UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

U.S. Patent No. 8,406,733

Case No. IPR2024-00341 and IPR2024-00342

DECLARATION OF FRIEDHELM RODERMUND IN SUPPORT OF A PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,406,733

SAMSUNG 1024

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Declaration of Friedhelm Rodermund

I, Friedhelm Rodermund, do hereby declare as follows:

I. INTRODUCTION AND ENGAGEMENT

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

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

- 3GPP TS 23.140 V6.9.0, which represents a 3GPP document with the tile "Technical Specification Group Services and System Aspects; Multimedia Messaging Service (MMS); Functional description; Stage 2 (Release 6))" (hereinafter "TS 23.140 V6.9.0") (SAMSUNG-1005)

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

- OMA-ERELD-MMS-V1_2-20030923-C, which represents an OMA document with the title "Enabler Release Definition for MMS Version 1.2 Candidate Version 23-September-2003." (SAMSUNG-1012)

- OMA-WAP-MMS—ARCH-V1_1-20040715-A, which represents an OMA document with the title "Multimedia Messaging Service Architecture Overview Approved Version 1.1 – 15 Jul 2004." (SAMSUNG-1011)

4. 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 any document published by 3GPP and the timing of their publication.

5. I am also knowledgeable about document management practices of OMA. This is due to the fact that I have been attending OMA meetings since 2004 and continued to follow OMA's work ever since. Thus, I'm able to testify regarding the availability and authenticity of any OMA document.

6. I am being compensated for my time spent on this matter at my usual rate of €470 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 the Petitioner.

7. I have been informed that Headwater Research LLC ("Headwater" or "Patent Owner") is the current assignee of U.S. Patent No. 8,406,733

("the '733 Patent") (SAMSUNG-1001). I have no financial interest in the Patent Owner, the Petitioner, or the '733 Patent.

II. BACKGROUND AND QUALIFICATIONS

8. I have more than 25 years of experience working with standards development organizations including 3GPP, ETSI, and 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.

9. 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.

10. 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).

11. 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"). Amongst other responsibilities, I was editor of TS 23.140 which is one of the documents addressed in this declaration.

12. In 2003, in addition to my roles in 3GPP, I was a member of the GSMA MMS Task Force where I was supporting the creation of interoperability guidelines for the introduction of MMS in cellular networks and devices.

13. During my time at ETSI, I acted also as the 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.

14. 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 Rights policy.

15. 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.

16. Since I left ETSI as a staff member in 2005, I have been continuously involved in standardization activities, including with OMA, ETSI, and 3GPP. Since

2017, I also have been attending the ETSI Intellectual Property Rights ("IPR") Special Committee, which is responsible for the maintenance of the ETSI IPR Policy.

17. 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 OMA, and then as a Senior Standards Strategist, all with responsibilities as described on my curriculum vitae. At Vodafone, I was deeply involved in standards work with ETSI, 3GPP and OMA, including as a delegate to 3GPP SA1 "Services." As part of my responsibilities, I attended 3GPP and OMA meetings, submitted documents to 3GPP and OMA, used 3GPP and OMA resources (including 3GPP's and OMA's document servers) extensively, and remained knowledgeable about 3GPP and OMA policies and procedures with regard to document management and public accessibility. At Vodafone, 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.

18. 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 (LwM2M) and 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.

19. I also provide consulting services related to patents, in particular around 3GPP Standard Essential Patents ("SEPs"), and I have worked 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 am conducting a seminar on SEPs and the Internet of Things at the Technical University of Ilmenau, Germany.

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

21. 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

22. It is my opinion that SAMSUNG-1004 is an authentic copy of 3GPP specification TS 23.140 V6.9.0 that was uploaded and made publicly available via the 3GPP ftp server by April 4, 2005.

23. It is my opinion that SAMSUNG-1012 is an authentic copy of OMA document OMA-ERELD-MMS-V1_2-20030923-C that was made available for download from the OMA website by June 12, 2004, at the latest.

24. It is my opinion that SAMSUNG-1011 is an authentic copy of OMA specification OMA-WAP-MMS-ARCH-V1_1-20040715-A that was made available for download from the OMA website by September 29, 2004, at the latest.

IV. PUBLICATION OF 3GPP SPECIFICATIONS AND RELATED DOCUMENTS

A. General Practices

25. Unless otherwise noted, the foregoing and following is an accurate description of 3GPP general practices from 1998 to the present, including in 2005, regardless of whether I use the present or past tense to describe those practices.

26. 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"), and 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 for the day-to-day work of 3GPP. Furthermore, ETSI manages 3GPP's IT services such as the 3GPP website, ftp server, and email exploders.

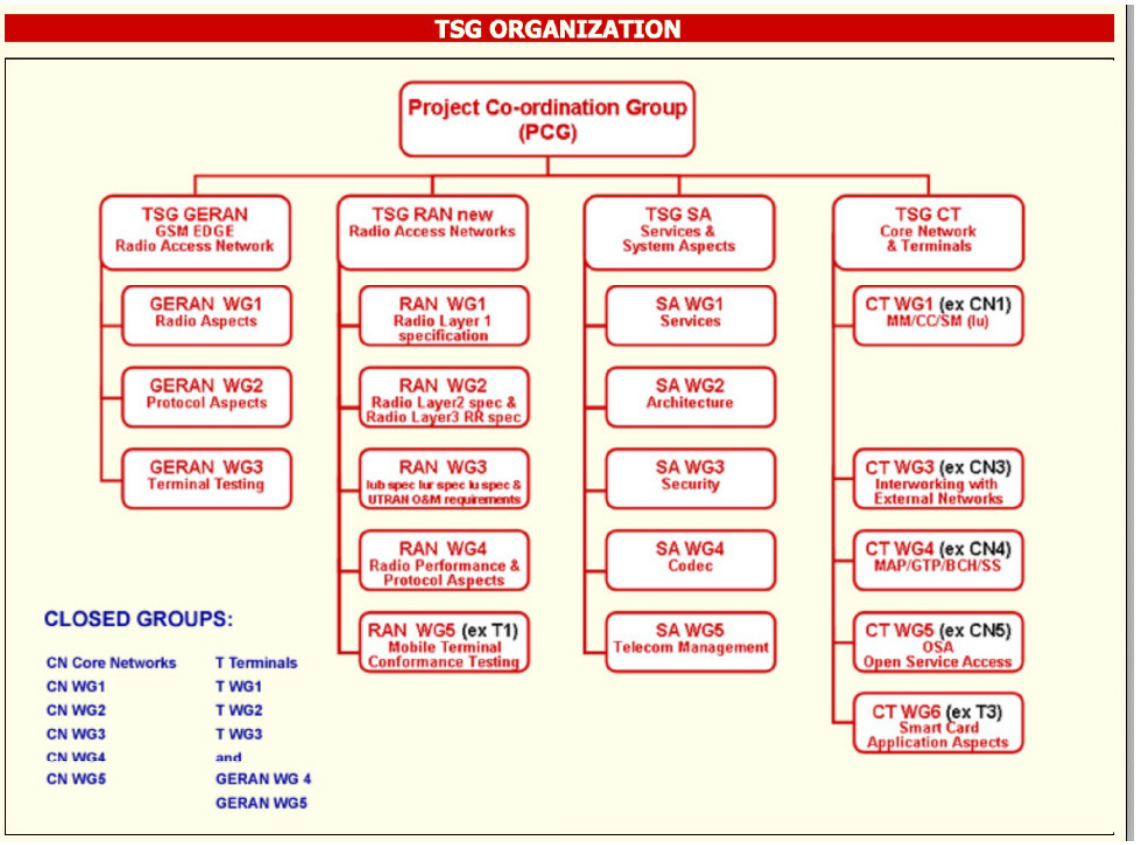
27. 3GPP is the world's leading organization for developing and maintaining cellular telecommunications standards, which it has done since it was founded in 1998. As noted above and in my curriculum vitae, I began working for 3GPP, as part of my work at ETSI, the European-based organizational partner of 3GPP.

28. 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 I began working at ETSI in 1998.

29. 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 on that same ftp server.

30. The names and the structure of 3GPP working groups, as of 2005, can be found at https://web.archive.org/web/20050805030338/http://www.3gpp.org:80/tb/home.htm (reproduced below and as Appendix B):



31. 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; wherein 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; and (5) zzzz: a running number (some working groups use 5 digits instead of 4).

32. 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.

33. As early as December 1998, including in 2005, 3GPP's ftp server was freely accessible to the general public with no login, password, or membership requirement.

34. By 1999, at least 100 companies were members of 3GPP (843 companies by August 2023), 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 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 UMTS or LTE or 5G network or device - including any services defined by 3GPP such as MMS - to consult the corresponding specifications on the 3GPP ftp server, as well as other related documents. The purpose of 3GPP creating and making these documents available was so that engineers and other individuals would have ready access to them when developing and implementing cellular networks and devices.

35. As early as June 1999, 3GPP's ftp server was well-known to persons in the cellular telecommunications industry as a source of public information regarding industry standards and technological advances.

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-technologies/specifications-by-series, and are reproduced below[1].

[1] Full website available as Appendix C.

Subject of specification series	3G and beyond / GSM (R99 and later)	GSM only (Rel-4 and later)	GSM only (before Rel-4)
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. Following a link for a series (e.g., "23 series" link) leads to a 3GPP web page providing access to all specifications in a series, as shown by the screenshot below[2]:



38. In the ordinary course of 3GPP's regularly conducted business activities, and pursuant to its standard business practices, 3GPP published and

[2] Full website available as Appendix D.

continues to publish all proposals, technical reports, technical specifications and other documents related to the development of cellular telecommunications standards to the 3GPP's publicly available, unrestricted, online ftp server: http://www.3gpp.org/ftp/. Draft proposals, technical reports, technical specifications, change requests, and other documents ("Tdocs") were assigned a document number ("Tdoc number") and uploaded to 3GPP's public ftp server before, during, and after meetings, making the documents publicly available. 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 and for approval at the next working group 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.

40. 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 occasionally. 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.

41. 3GPP's working practice to store their documents on its 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.

42. 3GPP maintains a set of publicly accessible documents[3] providing further details on its way of working:

- 3GPP Working Procedures
- Vocabulary for 3GPP Specifications 3GPP TR 21.905
- Working Methods 3GPP TR 21.900
- Specification Drafting Rules 3GPP TR 21.801

B. TS 23.140 V6.9.0

a) Authentication

43. SAMSUNG-1005 is a true and correct copy of 3GPP TS 23.140 V6.9.0, titled "Technical Specification Group Services and System Aspects; Multimedia Messaging Service (MMS); Functional description; Stage 2 (Release 6)," except that each page includes an exhibit label and page number on the bottom right corner added by counsel. I obtained SAMSUNG-1005 from 3GPP's FTP server at the following location: https://www.3gpp.org/ftp/Specs/archive/23_series/23.140[4].

b) Publication by 3GPP and ETSI

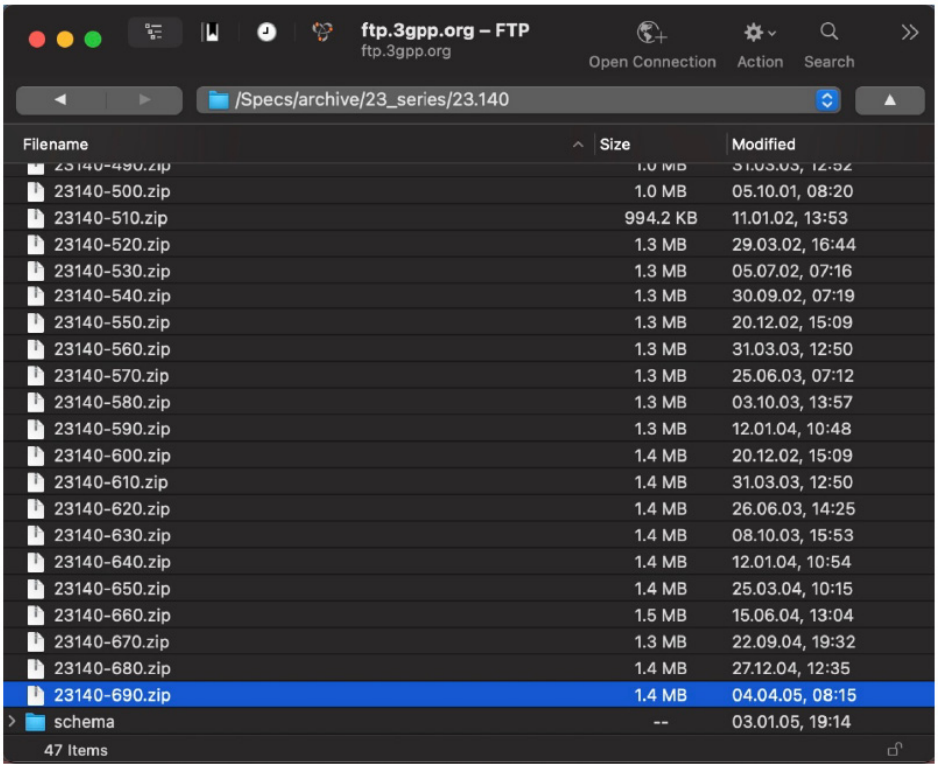
[3] All available from https://www.3gpp.org/delegates-corner/3gpp-working-procedures

[4] Website available as Appendix E.

44. SAMSUNG-1005 shows on its cover page "2005-03" as the year (2005) and month (March) during which the document was released by 3GPP.

45. SAMSUNG-1005 was uploaded to the 3GPP FTP server on April 4, 2005, based on the upload date stamp shown on the historic 3GPP FTP server for the corresponding downloadable file ("23140-690.zip"), as maintained by the Internet Archive at https://web.archive.org/web/20050511003100/http://www.3gpp.org:80/ftp/Specs/Archive/23_series/23.140/[5]. 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/23_series/23.140 as shown in the screenshot below (listing date as "04.04.05", or April 4, 2005):

[5] Website available as Appendix Q.



46. Experts in the field of determining the public availability of 3GPP documents would reasonably rely upon the FTP server upload date on the current 3GPP FTP server as well as an archived version of the directory structure maintained by the Internet Archive to establish a date that a 3GPP document became available to the public via the 3GPP FTP server.

47. In addition, metadata information for the downloaded and extracted T-doc file states a last Modified date of "4. April 2005," as shown in the screenshot below:



48. This last modified date is consistent with the April 4, 2005, upload date of the document and the typical practice among 3GPP staff to upload technical specifications shortly after creating them.

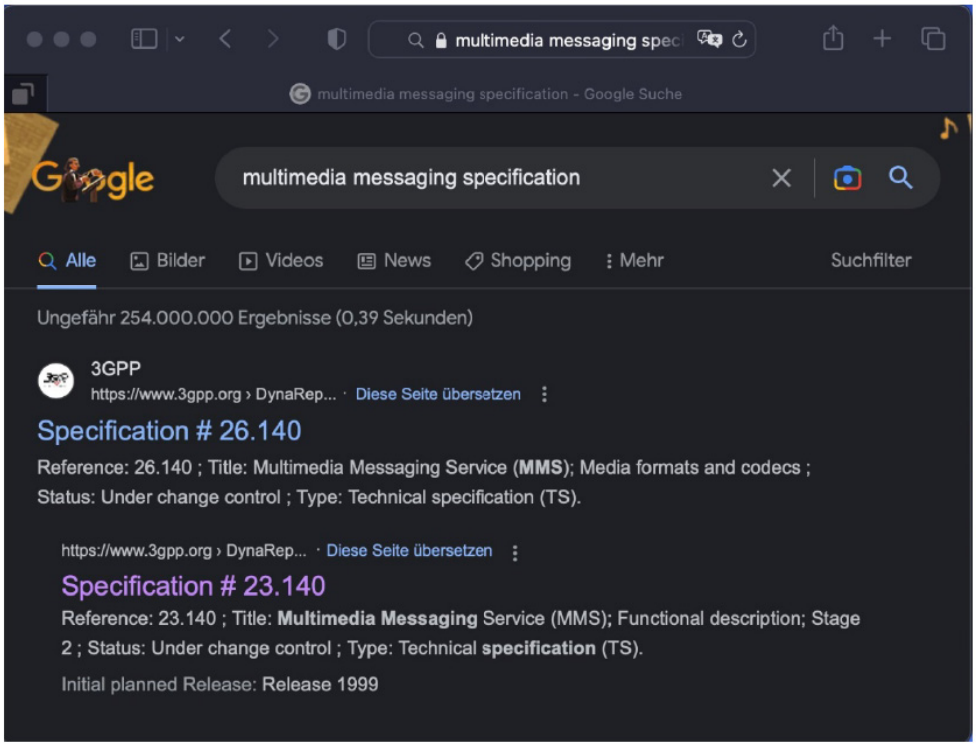
49. This publication date is further confirmed by the publication history of TS 23.140 V6.9.0 in the ETSI copy of TS 23.140 named "ETSI TS 123 140",

which states that V6.9.0 was published in March 2005[6]. March 2005 reflects the month the document was released by 3GPP and the upload to the ETSI website took place on April 27, 2005[7]. This is a few weeks after the upload to the 3GPP ftp server as it is common practice that the ETSI versions of 3GPP specifications are uploaded a few weeks after the 3GPP specifications are uploaded.

50. I believe that a person without prior knowledge of 3GPP and/or the technical specification (TS) number would have been able to also easily find the TS for download via internet search. For instance, a Google search for "multimedia messaging specification" provides the TS number "23.140" as one of the top results as can be seen in the screenshot below:

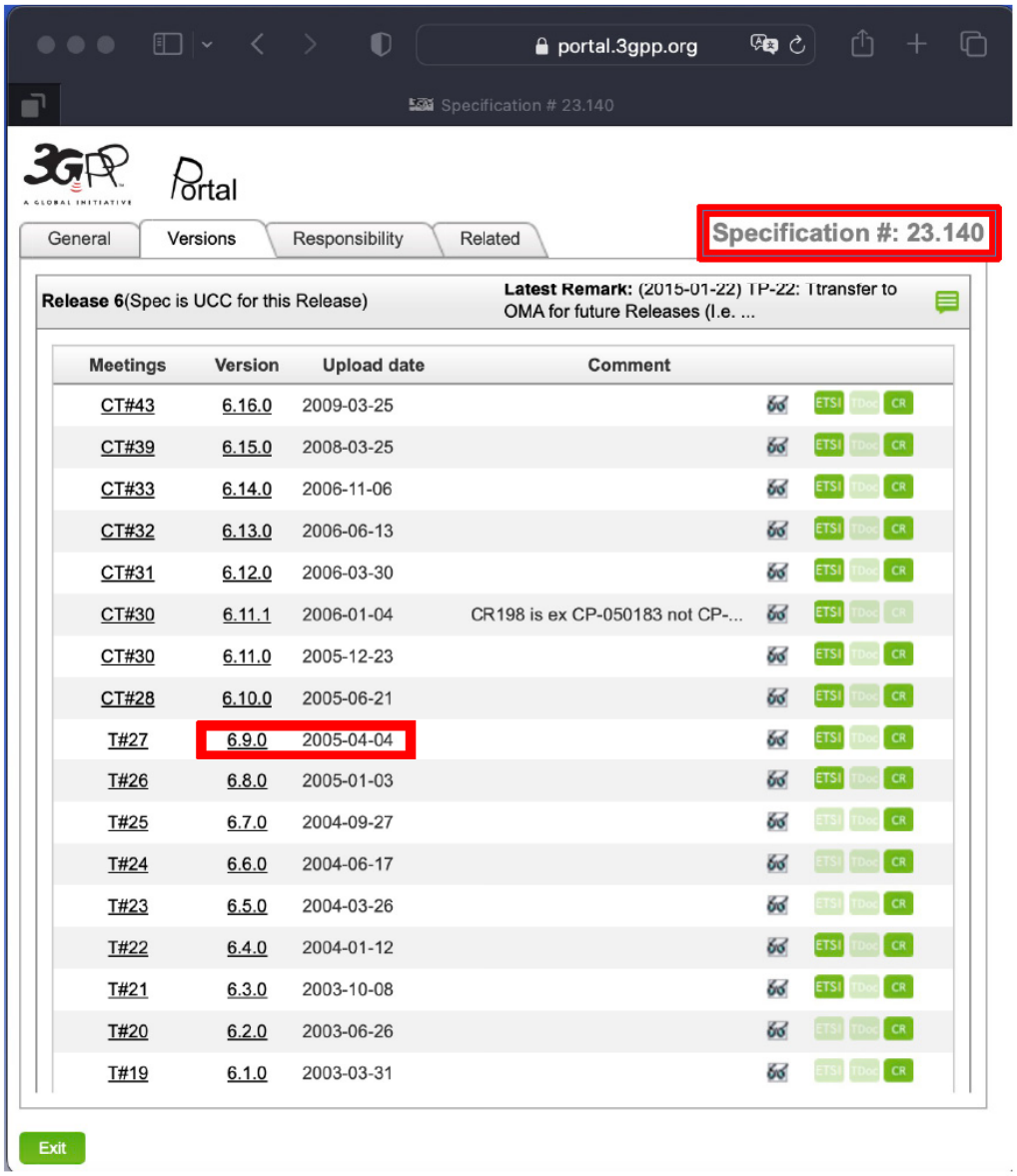
6 https://www.etsi.org/deliver/etsi_ts/123100_123199/123140/06.09.00_60/ts_123140v060900p.pdf

7 https://www.etsi.org/deliver/etsi_ts/123100_123199/123140/06.09.00_60/



51. Following the provided search result link "Specification # 23.140" leads to a 3GPP web page offering under the tab "Versions" download links to all versions of TS 23.140 including version 6.9.0, as shown by the screenshot below[8] :

[8] Full website available as Appendix F.

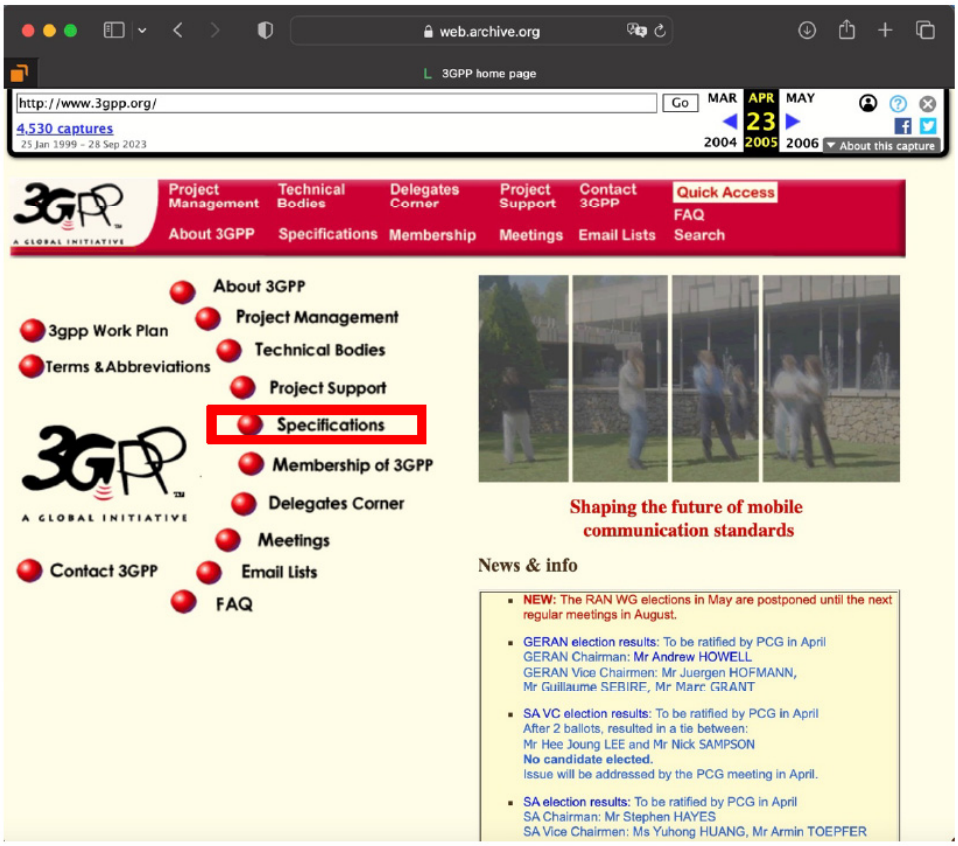


52. The above example search illustrates that it is very easy for an interested member of the public without prior knowledge of the TS number and even without prior knowledge of 3GPP to locate any version of TS 23.140, including version 6.9.0, for download.

53. The above search was performed at the time of writing this report. According to my personal experience, similar searches done in 2005 would have similarly provided a path to download version 6.9.0 of TS 23.140 although the layout of the webpages might have been slightly different.

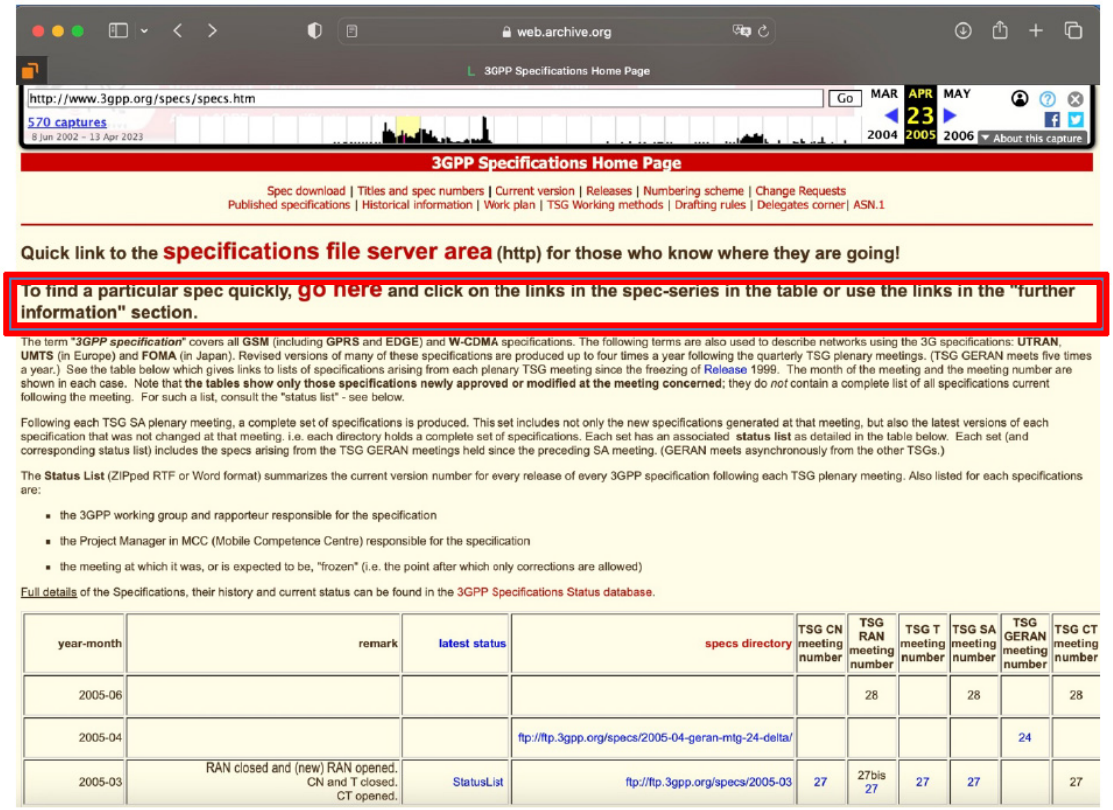
54. A similar search performed in 2005 could have looked like described in the following paragraphs. The 3GPP homepage from 2005 shown below included a link to "Specifications"[9]:

[9] Full website available as Appendix G.



55. Clicking on the "Specifications" link provided a specifications webpage with various paths for locating specific specifications, such as specification snapshots, e.g., "2005-03", a link to the "specifications file server area", or a link to the specifications series page ("To find a particular spec quickly, go here and click on the links in the spec-series in the table or use the links in the 'further information' section."), as shown below[10]:

[10] Full website available as Appendix H.



web.archive.org

3GPP Specifications Home Page

http://www.3gpp.org/specs/specs.htm

570 captures
8 Jun 2002 - 13 Apr 2023

MAR APR MAY
2004 23 2005 2006
About this capture

3GPP Specifications Home Page

Spec download | Titles and spec numbers | Current version | Releases | Numbering scheme | Change Requests
Published specifications | Historical information | Work plan | TSG Working methods | Drafting rules | Delegates corner | ASN.1

Quick link to the specifications file server area (http) for those who know where they are going!

To find a particular spec quickly, go here and click on the links in the spec-series in the table or use the links in the "further information" section.

The term "*3GPP specification*" covers all **GSM** (including **GPRS** and **EDGE**) and **W-CDMA** specifications. The following terms are also used to describe networks using the 3G specifications: **UTRAN**, **UMTS** (in Europe) and **FOMA** (in Japan). Revised versions of many of these specifications are produced up to four times a year following the quarterly TSG plenary meetings. (TSG GERAN meets five times a year.) See the table below which gives links to lists of specifications arising from each plenary TSG meeting since the freezing of Release 1999. The month of the meeting and the meeting number are shown in each case. Note that **the tables show only those specifications newly approved or modified at the meeting concerned**; they do *not* contain a complete list of all specifications current following the meeting. For such a list, consult the "status list" - see below.

Following each TSG SA plenary meeting, a complete set of specifications is produced. This set includes not only the new specifications generated at that meeting, but also the latest versions of each specification that was not changed at that meeting. i.e. each directory holds a complete set of specifications. Each set has an associated **status list** as detailed in the table below. Each set (and corresponding status list) includes the specs arising from the TSG GERAN meetings held since the preceding SA meeting. (GERAN meets asynchronously from the other TSGs.)

The **Status List** (ZIPped RTF or Word format) summarizes the current version number for every release of every 3GPP specification following each TSG plenary meeting. Also listed for each specifications are:

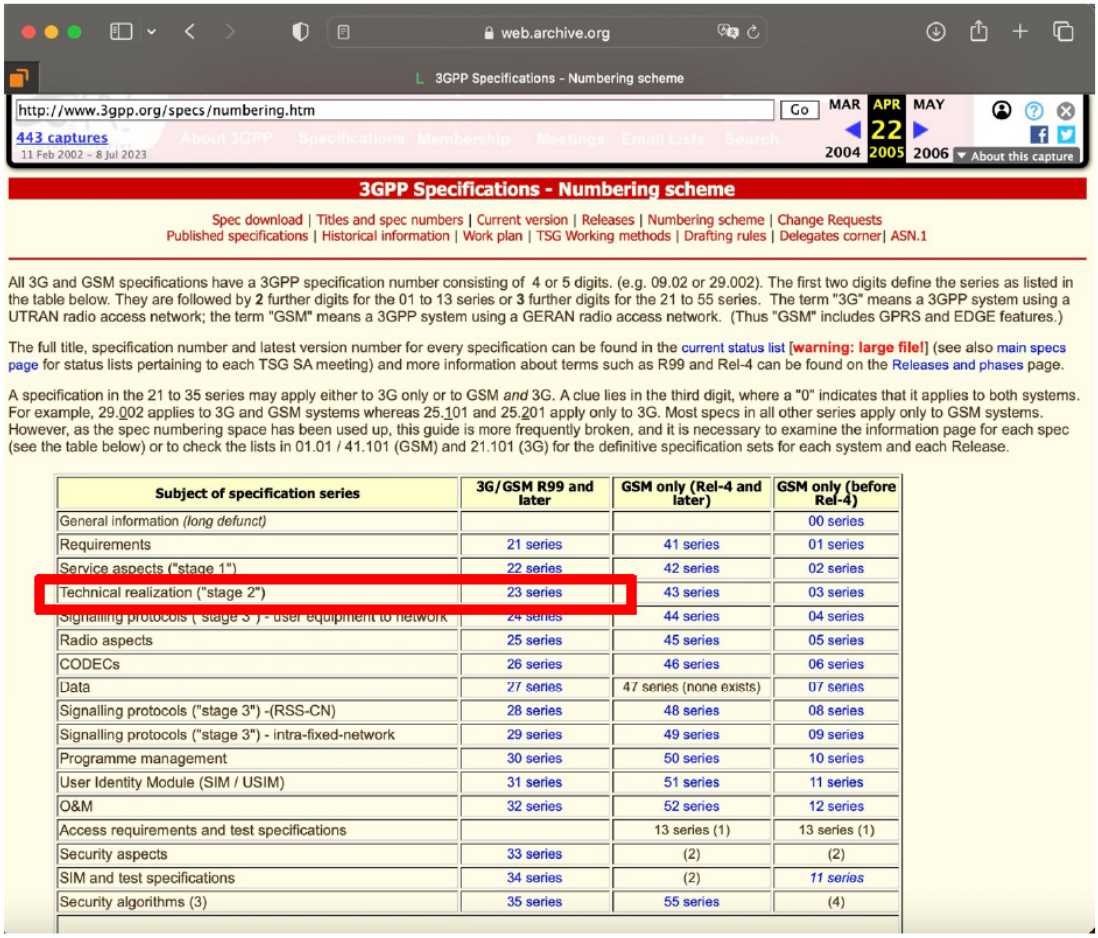
- the 3GPP working group and rapporteur responsible for the specification
- the Project Manager in MCC (Mobile Competence Centre) responsible for the specification
- the meeting at which it was, or is expected to be, "frozen" (i.e. the point after which only corrections are allowed)

Full details of the Specifications, their history and current status can be found in the 3GPP Specifications Status database.

year-month	remark	latest status	specs directory	TSG CN meeting number	TSG RAN meeting number	TSG T meeting number	TSG SA meeting number	TSG GERAN meeting number	TSG CT meeting number
2005-06					28		28		28
2005-04			ftp://ftp.3gpp.org/specs/2005-04-geran-mtg-24-delta/					24	
2005-03	RAN closed and (new) RAN opened. CN and T closed. CT opened.	StatusList	ftp://ftp.3gpp.org/specs/2005-03	27	27bis 27	27	27		27

56. The subjects of the individual specification series for the 3GPP UTMS and LTE standards were explained on 3GPP's website by clicking on the "To find a particular spec quickly, go here …" link on the specifications webpage identified above. This link directed to the 3GPP specification numbering webpage shown below[11]:

[11] Full website available as Appendix I.



web.archive.org

3GPP Specifications - Numbering scheme

http://www.3gpp.org/specs/numbering.htm

443 captures
11 Feb 2002 – 8 Jul 2023

MAR APR MAY
2004 22 2005 2006
About this capture

3GPP Specifications - Numbering scheme

Spec download | Titles and spec numbers | Current version | Releases | Numbering scheme | Change Requests
Published specifications | Historical information | Work plan | TSG Working methods | Drafting rules | Delegates corner| ASN.1

All 3G and GSM specifications have a 3GPP specification number consisting of 4 or 5 digits. (e.g. 09.02 or 29.002). The first two digits define the series as listed in the table below. They are followed by **2** further digits for the 01 to 13 series or **3** further digits for the 21 to 55 series. The term "3G" means a 3GPP system using a UTRAN radio access network; the term "GSM" means a 3GPP system using a GERAN radio access network. (Thus "GSM" includes GPRS and EDGE features.)

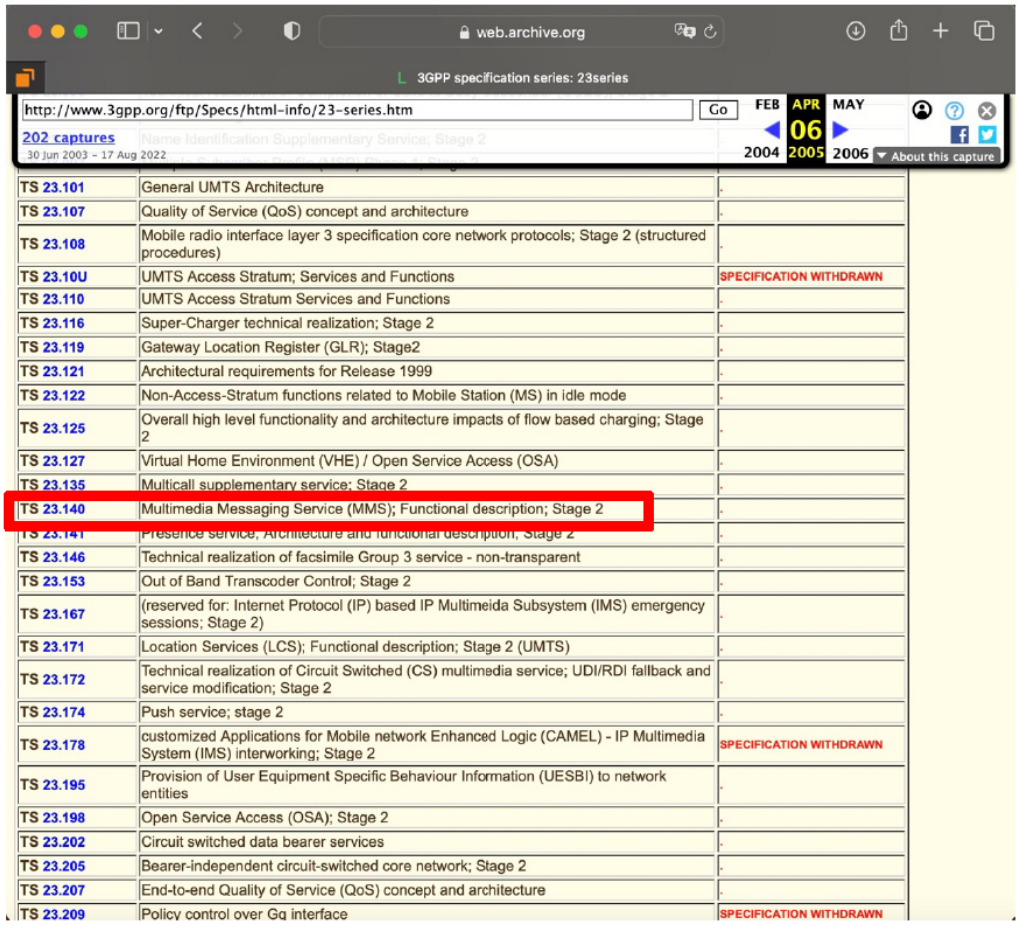
The full title, specification number and latest version number for every specification can be found in the current status list [**warning: large file!**] (see also main specs page for status lists pertaining to each TSG SA meeting) and more information about terms such as R99 and Rel-4 can be found on the Releases and phases page.

A specification in the 21 to 35 series may apply either to 3G only or to GSM *and* 3G. A clue lies in the third digit, where a "0" indicates that it applies to both systems. For example, 29.002 applies to 3G and GSM systems whereas 25.101 and 25.201 apply only to 3G. Most specs in all other series apply only to GSM systems. However, as the spec numbering space has been used up, this guide is more frequently broken, and it is necessary to examine the information page for each spec (see the table below) or to check the lists in 01.01 / 41.101 (GSM) and 21.101 (3G) for the definitive specification sets for each system and each Release.

Subject of specification series	3G/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)	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
User Identity Module (SIM / USIM)	31 series	51 series	11 series
O&M	32 series	52 series	12 series
Access requirements and test specifications		13 series (1)	13 series (1)
Security aspects	33 series	(2)	(2)
SIM and test specifications	34 series	(2)	*11 series*
Security algorithms (3)	35 series	55 series	(4)

57. Following the link for the 23 series would have led to a 3GPP webpage providing access to all specifications in a series and providing a subject matter index to the list of specifications, as shown by an excerpt of the webpage below[12]:

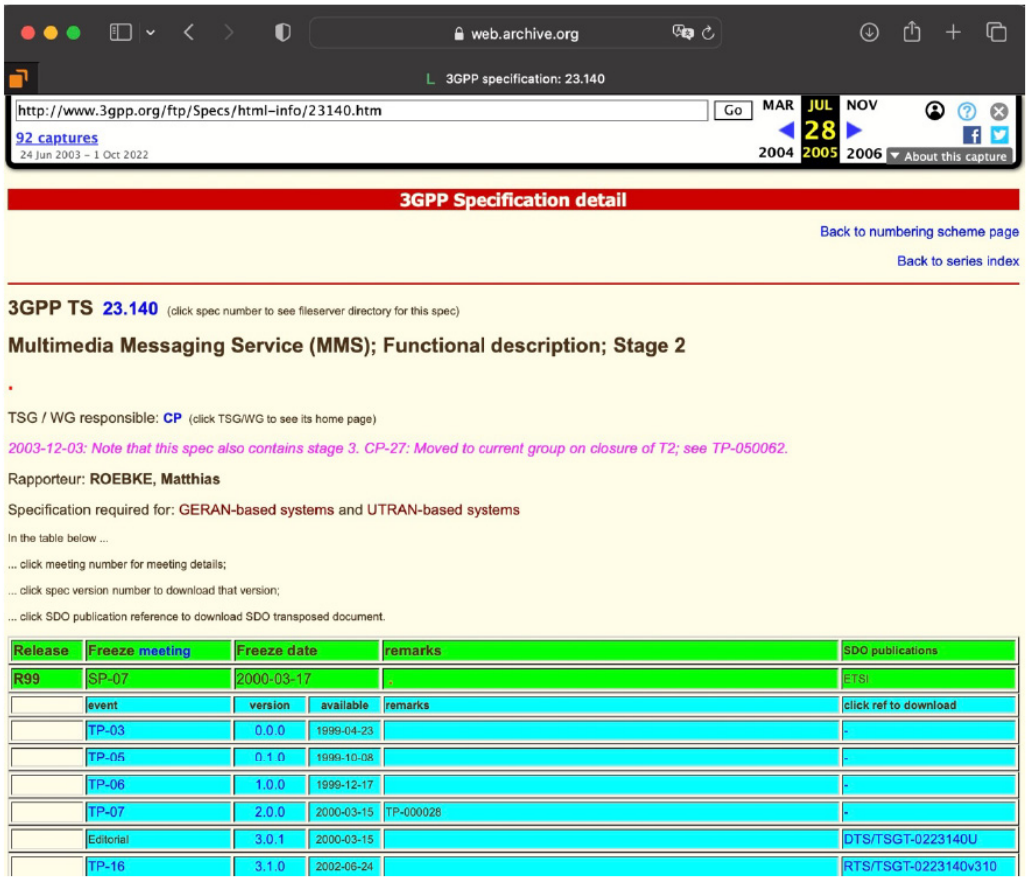
12 Full website available as Appendix J.



TS 23.101	General UMTS Architecture
TS 23.107	Quality of Service (QoS) concept and architecture
TS 23.108	Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)
TS 23.10U	UMTS Access Stratum; Services and Functions — SPECIFICATION WITHDRAWN
TS 23.110	UMTS Access Stratum Services and Functions
TS 23.116	Super-Charger technical realization; Stage 2
TS 23.119	Gateway Location Register (GLR); Stage2
TS 23.121	Architectural requirements for Release 1999
TS 23.122	Non-Access-Stratum functions related to Mobile Station (MS) in idle mode
TS 23.125	Overall high level functionality and architecture impacts of flow based charging; Stage 2
TS 23.127	Virtual Home Environment (VHE) / Open Service Access (OSA)
TS 23.135	Multicall supplementary service; Stage 2
TS 23.140	Multimedia Messaging Service (MMS); Functional description; Stage 2
TS 23.141	Presence service; Architecture and functional description; Stage 2
TS 23.146	Technical realization of facsimile Group 3 service - non-transparent
TS 23.153	Out of Band Transcoder Control; Stage 2
TS 23.167	(reserved for: Internet Protocol (IP) based IP Multimeida Subsystem (IMS) emergency sessions; Stage 2)
TS 23.171	Location Services (LCS); Functional description; Stage 2 (UMTS)
TS 23.172	Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification; Stage 2
TS 23.174	Push service; stage 2
TS 23.178	customized Applications for Mobile network Enhanced Logic (CAMEL) - IP Multimedia System (IMS) interworking; Stage 2 — SPECIFICATION WITHDRAWN
TS 23.195	Provision of User Equipment Specific Behaviour Information (UESBI) to network entities
TS 23.198	Open Service Access (OSA); Stage 2
TS 23.202	Circuit switched data bearer services
TS 23.205	Bearer-independent circuit-switched core network; Stage 2
TS 23.207	End-to-end Quality of Service (QoS) concept and architecture
TS 23.209	Policy control over Gq interface — SPECIFICATION WITHDRAWN

58. Following the link for TS 23.140 would have led to a 3GPP webpage providing access to all version of TS 23.140 including V6.9.0 for download, as shown by excerpts of the webpage below[13]:

[13] Full website available as Appendix K.



web.archive.org

3GPP specification: 23.140

http://www.3gpp.org/ftp/Specs/html-info/23140.htm Go MAR JUL NOV

92 captures 24 Jun 2003 – 1 Oct 2022

2004 28 2005 2006 About this capture

3GPP Specification detail

Back to numbering scheme page

Back to series index

3GPP TS 23.140 (click spec number to see fileserver directory for this spec)

Multimedia Messaging Service (MMS); Functional description; Stage 2

TSG / WG responsible: **CP** (click TSG/WG to see its home page)

2003-12-03: Note that this spec also contains stage 3. CP-27: Moved to current group on closure of T2; see TP-050062.

Rapporteur: **ROEBKE, Matthias**

Specification required for: GERAN-based systems and UTRAN-based systems

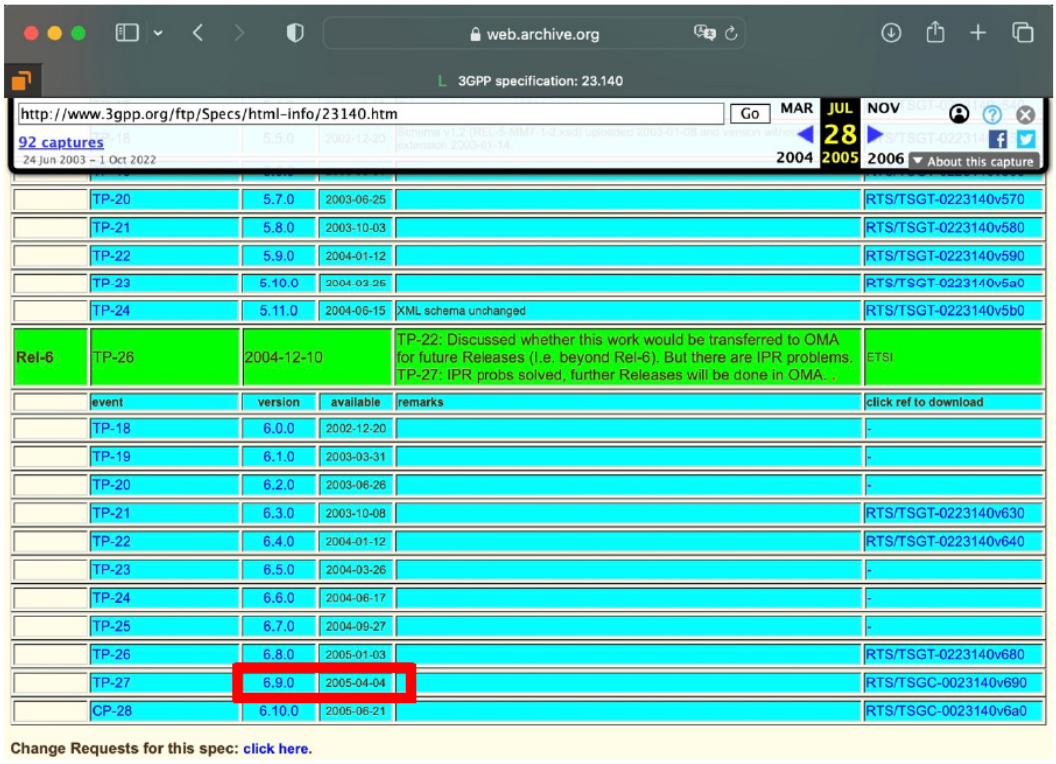
In the table below ...

... click meeting number for meeting details;

... click spec version number to download that version;

... click SDO publication reference to download SDO transposed document.

Release	Freeze meeting	Freeze date	remarks	SDO publications
R99	SP-07	2000-03-17	.	ETSI
	event	version	available	remarks	click ref to download
	TP-03	0.0.0	1999-04-23		-
	TP-05	0.1.0	1999-10-08		-
	TP-06	1.0.0	1999-12-17		-
	TP-07	2.0.0	2000-03-15	TP-000028	-
	Editorial	3.0.1	2000-03-15		DTS/TSGT-0223140U
	TP-16	3.1.0	2002-06-24		RTS/TSGT-0223140v310



	TP-20	5.7.0	2003-06-25		RTS/TSGT-0223140v570
	TP-21	5.8.0	2003-10-03		RTS/TSGT-0223140v580
	TP-22	5.9.0	2004-01-12		RTS/TSGT-0223140v590
	TP-23	5.10.0	2004-03-25		RTS/TSGT-0223140v5a0
	TP-24	5.11.0	2004-06-15	XML schema unchanged	RTS/TSGT-0223140v5b0
Rel-6	TP-26	2004-12-10		TP-22: Discussed whether this work would be transferred to OMA for future Releases (I.e. beyond Rel-6). But there are IPR problems. TP-27: IPR probs solved, further Releases will be done in OMA. .	ETSI
	event	version	available	remarks	click ref to download
	TP-18	6.0.0	2002-12-20		-
	TP-19	6.1.0	2003-03-31		-
	TP-20	6.2.0	2003-06-26		-
	TP-21	6.3.0	2003-10-08		RTS/TSGT-0223140v630
	TP-22	6.4.0	2004-01-12		RTS/TSGT-0223140v640
	TP-23	6.5.0	2004-03-26		-
	TP-24	6.6.0	2004-06-17		-
	TP-25	6.7.0	2004-09-27		-
	TP-26	6.8.0	2005-01-03		RTS/TSGT-0223140v680
	TP-27	6.9.0	2005-04-04		RTS/TSGC-0023140v690
	CP-28	6.10.0	2005-06-21		RTS/TSGC-0023140v6a0

Change Requests for this spec: click here.

59. In summary, there are - and there were in 2005 - several paths to locate and download a specific 3GPP specification. Thus, it is - and it has been already in 2005 - straightforward for any interested person including members of the public to access 3GPP specifications such as TS 23.140 V6.9.0.

c) Conclusion

60. Thus, based on my personal knowledge and experience with ETSI's and 3GPP's standard business practices, this information tells me that TS 23.140 V6.9.0 was uploaded and made available via the 3GPP FTP server to 3GPP delegates and interested members of the public who would have been able to locate the reference exercising reasonable diligence by April 4, 2005.

V. PUBLICATION OF OMA SPECIFICATIONS AND RELATED DOCUMENTS

A. General Practices

61. Unless otherwise noted, the foregoing and following is an accurate description of OMA general practices from 2002 to the present, including in 2004, regardless of whether I use the present or past tense to describe those practices.

62. OMA was established in June 2002 consolidating several industry forums working on application protocols and enablers applicable to the mobile phone industry. Thus, OMA was created as a merger of the following industry forums and Standard Development Organizations (SDOs): WAP Forum (focused on browsing and device provisioning protocols), the Wireless Village (focused on instant messaging and presence), the SyncML Initiative (focused on data synchronization), the Location Interoperability Forum, the Mobile Games Interoperability Forum, and the Mobile Wireless Internet Forum.

63. The OMA developed several application enablers such as OMA DRM (Digital Rights Management), OMA DM (Device Management), OMA PoC (Push to talk over cellular), SUPL (Secure User Plan Location Protocol), and many more. The OMA was also involved in the creation of the MMS (Multimedia Messaging Service) standard which was a joint effort between 3GPP and OMA.

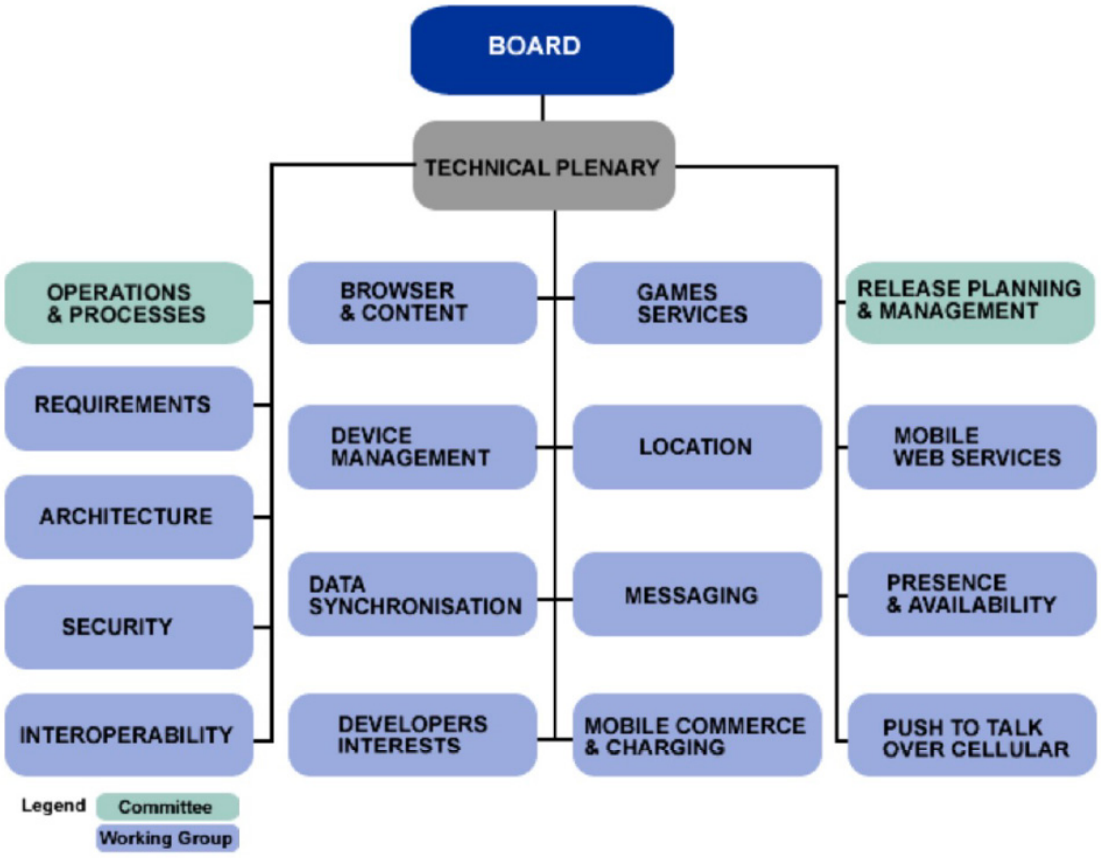
64. In March 2018, the OMA merged with the IPSO (Internet Protocol Smart Object) Alliance into OMASpecWorks. Today, the main focus area is to further the development of the LwM2M (Lightweight Machine to Machine) protocol and related LwM2M Objects.

65. OMASpecWorks members include companies from the wireless industry but also companies from other industries applying IoT (Internet of Things) related solutions developed by OMASpecWorks, in particular LwM2M.

66. I joined the OMA as a delegate for Vodafone in 2004 and have been active in the OMA ever since. My company IOTECC is a member of OMASpecWorks.

67. In the ordinary course of its regularly conducted business activities, and pursuant to its standard business practices, OMA publishes technical specifications, proposals, and other documents related to the development of application enabler standards for the mobile industry. Such documents are published for the purposes of discussion and establishment of application enabler standards. This has been OMA's ordinary course of business since I began attending OMA in 2004.

68. The names and the structure of OMA working groups, as of 2004, can be found at https://web.archive.org/web/20040804121754/http://www.openmobilealliance.org/about_OMA/orgchart.html (reproduced below and as Appendix L):



69. The "Messaging" working group was responsible for the development of the OMA MMS specifications.

70. In the ordinary course of OMA's regularly conducted business activities, and pursuant to its standard business practices, from 2002 onwards, OMA published all of its contributions and all final versions of its technical specifications on its website www.openmobilealliance.org. The OMA website also included a member area where certain non-public material was stored. However, final specifications have been made accessible to the public.

71. By June 2004, around 300 companies were members of OMA, ranging from Bosch to Ericsson to Nokia to Samsung and generally including those interested in the discussion, creation, and adoption of application enabler standards for cellular telecommunications, including MMS[14]. Each of these companies typically delegated one or multiple individuals to regularly participate in OMA meetings. Based on my experience with OMA and the telecommunications industry, I would expect any person implementing a cellular device, or infrastructure for cellular applications, such as MMS, to consult the corresponding specifications on the OMA website, as well as other related documents. The purpose of OMA creating and making these documents available was so that engineers and other individuals would have ready access to them when developing and implementing cellular networks, application servers and devices.

72. As early as 2004, OMA's website was well-known to persons in the cellular telecommunications industry as a source of public information regarding industry standards and technological advances.

73. OMA specifications bear the enabler name in the file name e.g. "MMS" which is usually followed by the version number e.g. "V1_2". Furthermore, the

[14] See https://web.archive.org/web/20040616060054/http://www.openmobilealliance.org/membership/currentmembers.html

filename includes the date when the document was approved by OMA e.g. "20040715".

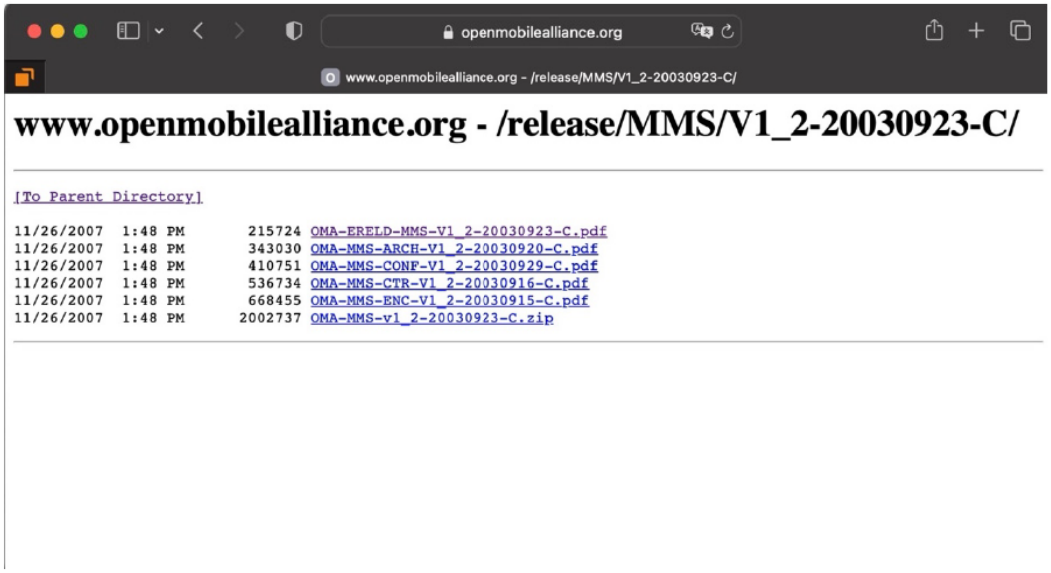
74. The timestamp on OMA's website shows the date when the document was uploaded the last time. Thus, the timestamp shows the latest possible date the document became publicly available and accessible on OMA's website. The given document might have been available earlier and the original timestamp might have been overwritten because the document was re-uploaded, or, because the document storage area of OMA's website was restructured. According to my experience, this is something which happened a few times. Thus, the timestamp is reliable as the latest possible upload date but one cannot determine whether it represents the first upload of a document to the website.

B. OMA-ERELD-MMS-V1_2-20030923-C

75. Based on my personal knowledge and my review of OMA's business records, I recognize SAMSUNG-1012 as a true and correct copy of an OMA document with the title "Enabler Release Definition for MMS Version 1.2 Candidate Version 23-September-2003." The document provides a basic overview of the MMS service and architecture, and lists all OMA specifications related to MMS.

76. On its face, "23-September-2003" indicates the date the document was released by OMA. This date is also aligned with the Change History on the last page of the document which has "23 Sep 2003" as the latest entry. According to my knowledge and experience, OMA specifications were made publicly available shortly after approval by OMA.

77. As of today, the document can be located under the following URL: https://www.openmobilealliance.org/release/MMS/V1_2-20030923-C/OMA-ERELD-MMS-V1_2-20030923-C.pdf. The website shows the upload date as 11/26/2007 as shown by the screenshot below[15]:



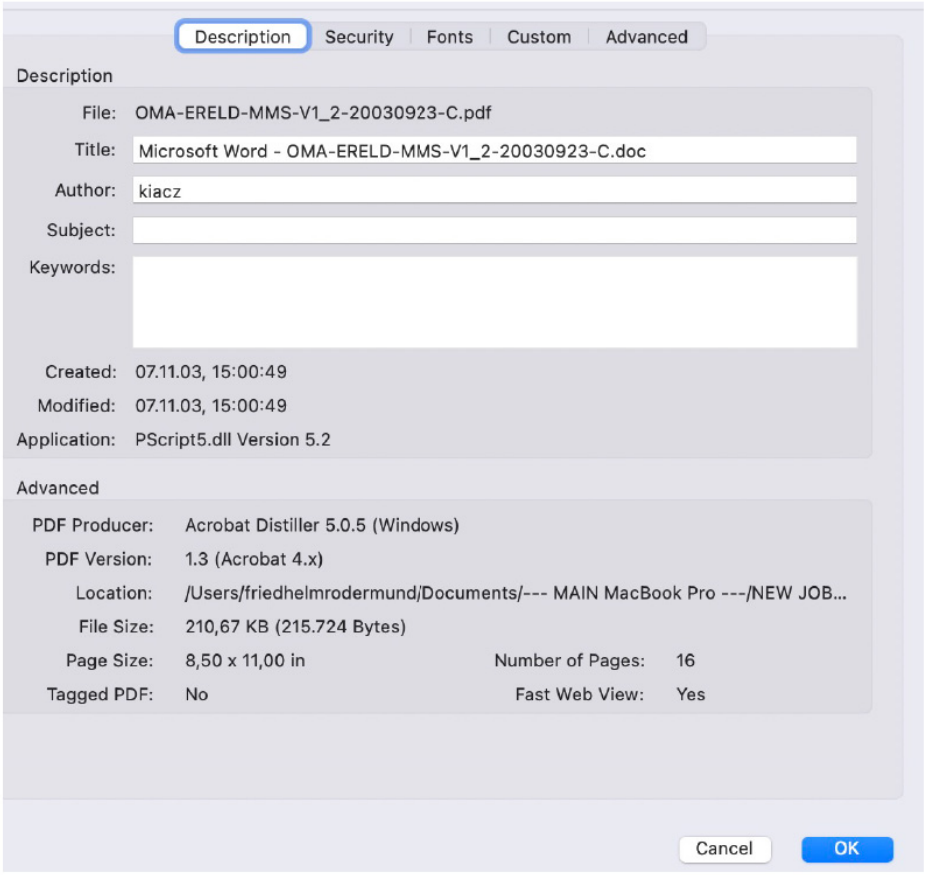
[15] Website available as Appendix M.

78. This later upload date does not reflect the earliest upload date. As explain in paragraph 74 the earliest upload date can be changed by overwriting the document, or, by restructuring of the document storage on the website. This is what happened to this document because publication more than 4 years after approval of the document would not make sense. According to my knowledge and experience, the document was published shortly after approval which happened September 23, 2003.

79. The earliest record of the internet archive showing the availability of the document for download is from June 12, 2004. This website is available as Appendix N and an excerpt is reprinted below:

Specifications		OMA-ERP-MLP-V3_1-20040518-C.pdf	
OMA Multimedia Messaging Service			Back to top
V1.2	Candidate	2003.09.23	OMA-MMS-v1_2-20030923-C.zip
ERELD		OMA-ERELD-MMS-V1_2-20030923-C.pdf	
Arch Doc		OMA-MMS-ARCH-V1_2-20030920-C.pdf	
Specifications		OMA-MMS-ENC-V1_2-20030915-C.pdf OMA-MMS-CTR-V1_2-20030916-C.pdf OMA-MMS-CONF-V1_2-20030929-C.pdf	
V1.1	Candidate	2002.11.04	OMA-MMS-V1_1-20021104-C.zip [549 KB]
ERELD		OMA-ERELD-MMS-V1_1-20021104-C.pdf	
Arch Doc		OMA-WAP-MMS-ARCH-V1_1-20021101-C.pdf	
Specifications		OMA-WAP-MMS-ENC-V1_1-20021030-C.pdf	
		OMA-WAP-MMS-CTR-V1_1-20021031-C.pdf	
		OMA-IOP-MMSCONF-V2_0_0-20020206-C.pdf	

80. In addition, metadata information for the downloaded and extracted T-doc file states a last modified date of "07.11.03," as shown in the screenshot below. Given the document was already approved on September 23, 2003, it is possible that subsequent editorial changes were made which led to the later last Modified date.



81. Thus, based on my personal knowledge and experience with OMA's standard business practices, this information tells me that this document was available to the general public via the OMA website shortly after its approval on September 23, 2003, and by June 12, 2004, at the latest, as shown by the Internet Archive record.

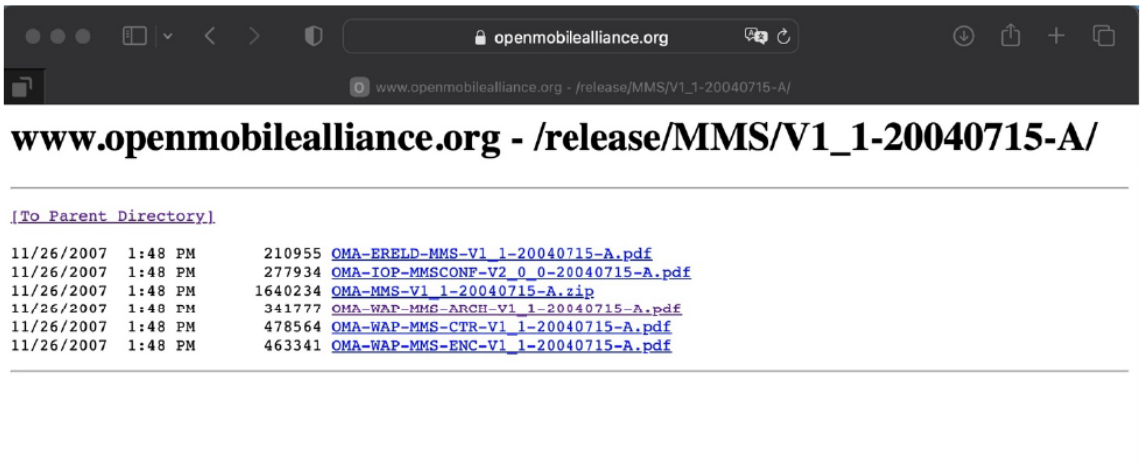
C. OMA-WAP-MMS-ARCH-V1_1-20040715-A

82. Based on my personal knowledge and my review of OMA's business records, I recognize SAMSUNG-1011 as a true and correct copy of an OMA

document with the title "Multimedia Messaging Service Architecture Overview Approved Version 1.1 – 15 Jul 2004." The document describes the MMS services and architecture, and various technical considerations.

83. On its face, "15 Jul 2004" indicates the date the document was released by OMA. This date is also aligned with the Change History on the last page of the document which has "15 Jul 2004" as the latest entry. According to my knowledge and experience, OMA specifications were made publicly available shortly after approval by OMA.

84. As of today, the document can be located under the following URL: https://www.openmobilealliance.org/release/MMS/V1_1-20040715-A/OMA-WAP-MMS-ARCH-V1_1-20040715-A.pdf. The website shows the upload date as 11/26/2007 as shown by the screenshot below[16]:



[16] Website available as Appendix O.

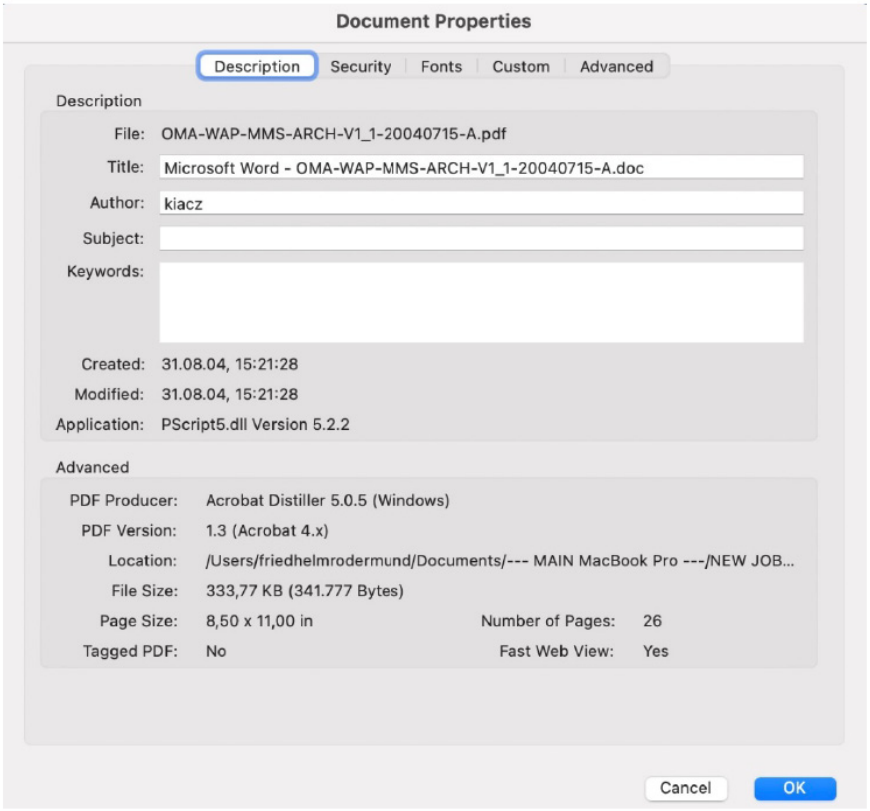
85. This later upload date does not reflect the earliest upload date. As explained in paragraph 74, the earliest upload date can be changed by overwriting the document, or, by restructuring of the document storage on the website. This is what happened to this document because publication more than 3 years after approval of the document does not make sense. According to my knowledge and experience, the document was published shortly after approval which happened July 14, 2004.

86. The earliest record of the internet archive showing the availability of the document for download is from September 29, 2004[17]. This website is available as Appendix P and an excerpt is reprinted below:

OMA Multimedia Messaging Service			
V1.1	Approved	2004.07.15	OMA-MMS-V1_1-20040715-A.zip [1.56 MB] New
ERELD			OMA-ERELD-MMS-V1_1-20040715-A.pdf
Arch Doc			OMA-WAP-MMS-ARCH-V1_1-20040715-A.pdf
Specifications			OMA-IOP-MMSCONF-V2_0_0-20040715-A.pdf
			OMA-IOP-MMSCONF-V2_0_0-20040715-A.pdf
			OMA-WAP-MMS-ENC-V1_1-20040715-A.pdf

87. In addition, metadata information for the downloaded and extracted T-doc file states a last modified date of "31.08.04," as shown in the screenshot below. Given the document was already approved on July 14, 2004, it is possible that subsequent editorial changes were made which led to the later last Modified date.

17 https://web.archive.org/web/20040929033628/http://www.openmobilealliance.org:80/release_program/enabler_releases.html



88. Thus, based on my personal knowledge and experience with OMA's standard business practices, this information tells me that this document was available to the general public via the OMA website shortly after its approval on July 14, 2004, and by September 29, 2004, at the latest, as shown by the Internet Archive record.

VI. AVAILABILITY FOR CROSS-EXAMINATION

89. 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

90. 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

91. 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.

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

Dated: *December 20, 2023*



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:	fred@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 patent litigations, and development/introduction of new services.

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 consulting and expert 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) technology and standards consulting
- Telecommunications and IoT patent consulting
  - Consulting services around telecommunications and IoT patents in particular related to 3GPP, ETSI and OMA standards
  - State of the art/prior art research services related to patent creation e.g. for new 5G patents
  - Prior art research, essentiality assessment, patent infringement analysis related to litigations and validity actions
  - Advising on IP strategy
  - Advising on Standards Development Organisations (SDO) working processes and IPR policy
  - 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

- IoT standards development and introduction of new IoT services

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

Senior Standards Strategist
- Representing Vodafone in various standardisation bodies
- Creating technical standards for 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 IoT/M2M projects related to e.g. automotive, smart metering, health, industry
- Advising on the introduction of new IoT/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 with responsiblity 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

2023

Headwater Research LLC v. Samsung Electronics Co., Ltd.
Inter Partes Review matters
On behalf of Samsung
Counsel: Fish&Richardson P.C.
Role: Expert witness and consulting services

2023

Pantech Corp. et al. v. LG Electronics Inc. et al.
Inter Partes Review matters
On behalf of LG Electronics
Counsel: Ropes & Gray LLP
Role: Expert witness and consulting services

2023

Apple Computer Trading (Shanghai) Co., Ltd, Apple Electronics Products Commerce (Beijing) Co., Ltd. v. Optis Cellular Technology LLC
Shenzhen, China, Intermediate People's Court
On behalf of Apple
Counsel: WilmerHale
Role: Expert witness and consulting services

2023

Huawei Technologies Co., Ltd. v. MediaTek Inc.
Inter Partes Review matters
On behalf of MediaTek
Counsel: Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.
Role: Expert witness and consulting service

2023

Apex Beam Technologies LLC v. Samsung
Inter Partes Review matters
On behalf of Samsung
Counsel: Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.
Role: Expert witness and consulting services

2022

Constellation Designs LLC v. LG Electronics, Inc.
Inter Partes Review matters
On behalf of LG Electronics
Counsel: Fish&Richardson P.C.
Role: Expert witness and consulting services

2022

Unified Patents, LLC v. Togail Technologies LTD.
Inter Partes Review matters
On behalf of Unified Patents
Counsel: Duane Morris LLP
Role: Expert witness and consulting services

2022

Ericsson v. Apple
Certain Mobile Telephones, Tablet Computers With Cellular Connectivity, And Smart Watches With Cellular Connectivity, Components Thereof, And Products Containing Same, Inv. No. 337-TA-1299 (U.S.I.T.C.)
On behalf of Apple
Counsel: WilmerHale
Role: Expert and consulting services

2022

Ericsson v. Apple
Civil Action No. 2:21-cv-376 (E.D. Tex.)
On behalf of Apple
Counsel: WilmerHale
Role: Expert and consulting services

2022

Intellectual Ventures II LLC v. Toyota Motor Cooperation.
Inter Partes Review matters
On behalf of Toyota
Counsel: Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.
Role: Expert witness and consulting services

2022

Ericsson v. Apple
2nd Business Court, Rio de Janeiro, Brazil
On behalf of Apple
Counsel: WilmerHale
Role: Expert and consulting services

2022

Ericsson v. Apple
Civil Court, Bogotá, Columbia
On behalf of Apple
Counsel: WilmerHale
Role: Expert and consulting services

2022

Proven Networks LLC. v. NetApp Inc.
Inter Partes Review matters
On behalf of NetApp
Counsel: Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., Ropes & Gray LLP
Role: Expert witness and consulting services

2022

Ericsson v. Apple
Inter Partes Review matters
On behalf of Apple
Counsel: Fish&Richardson, Erise IP
Role: Expert witness and consulting services

2021

AEGIS 11 LLC v. Hisense Company, Ltd. and Hisense USA Corporation
Inter Partes Review matters
On behalf of Hisense
Counsel: Orrik Herrington & Sutcliffe LLP
Role: Expert witness and consulting services

2021

Nokia v. Lenovo
Certain Electronic Devices, Including Computers, Tablet Computers, and Components and Modules Thereof, Inv. No. 337-TA-1208 (U.S.I.T.C.)
On behalf of Lenovo
Counsel: WilmerHale
Role: Expert witness and consulting services

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

2021

Ericsson v. Samsung
Inter Partes Review matters
On behalf of Samsung
Counsel: Kirkland&Ellis LLP, Fish&Richardson
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 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 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 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 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 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 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 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 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

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 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 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 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 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

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 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 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

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

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

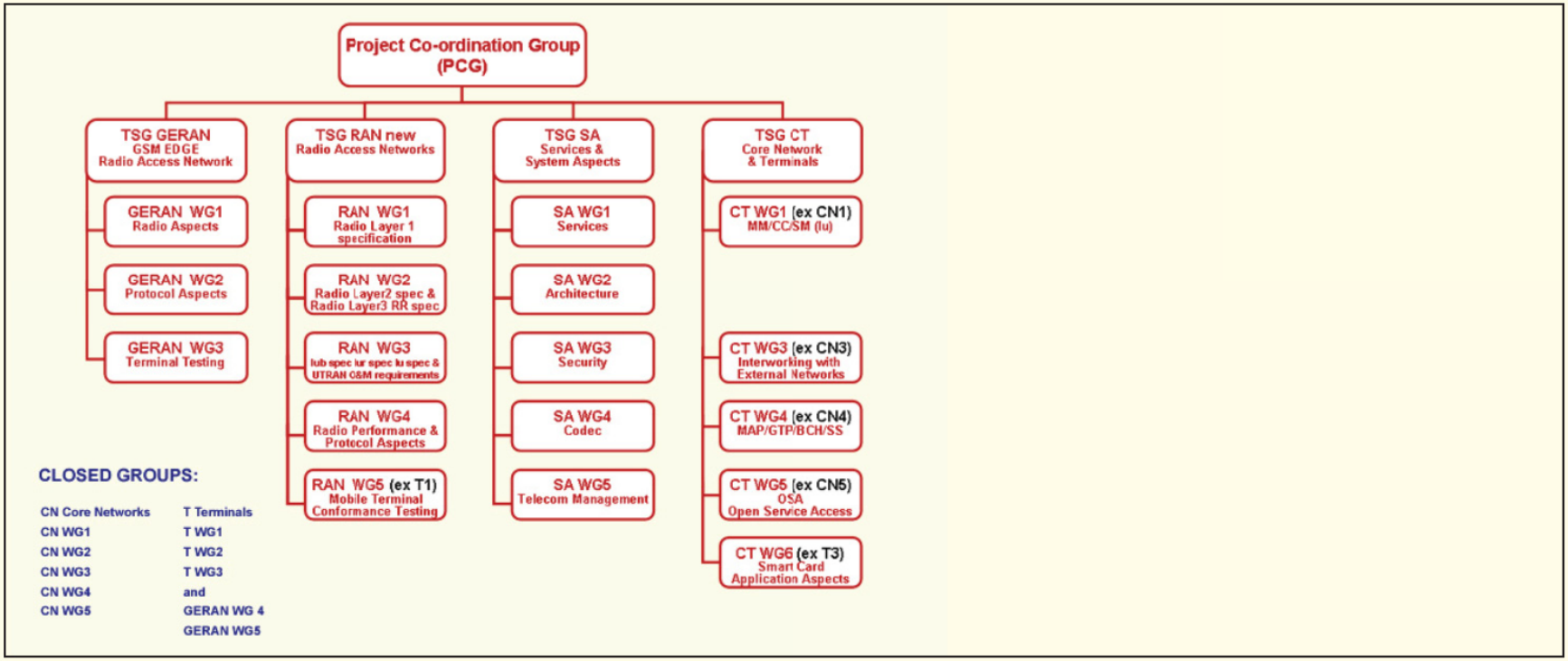
VI. RECENT PUBLICATIONS

- "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

INTERNET ARCHIVE
Wayback Machine
http://www.3gpp.org/tb/home.htm
Go
247 captures
14 Dec 2001 - 6 Oct 2022
JUN AUG OCT
2004 05 2005 2006
About this capture

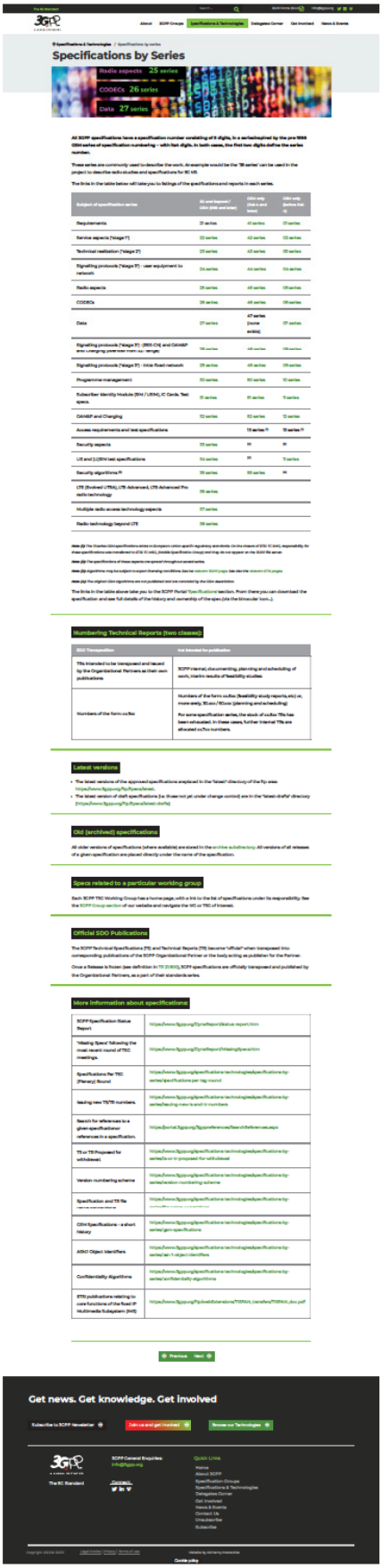
TSG ORGANIZATION



MCC Task Forces

last updated:
2005-06-22: new org chart removing closed working groups from main body of chart
2005-03-14: Complete update
2005-01-31: New TSG structure.

APPENDIX C



Specifications by Series

Radio aspects 25 series

CODECs 26 series

Data 27 series

All 3GPP specifications have a specification number consisting of 5 digits, in a series inspired by the pre-1998 GSM series of specification numbering – with last digits. In both cases, the first two digits define the series number.

These series are commonly used to describe the work. An example would be the "38 series" can be used in the project to describe radio studies and specifications for 5G NR.

The links in the table below will take you to listings of the specifications and reports in each series.

Subject of specification series	All and beyond / GSM (R99 and later)	GSM only (Rel-4 and later)	GSM only (before Rel-4)
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 (core network not radio) - terrgen	28 series	48 series	08 series
Signalling protocols (Stage 3) - inter-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	33	33
UE and (U)SIM test specifications	34 series	34	11 series
Security algorithms [2]	35 series	55 series	44
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		

Note [1]: For Inactive GSM specifications relate to European Union specific regulatory standards. On the means of ETSI TC SAGE, responsibility for these specifications was transferred to ETSI TC MSG, Mobile Specifications Group) and may do not appear on the 3GPP file server.

Note [2]: The specifications of these aspects are spread throughout several series.

Note [3]: algorithms may be subject to export licensing conditions. See the relevant 3GPP pages. See also the relevant ETSI pages.

Note [4]: the original GSM algorithms are not published and are controlled by the GSM Association.

The links in the table above take you to the 3GPP Portal "Specifications" section. From there you can download the specification and see full details of the history and ownership of the spec (cite the binocular icon...).

Numbering Technical Reports (two classes)

SDO Transposition	not intended for publication
TRs intended to be transposed and issued by the Organizational Partners as their own publications	3GPP internal, documenting, planning and scheduling of work, interim results of feasibility studies
Numbers of the form xx.9xx	Numbers of the form xx.8xx (feasibility study reports, etc) or, more rarely, 7Cxxx / 8Cxxx (planning and scheduling) For some specification series, the stock of xx.8xx TRs has been exhausted. In these cases, further Internal TRs are allocated xx.7xx numbers.

Latest versions

- The latest versions of the approved specifications employed in the "latest" directory of the ftp area: https://www.3gpp.org/ftp/specs/latest.
- The latest version of draft specifications (i.e. those not yet under change control) are in the "latest-drafts" directory: https://www.3gpp.org/ftp/Specs/latest-drafts

Old (archived) specifications

All older versions of specifications (where available) are stored in the archive subdirectory. All versions of all releases of a given specification are placed directly under the name of the specification.

Specs related to a particular working group

Each 3GPP TSC Working Group has a home page, with a link to the list of specifications under its responsibility. See the 3GPP Groups section of our website and navigate the WG or TSC of interest.

Official SDO Publications

The 3GPP Technical Specifications (TS) and Technical Reports (TR) become "official" when transposed into corresponding publications of the 3GPP Organizational Partner or the body acting as publisher for the Partner.

Once a Release is frozen (see definition in TR 21905), 3GPP specifications are officially transposed and published by the Organizational Partners, as a part of their standards series.

More information about specifications

3GPP Specification Status Report	https://www.3gpp.org/DynaReport/status-report.htm
"Missing Specs" following the most recent round of TSC meetings.	https://www.3gpp.org/DynaReport/missing-specs.htm
Specifications Per TSC (Plenary) Round	https://www.3gpp.org/specifications-technologies/specifications-by-series/specifications-per-tsg-round
Issuing new TS/TR numbers.	https://www.3gpp.org/specifications-technologies/specifications-by-series/issuing-new-ts-and-tr-numbers
Search for references to a given specification: references in a specification.	https://portal.3gpp.org/ngppapps/searchtheReferences.aspx
TS or TR Proposed for withdrawal.	https://www.3gpp.org/specifications-technologies/specifications-by-series/ts-or-tr-proposed-for-withdrawal
Version numbering scheme	https://www.3gpp.org/specifications-technologies/specifications-by-series/version-numbering-scheme
Specification and TR file [illegible]	https://www.3gpp.org/specifications-technologies/specifications-by-[illegible]
GSM Specifications – a short history	https://www.3gpp.org/specifications-technologies/specifications-by-series/gsm-specifications
ASN1 Object Identifiers	https://www.3gpp.org/specifications-technologies/specifications-by-series/asn-1-object-identifiers
Confidentiality Algorithms	https://www.3gpp.org/specifications-technologies/specifications-by-series/confidentiality-algorithms
ETSI publications relating to core functions of the fixed IP Multimedia Subsystem (IMS)	https://www.3gpp.org/ftp/Inet/Extensions/TISPAN_transfer/TISPAN_doc.pdf

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The 5G Standard

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APPENDIX D

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Search form (Series(1), Releases(26)) Items per page 50

Title/Specification number

Series: 23. Technical realization

Type: Technical Specification (TS); Technical Report (TR)

Release: All Releases

Publication: Internal; For Publication

Technology: 2G 3G LTE 5G

Status: Draft; Under change control; Withdrawn before change control; Withdrawn under change control

Search

Data pager

1 2 3 4 5 6 7 8 9 10 476 specifications found, displaying 1 to 50

Specification Number	Type	Title	Status	Primary Responsible Group	
23.002	TS	Network architecture	Under change control	S2	2g 3g lte CR
23.003	TS	Numbering, addressing and identification	Under change control	C4	2g 3g lte 5g CR
23.007	TS	Restoration procedures	Under change control	C4	2g 3g lte CR
23.008	TS	Organization of subscriber data	Under change control	C4	2g 3g lte 5g CR
23.009	TS	Handover procedures	Under change control	C4	2g 3g CR
23.010	TS	GSM Public Land Mobile Network (PLMN) Connection Types	Withdrawn under change control	-	3g CR
23.011	TS	Technical realization of Supplementary Services	Under change control	C4	2g 3g CR
23.012	TS	Location management procedures	Under change control	C4	2g 3g lte CR
23.014	TS	Support of Dual Tone Multi-Frequency (DTMF) signalling	Under change control	C1	2g 3g CR

62

23.015	TS	Technical realization of Operator Determined Barring (ODB)	Under change control	C4	2g 3g lte 5g CR
23.016	TS	Subscriber data management; Stage 2	Under change control	C4	2g 3g CR
23.018	TS	Basic call handling; Technical realization	Under change control	C4	2g 3g lte 5g CR
23.01U	TS	General UMTS architecture	Withdrawn under change control	SMG12	CR
23.022	TS	Functions related to Mobile Station (MS) in idle mode and group receive mode	Withdrawn under change control	-	2g 3g CR
23.031	TS	3G Security; Fraud Information Gathering System (FIGS); Technical realization; Stage 2	Under change control	S3	2g 3g CR
23.032	TS	Universal Geographical Area Description (GAD)	Under change control	S2	2g 3g CR
23.034	TS	High Speed Circuit Switched Data (HSCSD); Stage 2	Under change control	C1	2g 3g CR
23.035	TS	Immediate Service Termination (IST); Stage 2	Under change control	S3	2g 3g CR
23.038	TS	Alphabets and language-specific information	Under change control	C1	2g 3g lte 5g CR
23.039	TR	Interface Protocols for the connection of Short Message Service Centers (SMSCs) to Short Message Entities (SMEs)	Under change control	C1	2g 3g CR
23.040	TS	Technical realization of the Short Message Service (SMS)	Under change control	C1	2g 3g lte 5g CR
23.041	TS	Technical realization of Cell Broadcast Service (CBS)	Under change control	C1	2g 3g lte 5g CR
23.042	TS	Compression algorithm for text messaging services	Under change control	C1	2g 3g lte 5g CR
23.043	TS	Support of Videotex	Withdrawn under change control	-	3g CR
23.044	TS	Support of Teletex	Withdrawn under change control	-	3g CR
23.045	TS	Technical Realization of Facsimile Group 3 Service - transparent	Withdrawn under change control	N3	3g CR
23.046	TS	Technical realisation of facsimile Group 3 service - non-transparent	Withdrawn under change control	-	3g CR
23.048	TS	Security mechanisms for the (U)SIM application toolkit: Stage 2	Under change	C6	2g 3g CR

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Search form (Series(1), Releases(26)) **Items per page 50**

Title/Specification number		Release	All Releases	Status	☐ Draft ☐ Under change control ☐ Withdrawn before change control ☐ Withdrawn under change control
Series	23. Technical realization	Publication	☐ Internal ☐ For Publication		
Type	☐ Technical Specification (TS) ☐ Technical Report (TR)	Technology	☐ 2G ☐ 3G ☐ LTE ☐ 5G		

Search

Data pager

1 **2** 3 4 5 6 7 8 9 10 476 specifications found, displaying 51 to 100

Specification Number	Type	Title	Status	Primary Responsible Group	
23.090	TS	Unstructured Supplementary Service Data (USSD); Stage 2	Under change control	C4	2g 3g CR
23.091	TS	Explicit Call Transfer (ECT) supplementary service; Stage 2	Under change control	C4	2g 3g CR
23.093	TS	Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2	Under change control	C4	2g 3g CR
23.094	TS	Follow-Me (FM); Stage 2	Under change control	C4	2g 3g CR
23.096	TS	Name identification supplementary services; Stage 2	Under change control	C4	2g 3g CR
23.097	TS	Multiple Subscriber Profile (MSP) (Phase 2); Stage 2	Under change control	C4	2g 3g CR
23.101	TS	General Universal Mobile Telecommunications System (UMTS) architecture	Under change control	S2	3g CR
23.107	TS	Quality of Service (QoS) concept and architecture	Under change control	S2	2g 3g CR
23.108	TS	Mobile radio interface layer 3 specification, core network protocols; Stage 2	Under change control	C1	2g 3g CR

23.10U	TS	UMTS Access Stratum; Services and Functions	Withdrawn under change control	-	CR
23.110	TS	Universal Mobile Telecommunications System (UMTS) access stratum; Services and functions	Under change control	S2	2g 3g CR
23.116	TS	Super-Charger technical realization; Stage 2	Under change control	C4	2g 3g CR
23.119	TS	Gateway Location Register (GLR); Stage 2	Under change control	C4	3g CR
23.121	TS	Architectural requirements for Release 1999	Under change control	S2	2g 3g CR
23.122	TS	Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode	Under change control	C1	2g 3g 5g CR
23.125	TS	Overall high level functionality and architecture impacts of flow based charging; Stage 2	Under change control	S2	3g CR
23.127	TS	Virtual Home Environment (VHE) / Open Service Access (OSA)	Under change control	S2	2g 3g CR
23.135	TS	Multicall supplementary service; Stage 2	Under change control	C4	3g CR
23.139	TS	3GPP system - fixed broadband access network interworking; Stage 2	Under change control	S2	2g 3g CR
23.140	TS	Multimedia Messaging Service (MMS); Functional description; Stage 2	Under change control	CP	2g 3g CR
23.141	TS	Presence service; Architecture and functional description	Under change control	S2	IMS 3g CR
23.142	TS	Value-added Services for SMS (VAS4SMS); Interface and signalling flow	Under change control	C4	2g 3g 5g CR
23.146	TS	Technical realization of facsimile Group 3 non-transparent	Under change control	C3	3g CR
23.153	TS	Out of band transcoder control; Stage 2	Under change control	C4	2g 3g CR
23.161	TS	Network-Based IP Flow Mobility (NBIFOM); Stage 2	Under change control	S2	3g CR
23.167	TS	IP Multimedia Subsystem (IMS) emergency sessions	Under change control	S2	IMS 3g CR
23.168	TS	reerved for: Earthquake and Tsunami Warning System Specification (ETWS)	Withdrawn before change control	S2	2g 3g
23.171	TS	Location Services (LCS); Functional description; Stage 2 (UMTS)	Under change	S2	3g CR

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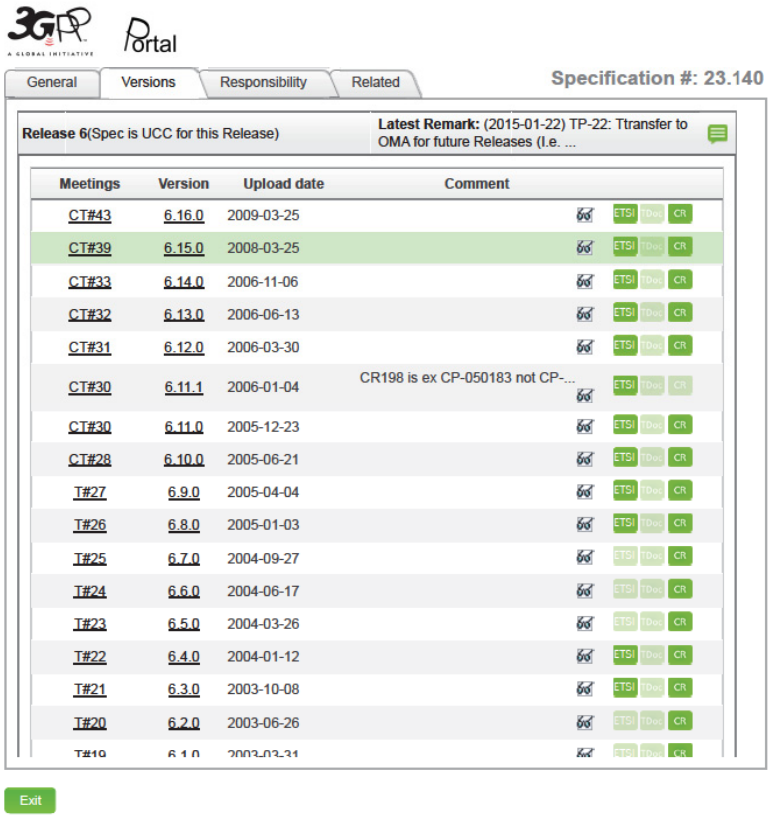
APPENDIX E

www.3gpp.org / ftp / Specs / archive / 23_series / 23.140

sort by name/desc	sort by date/desc	sort by size/desc
schema	2005/01/03 19:14	
23140-010.zip	1999/10/10 9:36	192,7 KB
23140-100.zip	1999/12/12 19:38	292,3 KB
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23140-400.zip	2000/10/06 9:18	581,3 KB
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23140-6g0.zip	2009/03/25 15:10	679 KB

47 items.

APPENDIX F


3GPP
A GLOBAL INITIATIVE
Portal
General
Versions
Responsibility
Related
Specification #: 23.140
Release 6(Spec is UCC for this Release)
Latest Remark: (2015-01-22) TP-22: Ttransfer to OMA for future Releases (I.e. ...
Meetings
Version
Upload date
Comment
CT#43 6.16.0 2009-03-25
CT#39 6.15.0 2008-03-25
CT#33 6.14.0 2006-11-06
CT#32 6.13.0 2006-06-13
CT#31 6.12.0 2006-03-30
CT#30 6.11.1 2006-01-04 CR198 is ex CP-050183 not CP-...
CT#30 6.11.0 2005-12-23
CT#28 6.10.0 2005-06-21
T#27 6.9.0 2005-04-04
T#26 6.8.0 2005-01-03
T#25 6.7.0 2004-09-27
T#24 6.6.0 2004-06-17
T#23 6.5.0 2004-03-26
T#22 6.4.0 2004-01-12
T#21 6.3.0 2003-10-08
T#20 6.2.0 2003-06-26
Exit

APPENDIX G

http://www.3gpp.org/ Go MAR APR MAY
4,530 captures
25 Jan 1999 – 28 Sep 2023
2004 23 2005 2006
About this capture

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Technical Bodies
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Meetings
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Shaping the future of mobile communication standards

News & info

- **NEW:** The RAN WG elections in May are postponed until the next regular meetings in August.
- GERAN election results: To be ratified by PCG in April
  GERAN Chairman: Mr Andrew HOWELL
  GERAN Vice Chairmen: Mr Juergen HOFMANN, Mr Guillaume SEBIRE, Mr Marc GRANT
- SA VC election results: To be ratified by PCG in April
  After 2 ballots, resulted in a tie between:
  Mr Hee Joung LEE and Mr Nick SAMPSON
  No candidate elected.
  Issue will be addressed by the PCG meeting in April.
- SA election results: To be ratified by PCG in April
  SA Chairman: Mr Stephen HAYES
  SA Vice Chairmen: Ms Yuhong HUANG, Mr Armin TOEPFER
- CT election results: To be ratified by PCG in April
  CT Chairman: Mr Hannu HIETALAHTI
  CT Vice Chairmen: Mr Akishige NODA, Mr Gary JONES, Mr Steve MECROW
- RAN election results: To be ratified by PCG in April
  RAN Chairman: Mr Francois COURAU
  RAN Vice Chairmen: Mr Don ZELMER, Mr Hyeon Woo LEE, Mr Takehiro NAKAMURA
- Mobile industry applauds latest 3G specifications
- What is UMTS? (overview of the content of Releases 99 to 5)
- 3GPP IETF Dependencies and Priorities
- Liaison statements

Click here for access to the 3GPP ftp site

Last update: 2005-04-22

Legal notice

APPENDIX H



3GPP Specifications Home Page

Quick link to the specifications file server area (http) for those who know where they are going!

To find a particular spec quickly, go here and click on the links in the spec-series in the table or use the links in the "further information" section.

year-month	remark	Meet status	spec directory	TSG CN meeting number	TSG RAN meeting number	TSG T meeting number	TSG SA meeting number	TSG GERAN meeting number	TSG CT meeting number
2005-06					26		26		26
2005-04			ftp://ftp.3gpp.org/specs/2005-04 (prel-rel)/						24
2005-03	RAN closed and (new) RAN1 opened, CN and T closed, CT opened	MeetList	ftp://ftp.3gpp.org/specs/2005-03	27	27bis 27	27	27		27
2005-01			ftp://ftp.3gpp.org/specs/2005-01 (prel-rel)/						23
2004-12		MeetList	ftp://ftp.3gpp.org/specs/2004-12	26	26	26	26		
2004-11			ftp://ftp.3gpp.org/specs/2004-11 (prel-rel)/						22
2004-09		MeetList	ftp://ftp.3gpp.org/specs/2004-09/	25	25	25	25		
2004-08			ftp://ftp.3gpp.org/specs/2004-08 (prel-rel)/						21
2004-06			ftp://ftp.3gpp.org/specs/2004-06 (prel-rel)/						20
2004-06		MeetList	ftp://ftp.3gpp.org/specs/2004-06/	24	24	24	24		
2004-04			ftp://ftp.3gpp.org/specs/2004-04 (prel-rel)/						19
2004-03		MeetList	ftp://ftp.3gpp.org/specs/2004-03/	23	23	23	23		
2004-02			ftp://ftp.3gpp.org/specs/2004-02 (prel-rel)/						18
2003-12		MeetList	ftp://ftp.3gpp.org/specs/2003-12/	22	22	22	22		
2003-11			ftp://ftp.3gpp.org/specs/2003-11 (prel-rel)/						17
2003-09		MeetList	ftp://ftp.3gpp.org/specs/2003-09/	21	21	21	21		
2003-09			ftp://ftp.3gpp.org/specs/2003-09 (prel-rel)/						16
2003-06			ftp://ftp.3gpp.org/specs/2003-06 (prel-rel)/						15
2003-06		MeetList	ftp://ftp.3gpp.org/specs/2003-06/	20	20	20	20		
2003-04			ftp://ftp.3gpp.org/specs/2003-04 (prel-rel)/						14
2003-03		MeetList	ftp://ftp.3gpp.org/specs/2003-03/	19	19	19	19		
2003-02			ftp://ftp.3gpp.org/specs/2003-02 (prel-rel)/						13
2002-12		MeetList	ftp://ftp.3gpp.org/specs/2002-12/	18	18	18	18	12	
2003-01		MeetList	ftp://ftp.3gpp.org/specs/2002-09/	17	17	17	17	11	
2002-09	Rel-5 GERAN features content functionally frozen		ftp://ftp.3gpp.org/specs/2002-09 (prel-rel)/						10
2002-06	Rel-5 features content functionally frozen (remainder, non-GERAN)	MeetList	ftp://ftp.3gpp.org/specs/2002-06/	16	16	16	16		
2002-04			ftp://ftp.3gpp.org/specs/2002-04 (prel-rel)/						9
2002-03	Rel-5 features content functionally frozen (part)	MeetList	ftp://ftp.3gpp.org/specs/2002-03/	15	15	15	15		
2002-02								6	
2001-12		MeetList	ftp://ftp.3gpp.org/specs/2001-12/	14	14	14	14		
2001-11								7	
2001-09		MeetList	ftp://ftp.3gpp.org/specs/2001-09/	13	13	13	13		
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2001-06		MeetList	ftp://ftp.3gpp.org/specs/2001-06/	12	12	12	12	5	
2001-06	Rel-4 GERAN features content functionally frozen							4	
2001-03	Rel-4 non-GERAN features content functionally frozen	MeetList	ftp://ftp.3gpp.org/specs/2001-03/	11	11	11	11		
2001-01								3	
2000-12 2000-11				10	10	10	10	2	
2000-11									
2000-09		MeetList	ftp://ftp.3gpp.org/specs/2000-09/	9	9	9	9	1	
2000-06		MeetList	ftp://ftp.3gpp.org/specs/2000-06/	8	8	8	8		
2000-03				7	7	7	7		
1999-12	R99 features content functionally frozen			6	6	6	6		
1999-10				5	5	5	5		
1999-06					4	4	4		
1999-05				4					
1999-04				3	3	3	3		
1999-03				2	2	2	2		
1999-12				1	1	1	1		

APPENDIX I

http://www.3gpp.org/specs/numbering.htm
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443 captures
11 Feb 2002 – 8 Jul 2023
2004 22 2005 2006
About this capture

3GPP Specifications - Numbering scheme

Spec download | Titles and spec numbers | Current version | Releases | Numbering scheme | Change Requests
Published specifications | Historical information | Work plan | TSG Working methods | Drafting rules | Delegates corner | ASN.1

All 3G and GSM specifications have a 3GPP specification number consisting of 4 or 5 digits. (e.g. 09.02 or 29.002). The first two digits define the series as listed in the table below. They are followed by **2** further digits for the 01 to 13 series or **3** further digits for the 21 to 55 series. The term "3G" means a 3GPP system using a UTRAN radio access network; the term "GSM" means a 3GPP system using a GERAN radio access network. (Thus "GSM" includes GPRS and EDGE features.)

The full title, specification number and latest version number for every specification can be found in the current status list **[warning: large file!]** (see also main specs page for status lists pertaining to each TSG SA meeting) and more information about terms such as R99 and Rel-4 can be found on the Releases and phases page.

A specification in the 21 to 35 series may apply either to 3G only or to GSM *and* 3G. A clue lies in the third digit, where a "0" indicates that it applies to both systems. For example, 29.002 applies to 3G and GSM systems whereas 25.101 and 25.201 apply only to 3G. Most specs in all other series apply only to GSM systems. However, as the spec numbering space has been used up, this guide is more frequently broken, and it is necessary to examine the information page for each spec (see the table below) or to check the lists in 01.01 / 41.101 (GSM) and 21.101 (3G) for the definitive specification sets for each system and each Release.

Subject of specification series	3G/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)	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
User Identity Module (SIM / USIM)	31 series	51 series	11 series
O&M	32 series	52 series	12 series
Access requirements and test specifications		13 series (1)	13 series (1)
Security aspects	33 series	(2)	(2)
SIM and test specifications	34 series	(2)	*11 series*
Security algorithms (3)	35 series	55 series	(4)

Note (1): The 13 series GSM specifications relate to European-Union-specific regulatory standards. On the closure of ETSI TC SMG, responsibility for these specifications was transferred to ETSI TC MSG, (Mobile Specification Group) and they do not appear on the 3GPP file server.

Note (2): The specification of these aspects are spread throughout several series.

Note (3): Algorithms may be subject to export licencing conditions. See the relevant 3GPP page. See also the relevant ETSI pages.

Note (4): The original GSM algorithms are not published and are controlled by the GSM Association.

The 3GPP Specifications are stored on the file server as zipped M3-Word files. The filenames have the following structure:

SM[-P[-Q]]-V.zip

where the character fields have the following significance ...

S = series number - 2 characters (see the table above)
M = mantissa (the part of the spec number after the series number) - 2 or 3 characters (see above)
P = optional part number - 1 or 2 digits if present
Q = optional sub-part number - 1 or 2 digits if present
V = version number, without separating dots - 3 digits

So for example:
21900-320.zip is 3GPP TR 21.900 version 3.2.0
0408-6g0.zip is 3GPP TS 04.08 version 6.16.0
32111-4-410 is 3GPP TS 32.111 part 4 version 4.1.0
29998-04-1-100 is 3GPP TS 29.998 part 4 sub-part 1 version 1.0.0

Further information:

Latest version

The latest versions of the approved specifications in the "latest" directory. The latest version of draft specs (i.e. those not yet under change control) are in the "latest-drafts" directory.

Particular version

All older versions of specifications (where available) are stored in the archive subdirectory. All versions of all releases of a given specification are placed directly under the name of the specification.

Title or subject

If you only know the title or the subject, but not the specification number, the best place to start looking is the complete list of all 3GPP specification numbers and titles. This list also shows the most recent version in each Release.

Specs related to a particular working group

Each 3GPP TSG Working Group has a home page, which lists the specifications under its responsibility. Follow the links from here....

Official versions published by recognized Standards Development Organizations

The 3GPP Technical Specifications (and Technical Reports) which are publicly available from this site have, in themselves, no legal standing. They only become "official" when transposed into corresponding publications of the Partner Organizations. If you are looking for the official versions, see the official publications page.

Yet more information:

- **Work plan.** The 3GPP Work plan describes the new functionality currently being elaborated in the TSG working groups. It also indicates the expected timescales for their finalization.
- **Releases (and phases, stages).** An introduction to the 3GPP mechanism for specifications releases can be found here.
- **Historical information.** If you need to look for old / superseded specifications or change requests, start here.
- **TSG working methods.** The procedures for creating, enhancing and maintaining specifications are described in TR 21.900. A presentation outlining the release and change request process can be found here.
- **3GPP Drafting rules.** The rules for drafting specifications are described in TR 21.801.
- **Change Requests (CRs).** The change request mechanism is used when a correction or new functionality is required for an existing specification. Here you can find all information related to change requests.

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last updated:
2004-08-02: missing bracket inserted
2004-03-02: typo in hyperlink to 45-series specs corrected.
2003-10-21: "further information" section originally in main specs page transferred to this page; sundry editorial improvements.
2003-09-10: links to current status list and to spec numbering system added.
2003-07-10: minor editorial clarifications
2003-06-27: 00.-series added to table; URLs to spec lists made relative rather than absolute (to aid site mirroring)
2003-06-26: minor corrections and clarifications
2003-04-24: links to specs series indexes added
2002-10-10: mention of 55 series specs added, plus notes 3 & 4.

APPENDIX J



3GPP Specification series

Back to numbering scheme page

Click on spec number for details

TS 23.002	Network architecture	
TS 23.003	Numbering, addressing and identification	
TS 23.007	Restoration procedures	
TS 23.008	Organisation of subscriber data	
TS 23.009	Handover procedures	
TS 23.010	GSM Public Land Mobile Network (PLMN) Connection Types	SPECIFICATION WITHDRAWN
TS 23.011	Technical realization of Supplementary Services	
TS 23.012	Location management procedures	
TS 23.014	Support of Dual Tone Multi Frequency (DTMF) signalling	
TS 23.015	Technical realization of Operator Determined Barring (ODB)	
TS 23.016	Subscriber data management; Stage 2	
TS 23.018	Basic Call Handling; Technical realization	
TS 23.01U	General UMTS architecture	SPECIFICATION WITHDRAWN
TS 23.022	Functions related to Mobile Station (MS) in idle mode and group receive mode	SPECIFICATION WITHDRAWN
TS 23.031	Fraud Information Gathering System (FIGS); Service description; Stage 2	
TS 23.032	Universal Geographical Area Description (GAD)	
TS 23.034	High Speed Circuit Switched Data (HSCSD); Stage 2	
TS 23.038	Alphabets and language-specific information	
TR 23.039	Interface Protocols for the Connection of Short Message Service Centers (SMSCs) to Short Message Entities (SMEs)	
TS 23.040	Technical realization of Short Message Service (SMS)	
TS 23.041	Technical realization of Cell Broadcast Service (CBS)	
TS 23.042	Compression algorithm for SMS	
TS 23.043	Support of Videotex	SPECIFICATION WITHDRAWN
TS 23.044	Support of Teletex	SPECIFICATION WITHDRAWN
TS 23.045	Technical Realization of Facsimile Group 3 Service - transparent	SPECIFICATION WITHDRAWN
TS 23.046	Technical realization of facsimile Group 3 service - non-transparent	SPECIFICATION WITHDRAWN
TS 23.048	Security mechanisms for the (U)SIM application toolkit; Stage 2	
TS 23.050	Handsfree Free Operation (TFO); Service description; Stage 2	
TS 23.054	Shared Interworking Functions (SIWF); Stage 2	SPECIFICATION WITHDRAWN
TS 23.057	Mobile Execution Environment (MExE); Functional description; Stage 2	
TR 23.058	UMTS Network principles	SPECIFICATION WITHDRAWN
TS 23.060	General Packet Radio Service (GPRS); Service description; Stage 2	
TS 23.066	Support of GSM Mobile Number Portability (MNP) stage 1	
TS 23.067	Enhanced Multi-Level Precedence and Pre-emption Service (eMLPP); Stage 2	
TS 23.068	Voice Broadcast service (VBS); Stage 2	SPECIFICATION WITHDRAWN
TS 23.070	Routeing of calls to/from Public Data Networks (PDN) and the GSM Public Land Mobile Network (PLMN)	SPECIFICATION WITHDRAWN
TS 23.071	Location Services (LCS); Functional description; Stage 2	SPECIFICATION WITHDRAWN
TS 23.072	Call Deflection Supplementary Service; Stage 2	
TS 23.073	Support of Localised Service Area (SoLSA); Stage 2	SPECIFICATION WITHDRAWN
TS 23.078	customized Applications for Mobile network Enhanced Logic (CAMEL); Stage 2	
TS 23.079	Support of Optimal Routeing (SOR); Technical realization; Stage 2	
TS 23.081	Line identification supplementary services; Stage 2	
TS 23.082	Call Forwarding (CF) Supplementary Services; Stage 2	
TS 23.083	Call Waiting (CW) and Call Hold (HOLD) Supplementary Service; Stage 2	
TS 23.084	MultiParty (MPTY) Supplementary Service; Stage 2	
TS 23.085	Closed User Group (CUG) Supplementary Service; Stage 2	
TS 23.086	Advice of Charge (AoC) Supplementary Service; Stage 2	
TS 23.087	User-to-User Signalling (UUS) supplementary service; Stage 2	
TS 23.088	Call Barring (CB) Supplementary Service; Stage 2	
TS 23.090	Unstructured Supplementary Service Data (USSD); Stage 2	
TS 23.091	Explicit Call Transfer (ECT) Supplementary Service; Stage 2	
TS 23.093	Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2	
TS 23.094	Follow Me Stage 3	
TS 23.096	Name Identification Supplementary Service; Stage 2	
TS 23.097	Multiple Subscriber Profile (MSP) Phase 1; Stage 2	
TS 23.101	General UMTS Architecture	
TS 23.107	Quality of Service (QoS) concept and architecture	
TS 23.108	Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)	
TS 23.10Z	UMTS Access Stratum; Services and Functions	SPECIFICATION WITHDRAWN
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TS 23.119	Gateway Location Register (GLR); Stage2	
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TS 23.126	Overall high level functionality and architecture impacts of flow based charging; Stage 2	
TS 23.127	Virtual Home Environment (VHE) / Open Service Access (OSA)	
TS 23.135	Multicall supplementary service; Stage 2	
TS 23.140	Multimedia Messaging Service (MMS); Functional description; Stage 2	
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TS 23.150	Out of Band Transcoder Control; Stage 2	
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TS 23.172	Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification; Stage 2	
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TS 23.199	Open Service Access (OSA); Stage 2	
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TS 23.206	Bearer-Independent circuit-switched core network; Stage 2	
TS 23.207	End-to-end Quality of Service (QoS) concept and architecture	
TS 23.209	Policy control over Go interface	SPECIFICATION WITHDRAWN
TS 23.20U	Evolution of the GSM platform towards UMTS	SPECIFICATION WITHDRAWN
TS 23.218	IP Multimedia (IM) session handling; IM call model; Stage 2	
TS 23.221	Architectural requirements	
TS 23.228	Global text telephony (GTT); Stage 2; Architecture	
TS 23.237	Application and user interaction in the UE; Principles and specific requirements	
TS 23.228	IP Multimedia Subsystem (IMS); Stage 2	
TS 23.234	3GPP system to Wireless Local Area Network (WLAN) interworking; System description	
TS 23.236	Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes	
TS 23.240	3GPP Generic User Profile (GUP) requirements; Architecture (Stage 2)	
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TS 23.40U	UMTS Network Aspects; Relationship with UPT	SPECIFICATION WITHDRAWN
TS 23.60U	UMTS Network Aspects; IN and B-ISDN concepts in a UMTS environment	SPECIFICATION WITHDRAWN
TS 23.80U	UMTS Network Aspects; UMTS data organization	SPECIFICATION WITHDRAWN
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TR 23.901	Potential mechanisms for Circuit Switched (CS) domain video and voice service improvements	
TR 23.902	Architectural enhancements for end-to-end Quality of Service (QoS)	
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TR 23.904	Support of SMS and MMS over generic 3GPP IP access	
TR 23.90U	UMTS Network Aspects; Signalling requirements for UMTS	SPECIFICATION WITHDRAWN
TR 23.910	Separating RR and MM specific parts of the MS Classmark	
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TR 23.921	Architecture Principles for Release 2000	SPECIFICATION WITHDRAWN
TR 23.928	Overall architecture aspects of IP flow based bearer level charging; Stage 2	SPECIFICATION WITHDRAWN
TR 23.936	Study into applicability of Gatlex in Location Services (LCS)	
TR 23.941	Presence service architecture	
TR 23.946	Multimedia Broadcast/Multicast Service (MBMS); Stage 1	
TR 23.980	Network sharing; Architecture and functional description	
TR 23.984	Commonality and Interoperability between IP Multimedia System (IMS) core networks	
TR 23.997	Internet Protocol (IP) based IP Multimedia Subsystem (IMS) emergency sessions	
TR 23.971	Enhanced support for user privacy in Location Services (LCS)	
TR 23.979	Feasibility study for transport and control separation in the PS CN domain	
TR 23.974	Feasibility study of architecture for network requested PDP context activation with User-ID	SPECIFICATION WITHDRAWN
TR 23.978	Support of Push service	
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TR 23.977	Architectural aspects of speech-enabled services	
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TR 23.981	Interworking aspects and migration scenarios for IPv4-based IP Multimedia Subsystem (IMS) implementations	SPECIFICATION WITHDRAWN
TR 23.988	Provision of UE specific behaviour information to network entities	
TR 23.986	Access Class Barring and Overload Protection (ACBOP)	
TR 23.988	Combining Circuit Switched (CS) bearers with IP Multimedia Subsystem (IMS)	
TR 23.909	Radial solution for voice-video switching	
TR 23.994	Support of SMS and MMS over generic 3GPP IP access	SPECIFICATION WITHDRAWN
TR 23.997	Quality of Service (QoS) concept	SPECIFICATION WITHDRAWN
TR 23.999	Technical report on Pre-Paging	
TR 23.999	Technical report on the Gateway Location Register	
TR 23.95U	UMTS Network Aspects; Network performance requirements	SPECIFICATION WITHDRAWN
TR 23.910	Circuit switched data bearer services	
TR 23.911	Technical report on Out-of-band transcoder control	
TR 23.912	Technical report on Super-Charger	
TR 23.913	UMTS Turbo-Charger	SPECIFICATION WITHDRAWN
TR 23.916	Charging implications of IMS architecture	SPECIFICATION WITHDRAWN
TR 23.917	Dynamic policy control enhancements for End to end Quality of Service (QoS)	SPECIFICATION WITHDRAWN
TR 23.920	Evolution of the GSM platform towards UMTS	SPECIFICATION WITHDRAWN
TR 23.922	Architecture for an All IP network	SPECIFICATION WITHDRAWN
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TR 23.937	VHE, Open Service Architecture (OSA)	SPECIFICATION WITHDRAWN
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APPENDIX K

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3GPP Specification detail

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3GPP TS 23.140 (click spec number to see fileserver directory for this spec)

Multimedia Messaging Service (MMS); Functional description; Stage 2

-

TSG / WG responsible: CP (click TSG/WG to see its home page)

2003-12-03: Note that this spec also contains stage 3. CP-27: Moved to current group on closure of T2; see TP-050062.

Rapporteur: **ROEBKE, Matthias**

Specification required for: GERAN-based systems and UTRAN-based systems

In the table below ...

... click meeting number for meeting details;

... click spec version number to download that version;

... click SDO publication reference to download SDO transposed document.

Release	Freeze meeting	Freeze date	remarks	SDO publications
R99	SP-07	2000-03-17	.	ETSI
	event	version	available	remarks	click ref to download
	TP-03	0.0.0	1999-04-23		-
	TP-05	0.1.0	1999-10-08		-
	TP-06	1.0.0	1999-12-17		-
	TP-07	2.0.0	2000-03-15	TP-000028	-
	Editorial	3.0.1	2000-03-15		DTS/TSGT-0223140U
	TP-16	3.1.0	2002-06-24		RTS/TSGT-0223140v310
Rel-4	SP-11	2001-03-22	.	ETSI
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	TP-10	4.1.0	2000-12-21		-
	TP-11	4.2.0	2001-03-29		RTS/TSGT-0223140Uv4
	TP-12	4.3.0	2001-07-03		RTS/TSGT-0223140Uv4R1
	TP-13	4.4.0	2001-10-05		RTS/TSGT-0223140Uv4R2
	TP-14	4.5.0	2002-01-11		RTS/TSGT-0223140Uv4R3
	TP-15	4.6.0	2002-03-21		RTS/TSGT-0223140Uv4R4
	TP-16	4.7.0	2002-06-25		RTS/TSGT-0223140v470
	TP-17	4.8.0	2002-09-23		RTS/TSGT-0223140v480
	TP-19	4.9.0	2003-03-31		RTS/TSGT-0223140v490
	TP-20	4.10.0	2003-06-24		RTS/TSGT-0223140v4a0
Rel-5	TP-15	2002-03-08	2002-01-25: WAP forum elements will not be ready in time for Rel-5, so suspend SDO publication till it is available. 2004-01-12: (Rodermund) WAP Forum (now OMA) elements for MMS Rel-5 are ready. .	ETSI
	event	version	available	remarks	click ref to download
	TP-13	5.0.0	2001-10-05		-
	TP-14	5.1.0	2002-01-11		-
	TP-15	5.2.0	2002-03-29		RTS/TSGT-0223140Uv5
	TP-16	5.3.0	2002-07-05	Schema delivered 2002-07-07 (uploaded -19) to http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0.	RTS/TSGT-0223140v530
	TP-17	5.4.0	2002-09-30	Schema v1.1 uploaded 2002-11-14.	RTS/TSGT-0223140v540
	TP-18	5.5.0	2002-12-20	Schema v1.2 (REL-5-MM7-1-2.xsd) uploaded 2003-01-08 and version without file extension 2003-01-14.	RTS/TSGT-0223140v550
	TP-19	5.6.0	2003-03-31		RTS/TSGT-0223140v560
	TP-20	5.7.0	2003-06-25		RTS/TSGT-0223140v570
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	TP-22	5.9.0	2004-01-12		RTS/TSGT-0223140v590
	TP-23	5.10.0	2004-03-25		RTS/TSGT-0223140v5a0
	TP-24	5.11.0	2004-06-15	XML schema unchanged	RTS/TSGT-0223140v5b0
Rel-6	TP-26	2004-12-10	TP-22: Discussed whether this work would be transferred to OMA for future Releases (I.e. beyond Rel-6). But there are IPR problems. TP-27: IPR probs solved, further Releases will be done in OMA. .	ETSI
	event	version	available	remarks	click ref to download
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	TP-20	6.2.0	2003-06-26		-
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	TP-26	6.8.0	2005-01-03		RTS/TSGT-0223140v680
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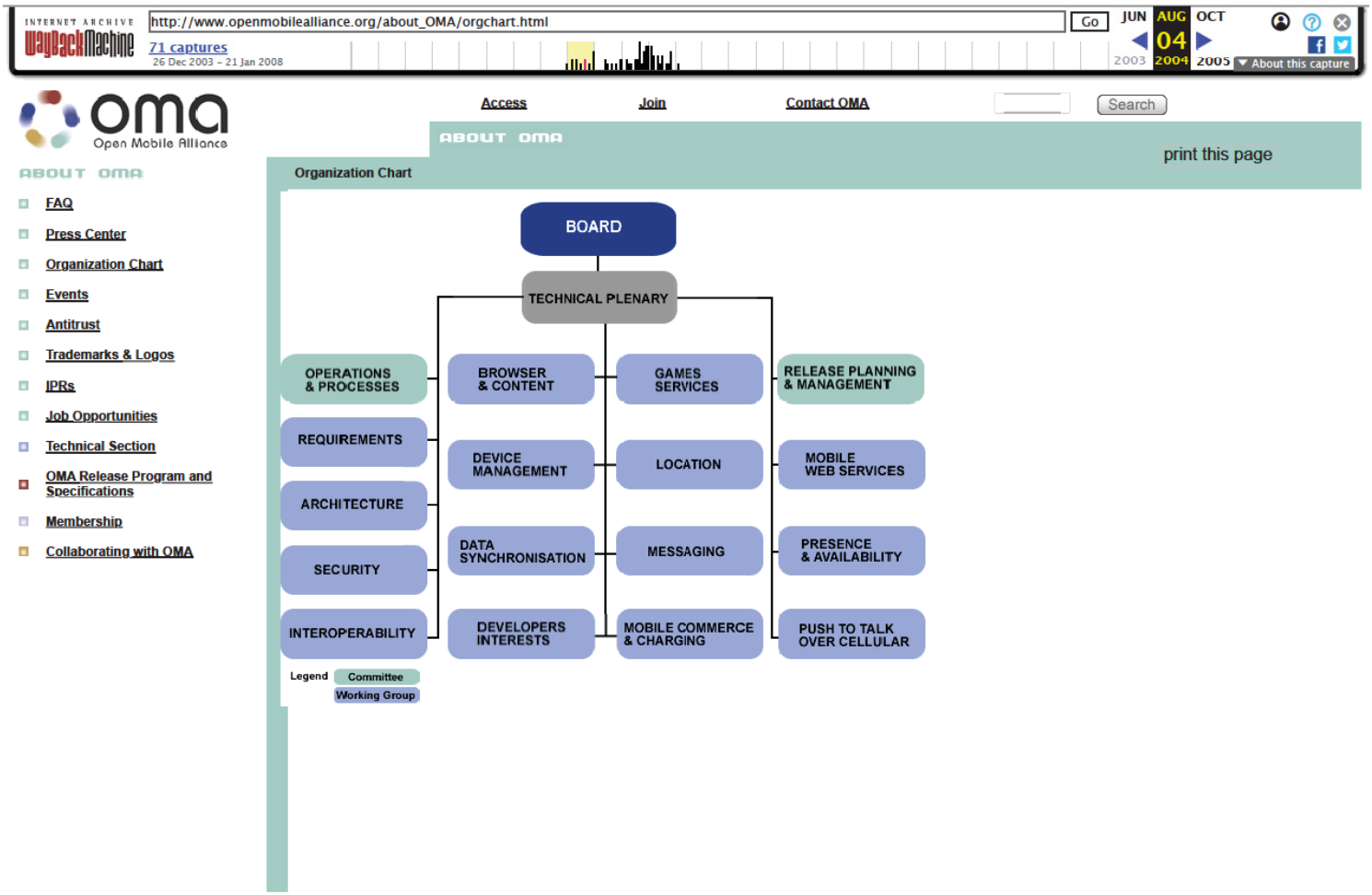
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antecedent(s)	this spec	descendant(s)
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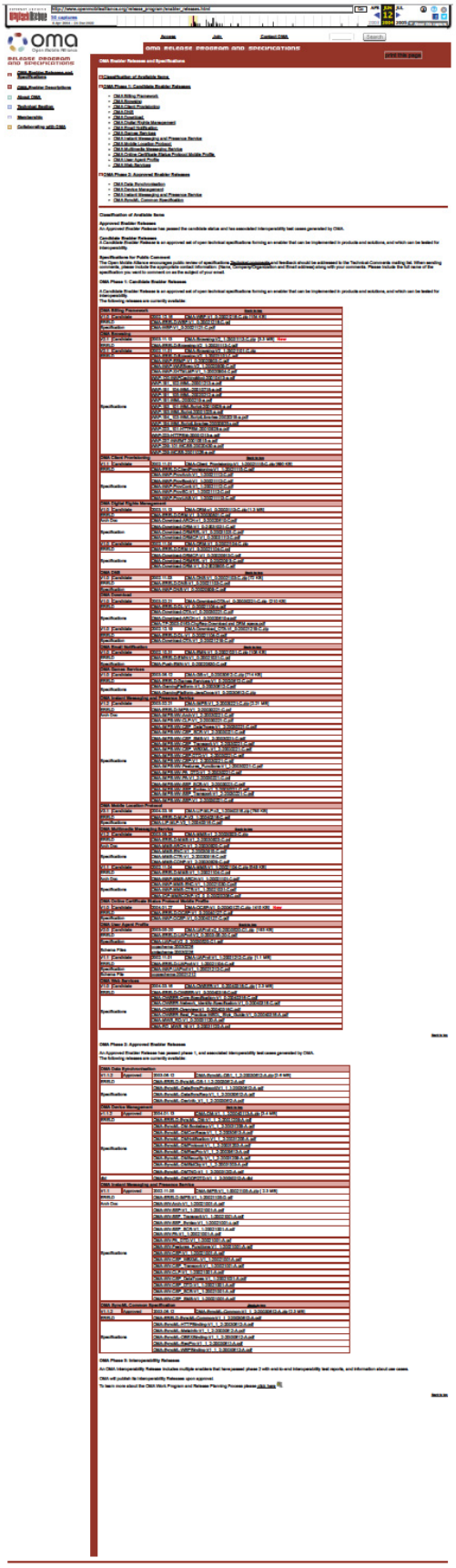
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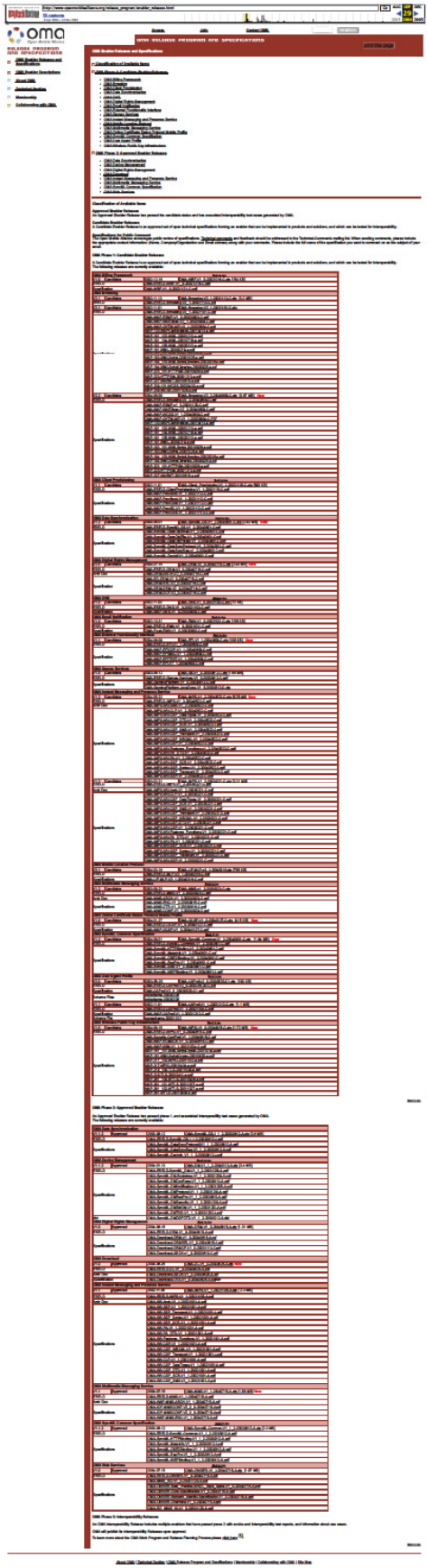
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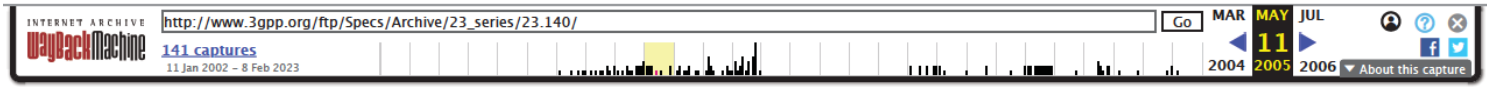
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