommunications industry as a source of public information and of technical specifications, proposals, meeting announcements, technical discussions and reports regarding industry standards and technological advances.

42. Based on my experience with 3GPP and the telecommunications industry, I would expect a person interested in the development of cellular standards, e.g., UMTS, to consult the emails archives of the working groups and TSGs that person is interested in, and/or, to be subscribed to the corresponding email reflectors to receive any email notifications in real-time.

43. 3GPP specifications almost always are duplicated in at least two and sometime more locations on the ftp server. One location corresponds to a "snapshot" of the specifications corresponding to a particular plenary meeting cycle, e.g., the 2018-12 snapshot contains a snapshot of numerous specifications after the December 2018 3GPP plenary meetings. The second location is an

"archive" that contains all versions over time for a given specification. While 3GPP aims to upload the updated specifications to both locations at the same time, occasionally there may be a small difference in the upload date, and thus the date stamp, for the same specification uploaded to the two locations. Additionally, specifications which are not yet approved (so called "draft" specifications) are available as T-docs at working group and at plenary meetings (as soon the working group decides to submit the specification to the plenary meeting for information or approval). In many cases, the T-docs are also distributed on the email exploder of the working group prior to the meeting, making the T-docs available to all those subscribed to the email distribution list.

44. The timestamp on 3GPP's ftp server shows the date when the document was uploaded the last time. Thus, the timestamp shows the latest possible date the document became publicly available and accessible on 3GPP's ftp server. The given document might have been available earlier and the original timestamp might have been overwritten because the document was uploaded again. According to my experience, this is something which happened quite frequently. Thus, the ftp timestamp is reliable as the latest possible upload date but one cannot determine whether it represents the first upload of a document to the ftp server.

45. 3GPP's working practice to store their documents on their ftp server, as described above, has not changed over time. Starting from the first 3GPP

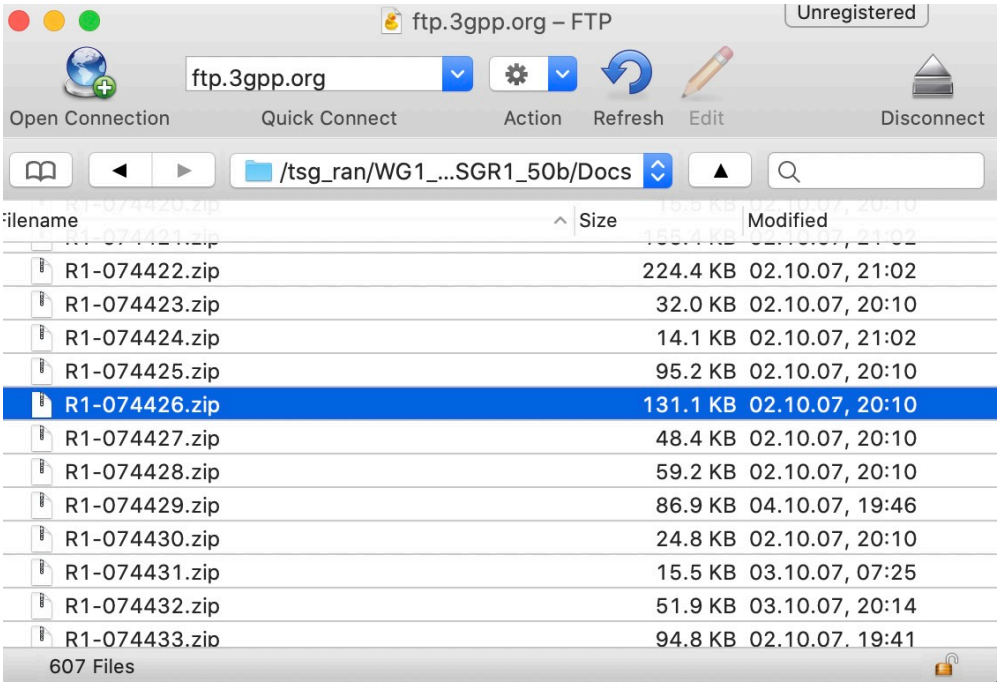
meetings in 1998 until present, all WGs and plenary meetings are represented by dedicated meeting folders on the ftp server. These meeting folders include the documents discussed at the meetings. Both the folders and the documents are accessible to the public. Almost every week, a new meeting folder with the respective documents is added. In addition to the plenary and WG meeting folders, and some other folders, there is also the "Specs" folder, which holds all 3GPP specifications including the aforementioned "snapshot" and archive folders. Since the early days of 3GPP a new folder is added inside the "Specs" folder after each TSG plenary meeting to hold the latest versions of specifications approved at those TSG plenary meetings. This is still 3GPP's working practice today; thus, this practice has not changed over time.

B. Specific Documents

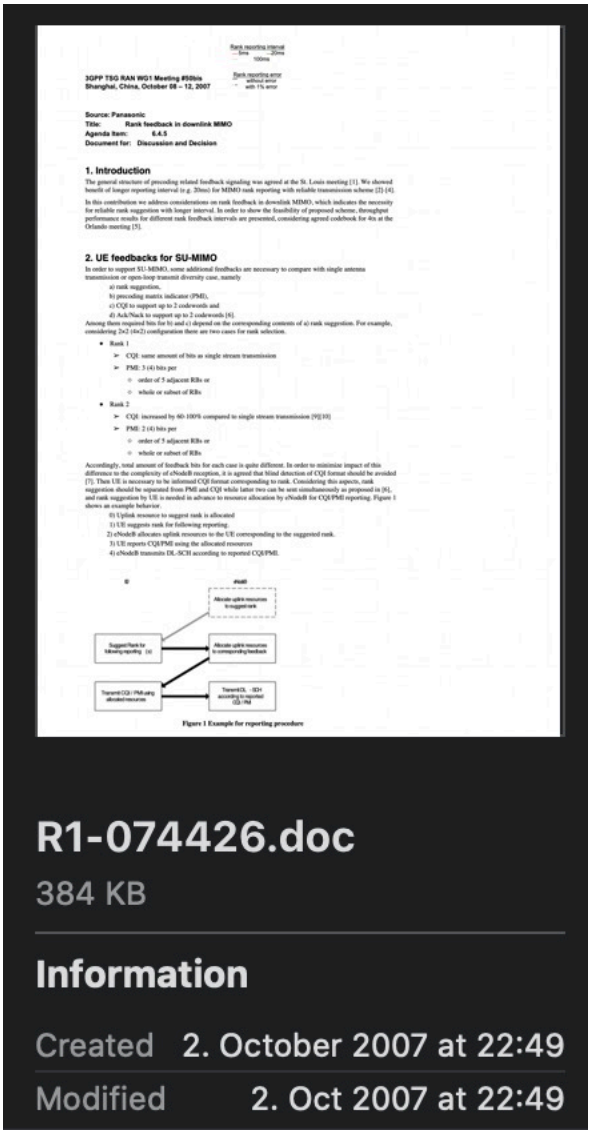
1. R1-074426

46. Based on my personal knowledge and my review of 3GPP's business records, I recognize APPLE-1006 as a true and correct copy of T-doc R1-074426, which represents a document submitted by Panasonic with the title "Rank feedback in downlink MIMO." The document discusses rank feedback in downlink MIMO indicating the necessity for reliable rank suggestion with longer intervals. On its face, R1-074426 refers to the RAN WG1 meeting #50bis held on October 8-12, 2007, in Shanghai, China. Thus, based on my personal knowledge and experience

with ETSI's and 3GPP's standard business practices, this information tells me that R1-074426 was available either prior or during that meeting to at least all attending 3GPP members. The availability of the document is confirmed by the date stamp, October 2, 2007, shown on the historic 3GPP ftp server for the corresponding downloadable file ("R1-074426.zip"), as maintained by the Internet Archive at https://web.archive.org/web/20170318161927/http://www.3gpp.org:80/ftp/tsg_ran/WG1_RL1/TSGR1_83/Docs as well as the date stamp for the present-day listing of the same document on the 3GPP ftp server https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_83/Docs as can be seen at the screen shot below:

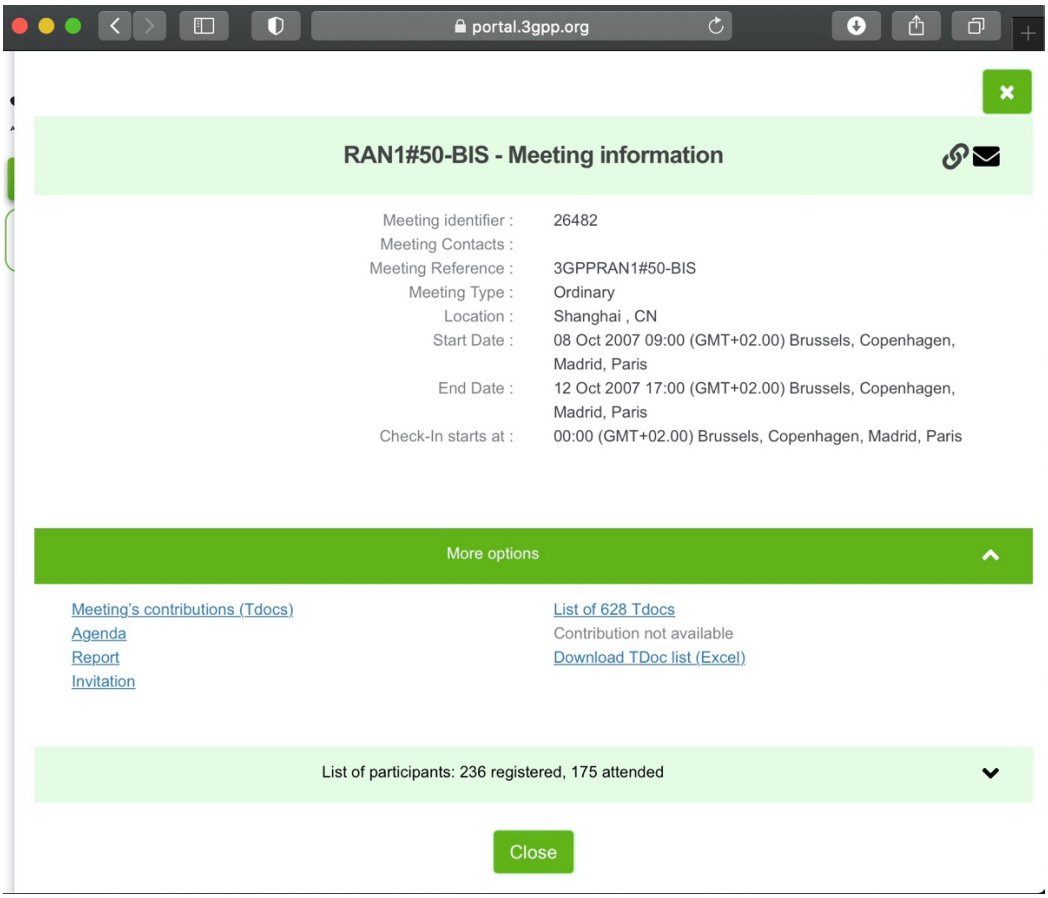


47. In addition, the information for the downloaded and extracted T-doc file states a last Modified date of "2. Oct 2007." Here is a screenshot showing those file details:



48. The official meeting report of the RAN WG1 meeting #50bis held on October 08-12, 2007, in Shanghai, China can be found in Appendix B. According to the 3GPP website at https://portal.3gpp.org/Meetings.aspx#/ which is shown by the

screen shot below, that meeting was attended by 175 individuals (out of 236 registered participants):



49. The meeting report has a document list attached (Appendix C) which has T-doc R1-074426 marked as "available" which clearly indicates that the document was available at the meeting. The screen shot below shows the related excerpt of the document list:

Available	Tdoc Number	Title	Source	Conclusion/Decision
Yes	R1-074426	Rank feedback in downlink MIMO	Panasonic	Not treated

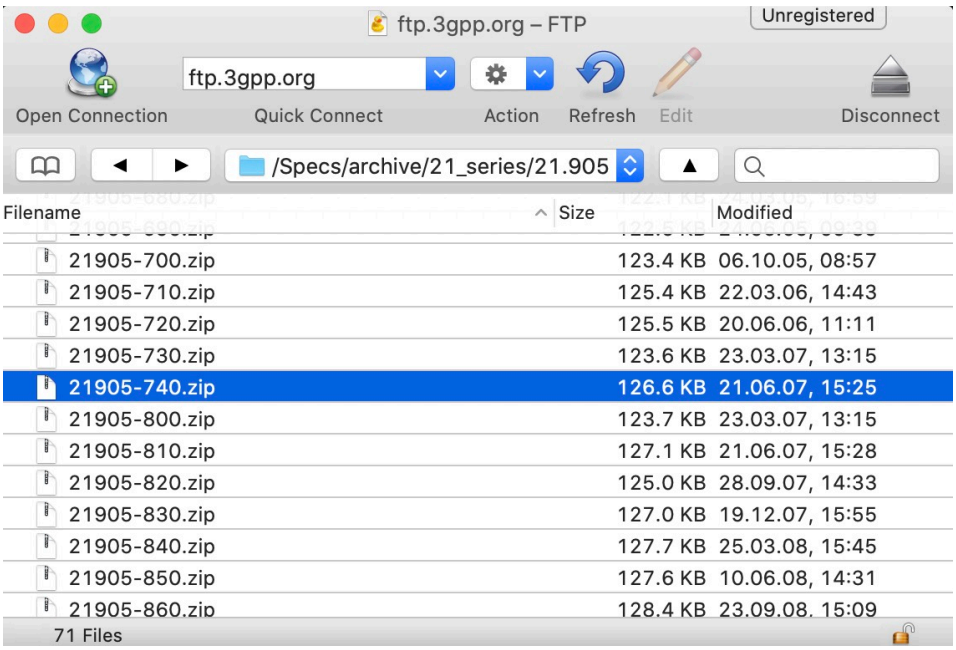
50. Furthermore, the document was distributed via the 3GPP_TSG_RAN_WG1 email exploder on October 3, 2007, as shown in Appendix D. At that time this email exploder had around 1000 subscribers as can be seen by the Internet Archive at https://web.archive.org/web/20070827091800/http://list.3gpp.org/.

51. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that this document was available to all 3GPP members and the general public by October 2, 2007, at the latest.

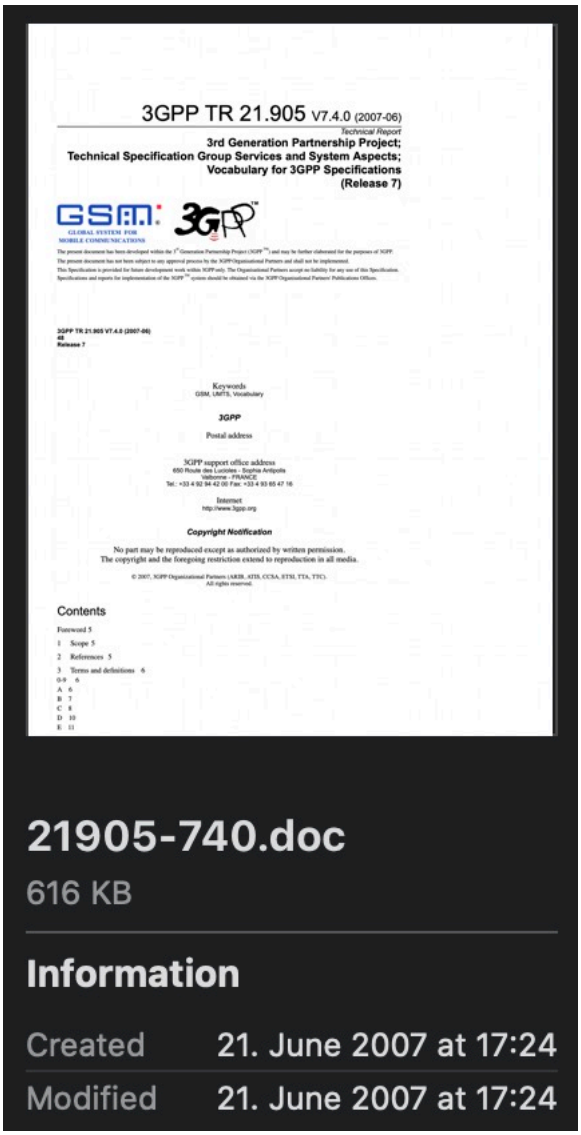
2. TR 21.905 v7.4.0

52. Based on my personal knowledge and my review of 3GPP's business records, I recognize APPLE-1010 as a true and correct copy of version 7.4.0 of technical report 3GPP TR 21.905 ("Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications (Release 7)") which shows on its cover page "2007-06" as the year (2007) and month (June) during which this document was released by 3GPP. The document was published and freely available on 3GPP's ftp server by June 21, 2007. This is confirmed by the date stamp shown on the historic 3GPP ftp server for the corresponding downloadable file ("21905-740.zip"), as maintained by the Internet Archive at

https://web.archive.org/web/20070822172534/http://www.3gpp.org:80/ftp/specs/archive/21_series/21.905, as well as the date stamp for the present-day listing of the same document on the 3GPP ftp server at https://www.3gpp.org/ftp/Specs/archive/21_series/21.905/ as shown by the screenshot below:



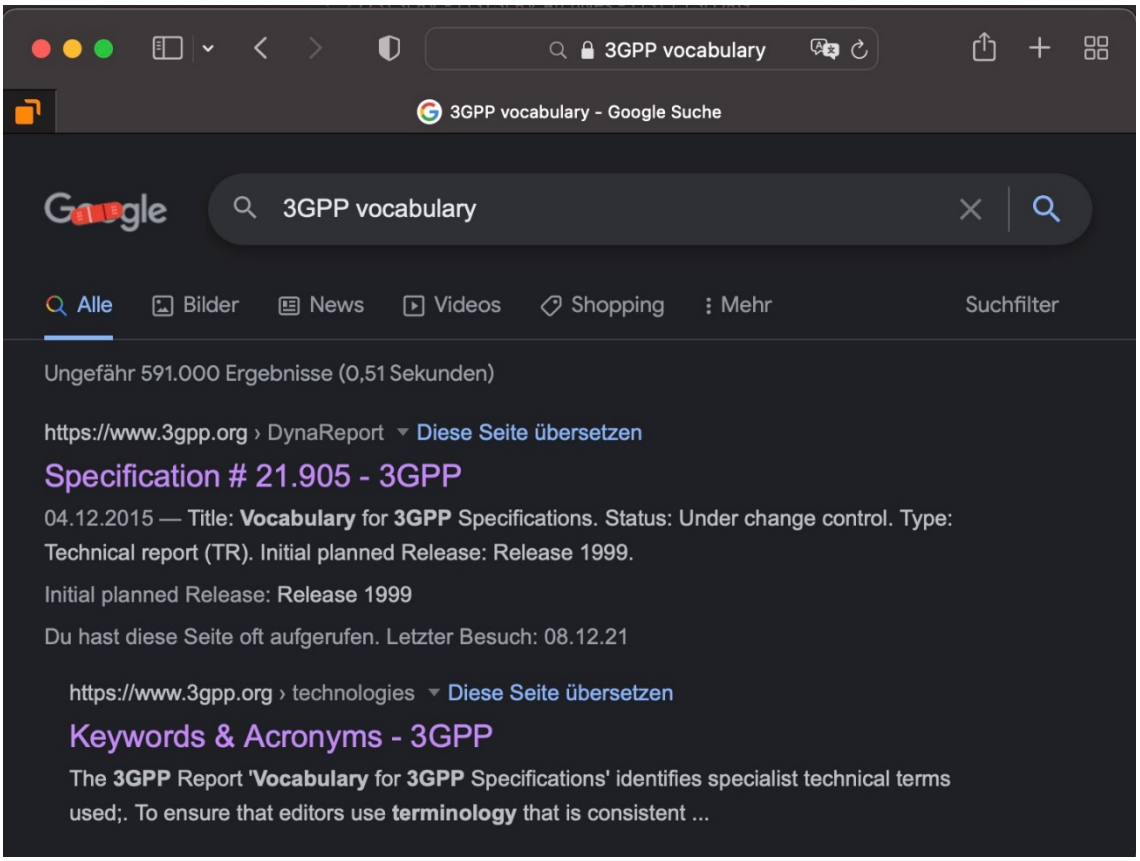
53. In addition, the information for the downloaded and extracted specification file states a last Modified date of "21. June 2007." Here is a screenshot showing those file details:



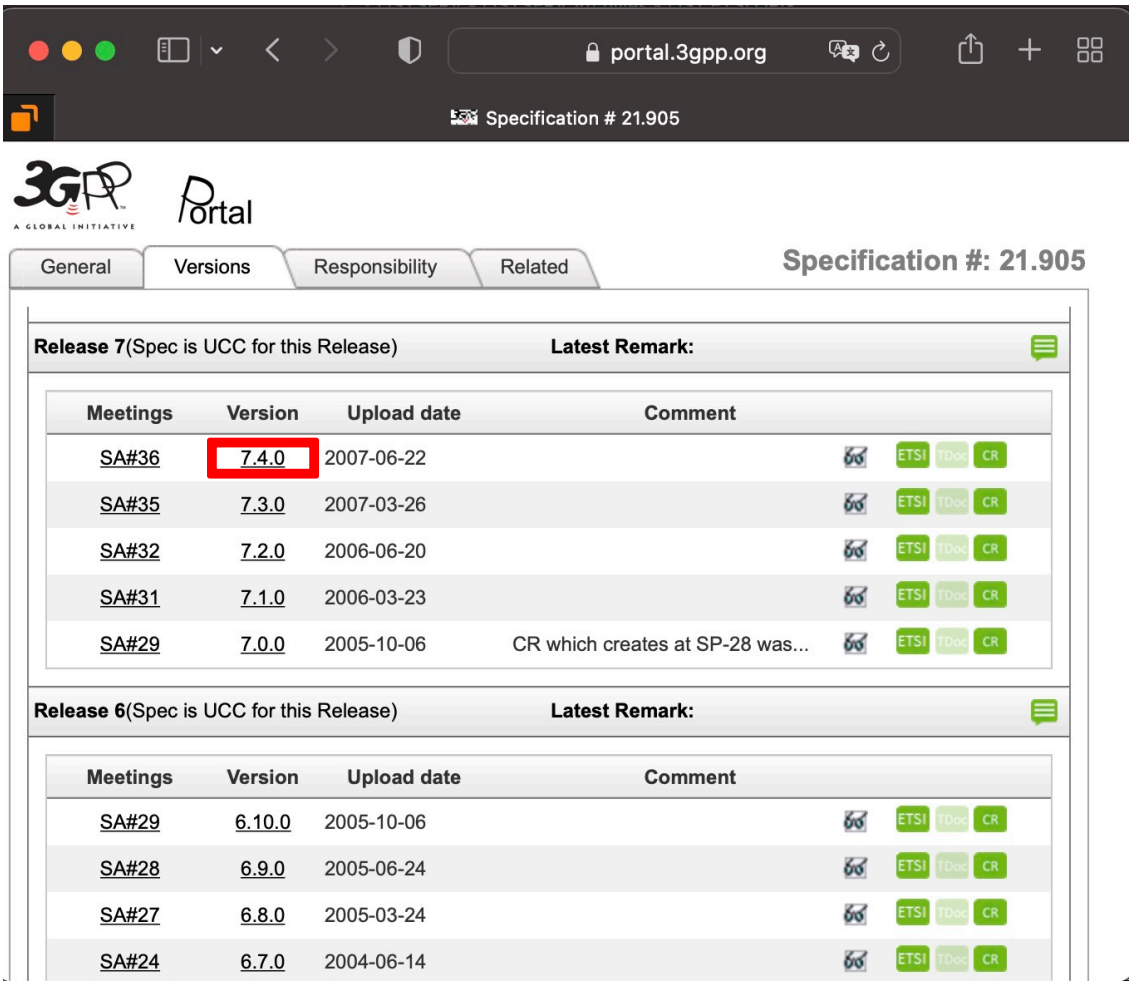
54. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that this document was available to all 3GPP members and the general public by June 21, 2007, at the latest.

55. I believe that a person without prior knowledge of the technical report (TR) number would have been able to easily find the TR for download via internet

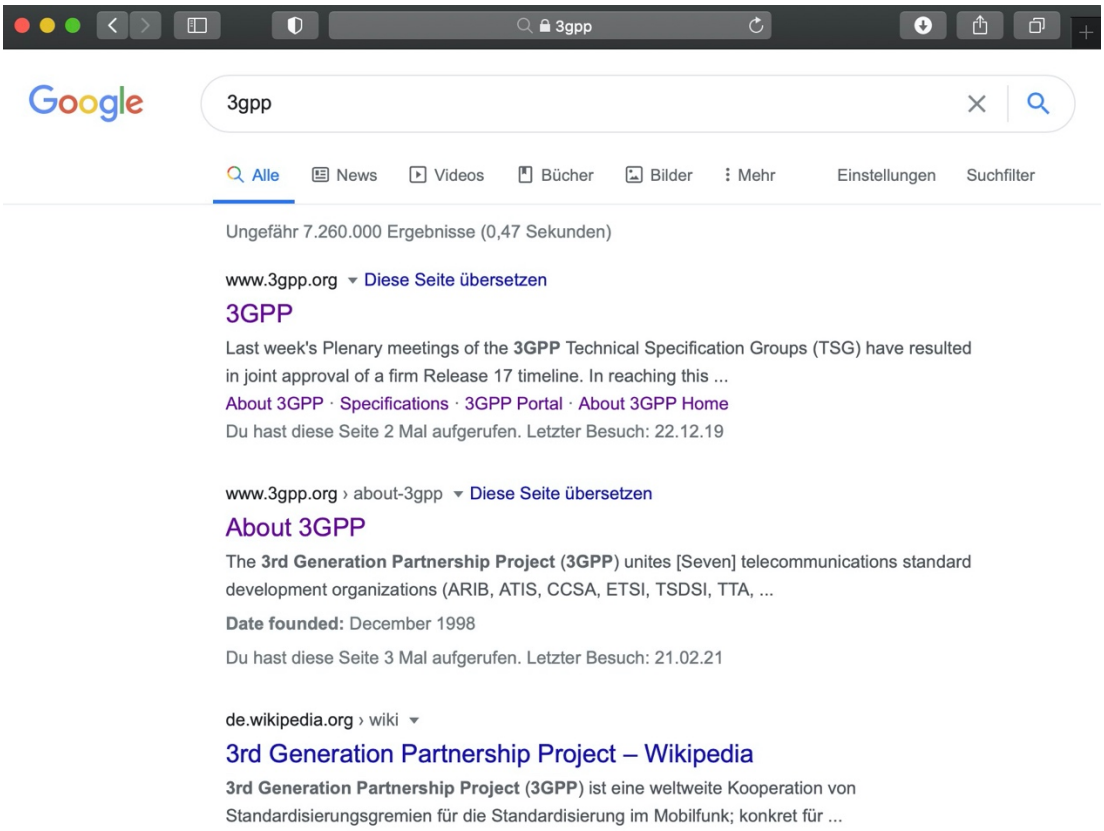
search. For instance, a Google search for "3GPP vocabulary" provides the TR number "21.905" as the top result as can be seen in the screen shot below:



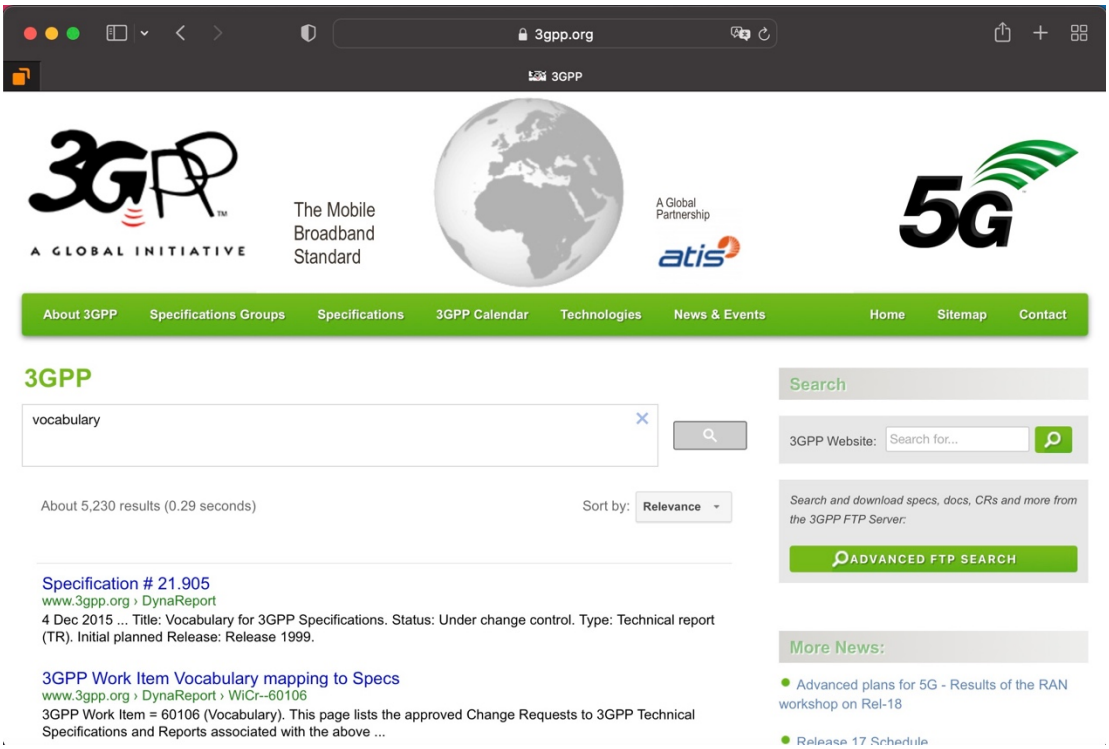
56. Following the provided search result link "Specification # 21.905 – 3GPP" leads to a 3GPP web page offering under the tab "Versions" download links to all versions of TR 21.905 including version 7.4.0, as shown by the screenshot below:



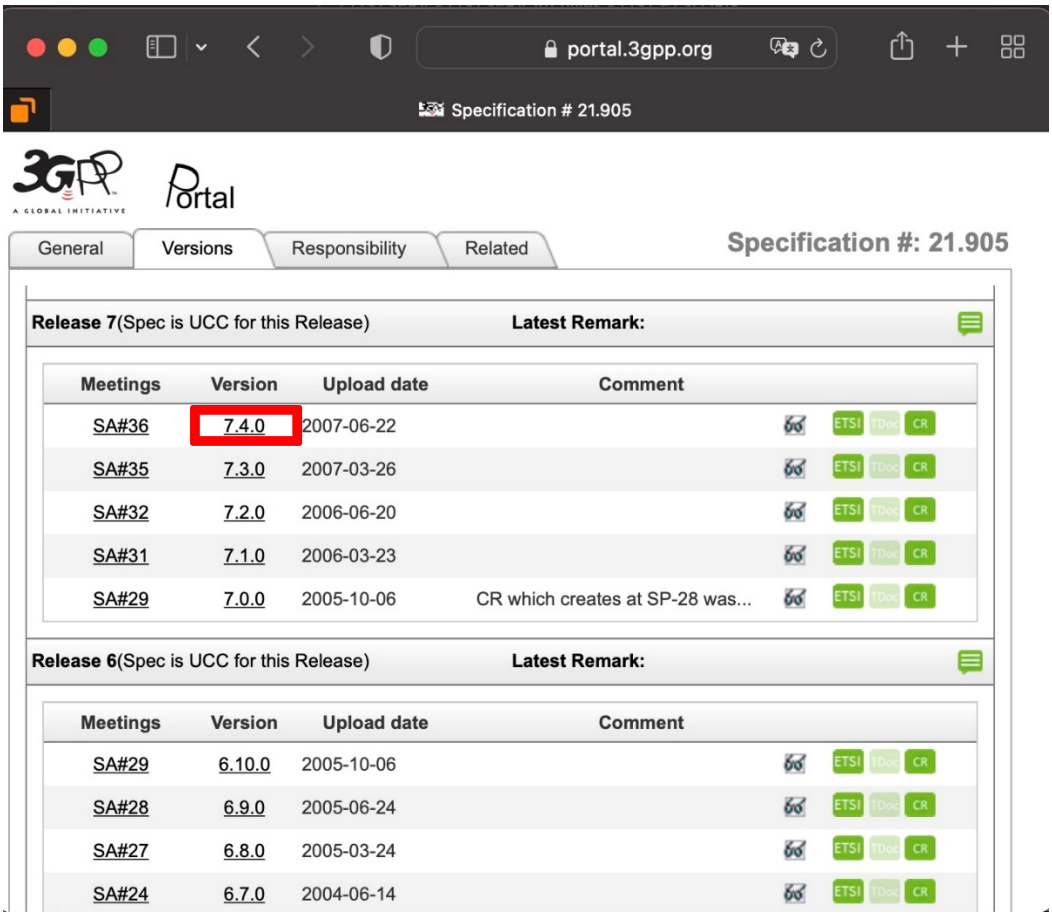
57. 3GPP is a very well-known SDO as of today and certainly was already very well-known in 2007. A person aware of 3GPP could have found TR 21.905 v7.4.0 also via a different route. Searching for "3GPP" leads to the 3GPP website htpp://www.3gpp.org, as can be seen by the screen shot below:



58. Entering "vocabulary" into the search box of the 3GPP web site provides "Specification # 21.905" as the top result, as can be seen by the screen shot below:



59. Following the provided search result link on "Specification # 21.905" leads to the same 3GPP web page as mentioned in paragraph 56 offering under the tab "Versions" download links to all versions of TR 21.905 including version 7.4.0, as shown by the screenshot below:

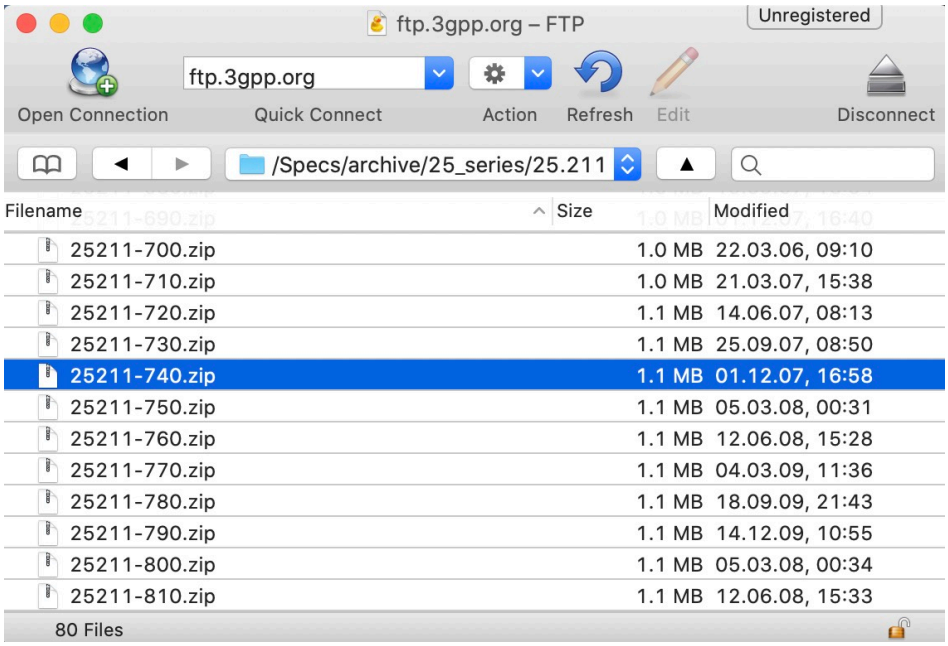


60. The above example searches illustrate that it is very easy for an interested member of the public without prior knowledge of the TR number to locate any version of TR 21.905, including version 7.4.0, for download.

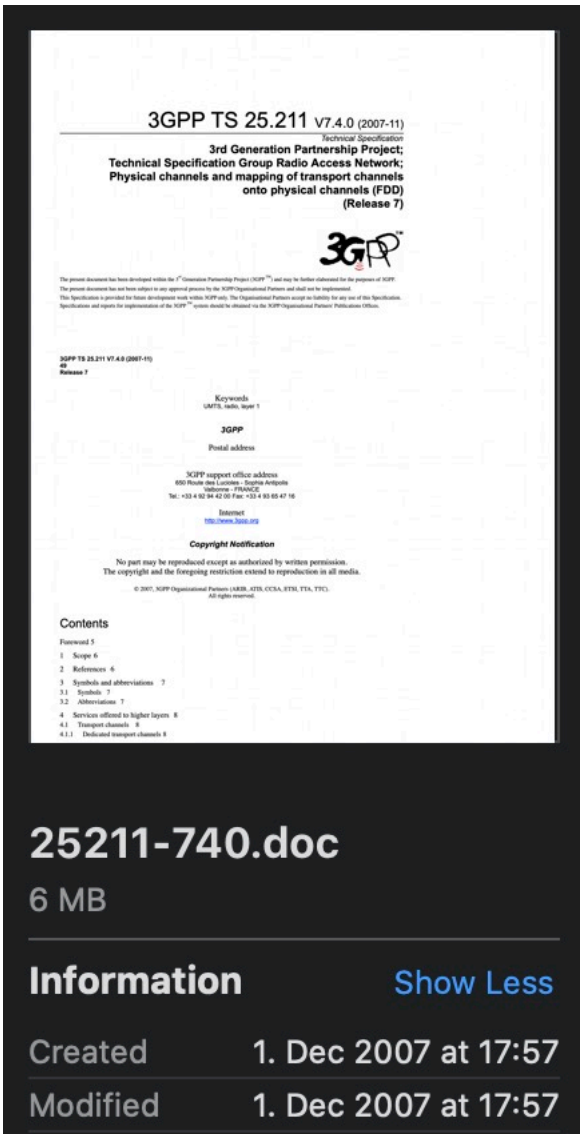
61. The above searches were performed at the time of writing this report. According to my personal experience, similar searches done in June 2007 or around that timeframe would have similarly provided the path to download version 7.4.0 of TR 21.905.

3. TS 25.211 V7.4.0

62. Based on my personal knowledge and my review of 3GPP's business records, I recognize APPLE-1013 as a true and correct copy of version 7.4.0 of technical specification 3GPP TS 25.211 ("Technical Specification Group Radio Access Network; Physical channels and mapping of transport channels onto physical channels (FDD) (Release 7)"), which shows on its cover page "2007-11" as the year (2007) and month (November) during which this document was released by 3GPP. The document was published and freely available on 3GPP's ftp server by December 1, 2007. This is confirmed by the date stamp shown on the historic 3GPP ftp server for the corresponding downloadable file ("25211-740.zip"), as maintained by the Internet Archive at https://web.archive.org/web/20080103160023/http://www.3gpp.org:80/ftp/Specs/archive/25_series/25.211. This information is also shown on the date stamp for the present-day listing of the same document on the 3GPP ftp server at https://www.3gpp.org/ftp/Specs/archive/25_series/25.211, as shown by the screen shot below:



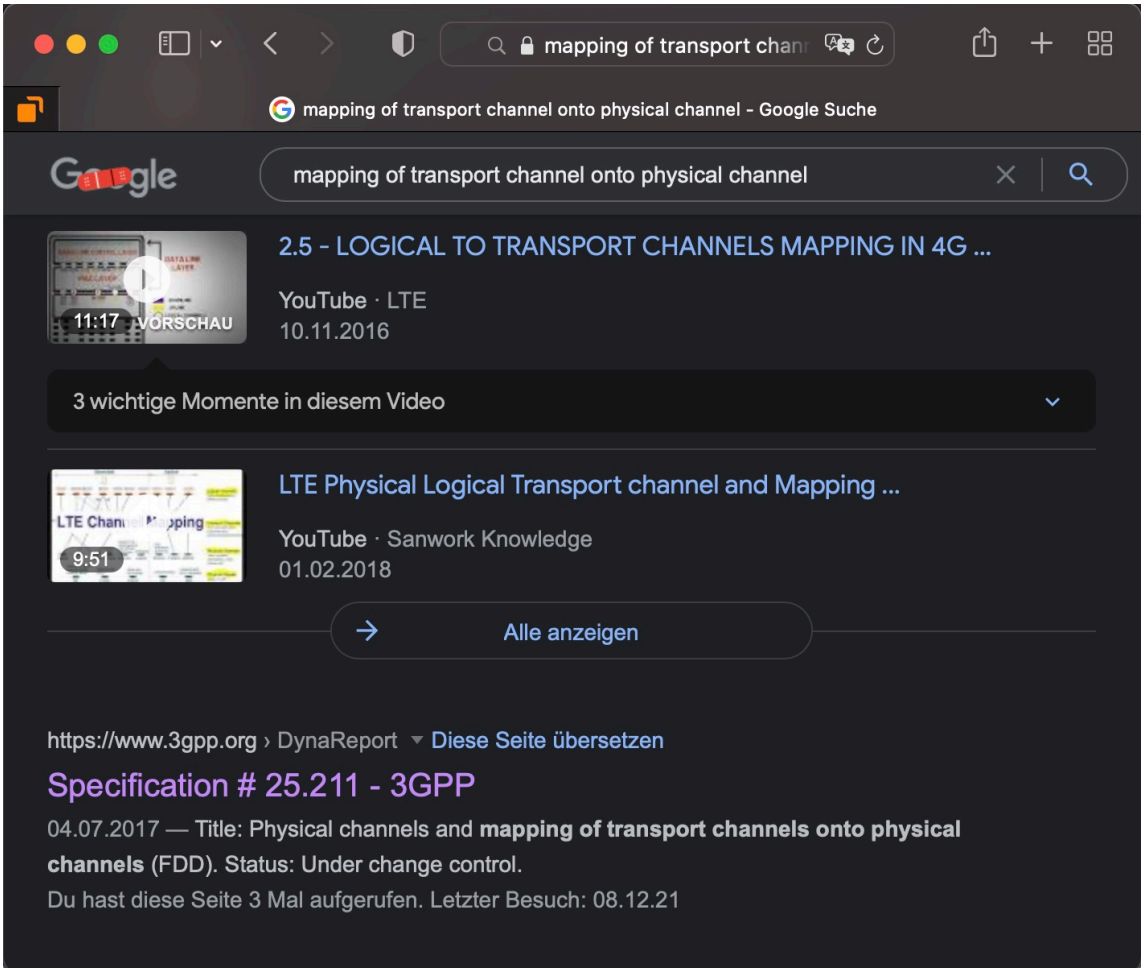
63. In addition, metadata information for the downloaded and extracted specification file states a last Modified date of "1. Dec 2007", as shown in the screen shot below:



64. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that this document was available to all 3GPP members and the general public by December 1, 2007, at the latest.

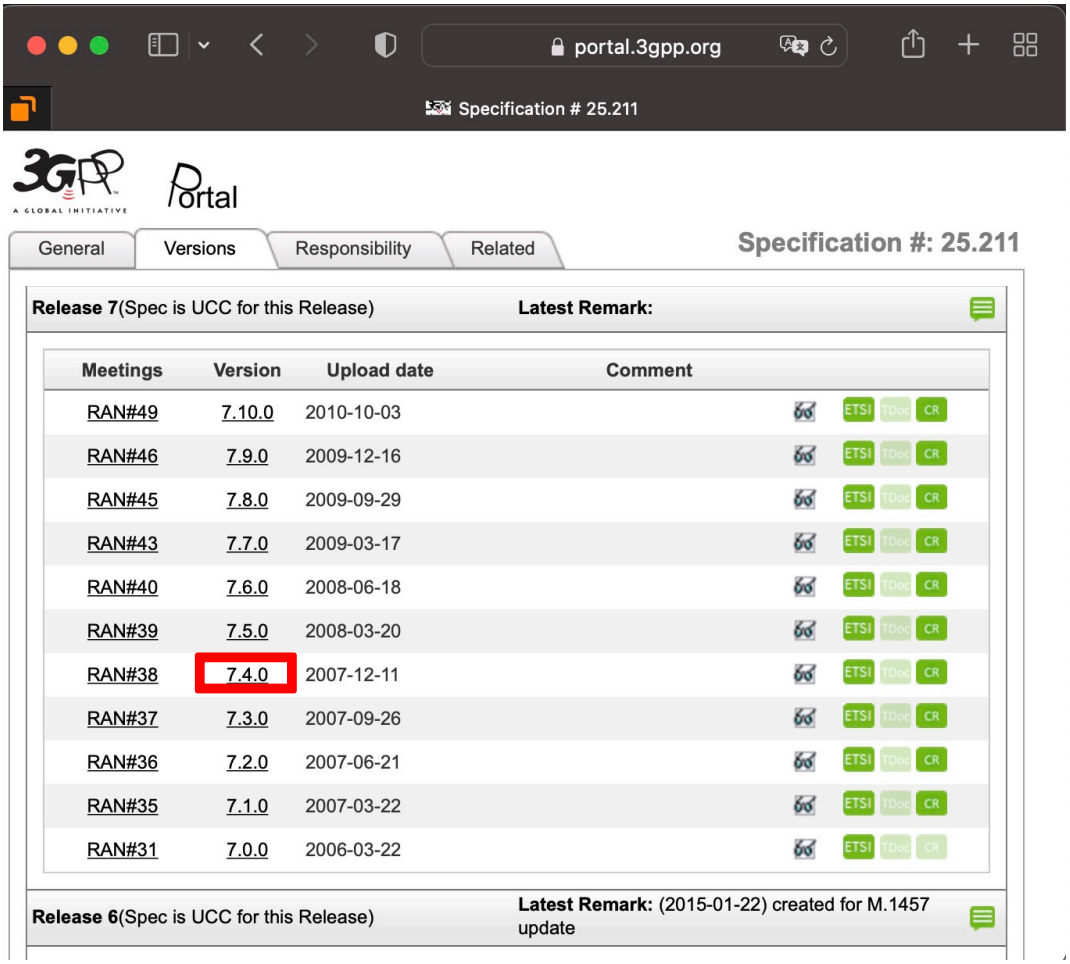
65. I believe that a person without prior knowledge of 3GPP and/or the technical specification (TS) number would have been able to easily find the TS for

download via internet search. For instance, a Google search for "mapping of transport channel onto physical channel" provides the TS number "25.211" as one of the top results as can be seen in the screen shot below:

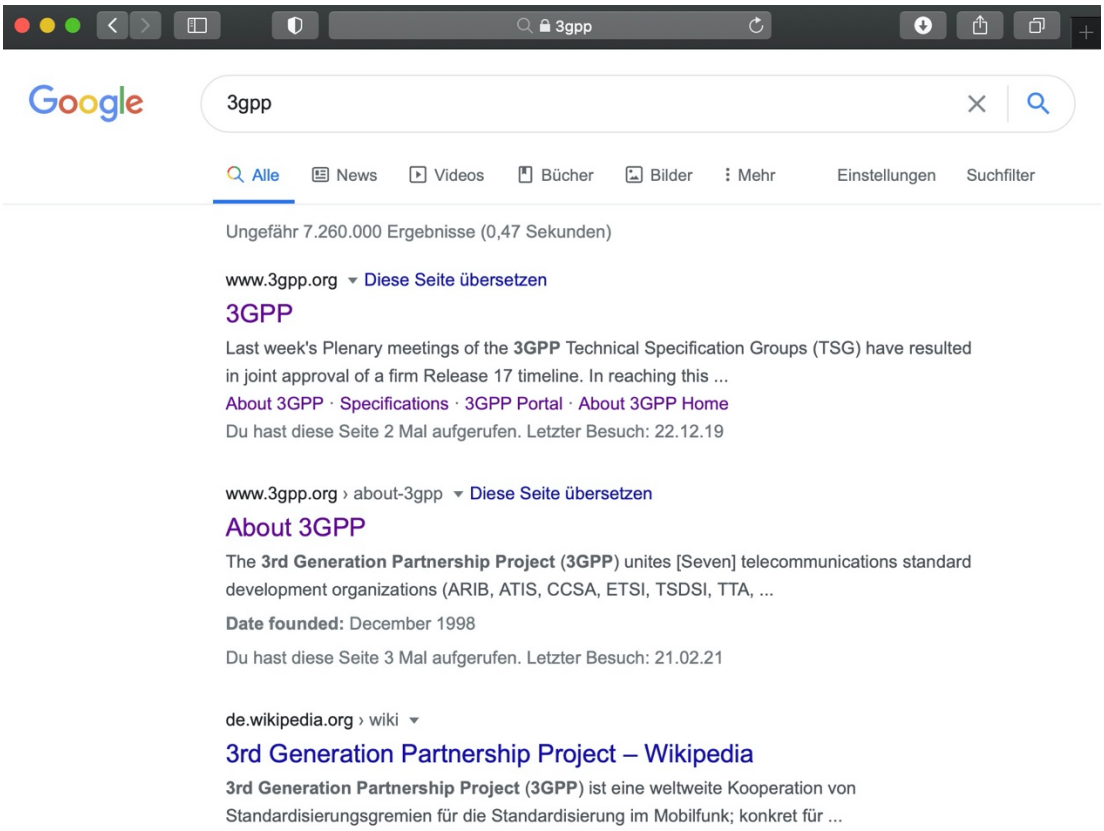


66. Following the provided search result link "Specification # 25.211 – 3GPP" leads to a 3GPP web page offering under the tab "Versions" download links

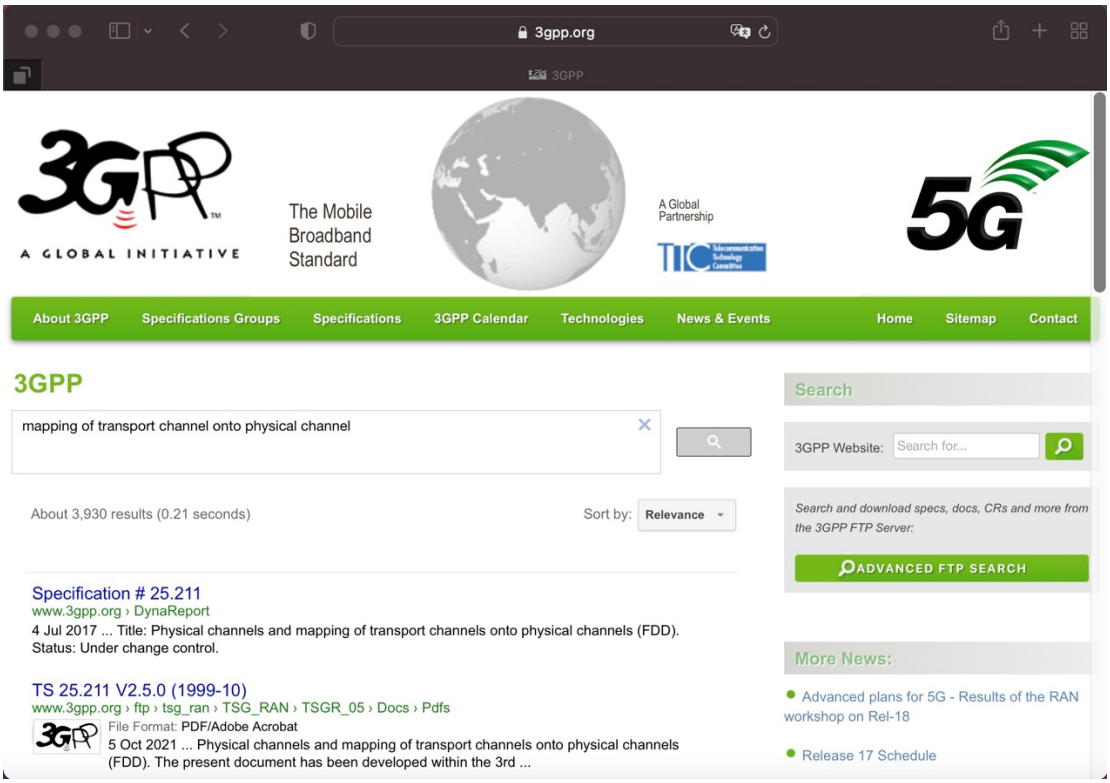
to all versions of TS 25.211 including version 7.4.0, as shown by the screenshot below:



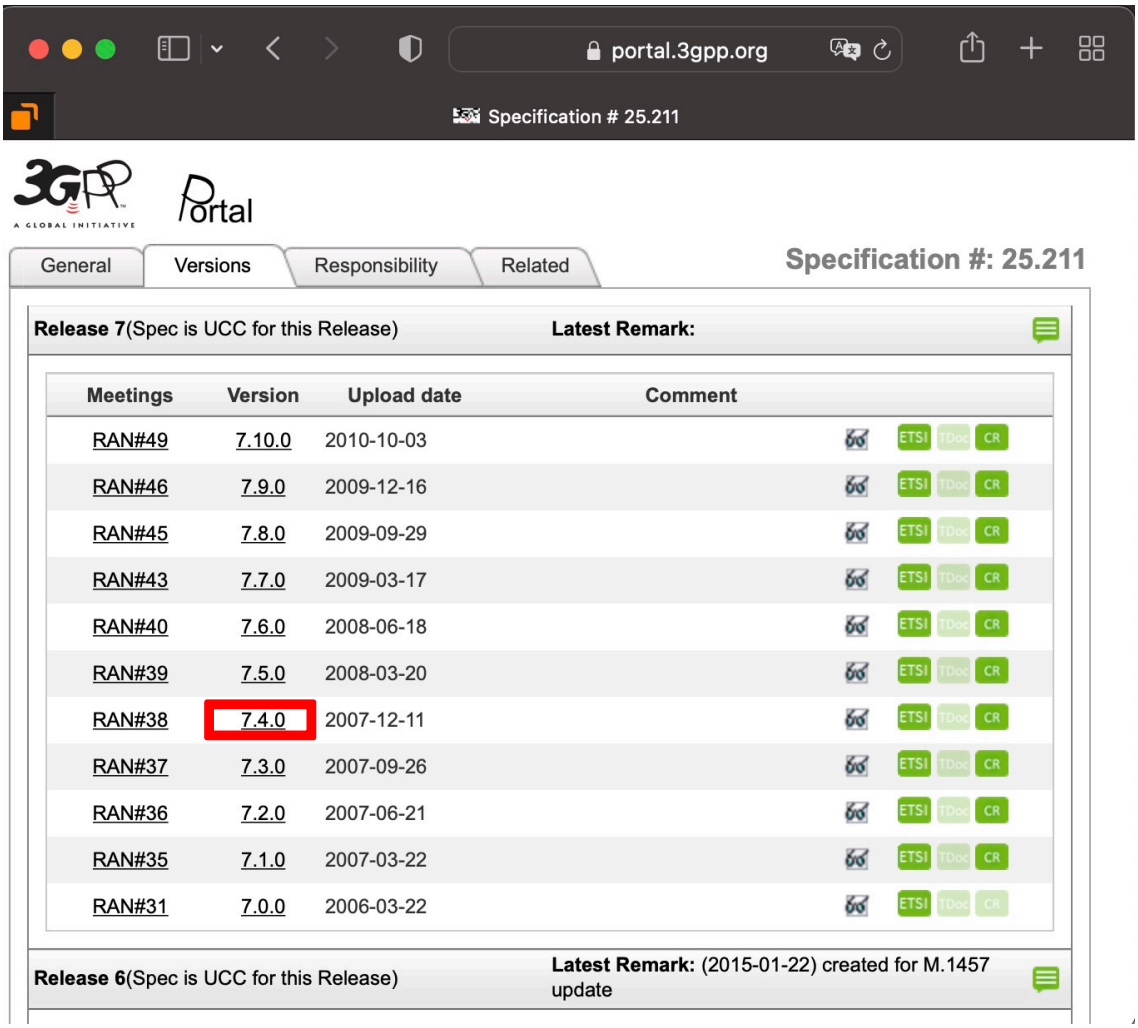
67. 3GPP is a very well-known SDO as of today and certainly was already very well-known in 2007. A person aware of 3GPP could have found TS 25.211 v7.4.0 also via a different route. Searching for "3GPP" leads to the 3GPP website htpp://www.3gpp.org, as can be seen by the screen shot below:



68. Entering "mapping of transport channel onto physical channel" into the search box of the 3GPP web site provides "Specification # 25.211" as the top result, as can be seen by the screen shot below:



69. Following the provided search result link on "Specification # 25.211" leads to the same 3GPP web page as mentioned in paragraph 66 offering under the tab "Versions" download links to all versions of TS 25.211 including version 7.4.0, as shown by the screenshot below:

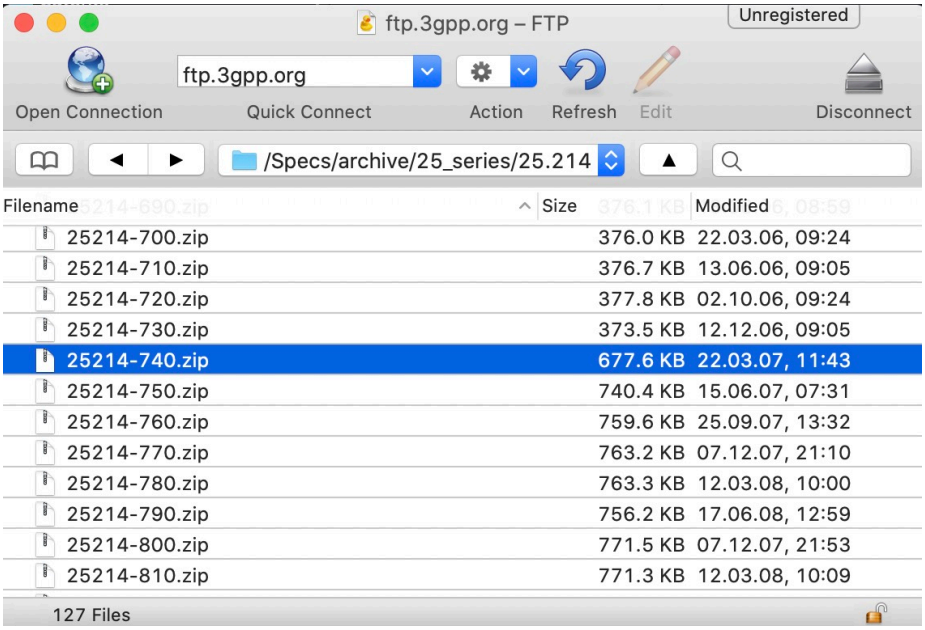


70. The above example searches illustrate that it is very easy for an interested member of the public without prior knowledge of the TS number and even without prior knowledge of 3GPP to locate any version of TS 25.211, including version 7.4.0, for download.

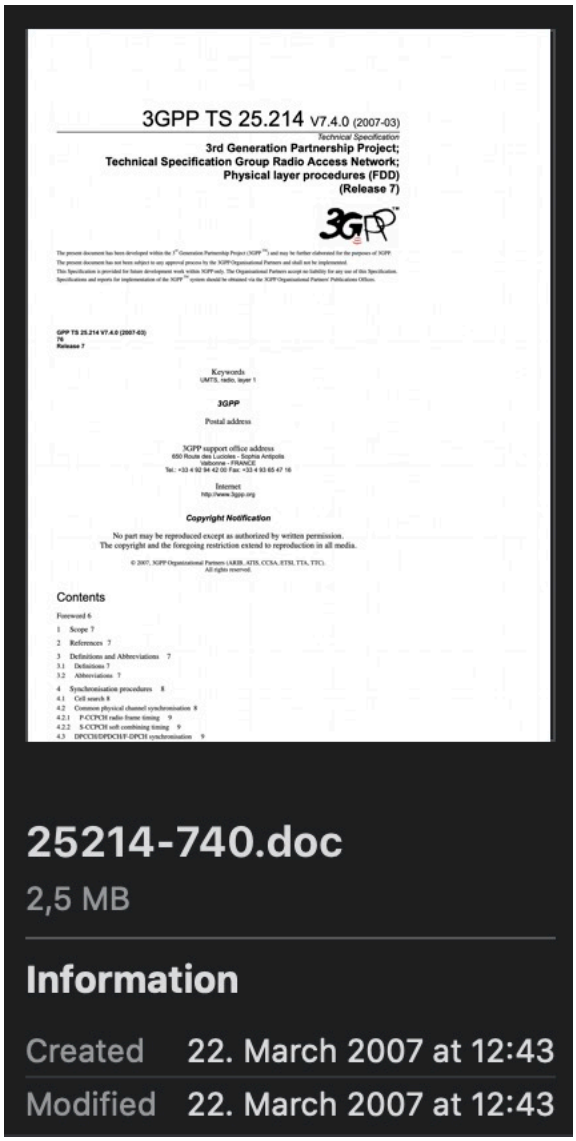
71. The above searches were performed at the time of writing this report. According to my personal experience, similar searches done in December 2007 or around that timeframe would have similarly provided the path to download version 7.4.0 of TS 25.211.

4. TS 25.214 V7.4.0

72. Based on my personal knowledge and my review of 3GPP's business records, I recognize APPLE-1005 as a true and correct copy of version 7.4.0 of technical specification 3GPP TS 25.214 ("Technical Specification Group Radio Access Network; Physical layer procedures (FDD) (Release 7)"), which shows on its cover page "2007-03" as the year (2007) and month (March) during which this document was released by 3GPP. The document was published and freely available on 3GPP's ftp server by March 22, 2007. This is confirmed by the date stamp shown on the historic 3GPP ftp server for the corresponding downloadable file ("25214-740.zip"), as maintained by the Internet Archive at https://web.archive.org/web/20070521202617/http://www.3gpp.org:80/ftp/specs/archive/25_series/25.214. This information is also shown on the date stamp for the present-day listing of the same document on the 3GPP ftp server at https://www.3gpp.org/ftp/Specs/archive/25_series/25.214, as shown by the screen shot below:



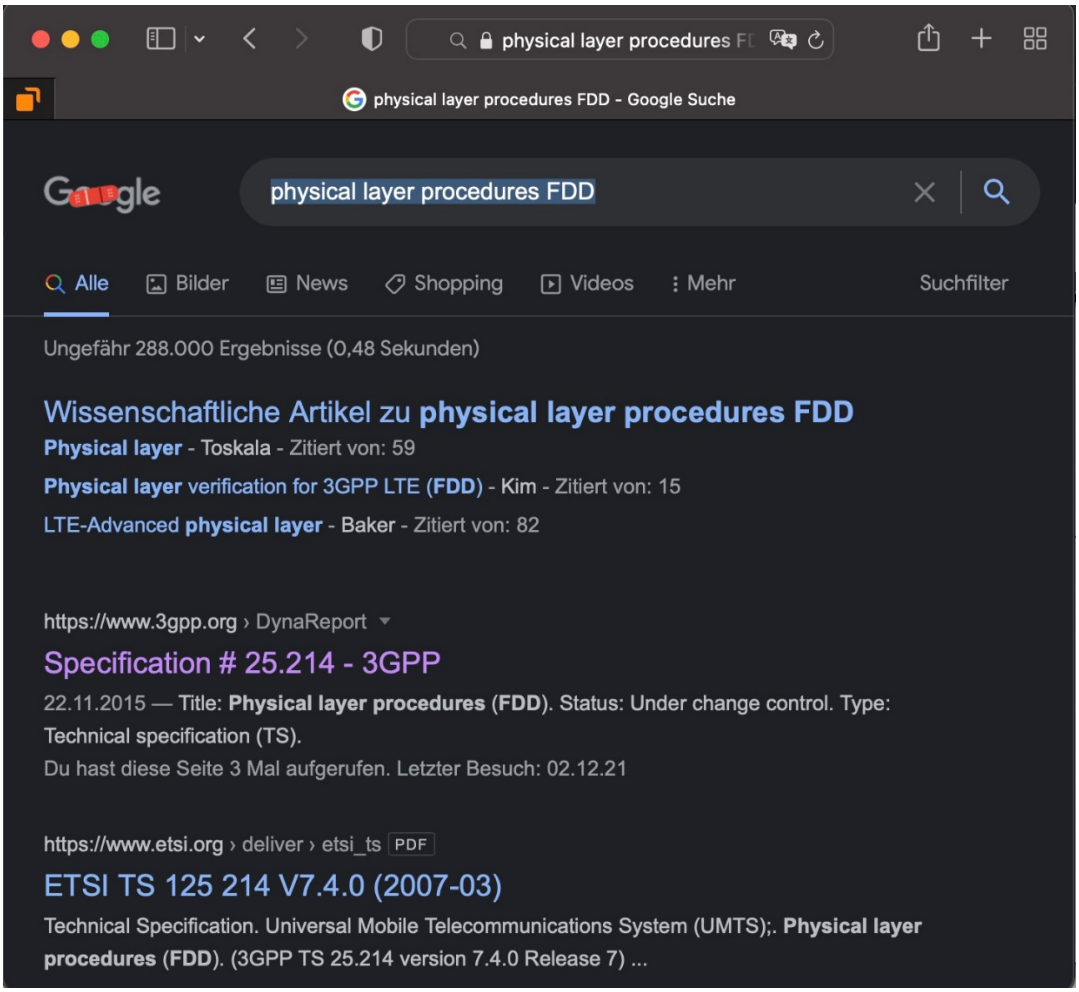
73. In addition, metadata information for the downloaded and extracted specification file states a last Modified date of "22. March 2007", as shown in the screen shot below:



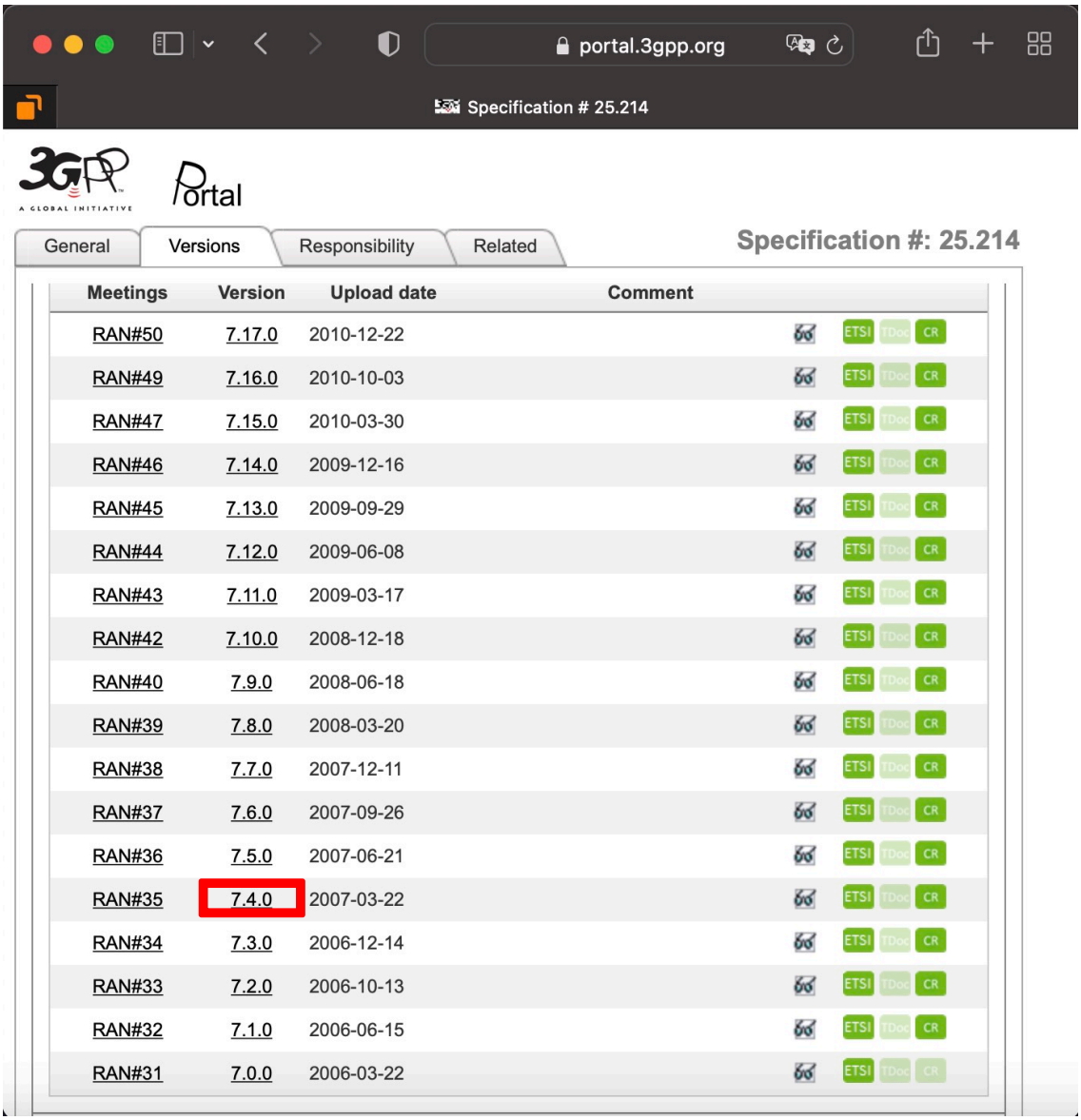
74. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that this document was available to all 3GPP members and the general public by March 22, 2007, at the latest.

75. Furthermore, the availability of the document was announced by the RAN WG1 secretary via the public 3GPP_TSG_RAN_WG1 email exploder on March 22, 2007, as shown in Appendix E. Around that time, the 3GPP_TSG_RAN_WG1 email exploder has around 1100 subscribers as can be seen at the Web Archive https://web.archive.org/web/20070331221506/http://list.etsi.org/.

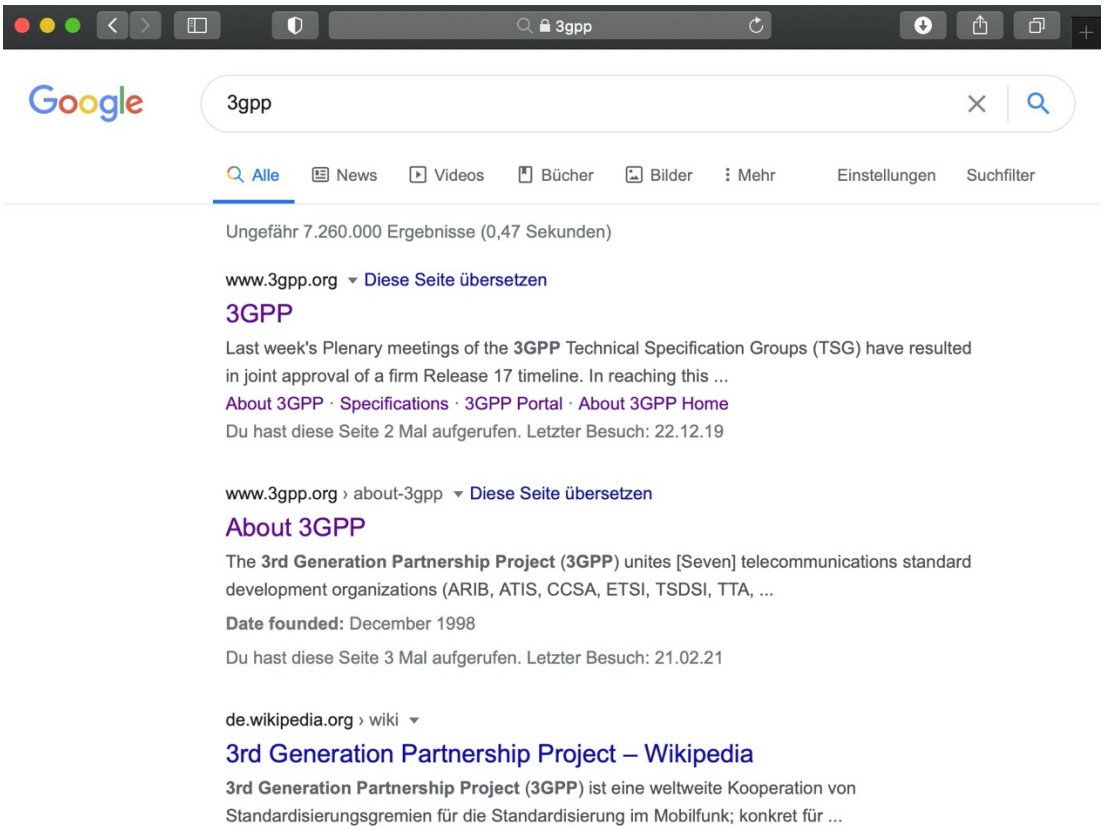
76. I believe that a person without prior knowledge of 3GPP and/or the technical specification (TS) number would have been able to easily find the TS for download via internet search. For instance, a Google search for "physical layer procedures FDD" provides the TS number "25.214" as one of the top results as can be seen in the screen shot below:



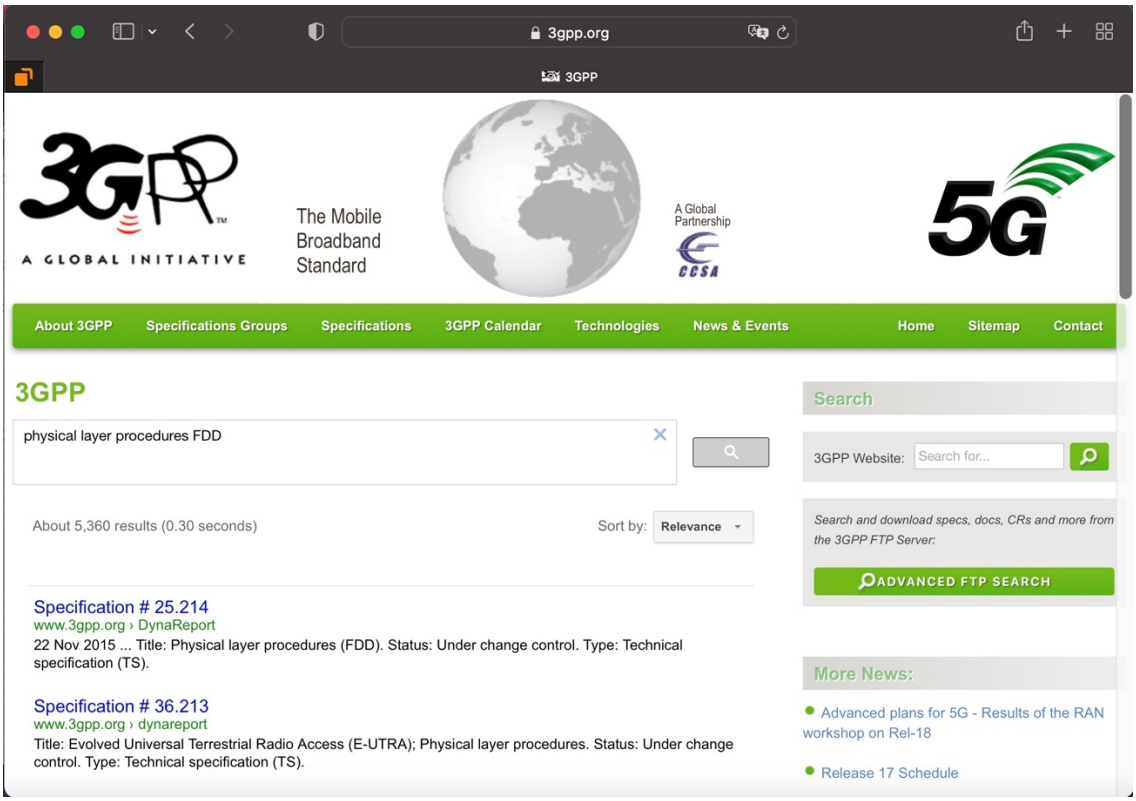
77. Following the provided search result link "Specification # 25.214 – 3GPP" leads to a 3GPP web page offering under the tab "Versions" download links to all versions of TS 25.214 including version 7.4.0, as shown by the screenshot below:



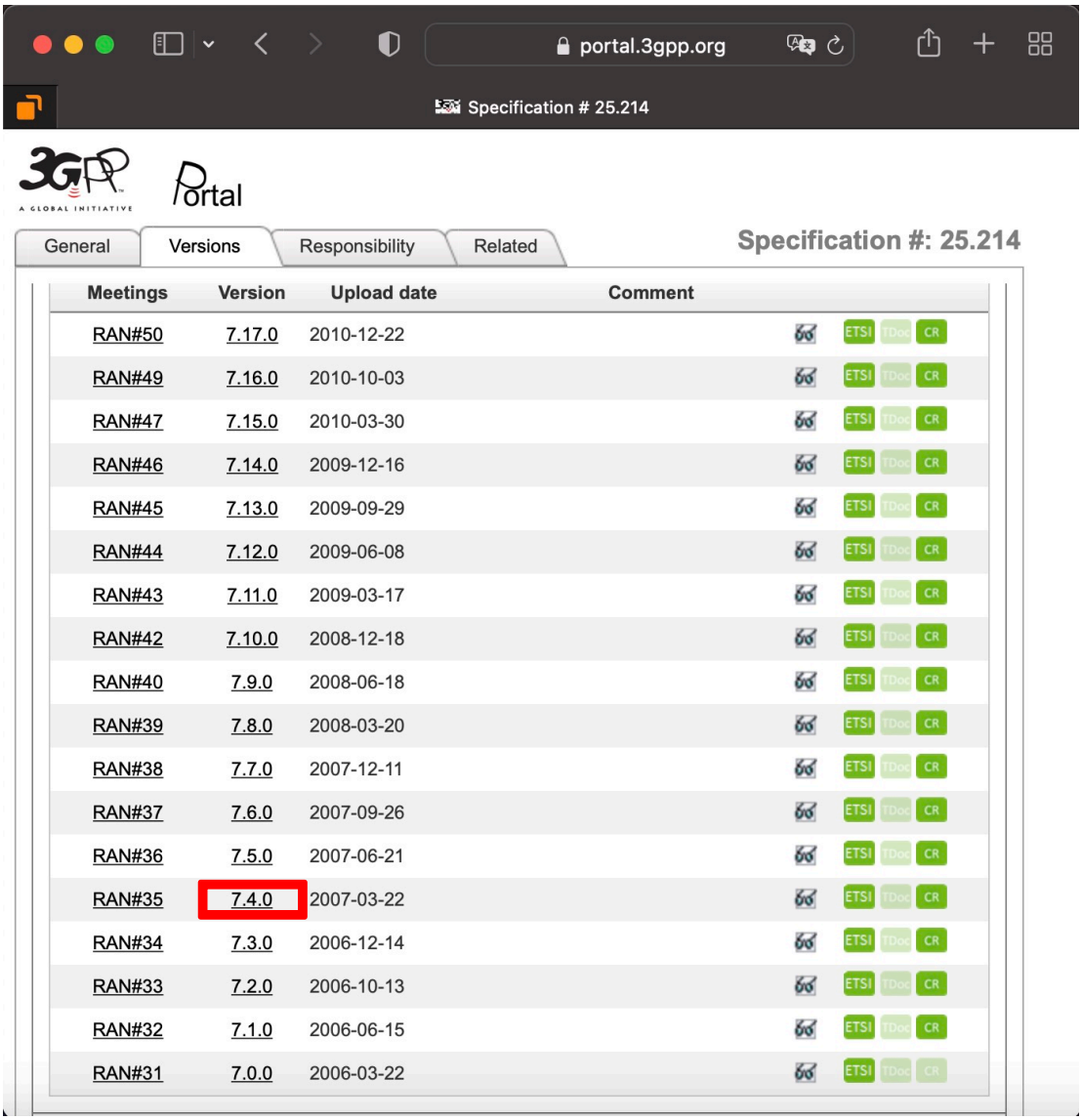
78. 3GPP is a very well-known SDO as of today and certainly was already very well-known in 2007. A person aware of 3GPP could have found TS 25.214 v7.4.0 also via a different route. Searching for "3GPP" leads to the 3GPP website htpp://www.3gpp.org, as can be seen by the screen shot below:



79. Entering "physical layer procedures FDD" into the search box of the 3GPP web site provides "Specification # 25.214" as the top result, as can be seen by the screen shot below:



80. Following the provided search result link on "Specification # 25.214" leads to the same 3GPP web page as mentioned in paragraph 77 offering under the tab "Versions" download links to all versions of TS 25.214 including version 7.4.0, as shown by the screenshot below:



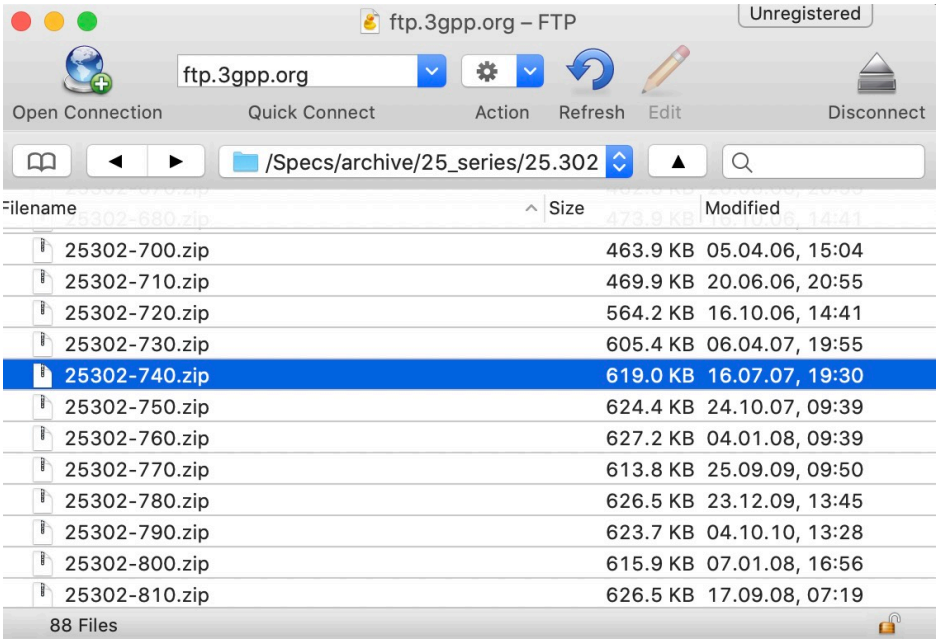
81. The above example searches illustrate that it is very easy for an interested member of the public without prior knowledge of the TS number and even without prior knowledge of 3GPP to locate any version of TS 25.214, including version 7.4.0, for download.

82. The above searches were performed at the time of writing this report. According to my personal experience, similar searches done in March 2007 or

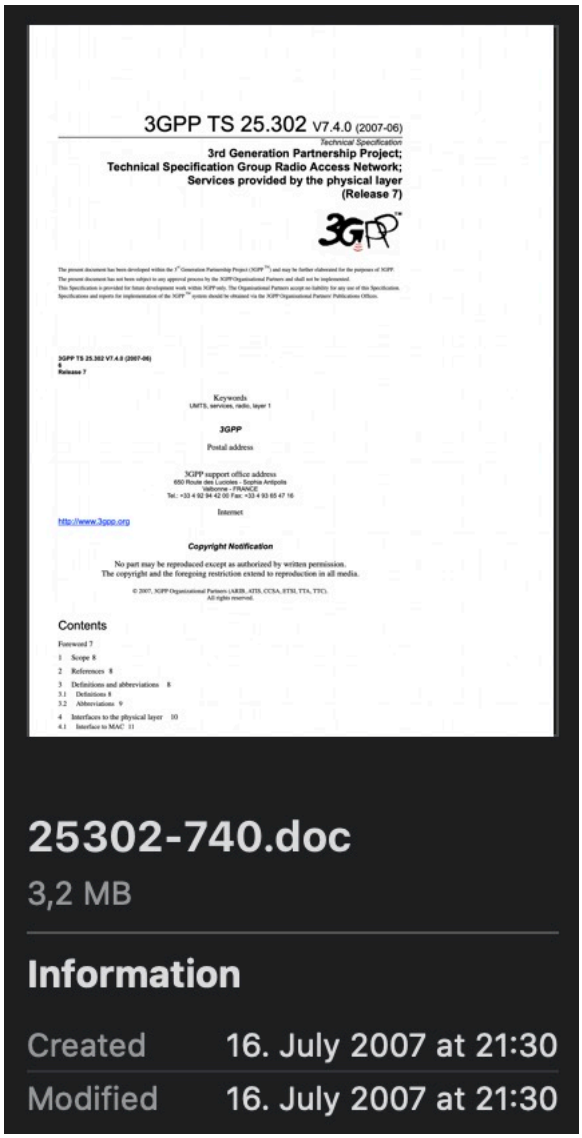
around that timeframe would have similarly provided the path to download version 7.4.0 of TS 25.214.

5. TS 25.302 V7.4.0

83. Based on my personal knowledge and my review of 3GPP's business records, I recognize APPLE-1014 as a true and correct copy of version 7.4.0 of technical specification 3GPP TS 25.302 ("Technical Specification Group Radio Access Network; Services provided by the physical layer (Release 7)"), which shows on its cover page "2007-06" as the year (2007) and month (June) during which this document was released by 3GPP. The document was published and freely available on 3GPP's ftp server by July 16, 2007. This is confirmed by the date stamp shown on the historic 3GPP ftp server for the corresponding downloadable file ("25302-740.zip"), as maintained by the Internet Archive at https://web.archive.org/web/20070815061706/http://www.3gpp.org/ftp/Specs/archive/25_series/25.302.This information is also shown on the date stamp for the present-day listing of the same document on the 3GPP ftp server at https://www.3gpp.org/ftp/Specs/archive/25_series/25.302, as shown by the screen shot below:



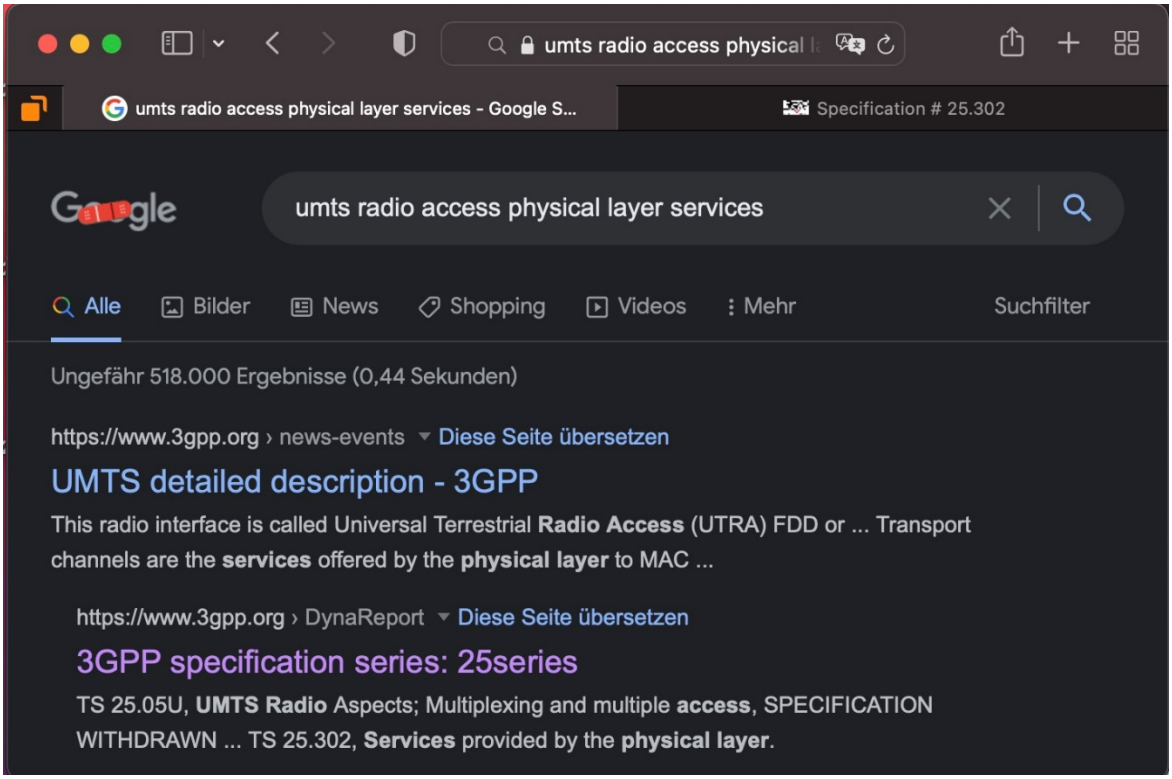
84. In addition, metadata information for the downloaded and extracted specification file states a last Modified date of "16. July 2007", as shown in the screen shot below:



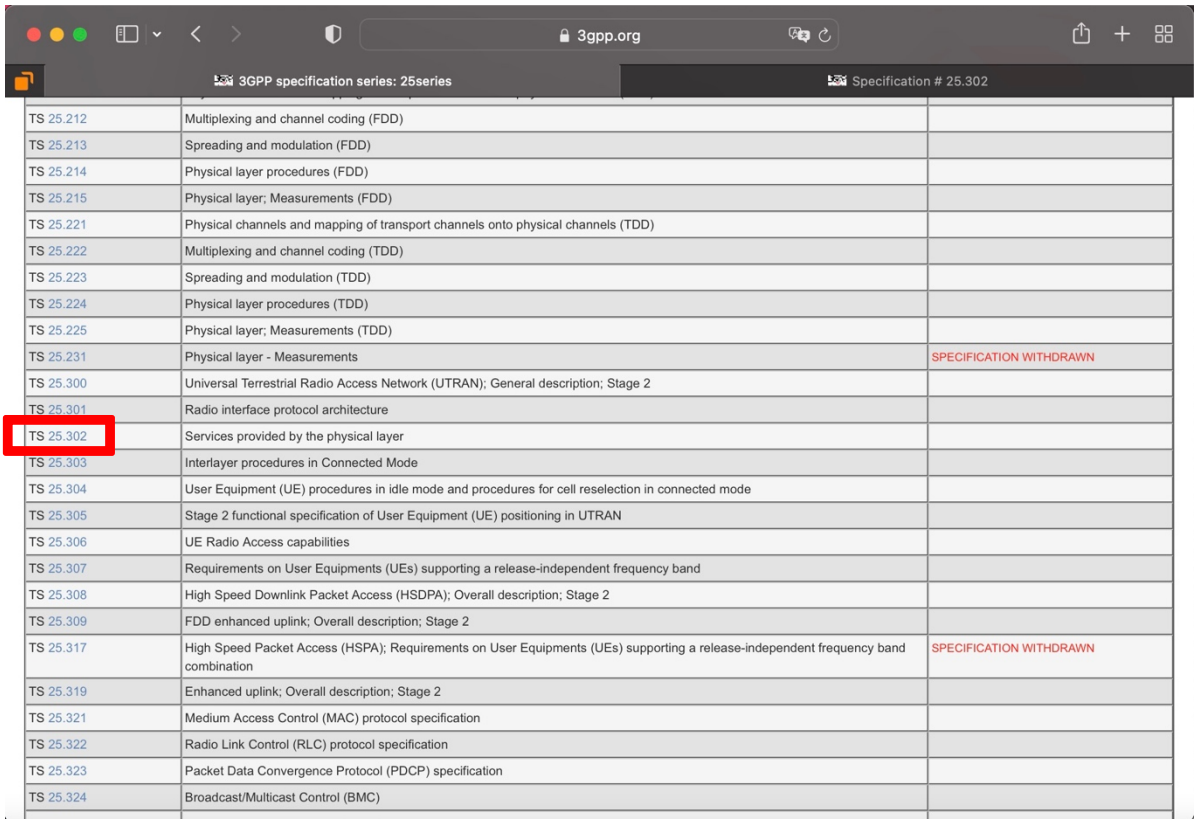
85. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that this document was available to all 3GPP members and the general public by July 16, 2007, at the latest.

86. I believe that a person without prior knowledge of 3GPP and/or the technical specification (TS) number would have been able to easily find the TS for

download via internet search. For instance, a Google search for "UMTS radio access physical layer services" provides the link to the "3GPP specification series: 25series" as one of the top results as can be seen in the screen shot below:

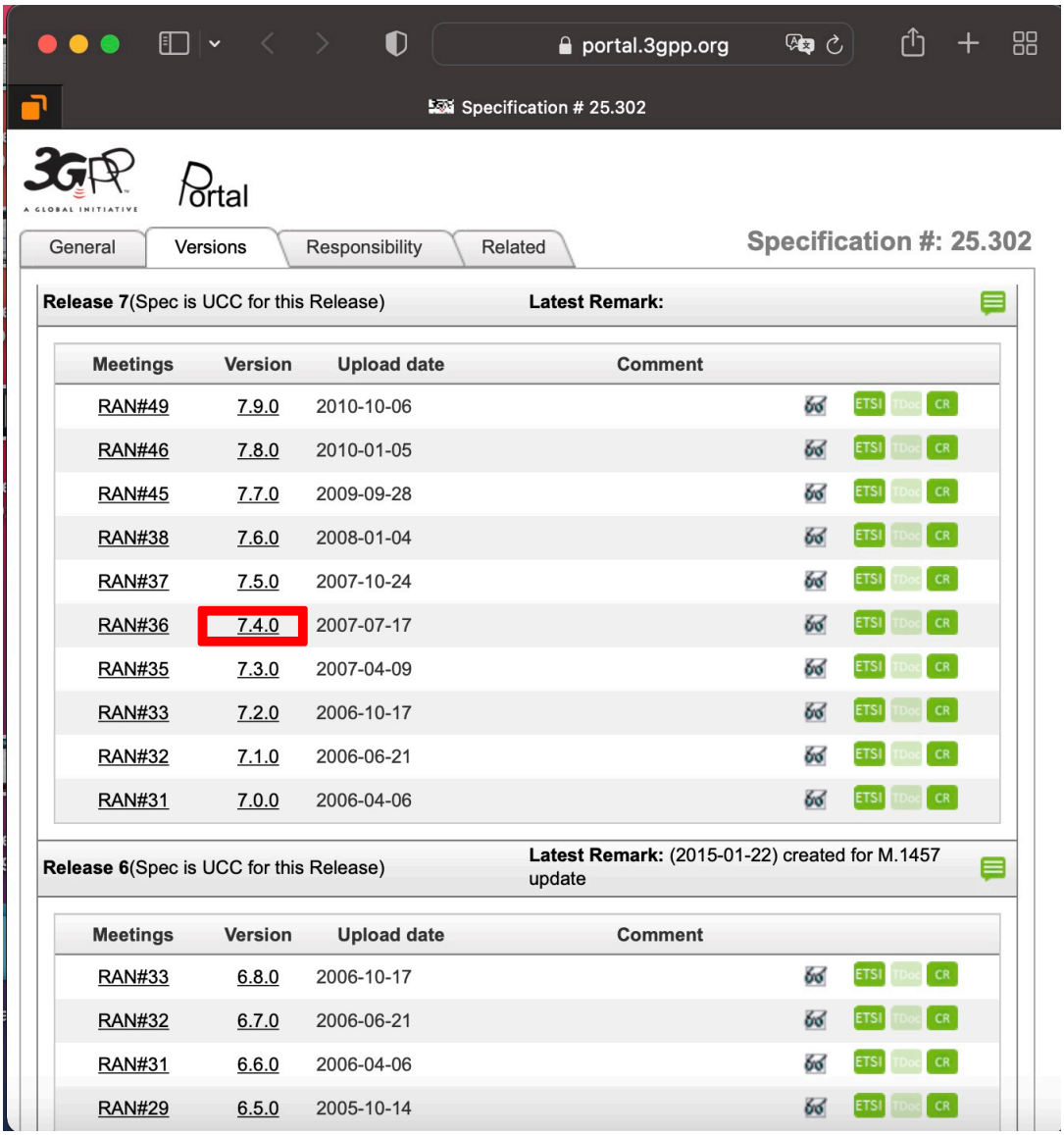


87. Following the provided search result link "3GPP specification series: 25series" leads to a 3GPP web page offering the overview about the entire 25-series which represents the 3GPP UMTS radio specifications, as shown by the screenshot (excerpt) below:

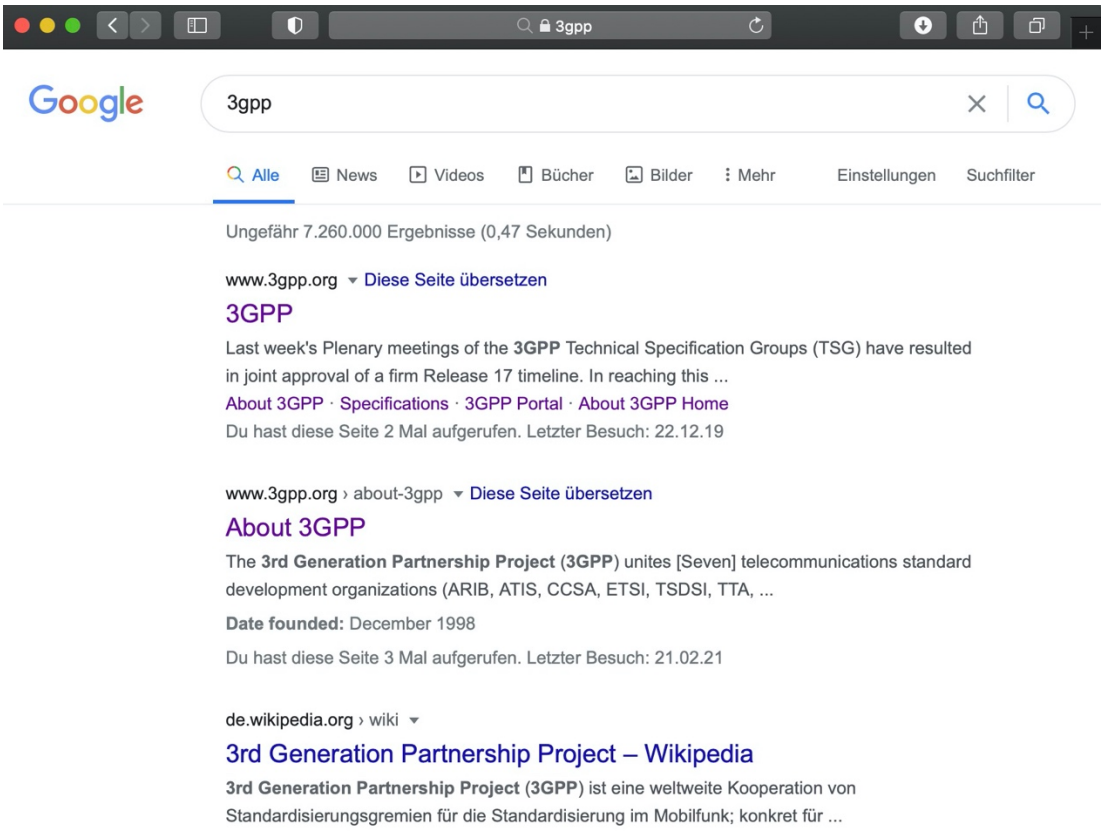


TS 25.212	Multiplexing and channel coding (FDD)	
TS 25.213	Spreading and modulation (FDD)	
TS 25.214	Physical layer procedures (FDD)	
TS 25.215	Physical layer; Measurements (FDD)	
TS 25.221	Physical channels and mapping of transport channels onto physical channels (TDD)	
TS 25.222	Multiplexing and channel coding (TDD)	
TS 25.223	Spreading and modulation (TDD)	
TS 25.224	Physical layer procedures (TDD)	
TS 25.225	Physical layer; Measurements (TDD)	
TS 25.231	Physical layer - Measurements	SPECIFICATION WITHDRAWN
TS 25.300	Universal Terrestrial Radio Access Network (UTRAN); General description; Stage 2	
TS 25.301	Radio interface protocol architecture	
TS 25.302	Services provided by the physical layer	
TS 25.303	Interlayer procedures in Connected Mode	
TS 25.304	User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode	
TS 25.305	Stage 2 functional specification of User Equipment (UE) positioning in UTRAN	
TS 25.306	UE Radio Access capabilities	
TS 25.307	Requirements on User Equipments (UEs) supporting a release-independent frequency band	
TS 25.308	High Speed Downlink Packet Access (HSDPA); Overall description; Stage 2	
TS 25.309	FDD enhanced uplink; Overall description; Stage 2	
TS 25.317	High Speed Packet Access (HSPA); Requirements on User Equipments (UEs) supporting a release-independent frequency band combination	SPECIFICATION WITHDRAWN
TS 25.319	Enhanced uplink; Overall description; Stage 2	
TS 25.321	Medium Access Control (MAC) protocol specification	
TS 25.322	Radio Link Control (RLC) protocol specification	
TS 25.323	Packet Data Convergence Protocol (PDCP) specification	
TS 25.324	Broadcast/Multicast Control (BMC)	

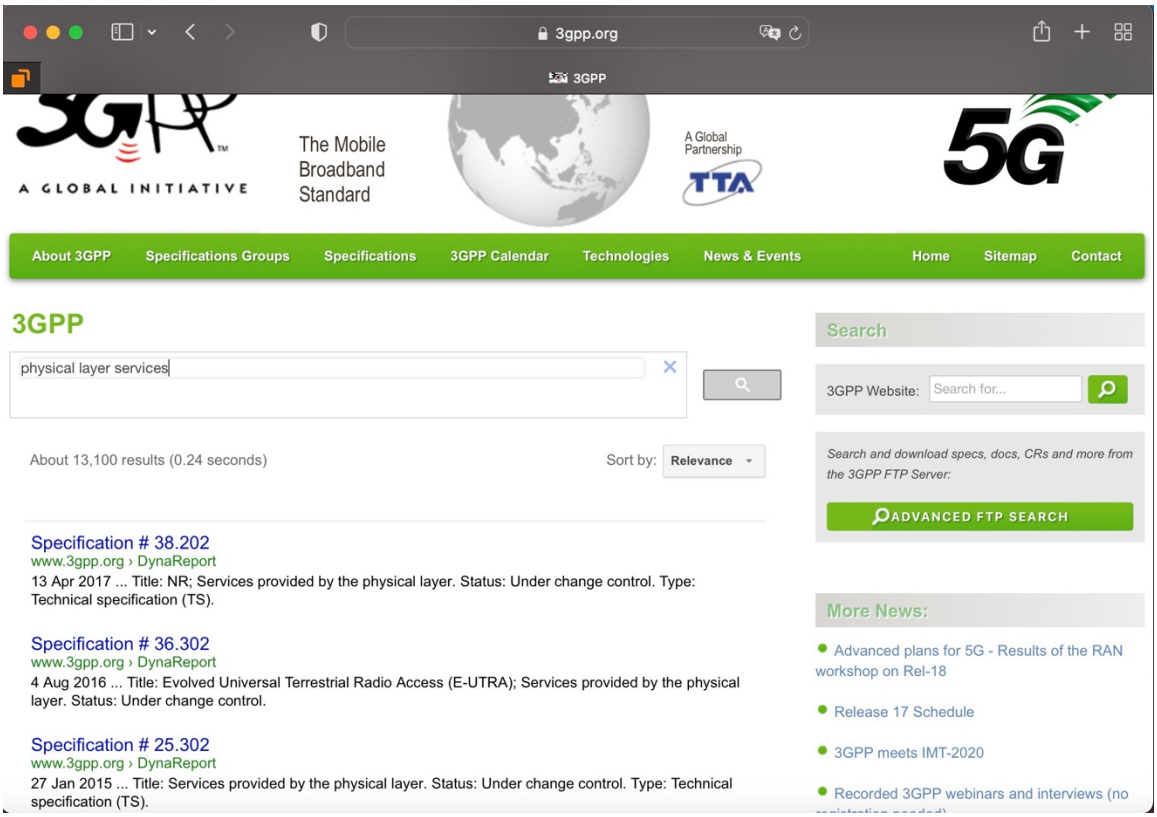
88. Following the provided link to TS 25.302 leads to a 3GPP web page offering under the tab “Versions” download links to all versions of TS 25.302 including version 7.4.0, as shown by the screenshot below:



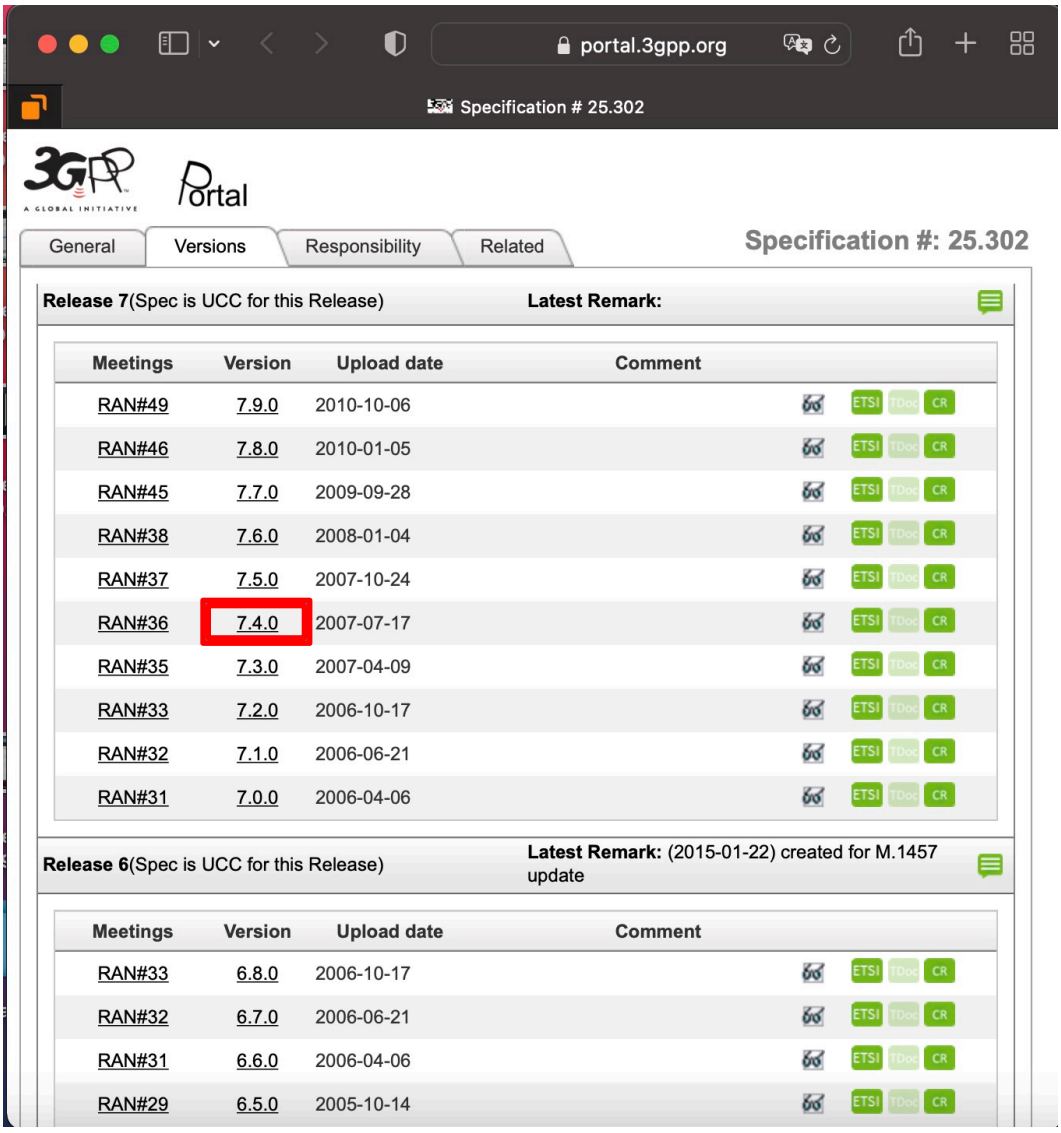
89. 3GPP is a very well-known SDO as of today and certainly was already very well-known in 2007. A person aware of 3GPP could have found TS 25.302 v7.4.0 also via a different route. Searching for "3GPP" leads to the 3GPP website htpp://www.3gpp.org, as can be seen by the screen shot below:



90. Entering "physical layer services" into the search box of the 3GPP web site provides "Specification # 25.302" as one of the top results, as can be seen by the screen shot below:



91. Following the provided search result link on “Specification # 25.302” leads to the same 3GPP web page as mentioned in paragraph 88 offering under the tab “Versions” download links to all versions of TS 25.302 including version 7.4.0, as shown by the screenshot below:



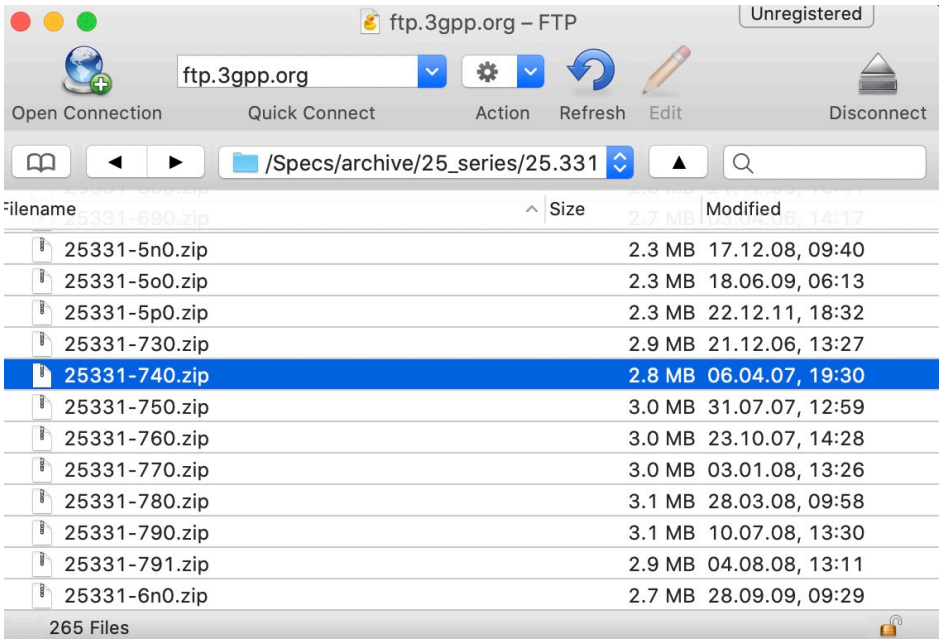
92. The above example searches illustrate that it is very easy for an interested member of the public without prior knowledge of the TS number and even without prior knowledge of 3GPP to locate any version of TS 25.302, including version 7.4.0, for download.

93. The above searches were performed at the time of writing this report. According to my personal experience, similar searches done in July 2007 or around

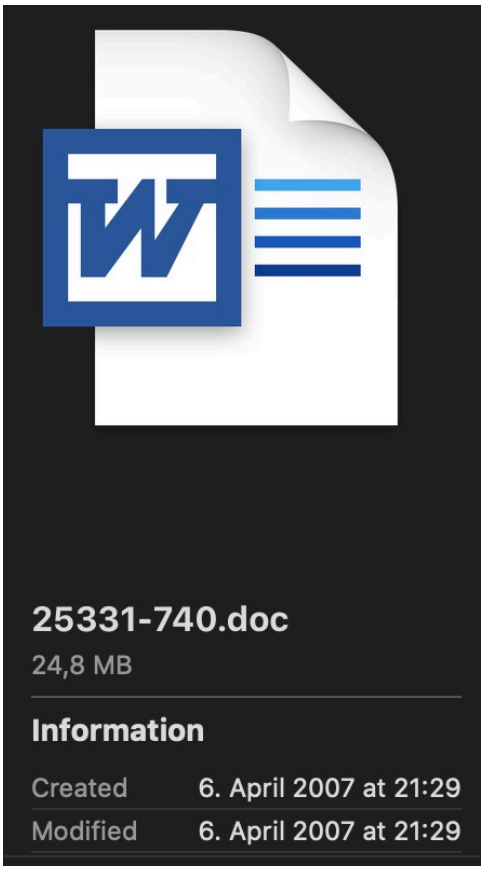
that timeframe would have similarly provided the path to download version 7.4.0 of TS 25.302.

6. TS 25.331 V7.4.0

94. Based on my personal knowledge and my review of 3GPP's business records, I recognize APPLE-1004 as a true and correct copy of version 7.4.0 of technical specification 3GPP TS 25.331 ("Technical Specification Group Radio Access Network; Radio Resource Control (RRC); Protocol specification (Release 7)"), which shows on its cover page "2007-03" as the year (2007) and month (March) during which this document was released by 3GPP. The document was published and freely available on 3GPP's ftp server by April 6, 2007. This is confirmed by the date stamp shown on the historic 3GPP ftp server for the corresponding downloadable file ("25331-740.zip"), as maintained by the Internet Archive at https://web.archive.org/web/20070504060112/http://www.3gpp.org:80/ftp/specs/archive/25_series/25.331. This information is also shown on the date stamp for the present-day listing of the same document on the 3GPP ftp server at https://www.3gpp.org/ftp/Specs/archive/25_series/25.331, as shown by the screen shot below:

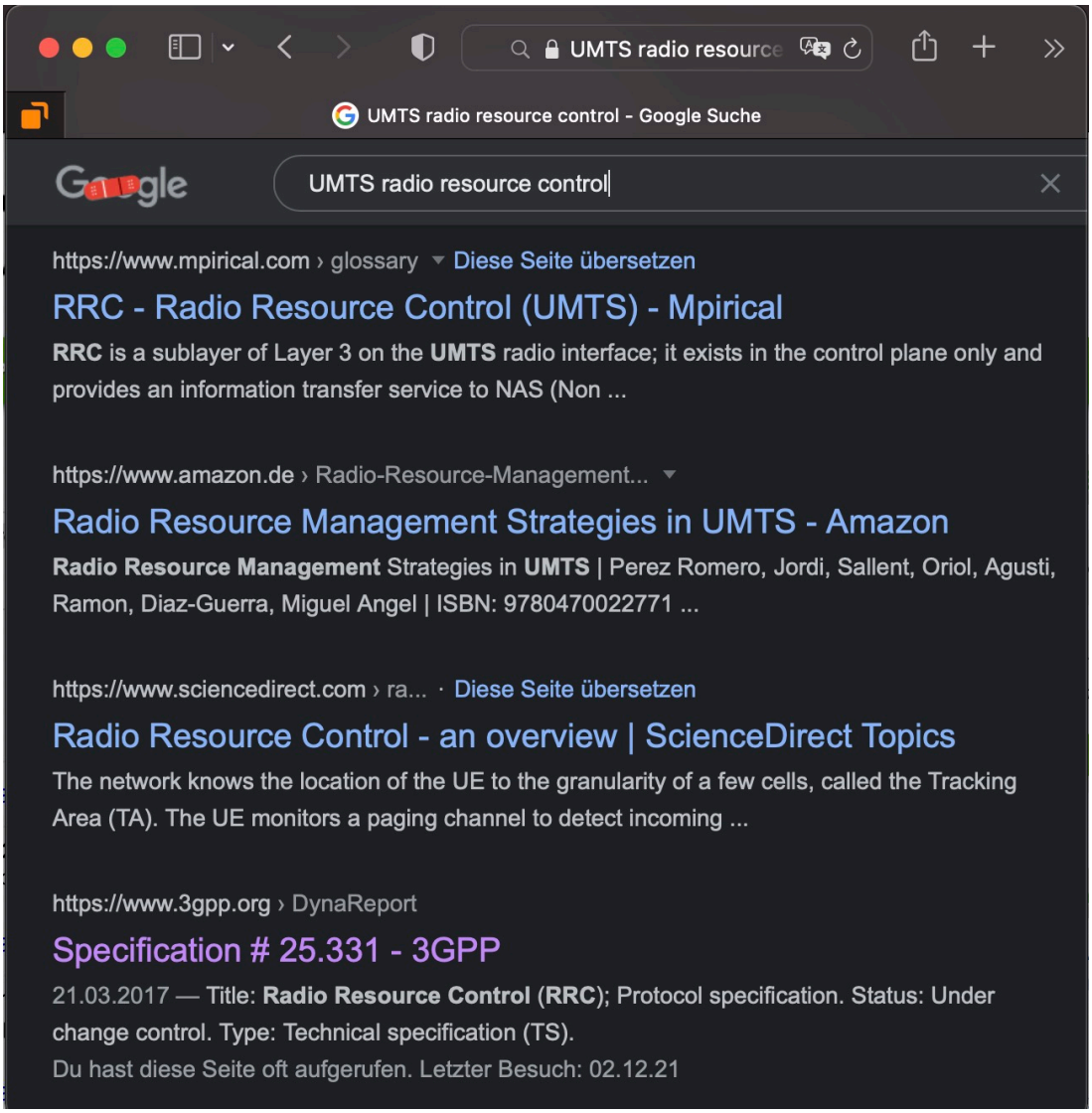


95. In addition, metadata information for the downloaded and extracted specification file states a last Modified date of "6. April 2007", as shown in the screen shot below (front page is not shown in this preview because it seems damaged):

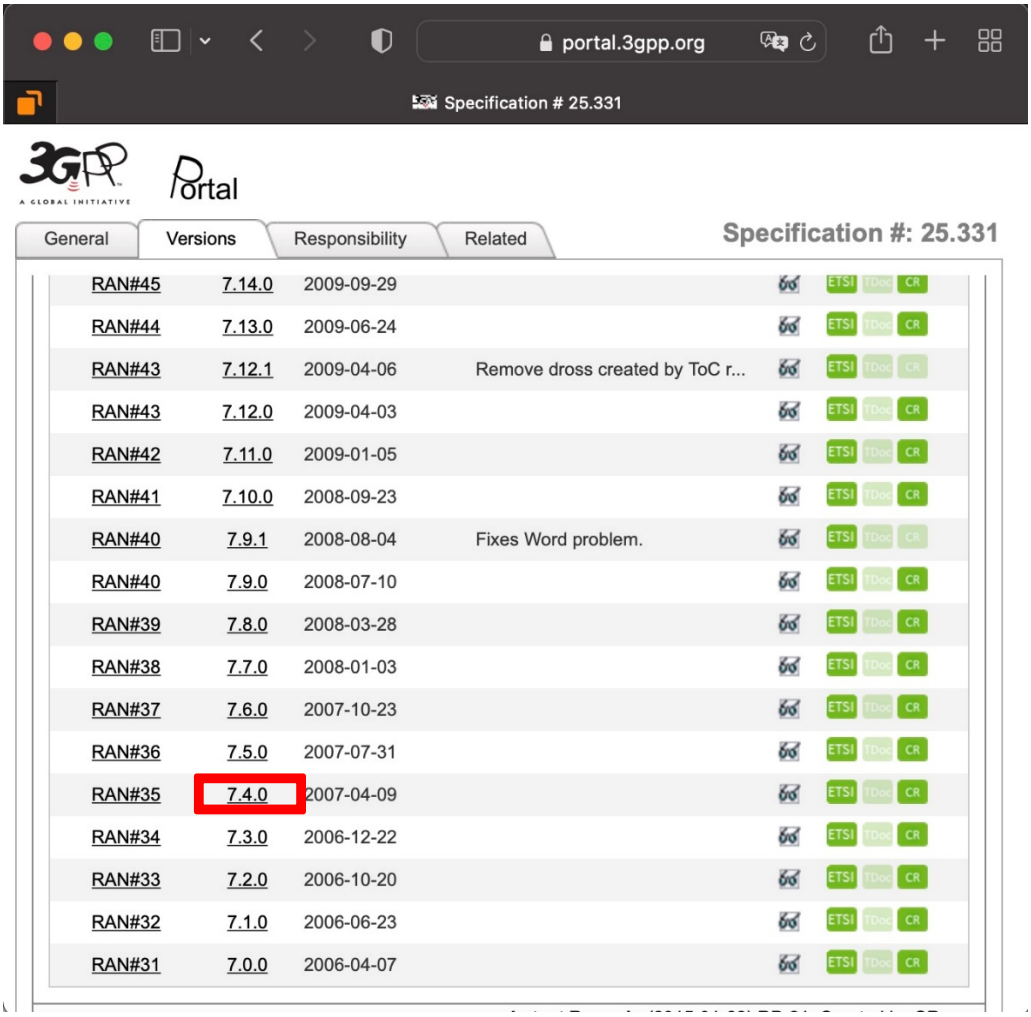


96. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that this document was available to all 3GPP members and the general public by April 6, 2007, at the latest.

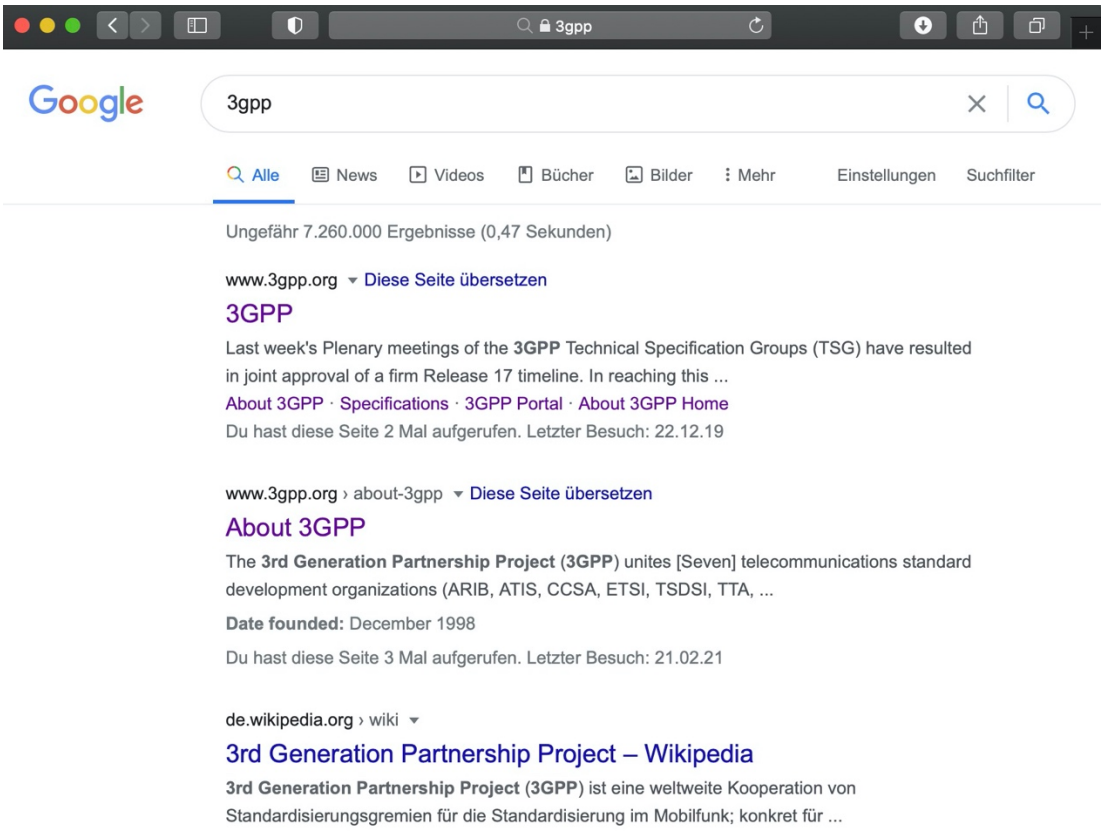
97. I believe that a person without prior knowledge of 3GPP and/or the technical specification (TS) number would have been able to easily find the TS for download via internet search. For instance, a Google search for "UMTS radio resource control" provides the TS number "25.331" as one of the top results as can be seen in the screen shot below:



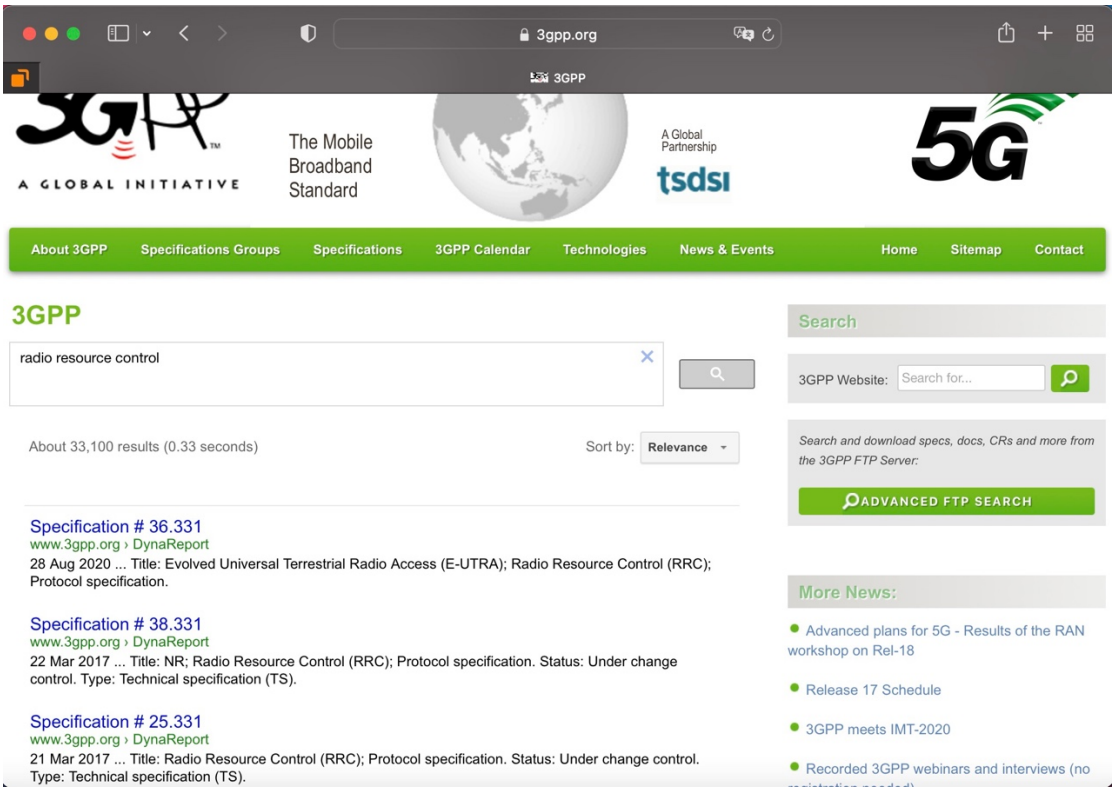
98. Following the provided search result link "Specification # 25.331 – 3GPP" leads to a 3GPP web page offering under the tab "Versions" download links to all versions of TS 25.331 including version 7.4.0, as shown by the screenshot below:



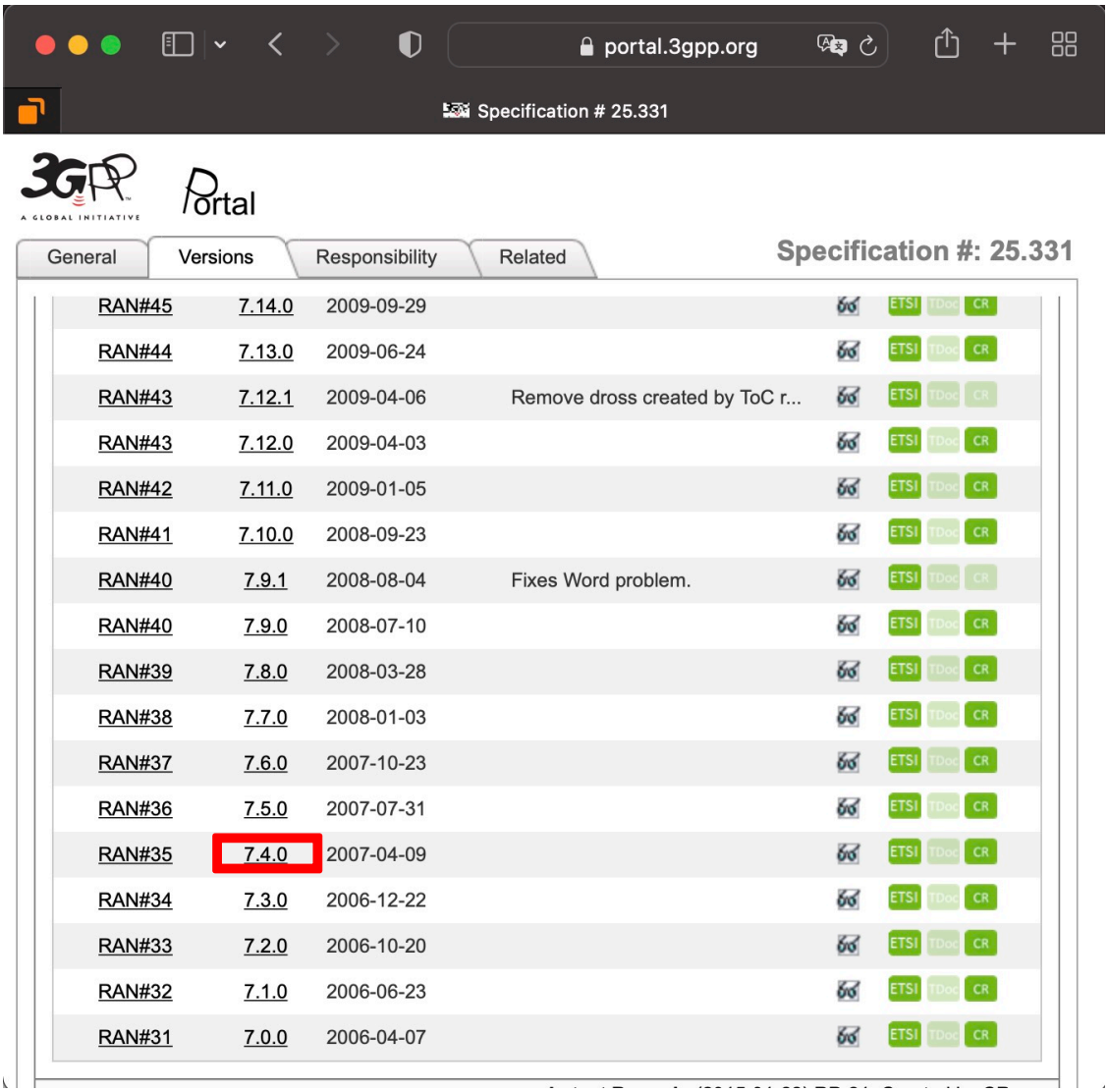
99. 3GPP is a very well-known SDO as of today and certainly was already very well-known in 2007. A person aware of 3GPP could have found TS 25.331 v7.4.0 also via a different route. Searching for "3GPP" leads to the 3GPP website htpp://www.3gpp.org, as can be seen by the screen shot below:



100. Entering "radio resource control" into the search box of the 3GPP web site provides "Specification # 25.331" as one of the top results, as can be seen by the screen shot below:



101. Following the provided search result link on "Specification # 25.331" leads to the same 3GPP web page as mentioned in paragraph 98 offering under the tab "Versions" download links to all versions of TS 25.331 including version 7.4.0, as shown by the screenshot below:



102. The above example searches illustrate that it is very easy for an interested member of the public without prior knowledge of the TS number and even without prior knowledge of 3GPP to locate any version of TS 25.331, including version 7.4.0, for download.

103. The above searches were performed at the time of writing this report. According to my personal experience, similar searches done in April 2007 or around

that timeframe would have similarly provided the path to download version 7.4.0 of TS 25.331.

V. AVAILABILITY FOR CROSS-EXAMINATION

104. In signing this declaration, I recognize that the declaration may be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross examination in the case and that cross examination will take place within the United States. If cross examination is required of me, I will cooperate to the best of my ability to appear for cross examination within the United States during the time allotted for cross examination.

A. Right To Supplement

105. I reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner raises and to take into account new information as it becomes available to me.

B. Signature

106. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false

statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

107. I declare under penalty of perjury that the foregoing is true and correct.

Dated: January 20, 2022

Friedhelm Rodermund

Appendix A

CURRICULUM VITAE

I. PERSONAL DATA

Name: **Friedhelm RODERMUND**

Mailing address: Am Steiner Graben 18
56077 Koblenz, Germany

Phone: +49 172 2606489

Email: friedhelm.rodermund@iotecc.com

II. PROFESSIONAL EXPERIENCE

Summary

Senior expert in telecommunications and Internet of Things (IoT) technology. 25 years of experience within the mobile communications industry, and several years in the IoT domain in various roles such as project management, technology innovation and evolution, standards development, technology strategy, patent creation and support of patent litigations, and development/introduction of new services.

Widely recognized standards expert who was actively involved in leading roles in the development of key standards for mobile telephony/data and service anablers across standards development organizations such as 3GPP, ETSI, GSMA, IETF, OMA, and oneM2M. Currently focussing on standards for the Internet of Things.

Founder and director of IOTECC GmbH which provides consulting services around technologies and standards enabling the Internet of Things, and provides consulting services related to patents for mobile telcommunications and IoT.

01/2015 – present **IOTECC GmbH** **Koblenz, Germany**

Founder and CEO

- Mobile telecommunications, Internet of Things (IoT) and Machine to Machine (M2M) technology and standards consulting
- Telecommunications and IoT patent consulting
  - Consulting services around telecommunications and IoT patents in particular related to ETSI, 3GPP, and OMA standards
  - State of the art/prior art research services related to patent creation e.g. for new 5G patents
  - Prior art research, patent infringement analysis related to litigations and validity actions
  - Advising on Standards Development Organisations (SDO) working processes and IPR policy, ETSI IPR Special Committee delegate
  - Experienced expert witness (please see section III for a list of supported actions)

11/2014 – 12/2014 **Friedhelm Rodermund Consulting** **Koblenz, Germany**

Internet of Things (IoT) Consultant

- M2M/IoT standards development and introduction of new M2M/IoT services

01/2011 – 10/2014 Vodafone Germany / Vodafone Group R&D Düsseldorf, Germany

Senior Standards Strategist
- Representing Vodafone in various standardisation bodies
- Driving the standardisation of the Internet of Things
- Work item lead, technical editor and key contributor of Open Mobile Alliance (OMA) "Lightweight M2M (LwM2M)" – the new standard for the Internet of Things
- Advising and supporting various M2M projects related to e.g. automotive, smart metering, health, industry
- Advising on the introduction of new M2M technologies and services
- Leading Proof of Concepts of emerging technologies
- Involved in innovation projects
- Supporting the creation and protection of Intellectual Property

01/2009 – 12/2010 Vodafone Germany Düsseldorf, Germany

Vice Chairman Open Mobile Alliance (OMA) Device Management (DM)
- Responsible for Vodafone's Device Management standardisation
- As OMA DM Vice Chairman, co-leading the group, chairing committee meetings and web conferences, steering the technical direction, management of the different work items
- Editor of several specifications, rapporteur of various work items
- Support of projects for the introduction of device management
- Delegate to 3GPP SA1 where I was responsible for the introduction of MTC (machine type communications) related service/network requirements

01/2005 – 12/2008 Vodafone Germany Düsseldorf, Germany

Project Manager Mobile Broadcast Standards
- Responsible for Mobile Broadcast standardisation across different broadcast systems/standards bodies and across all Vodafone local operations
- Responsible for Mobile Broadcast standardisation strategy development and implementation
- Delegation Lead for the Open Mobile Alliance (OMA) BCAST working group
- Initiated and managed the BCAST device profile development in the BMCO Forum
- Leading the "Service Protection" (pay-TV) stream of the German DVB-H Consortium
- Filed several patents
- Supporting patent litigations and patent portfolio evaluation (various technical areas)

04/2003 – 12/2003 GSM Association London, United Kingdom

Member of the MMS Task Force
- Verification of the MMS operator interworking framework
- Supporting the definition and specification of the MMS functional evolution
- Acting as a "link" between 3GPP and GSMA in the area of MMS

06/1998 – 12/2004 European Telecommunications Standards Institute (ETSI)
Sophia Antipolis, France

01/2002 – 12/2004: Secretary 3GPP Technical Specifications Group *"Terminals"* and Terminals Working Group 2 *"Terminal Services and Capabilities"*

01/1999 – 12/2001: Secretary 3GPP Terminals Working Group 2 *"Terminal Services and Capabilities"* and GERAN 3 *"Base Station Testing"*

06/1998 – 03/1999: Secretary ETSI SMG4 *"Data Services"* and SMG8 *"Base Station Testing"*

- Supported the establishment of 3GPP (3rd Generation Partnership Project) as the leading standards organization for mobile telecommunications
- Project manager and secretary of TSG "Terminals" reponsbile for Terminal Conformance Testing, Terminal Services and Capabilities, Universal Subscriber Identity Module (USIM)
- Project manager and secretary of Terminals Working Group 2 "Terminal Services and Capabilities" that was responsible for Terminal Execution Environments, Messaging including Short Message Service (SMS), Cell Broadcast Service (CBS), Enhanced Messaging Service (EMS), Multimedia Messaging Service (MMS), Terminal Interfaces incl. AT-commands, Generic User Profile, Data Synchronization and others
- Establishment and management of the Work Plan and follow-up and report on the progress of the related work items
- Advising the chairmen and the standards groups on technical, procedural and political issues
- Editorship of various GSM and UMTS technical specifications
- Responsible for presenting the technical results of the working groups to the parent body
- Responsible for the communication with other standards bodies inside and outside 3GPP
- PR activities (articles, interviews)

12/1993 – 06/1998 Mannesmann Mobilfunk GmbH Düsseldorf, Germany

System Engineer and Project Manager in Quality Assurance and Technical Standards

- Leadership and management of acceptance test projects in the area of GSM Base Station Controller (BSC) and GSM Base Station (BTS) hardware and software.
- Leading project teams of around 15 people
- Responsible for the clearance of releasing new software/hardware into the network
- Supported Request for Quotations, supplier evaluation and pre-selection, project manager of System Verification as a central part of the supplier selection process.
- Representation of Mannesmann Mobilfunk to the ETSI standardization group "Standardization Technical Committee SMG3 System Architecture"
- Conduction of product and hardware development quality audits
- Representative of Mannesmann Mobilfunk in A-interface interoperability testing activities
- Member of BSS product planning group which was defining operator requirements for future BSS releases
- Development of process improvements for type acceptance

III. LIST OF SUPPORTED PATENT LITIGATIONS AND VALIDITY ACTIONS

2021

Optis Cellular Technology LLC et al. v. Apple
Claim No. HP-2019-000006 (High Court of Justice, Business and Property Courts of England and Wales)
On behalf of Apple
Counsel: WilmerHale
Role: Expert witness and consulting services

2020

Panoptis Patent Management LLC et al. v. Apple Inc.
Civil Action No. 2:19-cv-66 (E.D. Tex.)
On behalf of Apple
Counsel: WilmerHale
Role: Expert witness (export report, deposition testimony, trial testimony) at bench trial

2020

Sol IP, LLC v. AT&T Mobility, LLC et al.
Civil Action No. 2:18-cv-526 (E.D. Tex.)
On behalf of AT&T, Verizon, Sprint
Counsel: Gibson Dunn
Role: Expert witness (export report) and consulting services

2020

Bell Northern Research LLC v. LG Electronics Inc. et al.
Civil Action No. 18-CV-2864-CAB-BLM (S.D. Cal.)
On behalf of LG Electronics Inc.
Counsel: Fish&Richardson
Role: Expert witness (declaration) and consulting services

2019

Conversant Wireless Licensing S.a.r.l. v. LG Electronics Deutschland GmbH
Civil Action No. 7 O 3277/18 (Landgericht Munich, Germany)
On behalf of LG Electronics Deutschland GmbH
Counsel: Wildanger Kehrwald Graf von Schwerin & Partner mbB
Role: Expert witness (export report) and consulting services

2019

Bell Northern Research, LLC v. Huawei Device Co., Ltd, et al.
Civil Action No. 3:18-cv-01784-CAB-BLM
On behalf of Huawei
Counsel: Fish&Richardson
Role: Expert witness (declaration) and consulting services

2019

Uniloc USA, Inc., et al. v. Samsung Electronics America, Inc. and Samsung Electronics Co. Ltd.
Civil Action Nos. 2:18-cv-00040-JRG, 2:18-cv-00041-JRG, 2:18-cv-00042-JRG and 2:18-cv-00044-JRG (United States District Court for the Eastern District of Texas)
On behalf of Samsung
Counsel: Greenberg Traurig
Role: Expert witness (export report, deposition testimony) and consulting services

2019

Uniloc USA, Inc., et al. v. Huawei Device USA, Inc. et al.
Civil Action No. 2:18-cv- 00072-JRG-RSP (E.D. Tex.)
On behalf of Huawei
Counsel: McGuireWoods

Role: Expert witness (export report) and consulting services

2019

Microsoft Corporation v. Uniloc 2017 LLC
Inter Partes Review of U.S. Pat. No. 7,167,487
Inter Partes Review of U.S. Pat. No. 7,075,917
On behalf of Microsoft and on behalf of Apple as joinder petitioner
Counsel: Klarquist Sparkman (Microsoft), Erise IP (Apple)
Role: Expert witness (declarations) and consulting services

2019

Qualcomm v. KFTC
South Korean Case, Seoul High Court
On behalf of intervenor Apple supporting the KFTC
Counsel: Boies Schiller Flexner
Role: Expert witness (trial testimony)

2018/19

Evolved Wireless, LLC v. Apple, Inc.
Civil Action No. 1:15-cv-00542-JFB-SRF
On behalf of Apple
Counsel: DLA Piper
Role: Expert witness (export report, deposition testimony) and consulting services

2018/19

Cisco Systems Inc. v. Traxcell Technologies
Inter Partes Review of Traxcell Technologies patents
On behalf of Cisco
Counsel: King&Spalding
Role: Expert witness (declaration) and consulting services

2018/19

Qualcomm Inc. v. Apple Inc.
Civil Action No. 3:17- cv-02398-DMS-MDD (United States District Court for the Southern District of California)
Civil Action No. 3:17-cv-02402-WQH-MDD
Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof (II), Inv. No. 337-TA-1093
Inter Partes Review of U.S. PATENT NO. 9,154,356
Cases IPR2019-00047, IPR2019-00048, IPR2019-00049, IPR2019-00128, IPR2019-00129
On behalf of Apple and Intel
Counsel: WilmerHale
Role: Expert witness (declaration) and consulting services

2018/19

Apple Inc. v. Qualcomm Inc.
Civil Action No. 3:17-CV-00108-GPC-MDD (United States District Court for the Southern District of California)
On behalf of Apple
Counsel: Fish&Richardson, Boies Schiller Flexner
Role: Expert witness (declaration, expert report, deposition testimony) and consulting services

2018

3G Licensing, S.A. et al. v. LG Electronics Inc. et al
Inter Partes Review of U.S. Patent No. 7,995,091
On behalf of LG Electronics
Counsel: Fish&Richardson
Role: Expert witness (declaration)

2017

Huawei Technologies Co. LTD. v. T-Mobile US, Inc. & T-Mobile USA, Inc.

E.D. Tex. Case Nos. 2:16-cv-00052-JRG-RSP; 2:16-cv-00055-JRG-RSP; 2:16-cv-00056-JRG-RSP; and 2:16-cv-00057-JRG-RSP
On behalf of T-Mobile
Counsel: Gibson Dunn
Role: Expert witness (expert reports, deposition testimony) and consulting services

2016

Koninklijke KPN N.V. v. Samsung Electronics America, Inc. et al.
Civil Action No. 14-cv-1165
On behalf of Samsung Electronics
Counsel: Baker Botts
Role: Expert witness (declaration and deposition testimony) and consulting services

2016

SSH v. Sony
OLG Düsseldorf, Germany
On behalf of SSH
Counsel: Cohausz&Florack
Role: Technical expert support

2015/16

LG Electronics v. Core Wireless Licensing S.A.R.L.
Inter Parles Review of U.S. Patent No. 8,165,049
On behalf of LG Electronics
Counsel: Greenberg Traurig
Role: Expert witness (declaration and deposition testimony)

2015/16

Core Wireless Licensing S.A.R.L. v. LG Electronics Inc. and LG Electronics MobileComm U.S.A., Inc
Civil Action No. 2:14-cv-911 (lead case) and Civil Action No. 2:14-cv-912 (consolidated)
On behalf of LG Electronics
Counsel: Greenberg Traurig, Sidley Austin
Role: Expert witness (expert report and deposition testimony)

2015

Intellectual Ventures I LLC v. T-Mobile USA, Inc. & T-Mobile US, Inc.
D. Del. Case No. 1:13-cv-01632
Intellectual Ventures II LLC v. T-Mobile USA, Inc. & T-Mobile US, Inc.
D. Del. Case No. 1:13-cv-01633
On behalf of T-Mobile
Counsel: Gibson Dunn
Role: Technical expert support

IV. EDUCATION

10/1984 – 10/1993 **University of Technology Aachen** **Aachen, Germany**
Graduate of Electrical Engineering with a focus on telecommunications technologies (Dipl.-Ing. TH)

10/1992 – 04/1993 **University of Technology Trondheim** **Trondheim, Norway**
Diploma Thesis "Design of a dual processor computer for digital signal processing in power electronics"

V. LANGUAGES

German, English, French

VI. RECENT PUBLICATIONS

- ”Unlocking the internet of things and driving the need for interoperability”, Global Telecoms Business, December 2013
- “The need for standardisation in the M2M services layer”, Global Telecoms Business, February 2014
- Co-authored white paper “Lightweight M2M: Enabling device management and applications for the internet of things”, Open Mobile Alliance, March 2014
- “Objects are a new way to create M2M applications”, Global Telecoms Business, April 2014
- “The need for standardisation in the M2M services layer”, M2M Now, July 2015

APPENDIX B

3GPP TSG RAN WG1 Meeting #51 R1-075054
Jeju, South Korea, 5 – 11 November, 2007

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:	**Chineese Friends of 3GPP**
Attendees:	**179 delegates**
Documents:	**628 (including some withdrawn and post-meeting artefacts)**

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Table of contents

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 Chineese 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/Ipr/).

2. Approval of the agenda

R1-073895	Draft Agenda for RAN1#50b meeting	RAN1 Chairman

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

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

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

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

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

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

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

The document was presented by Lars Lindbom from Ericsson.

Discussion (Question / Comment):
Decision: Document is agreed.

R1-073902	LTE Home NodeB mobility	RAN3, Vodafone

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

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

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

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

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

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	

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	

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	

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	

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	

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	

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	

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	

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

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	

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	

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	

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	

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

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	

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)

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	IPWirless, NextWave Wireless	
R1-074177	Frame configurations for TDD frame structure type 1	IPWirless, 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	

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, Futjitsu, Mitsubishi, Arraycomm, Sharp, Ericsson, CMCC, CATT, RITT, Orange, T-Mobile, Qualcomm	(R1-074245)

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	

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	

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 Electtronics	
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	

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)

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 ¾ 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	

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	

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	

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	

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.

Friday 12th October

R1-074503	RB mapping for odd number of RB	Motorola, Nokia, Nokia Siemens Networks, TI, Qualcomm, Philips, Samsung	

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	

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	

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	

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 L1L2 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	IPWirless, NextWave Wireless	
R1-074175	Dimensioning of TDD PHICH	IPWirless, NextWave Wireless	
R1-074176	Dimensioning of TDD Control Signalling	IPWirless, 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 overide 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	

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	

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.

Friday 12th October

R1-074508	Way forward on 4-Tx Transmit Diversity for PHICH Channel	Nortel, LGE, Alcatel-Lucent, Broadcom	

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	

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	

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	Mulplexing of PUCCH with PUSCH in E-UTRA UL Transmission	Alcatel-Lucent	

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	

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	IPWirless, NextWave Wireless	

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	IPWirless, NextWave Wireless	

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

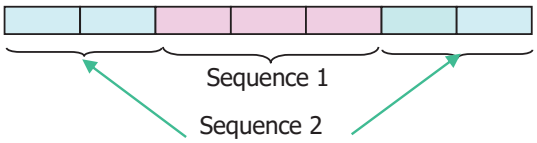
R1-074333	Scheduling Request supporting High Doppler	Nokia Siemens Networks, Nokia	(R1-073654)

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	

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)

Friday 12th October

R1-074491	Proposed way forward on ACK/NACK channelization	Panasonic, Nokia, Nokia Siemens Networks, Samsung, Texas Instruments	(R1-074409)

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	

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	

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	

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	

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	

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.

Friday 12th October

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)

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 Nd=3 for the diversity VRB mapping	Nortel	
R1-073964	UL RB hopping for PUSCH	Nortel	
R1-074017	DL Distributed Transmission for Nd=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 Nd=3	Panasonic	
R1-074419	Mapping within distributed PRB-pair for Nd=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	

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	

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	

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)

The document was presented by Pierre Bertrand from TI

Discussion (Question / Comment):
Decision: Document is noted.

R1-074180	PRACH Slot Configuration for TDD FS1	IPWirless, NextWave Wireless	

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	

The document was presented by Pierre Bertrand from TI.

Discussion (Question / Comment):
Decision: Document is noted.

Friday 12th October

R1-074514	Way forward proposal on PRACH sequence ordering	TI, LGE, Huawei, Alcatel-Lucent, Nokia, Nokia Siemens Networks, Panasonic, NTT DoCoMo	

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	

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	

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)

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	

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)

Friday 12th October

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	

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	

Decision: Document is noted as an attachment to R1-074468.

TDD HARQ

R1-074173	Summary of Reflector Discussions on TDD FS1: HARQ related	IPWirless, NextWave Wireless	

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	IPWirless, NextWave Wireless	(R1-074179)

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	

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	

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	IPWirless, NextWave Wireless	

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	

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)

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	

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) Defintion 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	

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	

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	

6.4.2 UL/DL Power Control

R1-074439	Summary of Power Control E-mail Discussion	Nokia Siemens Networks	

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:

- Po proposed dynamic range is agreed on [-126dBm, 24dBm]
- delta_i (accumulation): Off-line discussion is required
- delta_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	

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.

Friday 12th October

R1-074484	LS on UE transmission power adjustments	RAN1, Motorola, Panasonic

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	

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	

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)

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)

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	

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)

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	

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-	

		Lucent, T-Mobile	

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.

Friday 12th October

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	IPWirless, NextWave Wireless	

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	

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.

Friday 12th October

R1-074512	Way forward on Multiple Antenna Transmission for high-mobility UE	Samsung, LGE, Nortel, AT&T	(R1-074458)

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-mobilty 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	

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 closep loop antenna selection in LTE UL	Nokia Siemens Networks, Nokia	

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	

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	

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	

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)

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	

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	

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	

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	

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	

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

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

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	

The document was presented by (…) from ZTE and investigates the CELL_FACH enhancement in 1.28Mcps TDD. It also oulines 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	

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	

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	

The document was presented by (…) from TD-Tech.

Discussion (Question / Comment):
Decision: Document is noted.

R1-074189	Link Level Results of 2×2 MIMO Schemes for 1.28Mcps TDD	CATT	

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)

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

Annex C: List of CRs agreed at RAN1#50b

Spec	CR	R	Cat	Rel	R1 Tdoc	Title	Work Item
25.211	248	-	F	7	R1-074244	Correction to transmit diversity specification in MIMO mode	MIMO-Phys
25.213	091	1	F	7	R1-074455	Editorial changes in 25.213 for 16QAM specification	RANimp-16QamUplink
25.214	463	-	F	7	R1-074119	Timing of CQI vs DTX priority change	RANimp-CPC
25.214	465	-	F	7	R1-074121	Grant Monitoring clarification	RANimp-CPC
25.211	249	-	F	6	R1-074518	Correction to E-DPCCH transmission	EDCH-Phys
25.211	250	-	A	7	R1-074519	Correction to E-DPCCH transmission	EDCH-Phys
25.214	467	1	F	7	R1-074462	Clarification on CQI tables in Rel-7	TEI7
25.212		-	B	8	R1-074299	HS-SCCH information field mapping for 64QAM MIMO	RANimp-64QamMimoHsdpa

3GPP TSG RAN WG1 Meeting #51 **R1-075054**
Jeju, South Korea, 5 – 11 November, 2007

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

R1	Response to (Ic 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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APPENDIX C

Available	Tdoc Number	Title	Source	Agenda Item	Type	Rrevised to (from)	Conclusion/Decision
Yes	R1-073895	Draft Agenda for RAN1#50b meeting	RAN1 Chairman	2	Decision		Approved
Yes	R1-073896	Draft report of RAN1#50 meeting	MCC Support	3	Approval		Approved
Yes	R1-073897	LS on eNodeB measurements	RAN3, Nokia Siemens Networks	4	LS_in	= R3-071730	Noted
Yes	R1-073898	SSCH Mapping to Group ID and Frame Timing	Marvell Semiconductor	6.2.6	Discussion	R1-074485	Revised
Yes	R1-073899	Response to LS on neighbour cell list in LTE	GERAN, Nokia Siemens Networks	4	LS_in	= GP-071552	Noted
Yes	R1-073900	LS on high quality criterion	RAN2, Nokia	4	LS_in	= R2-073852	Noted
Yes	R1-073901	LS on introduction of radio bearers for MBMS PTP on HS in 34.108	RAN5, Ericsson	4	LS_in	= R5-072580	Noted
Yes	R1-073902	LTE Home NodeB mobility	RAN3, Vodafone	4	LS_in	= R3-071751	Noted
Yes	R1-073903	Response LS on receiver Performance and Enhanced CELL_FACH state	RAN4, Ericsson	4	LS_in	= R4-071486	Noted
Yes	R1-073904	Response to LS on Synchronization in Radio Access Networks	RAN3, Orange	4	LS_in	= R3-071745	Noted
Yes	R1-073905	Handover and Cell Reselection Interruption time	RAN4, Nokia Siemens Networks	4	LS_in	= R4-071451	Noted
Yes	R1-073906	Final details on CDD precoding	Qualcomm Europe	6.2	Discussion/Decision		Not treated
Yes	R1-073907	UL control details for TDD	Qualcomm Europe	6.2.4	Discussion/Decision		Not treated
Yes	R1-073908	Calibration procedures for TDD beamforming	Qualcomm Europe	6.4.5	Discussion/Decision		Not treated
Yes	R1-073909	RS structure for MBSFN subframes	Qualcomm Europe	6.2.1	Discussion/Decision		Not treated
Yes	R1-073910	CGS sequences for UL RS	Qualcomm Europe	6.2.2	Discussion/Decision		Not treated
Yes	R1-073911	SRS multiplexing structure	Qualcomm Europe	6.2.2	Discussion/Decision		Not treated
Yes	R1-073912	Hopping of UL DM-RS	Qualcomm Europe	6.2.2	Discussion/Decision		Not treated
Yes	R1-073913	PDCCH formats and contents	Qualcomm Europe	6.2.3	Discussion/Decision		Not treated
Yes	R1-073914	DL Control channel span	Qualcomm Europe	6.2.3	Discussion/Decision		Noted
Yes	R1-073915	Details on DL resource allocation	Qualcomm Europe	6.2.3	Discussion/Decision		Not treated
Yes	R1-073916	On the size of the CCE	Qualcomm Europe	6.2.3	Discussion/Decision		Not treated
Yes	R1-073917	PHICH details	Qualcomm Europe	6.2.3	Discussion/Decision		Not treated
Yes	R1-073918	Issues with SU-1 transmissions	Qualcomm Europe	6.2.3	Discussion/Decision		Not treated
Yes	R1-073919	D-BCH capacity	Qualcomm Europe	6.2.3	Discussion/Decision		Not treated
Yes	R1-073920	Joint coding of CQI and ACK	Qualcomm Europe	6.2.4	Discussion/Decision		Not treated
Yes	R1-073921	Support of ACK repetition in the UL of E-UTRA	Qualcomm Europe	6.2.4	Discussion/Decision		Not treated
Yes	R1-073922	PDSCH distributed transmissions	Qualcomm Europe	6.2.5	Discussion/Decision		Noted
Yes	R1-073923	UL hopping for frequency diverse scheduling	Qualcomm Europe	6.2.5	Discussion/Decision		Not treated
Yes	R1-073924	Scrambling of SSC	Qualcomm Europe	6.2.6	Discussion/Decision		Not treated
Yes	R1-073925	Details for SSC specification	Qualcomm Europe	6.2.6	Discussion/Decision		Not treated

Yes	R1-073926	Details of control and data multiplexing in PUSCH	Qualcomm Europe	6.3	Discussion/Decision		Not treated
Yes	R1-073927	RE mapping for PDSCH and PUSCH	Qualcomm Europe	6.3	Discussion/Decision		Not treated
Yes	R1-073928	Details on CQI format	Qualcomm Europe	6.4.5	Discussion/Decision		Not treated
Yes	R1-073929	Details on scheduling requests	Qualcomm Europe	6.4.6	Discussion/Decision		Not treated
Yes	R1-073930	Details on UL Power Control	Qualcomm Europe	6.4.2	Discussion/Decision		Noted
Yes	R1-073931	Enhanced CQI Feedback with Reduced Overhead for E-UTRA	Icera Semiconductor	6.4.5	Discussion/Decision		Noted
Yes	R1-073932	UL Sounding RS Control Signaling for Antenna Selection	Mitsubishi Electric	6.2.2	Discussion/Decision		Not treated
Yes	R1-073933	Selection of CQI reporting scheme	Mitsubishi Electric	6.2.4	Discussion/Decision		Noted
Yes	R1-073934	Uplink Reference Signal Sequence Allocation	Toshiba	6.2.2	Discussion/Decision		Not treated
Yes	R1-073935	CAZAC sequence allocation for PUCCH	Toshiba	6.2.4	Discussion		Not treated
Yes	R1-073936	Evaluation of Delta CQI Scheme	Alcatel-Lucent	6.4.5	Discussion		Not treated
Yes	R1-073937	Comparison Aspects of Fixed and Adaptive Beamforming for LTE Downlink	Alcatel-Lucent	6.2	Discussion		Not treated
Yes	R1-073938	Design of Non-CAZAC CG Sequences for Small RB Allocations in E-UTRA UL	SHARP	6.2.2	Discussion/Decision		Not treated
Yes	R1-073939	A Proposed Way Forward for Selection of UL DM RS CG Sequences for Small RB Allocations in E-UTRA UL	SHARP	6.2.2	Discussion/Decision		Not treated
Yes	R1-073940	Proposal of location of PHICH and CCE	SHARP	6.2.3	Discussion/Decision		Not treated
Yes	R1-073941	Improved Flexibility/Performance CQI+ACK/NACK coding in the E-UTRA uplink	SHARP	6.2.4	Discussion/Decision	R1-074493	Revised
Yes	R1-073942	Different target quality for rank	SHARP	6.2.4	Discussion/Decision		Not treated
Yes	R1-073943	Proposed Scrambling sequences for S-SCH with embedded frame timing derivation	SHARP	6.2.6	Discussion/Decision		Not treated
Yes	R1-073944	System information mapping for the SSC	SHARP	6.2.6	Discussion/Decision		Not treated
Yes	R1-073945	Adaptive Best-M Based Scheme for CQI Reporting in the LTE UL	SHARP	6.4.5	Discussion/Decision		Noted
Yes	R1-073946	Proposal for the expression of sub band position for Best-M based CQI reporting	SHARP	6.4.5	Discussion/Decision		Not treated
Yes	R1-073947	Consideration of CQI, PMI, and rank report feedback interval	SHARP	6.4.5	Discussion/Decision		Not treated
Yes	R1-073948	Transmission mechanism for CQI reporting	SHARP	6.4.5	Discussion/Decision		Not treated
Yes	R1-073949	Proposal for CQI feedback reconfiguration	SHARP	6.4.5	Discussion/Decision		Not treated
Yes	R1-073950	25.213 CR091 (Rel-7, F) "Editorial changes in 25.213 for 16QAM specification"	Ericsson	5	CR	R1-074455	Revised
Yes	R1-073951	On downlink sync criteria in case of UE DTX/DRX	Ericsson	5	Discussion/Decision		Noted
Yes	R1-073952	Clarification of UE measurements in case of Rx diversity	Ericsson	5	Discussion/Decision		Noted
Yes	R1-073953	CQI for the combination of MIMO and 64QAM	Ericsson	7	Discussion/Decision		Noted
Yes	R1-073954	Enhanced Uplink for CELL_FACH	Ericsson	8	Discussion/Decision		Noted
Yes	R1-073955	RS Structure for Short CP MBSFN	Nortel	6.2.1	Discussion/Decision		Not treated

Yes	R1-073956	Further Discussion on RS Structure Supporting Spatial Multiplexing for MBSFN	Nortel	6.2.1	Discussion/Decision		Not treated
Yes	R1-073957	RE Mapping of SFBC+FSTD Based TxD for RS Power boosting	Nortel	6.2.1	Discussion/Decision		Not treated
Yes	R1-073958	Link Level Evaluation on Adaptive Beaming Forming	Nortel	6.2.1	Discussion/Decision		Not treated
Yes	R1-073959	TxD gain for correlated 8 Tx antennas	Nortel	6.2.1	Discussion/Decision		Not treated
Yes	R1-073960	UL RS for UL MU-MIMO	Nortel	6.2.2	Discussion/Decision		Not treated
Yes	R1-073961	Spread factor for 4 Tx PHICH	Nortel	6.2.3	Discussion/Decision		Noted
Yes	R1-073962	Further discussion on DL/UL signaling channel supporting rank adaptation for high mobility UE	Nortel	6.2.4	Discussion/Decision		Not treated
Yes	R1-073963	On the need of Nd=3 for the diversity VRB mapping	Nortel	6.2.5	Discussion/Decision		Not treated
Yes	R1-073964	UL RB hopping for PUSCH	Nortel	6.2.5	Discussion/Decision		Not treated
Yes	R1-073965	Scrambling code design for SSCH	Nortel	6.2.6	Discussion/Decision		Not treated
Yes	R1-073966	Short Sequences for S-SCH	Nortel	6.2.6	Discussion/Decision		Not treated
Yes	R1-073967	MCS selection for LTE	Nortel	6.3	Discussion/Decision		Not treated
Yes	R1-073968	UL Power Control with Fractional Frequency Reuse for E-UTRA	Nortel	6.4.2	Discussion/Decision		Not treated
Yes	R1-073969	Discussion on the DL interference coordination	Nortel	6.4.3	Discussion/Decision		Not treated
Yes	R1-073970	Discussion on the Improvement of the Blind Detection of the antenna configuration	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073971	Discussion on Rank Adaptation Based on Shadowing for High Speed UEs	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073972	Further discussion on rank adaptation for high speed UE	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073973	System level simulation of adaptive MIMO for high speed UE	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073974	Performance evaluation of CL MIMO performance under different UE speed	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073975	Evaluation of Spatial Multiplexing for MBSFN including Line of Sight Considerations	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073976	Update on HARQ performance enhancement	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073977	Rank-1 and Rank-2 Transmission for High Mobility UE	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073978	MIMO feedback channel design (PMI, CQI and rank)	Nortel	6.4.5	Discussion/Decision		Not treated
Yes	R1-073979	Further discussion on UL closed-loop adaptive antenna switching	Nortel	6.4.6	Discussion/Decision		Noted
Yes	R1-073980	On Support of 2x2 MIMO for Class 1 UE	Nortel	6.6	Discussion/Decision		Noted
Yes	R1-073981	BCH/SCH Transmission for Odd number of RB	Motorola, Nokia, Nokia Siemens Network	6.2.3	Discussion/Decision		Noted
Yes	R1-073982	4x2 MIMO vs Beamforming Performance	Motorola	6.2.1	Discussion/Decision		Not treated
No	R1-073983	Beamforming for E-UTRA	Motorola	6.2.1	Discussion/Decision		Missing
Yes	R1-073984	Dedicated Reference Signals for Beamforming	Motorola	6.2.1	Discussion/Decision		Not treated

Yes	R1-073985	Proposal for UL DM RS for 1 and 2 RB Allocation	Motorola	6.2.2	Discussion/Decision		Not treated
Yes	R1-073986	Evaluation of Proposals for UL DM RS for 1 and 2 RB Allocation	Motorola	6.2.2	Discussion/Decision		Not treated
Yes	R1-073987	Multiplexing of SRS and PUSCH	Motorola	6.2.2	Discussion/Decision		Not treated
Yes	R1-073988	Views on Remaining Issues on UL DM RS	Motorola	6.2.2	Discussion/Decision		Not treated
Yes	R1-073989	Views on Remaining Issues on UL SRS	Motorola	6.2.2	Discussion/Decision		Not treated
Yes	R1-073990	Support of Precoding for E-UTRA DL L1/L2 Control Channel	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073991	Requirement for DL PMI Signaling	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073992	PHICH Transmission for 1 Tx Antenna	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073993	PCFICH Transmission for 1 Tx Antenna	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073994	Interleaver design for Mini-CCE to RE Mapping	Motorola	6.2.3	Discussion/Decision	R1-074488	Revised
Yes	R1-073995	Downlink Resource Allocation Mapping for E-UTRA	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073996	Search Space definition for L1/L2 Control Channels	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073997	E-UTRA Downlink L1/L2 Control Channel Configurations	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073998	Efficient Structure for Aggregating 12[3]48 Downlink Control Channel Elements	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-073999	PDCCH Formats for DL Scheduling Assignments	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-074000	PDCCH Formats for UL Scheduling Grants	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-074001	PMI Downlink Signaling for E-UTRA	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-074002	MU-MIMO PHICH Assignment	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-074003	LTE Control channel configuration signaling and DRX	Motorola	6.2.3	Discussion/Decision		Not treated
No	R1-074004	HARQ Process Identity for SU-MIMO	Motorola	6.2.3	Discussion/Decision		Missing
No	R1-074005	HARQ Error Conditions for Lost Grants	Motorola	6.2.3	Discussion/Decision		Missing
Yes	R1-074006	Transport Block and MCS mapping for RB Allocation	Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-074007	PUCCH Transmission with SRS	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074008	UL ACK/NACK Resource Provisioning	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074009	UL ACK/NACK Implicit Mapping	Motorola	6.2.4	Discussion/Decision		Noted
Yes	R1-074010	Uplink transmission of CQI and Ack/Nack	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074011	Repetition of UL ACK/NACK on PUCCH	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074012	Scheduling Request Mechanism for EUTRA Uplink	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074013	CQI Coding Schemes	Motorola	6.2.4	Discussion/Decision		Not treated

Yes	R1-074014	Multiplexing of Ack/Nack and data for UL	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074015	Persistent Scheduling of PUCCH resources	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074016	Uplink Control Signaling with Persistent Scheduling	Motorola	6.2.4	Discussion/Decision		Not treated
Yes	R1-074017	DL Distributed Transmission for Nd=3	Motorola	6.2.5	Discussion/Decision		Not treated
Yes	R1-074018	A simple example of dynamic DVRB signaling	Motorola	6.2.5	Discussion/Decision		Not treated
Yes	R1-074019	Downlink DVRB email reflector summary	Motorola	6.2.5	Discussion/Decision		Noted
Yes	R1-074020	UL Resource Allocation for Frequency-diverse (hopping) Allocations	Motorola	6.2.5	Discussion/Decision		Not treated
Yes	R1-074021	Uplink SCH Hopping Configuration email reflector summary	Motorola	6.2.5	Discussion/Decision		Noted
Yes	R1-074022	Cell Search E-mail Reflector Summary	Motorola	6.2.6	Discussion/Decision		Noted
Yes	R1-074023	Optimisation of P-SCH Indices for Synchronous Network Operation	Motorola, Nokia, Nokia Siemens Network	6.2.6	Discussion/Decision		Not treated
Yes	R1-074024	Evaluation of Scrambling Methods for S-SCH	Motorola	6.2.6	Discussion/Decision		Not treated
Yes	R1-074025	Indication of Frame Boundary Using S-SCH	Motorola	6.2.6	Discussion/Decision		Not treated
Yes	R1-074026	Random Access E-mail Reflector Summary	Motorola	6.2.7	Discussion/Decision		Noted
Yes	R1-074027	RACH Slot Configurations for FS1	Motorola	6.2.7	Discussion/Decision		Not treated
Yes	R1-074028	RACH for 1.4MHz System Bandwidth	Motorola	6.2.7	Discussion/Decision		Not treated
Yes	R1-074029	Comparison of Different Proposals for Ncs	Motorola	6.2.7	Discussion/Decision		Not treated
Yes	R1-074030	Physical Channel Segmentation Considering Multiple Antennas	Motorola	6.3	Discussion/Decision		Noted
Yes	R1-074031	RV definition	Motorola	6.3	Discussion/Decision		Not treated
Yes	R1-074032	On supporting 1st stage turbo code rate matching	Motorola	6.3	Discussion/Decision		Not treated
Yes	R1-074033	Soft Buffer size per HARQ Process	Motorola	6.3	Discussion/Decision		Not treated
Yes	R1-074034	Bit Scrambling Per Code Block	Motorola	6.3	Discussion/Decision		Not treated
Yes	R1-074035	Timing and HARQ	Motorola	6.4.1	Discussion/Decision		Not treated
No	R1-074036	Timing at HARQ for HD-FDD	Motorola	6.4.1	Discussion/Decision		Withdrawn
Yes	R1-074037	Sounding Reference Signal Power Setting	Motorola	6.4.2	Discussion/Decision		Not treated
Yes	R1-074038	Path loss and power headroom report for uplink power control	Motorola	6.4.2	Discussion/Decision		Noted
Yes	R1-074039	Power setting for persistent scheduled PUSCH	Motorola	6.4.2	Discussion/Decision		Noted
Yes	R1-074040	EPRE Downlink Requirements	Motorola	6.4.2	Discussion/Decision		Not treated
Yes	R1-074041	UE Transmit Power Adjustment for LTE	Motorola	6.4.2	Discussion/Decision		Noted
Yes	R1-074042	Uplink Inter-Cell Power Control: X2 Messages	Motorola	6.4.3	Discussion/Decision		Not treated

Yes	R1-074043	CQI Feedback Schemes for E-UTRA	Motorola	6.4.5	Discussion/Decision		Not treated
Yes	R1-074044	Performance of CQI Feedback Schemes	Motorola	6.4.5	Discussion/Decision		Not treated
Yes	R1-074045	Joint feedback for E-UTRA downlink precoding and CQI	Motorola	6.4.5	Discussion/Decision		Not treated
Yes	R1-074046	MU-MIMO for E-UTRA	Motorola	6.4.5	Discussion/Decision		Not treated
Yes	R1-074047	Way Forward for CQI Reporting	Motorola	6.4.5	Discussion/Decision		Noted
Yes	R1-074048	Further comments on UE capabilities and Soft Memory Size	Motorola	6.6	Discussion/Decision		Noted
Yes	R1-074049	Analysis of Enhancement to CELL_FACH State for 1.28Mcps TDD	ZTE	10	Discussion/Decision		Noted
Yes	R1-074050	Analysis of Continuous Packet Connectivity for 1.28Mcps TDD	ZTE	10	Discussion/Decision		Noted
Yes	R1-074051	64QAM Simulation Results for 1.28Mcps TDD HSDPA	ZTE	10	Discussion/Decision		Noted
Yes	R1-074052	Comparison of S-SCH mapping Methods	ETRI	6.2.6	Discussion/Decision		Not treated
Yes	R1-074053	S-SCH Scrambling Methods	ETRI	6.2.6	Discussion/Decision		Not treated
Yes	R1-074054	Cell Throughput Comparison for 2x2 MIMO: PARC, S-PARC and D-TxAA	TD-Tech	10	Discussion/Decision		Noted
Yes	R1-074055	25.224 CR0170 (Rel-7,) "EUL power control improvements for 1.28Mcps TDD"	TD-Tech	5	CR		Noted and postponed to next meeting
Yes	R1-074056	More improvement requirements on dedicated carrier for LCR TDD MBMS	CMCC	5	Discussion/Decision		Noted
Yes	R1-074057	Sequence Grouping Method for UL RS	Huawei	6.2.2	Discussion/Decision		Not treated
Yes	R1-074058	Resource-specific cyclic shift hopping	Huawei,ZTE	6.2.2	Discussion/Decision		Not treated
Yes	R1-074059	Control Signaling of MBMS Single-Cell Transmission	Huawei	6.2.3	Discussion/Decision		Not treated
Yes	R1-074060	UL index in UL schedule grant for LTE TDD	Huawei	6.2.3	Discussion/Decision		Not treated
Yes	R1-074061	Multiplexing of scheduling request indicator	Huawei	6.2.4	Discussion/Decision		Not treated
Yes	R1-074062	PUCCH channel structure of TDD FS 2	Huawei	6.2.4	Discussion/Decision		Not treated
Yes	R1-074063	Relation between UL ACK/NACK and DL CCE	Huawei	6.2.4	Discussion/Decision		Not treated
Yes	R1-074064	Summary of email discussion on LTE MIMO	Samsung	6	Discussion		Noted
Yes	R1-074065	Power Scaling and DL RS boosting	Samsung	6.2.1	Discussion/Decision	R1-074450	Not treated
Yes	R1-074066	Summary of Reflector Discussions on EUTRA DL RS	Samsung	6.2.1	Discussion		Noted
Yes	R1-074067	Downlink reference signal structure for TDD frame structure type 2	Samsung	6.2.1	Discussion/Decision		Not treated
Yes	R1-074068	Summary of Reflector Discussions on EUTRA UL RS	Samsung	6.2.2	Discussion		Noted
Yes	R1-074069	Sounding RS Multiplexing in E-UTRA UL – Interaction with PUCCH	Samsung	6.2.2	Discussion/Decision		Not treated
Yes	R1-074070	Link Adaptation Using DM RS for UL VoIP Transmissions	Samsung	6.2.2	Discussion/Decision		Not treated
Yes	R1-074071	Downlink Link Adaptation and Related Control Signaling	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074072	Downlink PMI indication for SU-MIMO	Samsung	6.2.3	Discussion/Decision		Not treated

Yes	R1-074073	PHICH linking to downlink CCE	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074074	Downlink ACK/NACK Transmit Diversity	Samsung	6.2.3	Discussion/Decision	R1-074483	Revised
Yes	R1-074075	Further Considerations of CDD Precoding for High-speed UEs	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074076	Subset selection for precoding	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074077	PHICH structure in MBSFN subframes	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074078	Configuration of PDCCH Monitoring Set	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074079	Comparison of Downlink Resource Allocation Indication Schemes	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074080	PHICH/PDCCH to RE mapping	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074081	Interpretation of CCFI for EUTRA TDD	Samsung	6.2.3	Discussion/Decision		Noted
Yes	R1-074082	Short UL Grant Size in E-UTRA	Samsung	6.2.3	Discussion/Decision		Not treated
No	R1-074083	Support of Re-Transmissions for Persistent Scheduling in E-UTRA UL	Samsung	6.2.3	Discussion/Decision		Missing
Yes	R1-074084	Transmission of Scheduling Units in E-UTRA DL	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074085	CCFI to RE Mapping for One Transmitter Antenna	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074086	CCFI to RE mapping for multiple TX antennas	Samsung	6.2.3	Discussion/Decision		Not treated
Yes	R1-074087	SU-MIMO PMI feedback and Compression	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074088	CQI Reporting for MU-MIMO	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074089	Performance of single CQI feedback for 2CW SU-MIMO	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074090	Uplink CQI report format	Samsung	6.2.4	Discussion/Decision		Noted
Yes	R1-074091	Selection of orthogonal cover Walsh codes for high speed UL ACK/NACK channels	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074092	Slot-level UL ACK/NACK Cyclic Shift/Orthogonal Cover Remapping	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074093	Simultaneous UE transmission of UL ACK/NAK and CQI	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074094	Cyclic shift and orthogonal cover allocations for UL ACK/NACK	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074095	UL ACK/NACK resource indication for DL persistent scheduling	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074096	UL RB mapping and slot level re-mapping for ACK/NACK and CQI	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074097	Multiplexing CQI and ACK/NAK Transmission in E-UTRA UL	Samsung	6.2.4	Discussion/Decision		Noted
Yes	R1-074098	ACK/NAK Repetitions in E-UTRA UL	Samsung	6.2.4	Discussion/Decision		Not treated
Yes	R1-074099	UL LFDMA with hopping in PUSCH	Samsung	6.2.5	Discussion/Decision		Not treated
Yes	R1-074100	Uplink time domain hopping for E-UTRA TDD	Samsung	6.2.5	Discussion/Decision		Not treated
Yes	R1-074101	Cyclic Shift Restrictions for RACH in Small, Medium and Large Cells	Samsung	6.2.7	Discussion/Decision		Not treated

Yes	R1-074102	Determination of the Cyclic Shift Amount, Ncs	Samsung	6.2.7	Discussion/Decision		Not treated
Yes	R1-074103	Performance of orthogonal Hybrid ARQ for multi-user MIMO in E-UTRA uplink	Samsung	6.3	Discussion/Decision		Not treated
Yes	R1-074104	Redundancy Version (RV) Defintion for Turbo code Rate Matching	Samsung	6.3	Discussion/Decision		Not treated
Yes	R1-074105	TB CRC generator polynomial	Samsung	6.3	Discussion/Decision	R1-074473	Revised
Yes	R1-074106	RV starting point in UL HARQ	Samsung	6.3	Discussion/Decision		Not treated
No	R1-074107	UL code symbol interleaver	Samsung	6.3	Discussion/Decision		Missing
Yes	R1-074108	HARQ symbol to RE mapping	Samsung	6.3	Discussion/Decision		Not treated
Yes	R1-074109	Radio link monitoring for E-UTRA	Samsung	6.4.1	Discussion/Decision		Noted
Yes	~~R1-074110~~	Improving cell-edge performance by Inter-Cell Interference Coordination	Samsung	6.4.3	Discussion/Decision		Withdrawn
Yes	R1-074111	More physical layer improvements on dedicated carrier for 1.28 Mcps TDD MBMS	CMCC, RITT, TD Tech, ZTE, Spreadtrum Communications, CATT	5	Discussion		Noted
Yes	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	5	CR		Postponed to next meeting
Yes	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	5	CR		Postponed to next meeting
Yes	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	5	CR		Postponed to next meeting
Yes	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	5	CR		Postponed to next meeting
Yes	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	5	CR		Postponed to next meeting
Yes	R1-074117	Analysis of UE capabilities in 1.28 Mcps TDD MBSFN	CMCC, RITT, CATT,TD Tech, ZTE, Spreadtrum Communications	5	Discussion/Decision		Noted and postponed to next meeting
Yes	R1-074118	Combining Period interrupted by a DTX gap	Qualcomm Europe	5	Discussion/Decision	R1-074456	Revised
Yes	R1-074119	25.214 CR463 (Rel-7, F) Timing of CQI vs DTX priority change - Rel 7	Qualcomm Europe	5	CR		Agreed
No	R1-074120	25.214 CR464 (Rel-8,) Timing of CQI vs DTX priority change - Rel 8	Qualcomm Europe	5	CR		Withdrawn
Yes	R1-074121	25.214 CR465 (Rel-7, F) Grant Monitoring clarification - Rel 7	Qualcomm Europe	5	CR		Agreed
No	R1-074122	25.214 CR466 (Rel-8,) Grant Monitoring clarification - Rel 8	Qualcomm Europe	5	CR		Withdrawn
Yes	R1-074123	E-DPCCH transmission in compressed frames	Qualcomm Europe	5	Discussion/Decision		Noted
No	R1-074124	CQI tables for MIMO + 64QAM	Qualcomm Europe	7	Discussion/Decision		Withdrawn
No	R1-074125	HS-SCCH signaling for MIMO + 64QAM	Qualcomm Europe	7	Discussion/Decision		Withdrawn
Yes	R1-074126	L1/L2 aspects for enhanced UL for CELL_FACH	Qualcomm Europe	8	Discussion/Decision		Noted
Yes	R1-074127	Link analysis of HS-RACH	Qualcomm Europe	8	Discussion/Decision		Noted
Yes	R1-074128	Considerations for operation of sync E-DCH	Qualcomm Europe	9	Discussion/Decision		Noted

Yes	R1-074129	Link analysis of sync E-DCH	Qualcomm Europe	9	Discussion/Decision		Noted
Yes	R1-074130	Design of of CG Sequences for Small RB Allocations in E-UTRA UL	Texas Instruments	6.2.2	Discussion/Decision		Not treated
Yes	R1-074131	Comparison of Computer-Generated Sequence Proposals for UL DM RS	Texas Instruments	6.2.2	Discussion/Decision	R1-074443	Revised
Yes	R1-074132	Uplink Reference Signal Sequence Assignments in E-UTRA	Texas Instruments	6.2.2	Discussion/Decision		Not treated
Yes	R1-074133	Interference between Sounding Reference Signal and Random Access Preamble	Texas Instruments	6.2.2	Discussion/Decision		Not treated
Yes	R1-074134	Uplink Reference Signals in Support of High-Speed UEs	Texas Instruments	6.2.2	Discussion/Decision		Not treated
Yes	R1-074135	Sufficient Number of Sequences for PUSCH with Proposed High-Speed UE RS Structure	Texas Instruments	6.2.2	Discussion/Decision		Not treated
Yes	R1-074136	Choice of CRC Length for PDCCH	Texas Instruments, Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074137	Consideration of Supportable TF for E-UTRA DL	Texas Instruments	6.2.3	Discussion/Decision		Not treated
Yes	R1-074138	Separate Rank and CQI Feedback in PUCCH	Texas Instruments	6.2.4	Discussion/Decision		Not treated
Yes	R1-074139	Simultaneous ACK/NAK and SR Transmission in Uplink	Texas Instruments	6.2.4	Discussion/Decision		Not treated
Yes	R1-074140	ACK/NAK Performance in PUCCH with Timing Offset and Near-Far Effect	Texas Instruments	6.2.4	Discussion/Decision	R1-074487	Revised
Yes	R1-074141	Simultaneous CQI and ACK/NAK Transmission in Uplink	Texas Instruments	6.2.4	Discussion/Decision		Not treated
Yes	R1-074142	Sounding Reference Signal In Support of Scheduling Request in E-UTRA	Texas Instruments	6.2.4	Discussion/Decision		Not treated
Yes	R1-074143	Secondary SCH Mapping and Scrambling	Texas Instruments	6.2.6	Discussion/Decision		Not treated
Yes	R1-074144	Random Access Slot Configurations	Texas Instruments	6.2.7	Discussion/Decision		Not treated
Yes	R1-074145	Sequence ordering for PRACH in E-UTRA	Texas Instruments, LG Electronics, Huawei	6.2.7	Discussion/Decision		Not treated
Yes	R1-074146	Comparison of Hybrid methods for PRACH sequence ordering	Texas Instruments	6.2.7	Discussion/Decision		Not treated
Yes	R1-074147	Cyclic Shift Values for E-UTRA PRACH	Texas Instruments, LG Electronics	6.2.7	Discussion/Decision		Noted
Yes	R1-074148	Cyclic Shift Configuration and Sequence Ordering in Support of High-Speed Random Access	Texas Instruments	6.2.7	Discussion/Decision		Not treated
Yes	R1-074149	Design Aspects of UE Feedback	Texas Instruments	6.4.5	Discussion/Decision		Not treated
Yes	R1-074150	Rank and PMI Feedback Rate – Analysis	Texas Instruments	6.4.5	Discussion/Decision		Not treated
Yes	R1-074151	CQI/PMI Feedback Rate – System Simulation	Texas Instruments	6.4.5	Discussion/Decision		Not treated
Yes	R1-074152	Rank Feedback Rate – System Simulation	Texas Instruments	6.4.5	Discussion/Decision		Not treated
Yes	R1-074153	CQI Feedback Reduction Scheme for E-UTRA	Texas Instruments	6.4.5	Discussion/Decision		Noted
Yes	R1-074154	Cell-specific Mapping of VRBs to PRBs for Downlink Distributed Transmission	NEC Group	6.2.5	Discussion/Decision		Not treated
Yes	R1-074155	DL Distributed Resource Signalling for EUTRA	NEC Group	6.2.5	Discussion/Decision		Not treated
Yes	R1-074156	Performance Evaluation of FH Schemes for EUTRA Uplink	NEC Group	6.2.5	Discussion/Decision		Not treated
Yes	R1-074157	Frequency Hopping Pattern for EUTRA Uplink	NEC Group	6.2.5	Discussion/Decision		Not treated

Yes	R1-074158	Way forward on DL power control	NEC Group	6.4.2	Discussion/Decision	R1-074479	Revised
Yes	R1-074159	CQI, PMI and rank reporting issues for EUTRA	NEC Group	6.4.5	Discussion/Decision		Not treated
Yes	R1-074160	DL Control Channel Structure: CCE Aggregation and Blind Detections	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074161	Compact DL Assignment and its Resource Allocation Signalling	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074162	DL Unicast Resource Allocation Signalling using L1L2 control channels	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074163	Downlink ACK/NACK signalling for E-UTRA	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074164	DL Multiplexing for Persistent and Dynamic scheduling	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074165	Control channel format for DBCH, PCH and RACH response	NEC, Nokia, Nokia Siemens Networks, Motorola	6.2.3	Discussion/Decision		Not treated
Yes	R1-074166	Low overhead PDCCH format for BCCH, PCH, RACH response	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074167	Control Channel Multiplexing	NEC Group	6.2.3	Discussion/Decision		Not treated
Yes	R1-074168	CQI + ACK/NACK transmission in PUCCH	NEC Group	6.2.4	Discussion/Decision		Not treated
Yes	R1-074169	PUCCH allocation for ACK/NACK transmission	NEC Group	6.2.4	Discussion/Decision		Not treated
Yes	R1-074170	Detail of ACK/NACK and CQI transmission without data transmission	NEC Group	6.2.4	Discussion/Decision		Not treated
Yes	R1-074171	Summary of Reflector Discussions on TDD FS1: Framing allocations	IPWirless, NextWave Wireless	6.2	Decision		Not treated
Yes	R1-074172	Summary of Reflector Discussions on TDD FS1: RACH Timing	IPWirless, NextWave Wireless	6.4.4	Decision		Postponed to next meeting
Yes	R1-074173	Summary of Reflector Discussions on TDD FS1: HARQ related	IPWirless, NextWave Wireless	6.3	Decision		Noted
Yes	R1-074174	On the TDD UL Grant Channel	IPWirless, NextWave Wireless	6.2.3	Decision		Not treated
Yes	R1-074175	Dimensioning of TDD PHICH	IPWirless, NextWave Wireless	6.2.3	Decision		Not treated
Yes	R1-074176	Dimensioning of TDD Control Signalling	IPWirless, NextWave Wireless	6.2.3	Decision		Not treated
Yes	R1-074177	Frame configurations for TDD frame structure type 1	IPWirless, NextWave Wireless	6.2	Decision		Not treated
Yes	R1-074178	Implementation of Idle Period in TDD FS1	IPWirless, NextWave Wireless	6.3	Decision		Agreed
Yes	R1-074179	TDD HARQ timing	IPWirless, NextWave Wireless	6.3	Decision	R1-074446	Revised
Yes	R1-074180	PRACH Slot Configuration for TDD FS1	IPWirless, NextWave Wireless	6.2.7	Decision		Noted
Yes	R1-074181	Maximum number of ACK/NAK per TTI for TDD FS1	IPWirless, NextWave Wireless	6.2.4	Decision		Noted
Yes	R1-074182	TDD PUCCH	IPWirless, NextWave Wireless	6.2.4	Decision		Noted
Yes	R1-074183	Multiplexing of PUCCH and Sounding RS	Fujitsu	6.2.2	Discussion/Decision		Not treated
Yes	R1-074184	Adoption of 2-stage Rate Matching and Modified IR-HARQ	Fujitsu	6.3	Discussion/Decision		Not treated
Yes	R1-074185	Signaling of MBSFN Subframe Allocations	Alcatel-Lucent	6.2.3	Discussion		Not treated
Yes	R1-074186	CCFI contents for LTE TDD with FS2	CATT	6.2.3	Discussion/Decision		Noted

Yes	R1-074187	PUCCH details for ACK transmission LTE TDD with FS2	CATT	6.2.4	Discussion/Decision		Not treated
Yes	R1-074188	PUCCH details for CQI transmission LTE TDD with FS2	CATT	6.2.4	Discussion/Decision		Not treated
Yes	R1-074189	Link Level Results of 2×2 MIMO Schemes for 1.28Mcps TDD	CATT	10	Discussion/Decision		Noted
Yes	R1-074190	Further Consideration on RE Mapping for 4Tx PDSCH	LG Electronics	6.2.1	Discussion		Not treated
Yes	R1-074191	Frequency hopping operation for UL sounding RS	LG Electronics	6.2.2	Discussion/Decision		Not treated
Yes	R1-074192	Comparison of the proposals for CG UL DM RS	LG Electronics	6.2.2	Discussion/Decision		Not treated
Yes	R1-074193	Interleaver Design for CCE-to-RE Mapping	LG Electronics	6.2.3	Discussion/Decision	R1-074472	Revised
Yes	R1-074194	Downlink control signaling for SU-MIMO	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074195	DL control channel configurations	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074196	Restriction of UL/DL subframe ratio considering PUCCH in TDD	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074197	Downlink PHICH repetition factor in 1 Tx case	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074198	Mapping Relation comparisons for PHICH	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074199	DL PHICH structure	LG Electronics	6.2.3	Discussion/Decision		Noted
Yes	R1-074200	On the implementation of rank overide using codeword DTX	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074201	Interference Randomization Techniques for PHICH	LG Electronics	6.2.3	Discussion/Decision		Not treated
Yes	R1-074202	Methods for PUCCH and SRS simultaneous transmission	LG Electronics	6.2.4	Discussion		Not treated
Yes	R1-074203	Way forward on PUCCH and SRS simultaneous transmission	LG Electronics	6.2.4	Discussion/Decision		Not treated
Yes	R1-074204	Error case handling in case of DL control channel failure	LG Electronics	6.2.4	Discussion		Not treated
Yes	R1-074205	Scheduling Request (SR) design considering PUCCH structure	LG Electronics	6.2.4	Discussion/Decision		Not treated
Yes	R1-074206	Considerations on UL ACK/NACK operation	LG Electronics	6.2.4	Discussion/Decision		Not treated
Yes	R1-074207	Control signalling error requirement depending on eNode B DTX detection	LG Electronics	6.2.4	Discussion/Decision		Not treated
Yes	R1-074208	DL LVRB allocation approach	LG Electronics	6.2.5	Discussion/Decision		Not treated
Yes	R1-074209	Frequency hopping method for PUSCH	LG Electronics	6.2.5	Discussion/Decision		Not treated
Yes	R1-074210	SSC mapping and scrambling method	LG Electronics	6.2.6	Discussion/Decision	R1-074502	Revised
Yes	R1-074211	Flexibility of detecting 40ms P-BCH boundary	LG Electronics	6.2.6	Discussion/Decision		Not treated
No	R1-074212	Consideration on UL power control	LG Electronics	6.4.2	Discussion/Decision		Missing
Yes	R1-074213	Spatial Delta CQI in SU-MIMO	LG Electronics	6.4.5	Discussion		Not treated
No	R1-074214	Separation of CQI report into indexes and values over PUSCH and PUCCH	LG Electronics	6.4.5	Discussion/Decision		Missing
Yes	R1-074215	Investigation on tradeoff between PMI overhead and performance	LG Electronics	6.4.5	Discussion/Decision		Not treated
Yes	R1-074216	Consideration on Open-loop SM Transmission Mode	LG Electronics	6.4.5	Discussion/Decision		Not treated

Yes	R1-074217	UL synchronous HARQ procedure and UE behaviour after ACK/NACK detection	LG Electronics	6.4.6	Discussion/Decision		Not treated
Yes	R1-074218	CCE allocation scheme in PDCCH for efficient blind detection	ZTE	6.2.3	Discussion/Decision		Not treated
Yes	R1-074219	Distributed Transmission in E-UTRA Downlink	ZTE	6.2.5	Discussion/Decision		Not treated
Yes	R1-074220	Remaining Issues on SSC Design	ZTE, RITT, CATT	6.2.6	Discussion/Decision		Not treated
Yes	R1-074221	DL Resource Allocation Signaling Indication Scheme	ZTE	6.2.3	Discussion/Decision		Not treated
Yes	R1-074222	The Intra-TTI frequency hopping scheme in PUSCH	ZTE, CATT, Huawei	6.2.5	Discussion/Decision		Not treated
Yes	R1-074223	Multiplexing of Sounding RS and PUCCH	ZTE	6.2.2	Discussion		Not treated
Yes	R1-074224	Hybrid combination of CG sequences for 1 and 2 RB UL DM RS	ZTE	6.2.2	Discussion		Not treated
Yes	R1-074225	Considerations on DL signaling for support of SU- and MU-MIMO	ZTE	6.2.3	Discussion		Not treated
Yes	R1-074226	Generic interleaver for PDCCH	Huawei	6.2.3	Discussion/Decision		Noted
Yes	R1-074227	MIMO precoding information in PDCCH	Huawei	6.2.3	Discussion/Decision		Not treated
Yes	R1-074228	Completing the 2 TX codebook	Huawei	6.2.4	Discussion/Decision		Not treated
Yes	R1-074229	Performance evaluation of cell-specific mapping of distributed virtual resource blocks in downlink	Huawei	6.2.5	Discussion/Decision		Not treated
Yes	R1-074230	Scrambling and information encoding for the S-SCH	Huawei	6.2.6	Discussion/Decision		Not treated
Yes	R1-074231	Comparison of proposals for values of cyclic shift increment Ncs	Huawei	6.2.7	Discussion/Decision		Not treated
Yes	R1-074232	Performances of CQI feedback schemes on PUSCH	Huawei	6.4.5	Discussion/Decision		Noted
Yes	R1-074233	CQI and PMI resource management	Huawei	6.4.5	Discussion/Decision		Not treated
Yes	R1-074234	Optimal bitmap compression for CQI feedback	Huawei	6.4.5	Discussion/Decision		Noted
Yes	R1-074235	Improving Inter-Sector Handover User Throughput by Combined Interference Coordination and softer Handover in E-UTRA Downlink	CHTTL	6.4.3	Discussion		Not treated
Yes	R1-074236	Multiplexing of PDCCHs of Multiple Ues in E-UTRA Downlink	KDDI	6.2.3	Discussion/Decision		Not treated
Yes	R1-074237	Hybrid FDM/CDM Based Multiplexing for ACK/NACK Signals in E-UTRA Downlink	KDDI	6.2.3	Discussion/Decision		Not treated
Yes	R1-074238	Rotational CDM for L1/L2 Control Channel Signaling in E-UTRA Downlink	KDDI	6.2.3	Discussion/Decision		Not treated
Yes	R1-074239	An Evaluation of the Rotational CDM for L1/L2 Control Channel	KDDI	6.2.3	Discussion/Decision		Not treated
Yes	R1-074240	System-Level Evaluation of the Rotational CDM for L1/L2 Control Channel	KDDI	6.2.3	Discussion/Decision		Not treated
Yes	R1-074241	Uplink Data-non-associated Control Signaling in E-UTRA	KDDI	6.2.4	Discussion		Not treated
Yes	R1-074242	Scheduling Request Channel in E-UTRA Uplink	KDDI	6.2.4	Discussion/Decision		Not treated
No	R1-074243	MCCH multiplexing	Philips	4	Discussion/Decision		Withdrawn
Yes	R1-074244	25.211 CR248 (Rel-7, F) Correction to transmit diversity specification in MIMO mode	Philips, NXP Semiconductors, Ericsson	5	CR		Agreed

Yes	R1-074245	Way forward for dedicated reference symbols for downlink beamforming	Philips, NXP Semiconductors, NTT DoCoMo, Vodafone, AT&T, NEC, Futjitsu, Mitsubishi, Arraycomm, Sharp	6.2.1	Discussion/Decision	R1-074506	Revised
Yes	R1-074246	Dedicated reference symbol pattern	Philips	6.2.1	Discussion/Decision		Not treated
Yes	R1-074247	Discussion of PDCCH message formats	Philips, NXP Semiconductors	6.2.3	Discussion/Decision		Not treated
Yes	R1-074248	Proposal for resource allocation signalling on PDCCH	Philips, NXP Semiconductors	6.2.3	Discussion/Decision		Not treated
Yes	R1-074249	Signalling for UL resource allocation	Philips, NXP Semiconductors	6.2.3	Discussion/Decision		Not treated
Yes	R1-074250	PDSCH timing for power saving for paging in idle mode	Philips	6.2.3	Discussion/Decision		Not treated
No	R1-074251	Vector quantisation with successive refinement for MIMO feedback	Philips	6.2.4	Discussion/Decision		Withdrawn
No	R1-074252	CQI reporting for TDD	Philips	6.2.4	Discussion/Decision		Withdrawn
Yes	R1-074253	DVRB to PRB mapping for EUTRA downlink	Philips	6.2.5	Discussion/Decision		Not treated
Yes	R1-074254	Codebook for MU-MIMO	Philips, NXP Semiconductors	6.4.5	Discussion/Decision		Not treated
Yes	R1-074255	CQI definition for MU-MIMO	Philips, NXP Semiconductors	6.4.5	Discussion/Decision		Not treated
Yes	R1-074256	UE procedure for ACK/NACK detection	Philips, NXP Semiconductors	6.4.6	Discussion/Decision		Not treated
No	R1-074257	Signalling to support combination of higher-order modulation and MIMO	Philips	7	Discussion/Decision		Withdrawn
Yes	R1-074258	Distributed Virtual Resource Block Mapping for Persistent Resource Allocation as VoIP	Alcatel-Lucent	6.2.5	Discussion/Decision		Not treated
Yes	R1-074259	Signaling Resource Allocations in DL Control Channel	Alcatel-Lucent	6.2.3	Discussion		Not treated
Yes	R1-074260	A use case for Max Tx Power per PRB as a eNodeB Measurement	Alcatel-Lucent	6.5	Discussion	R1-074515	Revised
Yes	R1-074261	Incremental CQI Feedback Scheme and Simulation Results	Alcatel-Lucent	6.4.5	Discussion		Noted
Yes	R1-074262	Application of the Incremental CQI Feedback Scheme	Alcatel-Lucent	6.4.5	Discussion		Not treated
Yes	R1-074263	Semi-Static Interference Coordination Method	Alcatel-Lucent	6.4.3	Discussion	R1-074475	Revised
Yes	R1-074264	Support for Semi-Static Inter cell Interference Coordination	Alcatel-Lucent, Nortel Networks	6.4.3	Discussion/Decision		Not treated
Yes	R1-074265	UL Sounding RS Design for E-UTRA	Alcatel-Lucent	6.2.2	Discussion/Decision		Not treated
Yes	R1-074266	UL Power Control Parameter Values in PUSCH Power Control	Alcatel-Lucent	6.4.2	Discussion/Decision		Not treated
Yes	R1-074267	Adaptivity for UL HARQ Transmissions	Alcatel-Lucent	6.2.4	Discussion/Decision		Not treated
Yes	R1-074268	On the Time Duration Field in the Uplink Scheduling Grant	Alcatel-Lucent	6.2.4	Discussion/Decision		Not treated
Yes	R1-074269	Number of HARQ Processes	Alcatel-Lucent	6.3	Discussion/Decision		Noted
Yes	R1-074270	Mulplexing of PUCCH with PUSCH in E-UTRA UL Transmission	Alcatel-Lucent	6.2.4	Discussion/Decision		Noted
Yes	R1-074271	On the Need for VoIP Coverage Enhancement for the E-UTRA UL	Alcatel-Lucent	6.2.4	Discussion/Decision		Not treated
Yes	R1-074272	Multiplexing ACK/NAK with CQI	Alcatel-Lucent	6.2.4	Discussion/decision		Not treated
Yes	R1-074273	Power Offsets to Maintain QoS for Persistent Allocations in the Presence of Control Channel Multiplexing for the E-UTRA Uplink	Alcatel-Lucent	6.4.6	Discussion/decision		Not treated

Yes	R1-074274	Power Control for RACH	Alcatel-Lucent	6.4.2	Discussion/decision		Not treated
Yes	R1-074275	VRB addressing for localized and distributed DL transmission	Alcatel-Lucent	6.2.5	Discussion/decision		Not treated
Yes	R1-074276	Multiplexing the Scheduling Request in the Uplink	Alcatel-Lucent	6.2.4	Discussion/decision		Not treated
Yes	R1-074277	Views on Beamforming Using Dedicated RS for E-UTRA Downlink	NTT DoCoMo	6.2.1	Discussion/decision		Not treated
Yes	R1-074278	Sequence Hopping for Uplink RS	NTT DoCoMo	6.2.2	Discussion/decision		Not treated
Yes	R1-074279	Sounding RS Structure in E-UTRA Uplink	NTT DoCoMo	6.2.2	Discussion/decision		Not treated
Yes	R1-074280	Assignment Scheme for Sounding Reference Signals in E-UTRA Uplink	NTT DoCoMo	6.2.2	Discussion/decision		Not treated
Yes	R1-074281	Necessity of Multiple Bandwidths for Sounding Reference Signals	NTT DoCoMo	6.2.2	Discussion/decision		Not treated
Yes	R1-074282	Multiplexing Scheme of Sounding RS in E-UTRA Uplink	NTT DoCoMo	6.2.2	Discussion/decision		Not treated
Yes	R1-074283	Investigation on Control Information Bits in PDCCH	NTT DoCoMo	6.2.3	Discussion/decision		Not treated
Yes	R1-074284	Semi-static Configuration of Non-adaptive and Adaptive ARQ in E-UTRA Downlink	NTT DoCoMo	6.2.3	Discussion/decision		Not treated
Yes	R1-074285	Investigation on PMI Indication Schemes for Single-User MIMO Precoding in E-UTRA Downlink	NTT DoCoMo	6.2.3	Discussion/decision		Not treated
Yes	R1-074286	Investigation on Throughput Performance of MU-MIMO in E-UTRA Downlink	NTT DoCoMo	6.2.3	Discussion/decision	R1-074463	Revised
Yes	R1-074287	On ACK/NACK and CQI Transmission Method in PUCCH	NTT DoCoMo	6.2.4	Discussion/decision		Not treated
No	R1-074288	Transmission Method of Scheduling Request in E-UTRA Uplink	NTT DoCoMo	6.2.4	Discussion/decision		Missing
Yes	R1-074289	Basic Method for CQI Feedback in E-UTRA	NTT DoCoMo	6.2.4	Discussion/decision		Not treated
Yes	R1-074290	Investigation on Performance of PUCCH in Coverage-limited Conditions	NTT DoCoMo	6.2.4	Discussion/decision	R1-074464	Revised
Yes	R1-074291	Usage of Remaining Resource Elements in Resource Blocks Multiplexed with PBCH and SCH	NTT DoCoMo	6.2.5	Discussion/decision		Not treated
Yes	R1-074292	Control Signaling for Uplink Frequency Hopping in E-UTRA	NTT DoCoMo	6.2.5	Discussion/decision	R1-074465	Revised
Yes	R1-074293	Investigation on P-SCH Specific Scrambling Sequences for S-SCH	NTT DoCoMo	6.2.6	Discussion/decision		Not treated
Yes	R1-074294	On PRACH Structure for 1.4-MHz System Bandwidth	NTT DoCoMo	6.2.7	Discussion/decision		Not treated
Yes	R1-074295	PRACH Multiplexing Method and Slot Configuration for E-UTRA Uplink	NTT DoCoMo	6.2.7	Discussion/decision		Not treated
Yes	R1-074296	Views on Number of Hybrid ARQ Processes in E-UTRA	NTT DoCoMo	6.3	Discussion/decision	R1-074466	Revised
Yes	R1-074297	Necessity of Time Diversity for D-BCH	NTT DoCoMo	6.4.5	Discussion/decision	R1-074467	Revised
Yes	R1-074298	UE Measurements and Rx Diversity	Nokia Siemens Networks, Nokia	5	Discussion		Noted
Yes	R1-074299	25212CR (R8, B) HS-SCCH information field mapping for 64QAM MIMO	Nokia, Nokia Siemens Networks, Ericsson, Philips	7	CR		Agreed
Yes	R1-074300	Enhanced CELL_FACH state with E-DCH	Nokia, Nokia Siemens Networks	8	Decision		Noted
Yes	R1-074301	Applications of Enhanced Uplink for CELL_FACH State in FDD	Nokia, Nokia Siemens Networks	8	Discussion		Noted

Yes	R1-074302	CELL_FACH state E-DCH – coverage comparison	Nokia, Nokia Siemens Networks	8	Discussion		Noted
Yes	R1-074303	Resource assignment for E-DCH access in CELL_FACH state	Nokia, Nokia Siemens Networks	8	Discussion		Noted
Yes	R1-074304	Synchronised E-DCH: Issues to be considered	Nokia Siemens Networks, Nokia	9	Discussion		Noted
Yes	R1-074305	Synchronised E-DCH: Initial link simulations	Nokia Siemens Networks, Nokia	9	Discussion		Noted
Yes	R1-074306	Draft TR skeleton for synchronised E-DCH	Nokia Siemens Networks, Nokia	9	TR	R1-074461	Revised
Yes	R1-074307	Invariant PBCH Structure	Nokia Siemens Networks, Nokia, Motorola	6.2	Discussion/Decision		Not treated
Yes	R1-074308	Capacity of D-BCH and Benefits of Time Diversity	Nokia Siemens Networks, Nokia	6.2	Discussion/Decision		Not treated
Yes	R1-074309	DL UL allocation options for EUTRA TDD	Nokia, Nokia Siemens Networks	6.2	Discussion/Decision		Not treated
Yes	R1-074310	Issues regarding MBSFN subframes	Nokia, Nokia Siemens Networks	6.2.1	Discussion/Decision		Not treated
Yes	R1-074311	On remaining MBSFN RS issues	Nokia, Nokia Siemens Networks	6.2.1	Discussion/Decision		Not treated
Yes	R1-074312	Dedicated Reference Signal for TDD FS2	Nokia, Nokia Siemens Networks	6.2.1	Discussion/Decision		Not treated
Yes	R1-074313	Open SRS issues	Nokia Siemens Networks, Nokia	6.2.2	Discussion/Decision		Not treated
Yes	R1-074314	On selection of computer generated DM RS sequences	Nokia Siemens Networks, Nokia	6.2.2	Discussion/Decision		Not treated
Yes	R1-074315	Cyclic Shift Hopping and DM RS Signaling	Nokia Siemens Networks, Nokia	6.2.2	Discussion/Decision	(R1-073644)	Not treated
Yes	R1-074316	UL sounding reference signal for EUTRA TDD	Nokia, Nokia Siemens Networks	6.2.2	Discussion/Decision		Not treated
Yes	R1-074317	Reducing the decoding complexity of the PDCCH	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074318	Control channel to RE mapping	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074319	Signaling PCH, RACH response and dynamic BCH	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074320	Considerations on the CCE sharing for uplink and downlink allocation grants	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074321	Downlink resource assignments structure for LTE	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074322	DL-CCH formats	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074323	Downlink Control signaling considerations for EUTRA TDD	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074324	Multi-TTI Uplink Grants for TDD	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074325	MBMS single-cell p-t-m related control signaling	Nokia, Nokia Siemens Networks	6.2.3	Discussion/Decision		Not treated
Yes	R1-074326	Comparison of single-sequence and multi sequence modulation on PUCCH	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision		Not treated
Yes	R1-074327	ACK/NACK+CQI transmitted on PUCCH	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision		Not treated
Yes	R1-074328	Benefits of resource-specific cyclic shift randomization on PUCCH	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision		Not treated
Yes	R1-074329	ACK/NACK Channelization	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision		Not treated
Yes	R1-074330	Implicit Mapping of ACK/NACK resources	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision		Not treated

Yes	R1-074331	Avoiding PUSCH error situations caused by DL allocation grant signalling failure	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision		Noted
Yes	R1-074332	Impact of prioritizing PUCCH ACK/NACK transmission over SRS	Nokia Siemens Networks, Nokia	6.2.2	Discussion/Decision		Not treated
Yes	R1-074333	Scheduling Request supporting High Doppler	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision	(R1-073654)	Noted
Yes	R1-074334	On CQI coding in PUCCH	Nokia Siemens Networks, Nokia	6.2.4	Discussion/Decision	(R1-073660)	Not treated
Yes	R1-074335	Repeated transmission of ACK in TDD FS2 PUCCH	Nokia, Nokia Siemens Networks	6.2.4	Discussion/Decision		Not treated
Yes	R1-074336	Multiple ACK transmission in PUCCH for TDD FS2	Nokia, Nokia Siemens Networks	6.2.4	Discussion/Decision		Not treated
Yes	R1-074337	CQI and CQI+ACK transmission in PUCCH for TDD FS2	Nokia, Nokia Siemens Networks	6.2.4	Discussion/Decision		Not treated
Yes	R1-074338	On the impact of LTE DL distributed transmission	Nokia, Nokia Siemens Networks	6.2.5	Discussion/Decision		Not treated
Yes	R1-074339	Transmission of P-BCH, P-SCH and S-SCH on dedicated MBMS carrier	Nokia, Nokia Siemens Networks	6.2.6	Discussion/Decision		Not treated
Yes	R1-074340	Sequence ordering and other RACH issues	Nokia Siemens Networks, Nokia	6.2.7	Discussion/Decision		Not treated
Yes	R1-074341	CRC Bit Order: Simulation Results	Nokia Siemens Networks, Nokia	6.3	Discussion/Decision		Noted
Yes	R1-074342	RV Definition	Nokia Siemens Networks, Nokia	6.3	Discussion/Decision		Not treated
Yes	R1-074343	BCH Interleaving	Nokia Siemens Networks, Nokia	6.3	Discussion/Decision		Not treated
Yes	R1-074344	Number of HARQ processes for FDD	Nokia, Nokia Siemens Networks	6.3	Discussion/Decision		Noted
Yes	R1-074345	HARQ in TDD (FS 1)	Nokia, Nokia Siemens Networks	6.3	Discussion/Decision		Noted
Yes	R1-074346	HARQ in TDD (FS 2)	Nokia, Nokia Siemens Networks	6.3	Discussion/Decision		Noted
Yes	R1-074347	Closed loop power control corrections for PUSCH	Nokia Siemens Networks, Nokia	6.4.2	Discussion/Decision	(R1-073675)	Not treated
Yes	R1-074348	Power control headroom reports for EUTRAN uplink	Nokia Siemens Networks, Nokia	6.4.2	Discussion/Decision	(R1-073676)	Noted
Yes	R1-074349	Overload Indicator handling for LTE	Nokia Siemens Networks, Nokia	6.4.3	Discussion		Not treated
Yes	R1-074350	Low load scenarios with CQI-based interference coordination	Nokia, Nokia Siemens Networks	6.4.3	Discussion/Decision		Not treated
Yes	R1-074351	On CQI measurements and compression for eNode-B RRM support	Nokia Siemens Networks, Nokia	6.4.5	Discussion/Decision		Not treated
Yes	R1-074352	CQI format to facilitate eNode-B link adaptation	Nokia Siemens Networks, Nokia	6.4.5	Discussion/Decision		Noted
Yes	R1-074353	CQI Trigger Mechanism	Nokia Siemens Networks, Nokia	6.4.5	Discussion/Decision	(R1-073680)	Not treated
Yes	R1-074354	Channel Quality Indicator for LTE MU-MIMO	Nokia, Nokia Siemens Networks	6.4.5	Discussion/Decision		Not treated
Yes	R1-074355	Effect of Precoding Granularity on LTE Multiuser MIMO	Nokia, Nokia Siemens Networks	6.4.5	Discussion/Decision		Not treated
Yes	R1-074356	CQI and MIMO feedback for LTE	Nokia Siemens Networks, Nokia	6.4.5	Discussion/Decision		Not treated
Yes	R1-074357	DL signaling for closep loop antenna selection in LTE UL	Nokia Siemens Networks, Nokia	6.4.6	Discussion/Decision		Noted
Yes	R1-074358	Measurement states for inter-RAT UE measurements	Nokia Siemens Networks, Nokia	6.5	Discussion		Noted
Yes	R1-074359	UE Categories	Nokia, Nokia Siemens Networks	6.6	Discussion/Decision		Noted

Yes	R1-074360	UE and CCE specific scrambling codes for low complexity blind detection of downlink control signaling	Mitsubishi Electric	6.2.3	Discussion/Decision		Not treated
Yes	R1-074361	Distributed VRB mapping over 3 PRBs	Mitsubishi Electric	6.2.5	Discussion/Decision		Not treated
Yes	R1-074362	UE category with single Rx antenna	NXP, Philips	6.6	Discussion/Decision		Noted
Yes	R1-074363	Inconsistence of signalling overhead and resource indication value function	ZTE	6.4.5	Discussion/Decision		Not treated
Yes	R1-074364	25.214 CR467 (Rel-7, F) Clarification on CQI tables in Rel-7	Alcatel-Lucent	5	CR	R1-074462	Revised
Yes	R1-074365	On optimisation of LTE TDD based on FS2	Ericsson	6.1	Discussion/Decision	R1-074459	Revised
No	R1-074366	Further optimization of FS2	Ericsson	6.1	Discussion/Decision		Withdrawn
Yes	R1-074367	Downlink reference signal sequences	Ericsson	6.2.1	Discussion/Decision		Not treated
Yes	R1-074368	PUSCH sequence hopping patterns	Ericsson	6.2.2	Discussion/Decision		Not treated
Yes	R1-074369	E-mail summary taking you forward on downlink control signaling	Ericsson	6.2.3	Discussion/Decision		Noted
Yes	R1-074370	CCE to RE Mapping	Ericsson	6.2.3	Discussion/Decision		Not treated
Yes	R1-074371	MIMO related DL control signalling	Ericsson	6.2.3	Discussion/Decision		Not treated
Yes	R1-074372	E-mail summary taking you forward on uplink control signaling	Ericsson	6.2.4	Discussion/Decision		Noted
Yes	R1-074373	Control Signalling for Half Duplex FDD in LTE	Ericsson	6.2.4	Discussion/Decision		Not treated
Yes	R1-074374	Scrambling of the Secondary Synchronization Signal	Ericsson	6.2.6	Discussion/Decision		Not treated
Yes	R1-074375	Error Detection Reliability of CRC	Ericsson	6.3	Discussion/Decision		Noted
Yes	R1-074376	ID specific CRC on DL-SCH/UL-SCH	Ericsson	6.3	Discussion/Decision		Noted
Yes	R1-074377	On monitoring radio problem detection	Ericsson	6.4.1	Discussion/Decision		Noted
Yes	R1-074378	Uplink Power Control for E-UTRA – Comments on Open Issues	Ericsson	6.4.2	Discussion/Decision	R1-074470	Revised
Yes	R1-074379	Reactive and Pro-active Use of Uplink Overload Indication in LTE	Ericsson	6.4.3	Discussion/Decision		Not treated
Yes	R1-074380	On Inter-cell Interference Coordination Schemes without/with Traffic Load Indication	Ericsson	6.4.3	Discussion/Decision	R1-074444	Revised
Yes	R1-074381	Aperiodic CQI reporting	Ericsson	6.4.5	Discussion/Decision		Noted
Yes	R1-074382	Extending Codeword to layer mapping for efficient support of retransmissions	Ericsson	6.4.5	Discussion/Decision		Not treated
Yes	R1-074383	Proposed way forward for CQI reporting	Nokia Siemens Networks, Ericsson, Huawei, Nokia, CATT	6.4.5	Discussion/Decision	R1-074453	Revised
Yes	R1-074384	Modulation & Channelization Signaling for MIMO and 64-QAM	InterDigital	7	CR		Noted
Yes	R1-074385	ACK/NACK Index Mapping for Uplink Transmission for E-UTRA	InterDigital Communications LLC	6.2.3	Discussion/Decision		Not treated
Yes	R1-074386	MU-MIMO Codebook Selection and Signaling Considerations for E-UTRA	InterDigital Communications LLC	6.2.3	Discussion/Decision	R1-074469	Revised
Yes	R1-074387	E-UTRA Power Control Performance Comparison of Feedback Methods	InterDigital Communications LLC	6.4.2	Discussion/Decision	R1-074481	Revised
Yes	R1-074388	Uplink Power Control Procedures and Text Proposal for E-UTRA	InterDigital Communications LLC	6.4.2	Discussion/Decision		Not treated

Yes	R1-074389	Performance Evaluation of E-UTRA CQI Schemes with Restricted Reporting Periods	InterDigital Communications LLC	6.4.5	Discussion		Noted
Yes	R1-074390	Binary Differential Feedback Using Existing Codebooks for E-UTRA	InterDigital Communications LLC	6.4.5	Discussion/Decision		Not treated
Yes	R1-074391	E-UTRA PUCCH: ACK/NACK, CQI, PMI, and RI Issues	InterDigital Communications LLC	6.4.5	Discussion		Not treated
Yes	R1-074392	Specification of Formula for Restricted Cyclic shift Set	LG Electronics, Nokia, Nokia Siemens Networks, Texas Instruments	6.2.7	Decision		Not treated
No	R1-074393	On the codeword to layer mapping issue for retransmission	Freescale Semiconductor	6.2.3	Discussion/Decision		Missing
No	R1-074394	Remaining issues in DL MIMO	Freescale Semiconductor	6.2	Discussion		Missing
No	R1-074395	Rank reporting for DL LTE MIMO	Freescale Semiconductor	6.4.5	Discussion/Decision		Missing
Yes	R1-074396	Comparison of Computer Generated sequences for E-UTRA uplink	Panasonic	6.2.2	Discussion/Decision		Not treated
Yes	R1-074397	Further consideration on uplink RS hopping and grouping	Panasonic	6.2.2	Discussion/Decision		Not treated
Yes	R1-074398	Frequency dependent PUSCH DM-RS generation method with considering eNB-specific allocation	Panasonic	6.2.2	Discussion/Decision		Not treated
Yes	R1-074399	Sounding RS position and relation with PUCCH	Panasonic	6.2.2	Discussion/Decision		Not treated
Yes	R1-074400	Transport format signaling and padding overhead	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074401	PDCCH payload formats and sizes	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074402	PDCCH Signaling for retransmission of downlink persistent scheduling	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074403	Comparison between FDM and CDM+FDM for DL L1/L2 control channel multiplexing	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074404	DL ACK/NACK modulation and UL HARQ behavior	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074405	Assignment of Downlink ACK/NACK channel	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074406	System level analysis for CCE aggregation size dependent transport format signaling	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074407	Resource allocation and transport format signaling	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074408	Ack/Nack repetition and Implicit Resource Allocation for PUCCH	Panasonic	6.2.4	Discussion/Decision		Not treated
Yes	R1-074409	Proposed way forward on ACK/NACK channelization	Panasonic, Samsung	6.2.4	Discussion/Decision	R1-074491	Revised
Yes	R1-074410	Mapping position of control channel for Uplink Shared Channel	Panasonic	6.2.4	Discussion/Decision		Not treated
Yes	R1-074411	Cyclic shift hopping patterns for uplink ACK/NACK	Panasonic	6.2.4	Discussion/Decision		Not treated
Yes	R1-074412	Ordering of the implicit resource allocation table for UL ACK/NACK	Panasonic	6.2.4	Discussion/Decision		Not treated
Yes	R1-074413	Variable Phase Definition of the Reference Signal for CQI in PUCCH	Panasonic	6.2.4	Discussion/Decision		Not treated
Yes	R1-074414	Clarification of Implicit Resource Allocation of Uplink ACK/NACK Signal	Panasonic	6.2.4	Discussion/Decision		Not treated
Yes	R1-074415	Selected sub-band CQI reporting	Panasonic	6.4.5	Discussion/Decision		Noted
Yes	R1-074416	DVRB-pair to PRB-pair assignment and signaling for DL distributed transmission	Panasonic	6.2.5	Discussion/Decision		Not treated
Yes	R1-074417	VoIP capacity comparison between Nd=2 and Nd=3 for DL distributed transmission	Panasonic	6.2.5	Discussion/Decision		Noted

Yes	R1-074418	Views on mapping within distributed PRB-pair for Nd=3	Panasonic	6.2.5	Discussion/Decision		Not treated
Yes	R1-074419	Mapping within distributed PRB-pair for Nd=3	Panasonic	6.2.5	Discussion/Decision		Not treated
Yes	R1-074420	Proposed way forward for PRACH sequence ordering discussion	Panasonic	6.2.7	Discussion/Decision	R1-074494	Revised
Yes	R1-074421	PRACH sequence index ordering	Panasonic	6.2.7	Discussion/Decision		Not treated
Yes	R1-074422	Limitation of RACH sequence allocation for high mobility cell	Panasonic	6.2.7	Discussion/Decision		Not treated
Yes	R1-074423	Power control: Function split between Specifications	Panasonic	6.4.2	Discussion/Decision		Not treated
Yes	R1-074424	Discussion on CQI Report Metric (SINR vs TBS)	Panasonic	6.4.5	Discussion/Decision		Noted
Yes	R1-074425	CQI transmission methods for large reports on PUCCH	Panasonic	6.4.5	Discussion/Decision		Not treated
Yes	R1-074426	Rank feedback in downlink MIMO	Panasonic	6.4.5	Discussion/Decision		Not treated
Yes	R1-074427	Control signalling aspects of MU-MIMO	Panasonic	6.4.5	Discussion/Decision		Not treated
Yes	R1-074428	UE capability and time diversity	Panasonic	6.6	Discussion/Decision		Not treated
Yes	R1-074429	Details on scrambling	Qualcomm Europe	6.2	Discussion/Decision		Not treated
Yes	R1-074430	Baseline CQI format	Qualcomm Europe	6.4.5	Discussion/Decision		Not treated
Yes	R1-074431	Bandwidth Allocation for the SRS	Freescale Semiconductor	6.2.2	Discussion		Not treated
Yes	R1-074432	TDD Frame Structure	IPWireless, NextWave Wireless	6.1	Discussion		Noted
Yes	R1-074433	P-BCH TTI boundary detection using BPSK on S-SCH	InterDigital Communications LLC	6.2.6	Discussion		Not treated
Yes	R1-074434	Semi-static, dynamic and hybrid CCE aggregation	Panasonic	6.2.3	Discussion/Decision		Not treated
Yes	R1-074435	Signaling of Frequency Hopping for UL Transmission	Alcatel-Lucent	6.2.4	Discussion/Decision		Not treated
Yes	R1-074436	Down Link Rank Adaptation with 4 Tx antennas for Open Loop MIMO at High Doppler	LSI Corporation	6.4.5	Discussion/Decision		Not treated
Yes	R1-074437	Proposed way forward on CPICH measurements with Rx diversity	Vodafone	5	Approval		Noted
Yes	R1-074438	PUCCH details for TDD FS2	Nokia, Nokia Siemens Networks	6.2.4	Discussion/Decision		Not treated
Yes	R1-074439	Summary of Power Control E-mail Discussion	Nokia Siemens Networks	6.4.2	Discussion/ Decision		Noted
Yes	R1-074440	Draft TR for 1.28Mcps TDD HSPA evolution	TD-Tech	10	Discussion/ Decision	R1-074457	Revised
Yes	R1-074441	CRC Bit Order: Way Forward	Nokia Siemens Networks, Nokia, Motorola, Ericsson, Samsung	6.3	Decision	R1-074510	Agreed-Revised during the week
Yes	R1-074442	Summary of the e-mail discussion on UE category	NTT DoCoMo	6.6	Discussion/ Decision	R1-074500	Revised
Yes	R1-074443	Comparison of Computer-Generated Sequence Proposals for UL DM RS	Texas Instruments	6.2.2	Discussion/Decision	(R1-074131)	Not treated
Yes	R1-074444	On Inter-cell Interference Coordination Schemes without/with Traffic Load Indication	Ericsson	6.4.3	Discussion/Decision	(R1-074380)	Not treated
Yes	R1-074445	Way Forward on Full use of Power and Bandwidth in DL PDSCH	Samsung, LGE	6.2.1	Discussion/Decision		Not treated
Yes	R1-074446	TDD HARQ timing	IPWirless, NextWave Wireless	6.3	Decision	(R1-074179)	Noted
Yes	R1-074447	Draft Report WS GERAN_RAN on GERAN E-UTRAN interworking	MCC	3	Information		Noted

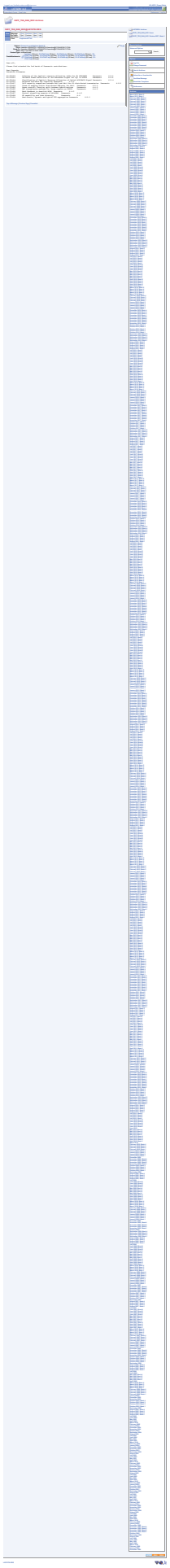
Yes	R1-074448	Generator Polynomial for Transport Block CRC	Qualcomm Europe	6.3	Discussion/Decision		Noted
Yes	R1-074449	Computer Generated Sequence Comparison	Qualcomm Europe	6.2.2	Discussion/Decision		Not treated
Yes	R1-074450	Power Scaling and DL RS boosting	Samsung	6.2.1	Discussion/Decision	(R1-074065)	Not treated
No	R1-074451	Reply LS on neighbour cell list in LTE	RAN1, Nokia Siemens Networks	4	LS_out		Postponed
Yes	R1-074452	Reply LS on introduction of radio bearers for MBMS PTP on HS in 34.108	RAN1, Ericsson	4	LS_out		Agreed
Yes	R1-074453	Proposed way forward for CQI reporting	Nokia Siemens Networks, Ericsson, Huawei, Nokia, CATT	6.4.5	Discussion/Decision	(R1-074383)	Noted
	R1-074454	void					
Yes	R1-074455	25.213 CR091r1 (Rel-7, F) "Editorial changes in 25.213 for 16QAM specification"	Ericsson	5	CR	(R1-073950)	Agreed
No	R1-074456	Combining Period interrupted by a DTX gap	Qualcomm Europe	5	Discussion/Decision	(R1-074118)	Withdrawn
Yes	R1-074457	Draft TR for 1.28Mcps TDD HSPA evolution	TD-Tech	10	Discussion/Decision	(R1-074440)	Noted
Yes	R1-074458	Way forward on Multiple Antenna Transmission for high-mobilty UE	Samsung, LGE, Nortel	6.4.5	Discussion/Decision	R1-074512	Revised
Yes	R1-074459	On optimisation of LTE TDD based on FS2	CMCC, Vodafone, CATT, RITT, Ericsson, Nokia, Nokia Siemens Networks, ZTE, Huawei, Qualcomm Europe	6.1	Discussion/Decision	(R1-074365)	Noted
Yes	R1-074460	Draft LS on RAN1 conclusions on Enhanced Uplink for CELL_FACH state in FDD	Nokia Siemens Networks	8	LS_out	R1-074522	Revised
Yes	R1-074461	Draft TR skeleton for synchronised E-DCH	Nokia Siemens Networks, Nokia	9	TR	(R1-074306)	Agreed
Yes	R1-074462	25.214 CR467r1 (Rel-7, F) Clarification on CQI tables in Rel-7	Alcatel-Lucent, Nokia, Nokia Siemens Networks, Ericsson, Philips	5	CR	(R1-074364)	Agreed
Yes	R1-074463	Investigation on Throughput Performance of MU-MIMO in E-UTRA Downlink	NTT DoCoMo	6.2.3	Discussion/decision	(R1-074286)	Not treated
Yes	R1-074464	Investigation on Performance of PUCCH in Coverage-limited Conditions	NTT DoCoMo	6.2.4	Discussion/decision	(R1-074290)	Not treated
Yes	R1-074465	Control Signaling for Uplink Frequency Hopping in E-UTRA	NTT DoCoMo	6.2.5	Discussion/decision	(R1-074292)	Not treated
Yes	R1-074466	Views on Number of Hybrid ARQ Processes in E-UTRA	NTT DoCoMo, AT&T, KDDI, Mitsubishi Electric, Orange, Sharp, T-Mobile	6.3	Discussion/decision	(R1-074296)	Noted
Yes	R1-074467	Necessity of Time Diversity for D-BCH	NTT DoCoMo	6.4.5	Discussion/decision	(R1-074297)	Not treated
Yes	R1-074468	Way forward on Physical Channel Segmentation	Motorola, Nokia, Nokia Siemens Networks, Broadcom, TI, Qualcomm, Nortel, Freescale	6.3	Discussion/decision		Agreed
Yes	R1-074469	MU-MIMO Codebook Selection and Signaling Considerations for E-UTRA	InterDigital Communications LLC	6.2.3	Discussion/Decision	(R1-074386)	Not treated
Yes	R1-074470	Uplink Power Control for E-UTRA – Comments on Open Issues	Ericsson	6.4.2	Discussion/Decision	(R1-074378)	Noted
Yes	R1-074471	Coverage impact of shortened ACK/NACK format	Ericsson	6.2.2	Discussion/Decision		Not treated
Yes	R1-074472	Interleaver Design for CCE-to-RE Mapping	LG Electronics	6.2.3	Discussion/Decision	(R1-074193)	Not treated

Yes	R1-074473	TB CRC generator polynomial	Ericsson, ETRI, ITRI, LGE, Motorola, Nokia, Nokia Siemens Networks, Nortel, Qualcomm, Samsung, ZTE	6.3	Discussion/Decision	(R1-074105)	Noted
Yes	R1-074474	Summary of companies views regarding multiplexing between PUCCH and S-RS	LG Electtronics	6.2.2	Discussion/Decision	R1-074513	Revised
Yes	R1-074475	Semi-Static Interference Coordination Method	Alcatel-Lucent	6.4.3	Discussion	(R1-074263)	Not treated
Yes	R1-074476	Transmission mode for BCCH	Ericsson	6.4.5	Discussion/Decision		Not treated
Yes	R1-074477	Way forward on UL ICIC/overload indicator for LTE	Nokia Siemens Networks, Nokia, Ericsson, Alcatel-Lucent, T-Mobile	6.4.3	Decision		Noted
Yes	R1-074478	One generator polynomial for both transport block CRC and code block CRC	Broadcom	6.3	Discussion/Decision		Not treated
Yes	R1-074479	Way forward on DL power control	NEC, Ericsson, Fujitsu, Marvell Semiconductor, Motorola, Panasonic, Philips, Qualcomm, ZTE	6.4.2	Discussion/Decision	(R1-074158)	Noted
Yes	R1-074480	Reply LS on Request to clarify LTE states for physical layer measurements	RAN2, Nokia Siemens Networks	4	LS_in	= R2-074509	Noted
No	R1-074481	E-UTRA Power Control Performance Comparison of Feedback Methods	InterDigital Communications LLC	6.4.2	Discussion/Decision	(R1-074387)	Missing
Yes	R1-074482	36.214 CR001 (Rel-8, F) "RRC state correction for LTE UE measurements	Nokia Siemens Networks, Nokia	6.5	CR		Noted
Yes	R1-074483	Downlink ACK/NACK Transmit Diversity	Samsung	6.2.3	Discussion/Decision	(R1-074074)	Noted
Yes	R1-074484	LS on UE transmission power adjustments	RAN1, Motorola, Panasonic	6.4.2	LS_out		Agreed
Yes	R1-074485	SSCH Mapping to Group ID and Frame Timing	Marvell Semiconductor	6.2.6	Discussion	(R1-073898)	Not treated
Yes	R1-074486	F-QPSK based CG UL DM RS for 1RB and 2RB	LG Electronics	6.2.2	Discussion		Not treated
Yes	R1-074487	ACK/NAK Performance in PUCCH with Timing Offset and Near-Far Effect	Texas Instruments	6.2.4	Discussion/Decision	(R1-074140)	Not treated
Yes	R1-074488	Interleaver design for Mini-CCE to RE Mapping	Motorola	6.2.3	Discussion/Decision	(R1-073994)	Not treated
Yes	R1-074489	Uplink Power Control Way forward	Ericsson	6.4.2	Discussion/Decision	R1-074507	Revised
Yes	R1-074490	CQI compression - starting point	CQI Ad-Hoc Chair	6.4.5	Discussion/Decision		Noted
Yes	R1-074491	Proposed way forward on ACK/NACK channelization	Panasonic, Nokia, Nokia Siemens Networks, Samsung, Texas Instruments	6.2.4	Discussion/Decision	(R1-074409)	Agreed
Yes	R1-074492	Details on Probabilities of Undetected TB Errors	Ericsson	6.3	Discussion		Not treated
Yes	R1-074493	Improved Flexibility/Performance CQI+ACK/NACK coding in the E-UTRA uplink	SHARP	6.2.4	Discussion/Decision	(R1-073941)	Not treated
Yes	R1-074494	Proposed way forward for PRACH sequence ordering discussion	Panasonic, TI, Huawei, LGE, NTT DoCoMo	6.2.7	Discussion/Decision	(R1-074420)	Noted
Yes	R1-074495	Way forward for LFDMA with hopping in PUSCH	Samsung, Qualcomm	6.2.5	Discussion/Decision	R1-074517	Revised
Yes	R1-074496	Proposal for CQI way forward	Nokia, Nokia Siemens Networks, Ericsson, TI, Huawei, Samsung, Qualcomm, ZTE, CATT, Nortel	6.4.5	Discussion/Decision		Noted
Yes	R1-074497	delta-I for UL PC - Way forward	Motorola	6.4.2	Discussion/Decision		Not treated

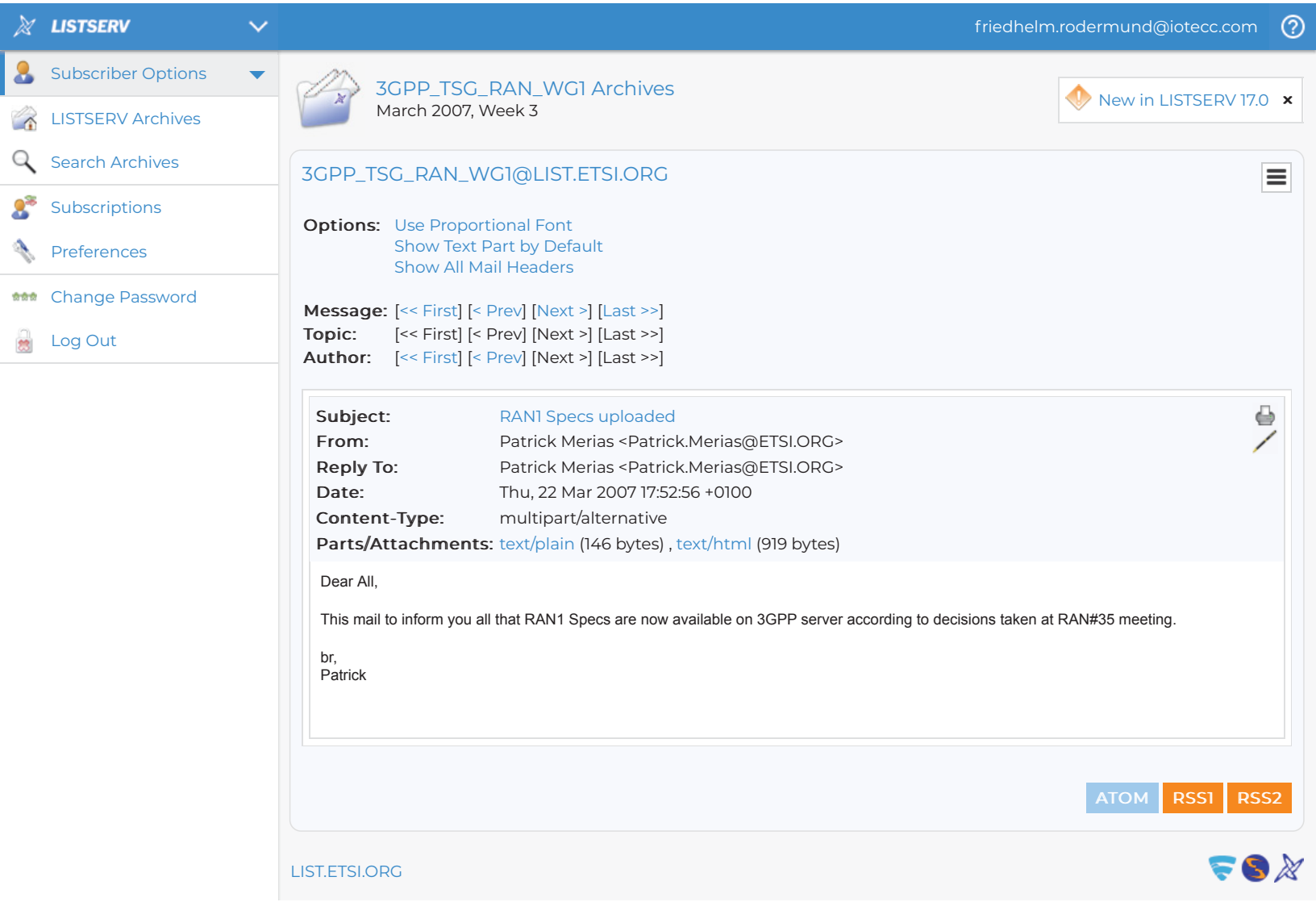
Yes	R1-074498	Way Forward for Secondary SCH Mapping and Scrambling	TI, Motorola, Huawei, LGE, Nortel, Qualcomm, Sharp, ETRI	6.2.6	Discussion/Decision		Agreed
Yes	R1-074499	Outcome of off-line discussion on DL control signaling	Ericsson	6.2.3	Discussion/Decision		Endorsed
Yes	R1-074500	Summary of the e-mail discussion on UE category	NTT DoCoMo	6.6	Discussion/Decision	(R1-074442) R1-074504	Revised
Yes	R1-074501	Summary of CQI Ad-Hoc	Ad-Hoc Chairman	6.4.5	Discussion/Decision		Endorsed
Yes	R1-074502	SSC mapping and scrambling method	LG Electronics	6.2.6	Discussion/Decision	(R1-074210)	Not treated
Yes	R1-074503	RB mapping for odd number of RB	Motorola, Nokia, Nokia Siemens Networks, TI, Qualcomm, Philips, Samsung	6.2	Decision		Agreed
Yes	R1-074504	Summary of the e-mail discussion on UE category	NTT DoCoMo	6.6	Discussion/Decision	(R1-074500)	Noted
Yes	R1-074505	Way forward on DL Control channel multiplexing	NEC, Nokia, Nokia Siemens Networks	6.2.3	Decision		Noted
Yes	R1-074506	Way forward for dedicated reference symbols for downlink beamforming	Philips, NXP Semiconductors, NTT DoCoMo, Vodafone, AT&T, NEC, Futjitsu, Mitsubishi, Arraycomm, Sharp, Ericsson, CMCC, CATT, RITT, Orange, T-Mobile, Qualcomm	6.2.1	Decision	(R1-074245)	Noted
Yes	R1-074507	Uplink Power Control Way forward	Ericsson	6.4.2	Decision	(R1-074489)	Not treated
Yes	R1-074508	Way forward on 4-Tx Transmit Diversity for PHICH Channel	Nortel, LGE, Alcatel-Lucent, Broadcom	6.2.3	Decision		Agreed
Yes	R1-074509	Way forward on computer generated DM RS sequencer	LGE, Motorola, Nokia, Nokia Siemens Networks, Qualcomm, Sharp, TI	6.2.2	Decision		Agreed
Yes	R1-074510	CRC Bit Order: Way Forward	Nokia Siemens Networks, Nokia, Motorola, Ericsson, Samsung, LGE, TI, Broadcom, Nortel	6.3	Decision	(R1-074441)	Not treated
Yes	R1-074511	Summary of Power Control Discussion	Nokia	6.4.2	Discussion/Decision		Postponed
Yes	R1-074512	Way forward on Multiple Antenna Transmission for high-mobilty UE	Samsung, LGE, Nortel, AT&T	6.4.5	Discussion/Decision	(R1-074458)	Noted
Yes	R1-074513	Summary of companies views regarding multiplexing between PUCCH and S-RS	LG Electtronics	6.2.2	Discussion/Decision	(R1-074474)	Not treated
Yes	R1-074514	Way forward proposal on PRACH sequence ordering	TI, LGE, Huawei, Alcatel-Lucent, Nokia, Nokia Siemens Networks, Panasonic, NTT DoCoMo	6.2.7	Discussion/Decision		Agreed
No	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	6.5	Discussion/Decision	(R1-074260)	Missing
Yes	R1-074516	Draft LS on UE Categories	NTT DoCoMo	6.6	LS_out	R1-074521	Revised
Yes	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	6.2.5	Discussion/Decision	(R1-074495)	Noted

Yes	R1-074518	25.211 CR0249 (Rel-6, F) "Correction to E-DPCCH transmission"	Philips, Nokia Siemens Networks, Nokia, Alcatel-Lucent	5	CR		Agreed
Yes	R1-074519	25.211 CR0250 (Rel-7, A) "Correction to E-DPCCH transmission"	Philips, Nokia Siemens Networks, Nokia, Alcatel-Lucent	5	CR		Agreed
Yes	R1-074520	Some consideration on UL coverage and overhead improvement LTE TDD FS2	CATT, CMCC, Huawei, RITT, ZTE	6.1	Discussion/Decision		For information and further email discussions
Yes	R1-074521	LS on UE Categories	RAN1, NTT DoCoMo	6.6	LS_out	(R1-074516)	Agreed
Yes	R1-074522	LS on RAN1 conclusions on Enhanced Uplink for CELL_FACH state in FDD	RAN1, Nokia Siemens Networks	8	LS_out	(R1-074460)	Agreed

APPENDIX D



APPENDIX E


LISTSERV
friedhelm.rodermund@iotecc.com
Subscriber Options
LISTSERV Archives
Search Archives
Subscriptions
Preferences
Change Password
Log Out
3GPP_TSG_RAN_WG1 Archives
March 2007, Week 3
New in LISTSERV 17.0
3GPP_TSG_RAN_WG1@LIST.ETSI.ORG
Options: Use Proportional Font
Show Text Part by Default
Show All Mail Headers
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Author: [<< First] [< Prev] [Next >] [Last >>]
Subject: RAN1 Specs uploaded
From: Patrick Merias <Patrick.Merias@ETSI.ORG>
Reply To: Patrick Merias <Patrick.Merias@ETSI.ORG>
Date: Thu, 22 Mar 2007 17:52:56 +0100
Content-Type: multipart/alternative
Parts/Attachments: text/plain (146 bytes) , text/html (919 bytes)
Dear All,
This mail to inform you all that RAN1 Specs are now available on 3GPP server according to decisions taken at RAN#35 meeting.
br,
Patrick
ATOM
RSS1
RSS2
LIST.ETSI.ORG