



Cellular Networking Perspectives

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Next Issue: February 3rd, 2004

Changes for 2004

There will be no price increase for *Cellular Networking Perspectives* or *Wireless Security Perspectives* for 2004, but the July and August, 2004 issues will be merged. We still expect to exceed our goal of providing at least 72 pages of up-to-date, accurate and concise wireless standards and technology information throughout the year.

J-STD-025-B (US Intercept Standard) Approved for Publication

Joint TIA/ATIS standard J-STD-025 Revision B has been approved for publication, and will soon be sent for ANSI review. This standard specifies interfaces for lawfully authorized electronic surveillance for compliance with the US CALEA legislation. Revision B provides support for packet data. Earlier versions supported intercept of voice calls.

The new *PacketEnvelope* message in the protocol provides addressing information for the packet (e.g. originating and destination addresses), and also includes the uninterpreted contents of the packet as well. Due to the multiple layers found in some packet communications, the raw packet may need further analysis to truly identify the type of data included, and the identity of the communicating parties.

SIP – Session Initiation Protocol

IETF SIP is becoming the most popular protocol for VoIP call control, including on wireless systems. SIP not only supports voice calls, but also multi-media sessions combining voice with, for example, video.

Table 1 lists the available IETF RFCs (Requests for Comments, a sort of ‘interim standard’ for the internet) for SIP. A number of other specifications are available as drafts from the **SIP WG**.

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Table 1: Session Initiation Protocol (SIP) Specifications (IETF RFCs)

RFC	Description	Status
2543	SIP: Session Initiation Protocol	Replaced by RFC3261
2848	The PINT Service Protocol: Extensions to SIP and SDP for IP Access to Telephone Call Services	Published 06/00
2976	The SIP INFO Method	Published 10/00
3050	Common Gateway Interface for SIP	Published 01/01
3087	Control of Service Context using SIP Request-URI	Published 04/01
3204	MIME media types for ISUP and QSIG Objects	Published 12/01
3261	SIP: Session Initiation Protocol	Published 06/02
3262	Reliability of Provisional Responses in Session Initiation Protocol (SIP)	Published 06/02
3263	Session Initiation Protocol (SIP): Locating SIP Servers	Published 06/02
3265	Session Initiation Protocol (SIP)-Specific Event Notification	Published 06/02
3310	HTTP Digest Authentication Using AKA	Published 09/02
3311	The Session Initiation Protocol (SIP) UPDATE Method	Published 10/02
3312	Integration of Resource Management and Session Initiation Protocol (SIP)	Published 03/02
3313	Private Session Initiation Protocol (SIP) Extensions for Media Authorization	Published 01/03
3319	Dynamic Host Configuration Protocol (DHCPv6) Options for Session Initiation Protocol (SIP) Servers	Published 07/03
3323	A Privacy Mechanism for the Session Initiation Protocol (SIP)	Published 11/02
3325	Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks	Published 11/02
3326	The Reason Header Field for the Session Initiation Protocol (SIP)	Published 12/02
3327	Session Initiation Protocol (SIP) Extension Header Field for Registering Non-Adjacent Contacts	Published 12/02
3329	Security Mechanism Agreement for the Session Initiation Protocol (SIP)	Published 01/03

Table 1: Session Initiation Protocol (SIP) Specifications (IETF RFCs)

RFC	Description	Status
3351	User Requirements for the Session Initiation Protocol (SIP) in Support of Deaf, Hard of Hearing and Speech-impaired Individuals	Published 08/02
3361	Dynamic Host Configuration Protocol (DHCP-for-IPv4) Option for Session Initiation Protocol (SIP) Servers	Published 08/02
3372	Session Initiation Protocol for Telephones (SIP-T): (SIP-T): Context and Architectures	Published 09/02
3398	Integrated Services Digital Network (ISDN) User Part (ISUP) to Session Initiation Protocol (SIP) Mapping	Published 12/02
3420	Internet Media Type message/sipfrag	Published 11/02
3427	Change Process for the Session Initiation Protocol (SIP)	Published 12/02
3428	Session Initiation Protocol (SIP) Extension for Instant Messaging	Published 12/02
3455	Private Header (P-Header) Extensions to the Session Initiation Protocol (SIP) for the 3rd-Generation Partnership Project (3GPP)	Published 01/03
3485	The Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Static Dictionary for Signaling Compression (SigComp)	Published 02/03
3486	Compressing the Session Initiation Protocol (SIP)	Published 02/03
3487	Requirements for Resource Priority Mechanisms for the Session Initiation Protocol (SIP)	Published 02/03
3515	The Session Initiation Protocol (SIP) Refer Method	Published 04/03
3581	An Extension to SIP for Symmetric Response Routing	Published 08/03
3608	SIP Extension Header Field for Service Route Discovery During Registration	Published 10/03

3GPP TSG RAN (Radio Access Networks) Update

TSG RAN, the 3GPP Technical Specification Group for the Radio Access Network defines the functions, requirements and interfaces of the **UTRA** network in both its **FDD** and **TDD** modes. This includes radio performance, physical layer (layer 1), layer 2 and layer 3 RR specification in **UTRAN**, specification of the access network interfaces (**Iu**, **Iub** and **Iur**); definition of the O&M requirements in **UTRAN** and conformance testing for Base Stations.

Highlights of this group's activities in the two most recent meetings (TSG #21 and #22) are:

- At TSG #21 the group reviewed submissions to **ITU WP8F#11** (Development of **ITU-R** Recommendations on **IMT-2000** Radio Interface Criteria, and Sharing and Coordination Criteria) for Revision 4 of Recommendation M.1457 (Detailed Specifications of the radio interface of **IMT-2000**). The documents provide an overview of radio interface for both **FDD** and **TDD** modes and include new frequency bands (850 MHz and 1.7/2.1 GHz for the US and 800 MHz for Japan).
- At TSG #22, TSG RAN decided to produce Release 6 versions for most of its specification. These will be sent to **ITU-R** for Revision 4 of M. 1457.
- TSG #22 endorsed preliminary contributions to update **UTRA FDD** and **TDD** for Revision 5 of M.1457.
- At TSG #21 there was a discussion of **Iu** mode issues between TSG **GERAN** and **RAN 2**. The groups exchanged Liaison Statements on various solutions, although this working method was considered ineffective by many. Consequently it was agreed that **GERAN** will take ownership of this issue as most impacts are to its specifications.
- At TSG #21 there was a long discussion on the definition of the "Minimum User Equipment Capability Class". Ericsson submitted a CR proposing that minimum capability should be mandatory for both up and down links or for neither. Nokia objected to this proposal because **RAN 2** had already reached agreement on the downlink. There was no final decision so **RAN 2** will continue to study the issue.
- At TSG #21 the following Work Items and Study Items were closed:
 - » WI – "Improving Receiver Performance Requirements for the **FDD UE**" was completed.
 - » WI – "Open Serving Mobile Location Centre (**SMLC**) – Serving Radio Network Controller (**SRNC**) Interface within the **UTRAN** to support **UTRAN Rel-4** position methods" was completed.
- » WI – "Improvement of Radio Resource Management (**RRM**) across Radio Network Subsystem (**RNS**) and **RNS/BSS**" was closed due to lack of activity.
- » A Study Item on "Improvement of inter-frequency and inter-system measurements for 1.28 Mcps **TDD**" was closed after concluding that no additions to **TR 25.888** are required. Improvements can be achieved through changes to the **RNC** implementation.
- » A Study Item on "Enhancements to Observed Time Difference of Arrival (**OTDOA**) Positioning using advanced blanking method" concluded that extensive modifications are required. This work will be performed under the WI "UE positioning Enhancements".
- » A Study Item on "Improved access to UE measurement data for **CRNC** to support **TDD RRM**" was concluded with an agreement to initiate a work item with the same name.
- At TSG RAN#22, the group decided on the status of the TRs below:
 - » **TR 25.833 (Rel 99)**, "Physical Layer items not for inclusion in **Rel 99**" was brought under change control as v.3.0.0.
 - » **TR 25.840 (Rel 4)**, "Terminal power saving features" was brought under change control as v.4.0.0.
 - » **TR 25.890 (Rel 5)**, "High Speed Downlink Packet Access (**HSDPA**); User Equipment radio transmission and reception (**FDD**)" was discontinued.
- At TSG RAN#22, it was agreed that the **TS 25.331 ASN.1 (Abstract Syntax Notation One)** in **RAN 2** and **RAN 3** cannot be frozen until the Working Groups are aligned.
- It is impossible to operate **TDD Uplink Shared Channel (USCH)** with **Rel 5 Uplink Shared Channel (HSDPA)**. Many companies believe that this produces a service discontinuity but others believe that this was a deliberate decision taken within the **Rel 5** time frame and should not be changed. No consensus was reached at meeting #22. It was suggested to allow for joint **HSDPA/USCH** operation in **Rel 6**, but this proposal needs further discussion.
- The WI on "Beamforming Enhancements" has been completed, with all CRs approved for incorporation.
- The WI entitled "Introduction of **UMTS** in the 800 MHz band in Japan and 850 MHz band in the US" has been completed with all CRs incorporated.

TSG RAN Working Group 1 (Radio Layer 1)

3GPP TSG RAN Working Group 1 (RAN 1) specifies the physical layer of the radio interface for **UE** and **UTRAN**. This includes specification of physical channel structures, the mapping of transport channels to physical channels, spreading, modulation, physical layer multiplexing, channel coding and error detection. It also specifies the physical layer procedures and measurements provided to upper layers are. RAN 1 has created email distribution lists for specific topic, but occasionally has its own face-to-face meetings.

Highlights of recent meetings includes:

- Most of the meeting time was spent on Rel 6 discussions. Key topics were Enhanced Uplink Dedicated Channel (UL DCH), Rel 99/Rel 4/ Rel 5 maintenance, Multimedia Broadcast Multicast Service (MBMS), and Orthogonal Frequency Division Multiplexing (OFDM).
- Enhanced Uplink Dedicated Channel (DCH) is the biggest topic in RAN 1 both in terms of the number of contributions and contributing companies. Several proposals were agreed for inclusion in the latest version, which is TR 25.896 v1.1.2.
- OFDM (Orthogonal Frequency Division Multiplexing). Several proposals were agreed for inclusion in the latest version, which is TR 25.892 v0.5.2.

Table 2: 3GPP TSG RAN Working Group 1 (Radio Layer 1) Specification Update

Document	Title	Status
TS 25.212	Multiplexing and Channel Coding (FDD)	Version 5.7 being revised.
TS 25.213	Spreading and modulation (FDD)	Version 3.9 (Rel 99), 4.4 and 5.5 being revised.
TS 25.214	Physical Layer Procedures (FDD)	Version 5.7 being revised.
TS 25.215	Physical layer - Measurements (FDD)	Version 6.0 released.
TS 25.222	Multiplexing and Channel Coding (TDD)	Versions 4.7 and 5.6 being revised.
TS 25.224	Physical Layer Procedures (TDD)	Versions 4.10 and 5.7 being revised.
TS 25.225	Physical Layer – Measurements (TDD)	Version 5.6 being revised.

TSG RAN Working Group 2 (Radio Layer 2 and Radio Layer 3 RR)

3GPP TSG RAN Working Group 2 (RAN 2) is in charge of the Radio Interface architecture and protocols (MAC, RLC, PDCP), the specification of the Radio Resource Control protocol, the strategies of Radio Resource Management and the services provided by the physical layer to the upper layers.

Highlights of the most recent meetings include:

- Release 99 is still an important part of RAN 2 activity, with RAN 2 trying to find acceptable corrections with little or no impact to current UE implementations.

- Rel 99 HSDPA is stable with few change requests.
- There has been a significant increase in Multimedia Multicast and Broadcast Service (MBMS) activity. One ad hoc meeting was held in October, 2003 on MBMS with other 3GPP working group. Agreeing on a paging/notification mechanism resolved an important outstanding issue.
- RAN 2 suspended its work on “Enhancement of Support for Network Sharing in UTRAN” until SA 2 completes its stage 2 architecture.

Table 3: 3GPP TSG RAN Working Group 2 (Radio Layer 2 and 3) Specification Update

Document	Title	Status
tbd	Enhancement of the Support of Network Sharing in UTRAN	New Work Item approved at TSG #21.
TS 25.302	Services Provided by the Physical Layer	Version 5.7 being revised.
TS 25.305	Stage 2 Functional Specification of User Equipment (UE) Positioning in UTRAN	Versions 3.11 (Rel 99), 4.7 and 5.8 are being revised.
TS 25.306	UE Radio Access Capabilities	Versions 3.10 (Rel 99), 4.9 and 5.7 are being revised.

Table 3: 3GPP TSG RAN Working Group 2 (Radio Layer 2 and 3) Specification Update

Document	Title	Status
TS 25.307	Requirements on UEs Supporting a Release Independent Frequency Band	Versions 3.2 (Rel 99), 4.2 and 5.1 are being revised. Version 6.0 released.
TS 25.321	MAC Protocol Specification	Version 5.7 is being revised.
TS 25.322	RLC Protocol Specification	Version 3.17 (Rel 99), 4.11 and 5.7 are being revised.
TS 25.331	RRC Protocol Specification	Versions 3.17 (Rel 99), 4.12 and 5.7 are being revised. Version 6.0 released.

TSG RAN Working Group 3 (UTRAN Architecture)

3GPP TSG RAN Working Group 3 (RAN 3) is responsible for the overall UTRAN architecture, the specification of protocols for the Iu, Iur and Iub interfaces and the use of IP protocol for the transport layer in UTRAN.

Highlights of the two most recent meetings includes:

- No solution has been agreed for interworking of ATM based and IP base UTRAN nodes for Rel 5. Two possible candidate solutions have been discussed. One solution is ITU-T Q.2631.1 “IP Connection Control Signalling Protocol - Capability Set 1”, and the other is the IETF PWE3 “Pseudo Wire Emulation Edge-to-Edge”. RAN 3 hopes to choose a solution at the next meeting.

- The High Speed Downlink Packet Access (HSDPA) Iub/Iur Protocol Aspects work has had many contributions.
- RAN 3 reported that they need more time to study specification impact for the “Iu Enhancements for IMS (IP Multimedia Subsystem) support in the RAN” Work Item, particularly the issue of the user payload in SIP messages.
- Good progress has been made on the Remote Control of Electrical Tilting Antennas Work Item. The architecture impact will need to be decided later, although this will probably not include adding a new reference point.
- More time is required for the feasibility study on the evolution of the UTRAN architecture. Many contributions were not discussed during the meeting due to lack of time. For future meetings, the group will need to focus on the mobility complexity analysis and aligning functional model.

Table 4: 3GPP TSG RAN Working Group 3 (UTRAN Architecture) Specification Update

Document	Title	Status
tbd	Access to UE Measurement Data for CRNC to Support TDD RRM	New Work Item approved at TSG T#21.
TS 25.401	UTRAN Overall Description	Versions 5.7 and 6.2 being revised.
TS 25.402	Synchronisation in UTRAN Stage 2	Version 5.3 being revised.
TS 25.413	UTRAN Iu Interface RANAP Signalling	Versions 4.11 and 5.7 being revised.
TS 25.414	UTRAN Iu Interface Data Transport and Transport Signalling	Versions 4.7 and 5.5 being revised.
TS 25.419	UTRAN Iu-BC Interface: Service Area Broadcast Protocol	Versions 4.10 and 5.6 being revised.
TS 25.423	UTRAN Iur Interface RNSAP Signalling	Versions 4.11 and 5.8 being revised. Version 6.0 released.
TS 25.424	UTRAN I _{ur} Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams	Version 5.3 being revised.
TS 25.425	UTRAN I _{ur} Interface User Plane Protocols for Common Transport Channel Data Streams	Versions 3.8 (Rel 99), 4.4 and 5.6 being revised. Version 6.0 released.
TS 25.427	UTRAN Iub/Iur Interface User Plane Protocol for DCH Data Streams	Versions 3.11 (Rel 99), 4.5 and 5.3 being revised.

Table 4: 3GPP TSG RAN Working Group 3 (UTRAN Architecture) Specification Update

Document	Title	Status
TS 25.433	UTRAN Iub Interface NBAP Signalling	Versions 3.15 (Rel 99), 4.11 and 5.7 being revised.
TS 25.434	UTRAN I _{ub} Interface Data Transport and Transport Signalling for Common Transport Channel Data Streams	Version 5.3 being revised.
TS 25.435	UTRAN I _{ub} Interface User Plane Protocols for Common Transport Channel data streams	Versions 3.11 (Rel 99), 4.6 and 5.6 being revised. Version 6.0 released.
TS 25.453	UTRAN Iu _{ps} interface Positioning Calculation Application Part (PCAP) signalling	Versions 5.8 and 6.3 being revised.
TR 25.921	Guidelines and Principles for Protocol Description and Error Handling	Version 5.3 being revised.
TR 25.922	Radio Resource Management Strategies	Version 5.2 being revised.
TR 25.933	IP transport in UTRAN	Version 5.4 being revised.
TR 25.993	Typical Examples of RABs and RBs Supported by UTRA	Versions 3.1 (Rel 99), 4.1, 5.1 and 6.4 being revised.

TSG RAN Working Group 4 (Radio Performance and Protocol)

3GPP TSG RAN Working Group 4 (RAN 4) specifies the RF aspects of UTRAN including simulations of diverse RF system scenarios and the minimum requirements for transmission and reception parameters, and for channel demodulation. Based on these

requirements, RAN 4 defines test procedures to verify that they are met. Requirements for other radio elements, like repeaters, are also specified in RAN 4.

At the most recent RAN 4 meeting, the number of Rel 99 CRs notably increased, mainly due to test specification issues being reported for TS 25.133 Annex A by TSG T Working Group 1.

Table 5: 3GPP TSG RAN Working Group 4 (Radio Performance and Protocol) Specification Updates

Document	Title	Status
tbd	Performance Requirements of Receive Diversity for HSDP	New Work Item.
tbd	Improvements of Receiver Performance of HSPDA UE for enhancing the performance of FDD system	New Study Item.
TS 25.101	UE Radio Transmission and Reception (FDD)	Versions 3.16 (Rel 99), 4.10, 5.9 and 6.3 being revised.
TS 25.102	UTRA (UE) TDD; Radio Transmission and Reception	Version 5.6 being revised. Version 6.0 released.
TS 25.104	UTRA (BS) FDD; Radio Transmission and Reception	Versions 5.8 and 6.4 being revised.
TS 25.105	BS Radio Transmission and Reception (TDD)	Version 5.5 being revised.
TS 25.106	UTRA Repeater Radio Transmission and Reception	Versions 4.7 and 5.7 being revised.
TS 25.113	Base Station and Repeater Electromagnetic Compatibility (EMC)	Version 5.5 being revised.
TS 25.123	Requirements for Support of Radio Resource Management (TDD)	Versions 3.14 (Rel 99), 4.11 and 5.7 being revised. Version 6.0 released.
TS 25.133	Requirements for Support of Radio Resource Management (FDD)	Versions 3.16 (Rel 99), 4.11, 5.9 and 6.4 being revised.
TS 25.141	Base Station Conformance Testing (FDD)	Versions 5.8 and 6.4 being revised.
TS 25.142	Base station Conformance Testing (TDD)	Version 5.6 being revised.
TS 25.143	UTRAN Iu Interface RANAP Signalling	Versions 4.9 and 5.7 being revised.

Meeting Schedule

The most recent plenary meetings of TSG RAN were held September 16th – 19th 2003 in Frankfurt, Germany and December 9th – 12th 2003 in Hawai'i. Upcoming meetings are scheduled for:

- January 12th– 16th 2004 in Sophia Antipolis, France for RAN 2 and 3.
- January 27th– 30th 2004 in Espoo, Finland for all working groups.
- February 9th– 13th 2004 in Munich, Germany for RAN 4 only.
- February 16th– 20th 2004 in Malaga, Spain for RAN 1, 2 and 3.
- March 10th– 12th 2004 in Phoenix, Arizona.
- May 10th– 14th 2004 for all working groups (RAN 2 and 3 in Montreal, location of RAN 1 and 4 meetings tbd).

- June 2nd – 4th 2004 in Seoul, Korea.
- August 16th– 20th 2004 in Prague for all working groups.
- September 8th – 10th 2004 in Palm Springs, California.
- October 4th– 8th 2004 in Sophia Antipolis for RAN 2 and 3.
- November 15th– 19th 2004 for all working groups.
- December 7th – 10th 2004 in Athens, Greece.
- March 9th – 11th 2005 in Tokyo, Japan.
- June 1st – 3rd 2005.
- September 7th – 9th 2005.
- November 30th – December 2nd 2005.

For a complete schedule of 3GPP meetings consult:

www.3gpp.org/Meetings/meetings.htm

3GPP2 TSG-X (and related SDOs) Wireless Core Network Specifications

Cellular Networking Perspectives

Editor: David.Crowe@cnp-wireless.com

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Note: 1. IS- Interim Standard, TSB- Telecommunications Systems Bulletin, PN- Project Number, SP- ANSI Standards Proposal.
2. Bold Type indicates a modification since the previous publication of this information.
3. Published TIA standards can be obtained from TIA at www.tiaonline.org/standards/search_n_order.cfm.

3GPP2 TSG-X Core Network Technical Specification Group - Reports

Standard	Description	Status
X.R0001	TSG-X Detailed Working Procedures	Development

3GPP2 TSG-X Core Network Technical Specification Group - Projects

Standard	Description	Status
X.P0001	CDMA Packet Data Service Rev-1	See TIA-880-A
X.P0002	LS Authentication/Privacy/Security And Enhancements	See TIA-881
X.P0003	TIA/EIA-41-D Network Enhancements to Support CDMA SIM Roaming to GSM	See TIA-868
X.P0004	TIA/EIA-41-E Integration	See TIA-41-E
X.P0005	TIA/EIA-41-F Integration	See TIA-41-F
X.P0006	TIA/EIA-41 Enhanced Security Services (ESA/AKA)	See TIA/EIA-41-D
X.P0007	TIA/EIA-41 Enhancements for Secure Mode OTASP and OTAPA	See TIA-906
X.P0008	TIA/EIA-41 Support for the Mobile Equipment Identity (MEID)	See TIA-928
X.P0009	WIN Location-based Services Phase III	See IS-843
X.P0010	WIN Pre-Paid Charging Enhancements	See TIA-826-A
X.P0011	TIA/EIA-835 Enhancements	See TIA-835-C
X.P0013	IP Core Network - Multimedia Domain	See TIA-873
X.P0014	Wireless Radio Telecommunications Intersystem Non-Signaling Data Communication DMH (Data Message Handler)	See TIA-124-E
X.P0015	Accounting and Auditing All-IP System Requirements	See S.P0075
X.P0016	Multimedia Message Services	See TIA-934
X.P0017	Open Service Access (OSA): Application Programming Interface	See TIA-937
X.P0018	LMSD Step 2 (IP Bearer)	
X.P0019	Broadcast/Multicast Services (BCMCS)	
X.P0020	Wireless IP Network	See TIA-835-B-1
X.P0021	Roamer Database Verification Version 3	See TIA-847-A
X.P0022	Broadcast/Multicast in cdma2000 Wireless IP Network	
X.P0023	GSM/ANSI-41 Interworking	See J-STD-038-B
X.P0024	IP-based Location Services (LCS)	See TIA-1020
X.P0025	LMSD Step 2	See TIA-1022
X.P0026	Transcoder Free Operation (TrFO)	See TIA-1021
X.Pxxxx	Subscribed Rate for Packet Data	
X.Pxxxx	Enhanced Message Service	

X.Pxxxx	IP-based Service Architecture
X.Pxxxx	Prepaid Service Support for HRPD
X.Pxxxx	Internet Over-the-Air Handset Configuration
X.Pxxxx	File and Media Format for Multimedia Services
X.Pxxxx	Common Security Algorithms
X.Pxxxx	1xEV-DV Capabilities
X.Pxxxx	Wireless Applications Management
X.Pxxxx	IP Broadcast and IP Multicast
X.Pxxxx	Multimedia Streaming
X.Pxxxx	Enhanced Call Recovery
X.Pxxxx	Enhanced Packet Data Air Interface Security
X.Pxxxx	Wideband Speech Codec for CDMA2000 Systems
X.Pxxxx	Security Framework for Data Services via HRPD
X.Pxxxx	Standardized Packet Data Performance Testing
X.Pxxxx	Wireless Local Area Network (WLAN) Interworking with CDMA2000
X.Pxxxx	Voice Over IP (VoIP)
X.Pxxxx	End to End QoS
X.Pxxxx	Diameter Base Protocol Support

3GPP2 TSG-N Specifications (N.Sxxxx)

Specification	Description	Status
N.S0003	User Identity Module (UIM)	Published 04/01
N.S0004	WIN Phase II	See IS-848
N.S0005	Intersystem Operations	See TIA/EIA-41-E
N.S0006	PCS Multi-band Operations	See TSB76
N.S0007	DCCH (Digital Control Channel for TDMA)	See IS-730
N.S0008	Circuit Mode Services	See IS-735
N.S0009	IMSI Support in TIA/EIA-41	See IS-751
N.S0010	Advanced CDMA Features	See IS-735
N.S0011	OTASP and OTAPA	See IS-725-A
N.S0012	Calling Name Presentation (CNAP) and Restriction (CNAR)	See IS-764
N.S0013	WIN Phase I	See IS-771
N.S0014	Authentication Enhancements	See IS-778
N.S0015	TIA/EIA-41-D Miscellaneous Enhancements	Development
N.S0016	TIA/EIA-41-D Internationalization	See IS-807
N.S0017	International Implementations of Systems Compliant with TIA/EIA-41	See TSB29-C
N.S0017-A	International Implementations of Systems Compliant with TIA/EIA-41	See TSB29-D
N.S0018	Prepaid Charging (WIN Phase II)	See IS-826
N.S0019	Intersystem Link Protocol (ISLP)	See IS-728
N.S0020	Segmentation and Reassembly	See IS-812
N.S0021	User Selective Call Forwarding	See IS-838
N.S0022	Answer Hold	See IS-837
N.S0023	Automatic Code Gapping (ACG)	See IS-786
N.S0024	MDN-based Message Centers (MC)	See IS-841
N.S0025	Roamer Database Verification	See IS-847
N.S0026	Near Real-Time Call Detail/Billing Record Transfer	See TIA/EIA-124
N.S0027	Enhanced International Dialing, Calling Number Identification, Callback and Calling Party Category Identification	See IS-875
N.S0028	CDMA IP Network Requirements and Architecture Model	See IS-884
N.S0029	Inter-System Operations for Roaming and Mobility	See TIA/EIA-41-F

N.S0030	Enhanced Security Services based on AKA	See PN-4393
N.S0032	Mobile Application Part, Revision F	See TIA/EIA-41-F
N.S0033	Addendum 2 for Enhanced Emergency Services Phase II	See J-STD-036-A
N.S0034	Emergency Services beyond US FCC Mandate	See PN-4288
N.S0035	Lawfully Authorized Electronic Surveillance (LAES)	See J-STD-025-A
N.S0036	Semi-Realtime Call Detail and Billing Record Transport	See TIA/EIA-124-C
N.S0038	Secure Mode OTASP and OTAPA	See TIA-906

3GPP2 TSG-P Specifications (P.Sxxxx)

Specification	Description	Status
P.S0001	Wireless IP Network based on IETF Protocols (same as IS-835)	See IS-835
P.S0001-A	Wireless IP Network Standard	Published 08/00
P.S0001-A-1	Addendum to P.S0001-A	Published 01/01
P.S0001-Av3	Wireless IP Network Standard	See IS-835-A
P.S0001-B	Wireless IP Network Standard	See IS-835-B

3GPP2 TSG-P Reports (P.Rxxxx)

Report	Description	Status
P.R0001	Wireless IP Network Architecture based on IETF Protocols	Published 08/00

TIA TR-45.2 ANSI Standards and Annexes

ANSI Std.	Description	Status
J-STD-025	ANSI version of J-STD-025	Published 12/00
TIA/EIA-41-D	Intersystem Operations	Published 12/97
TIA/EIA-41-D-AD1	Addendum to TIA/EIA-41-D	Published 04/02
TIA/EIA-93-A	Ai and Di Interfaces Standard (including 9-1-1 Phase I: Cell/Sector Location)	Published 11/98
TIA/EIA-93-B	Ai and Di Interfaces Standard (including JIP and 9-1-1 Phase II location)	Published 07/01
TIA/EIA-124-B	Cellular Inter-System Non-Signaling Data Communications	Published 06/99
TIA/EIA-124-C	Support for WIN and CIBERNET NSDP-B-and-S protocol	Published 09/00
TIA/EIA-124-D	Further enhancements to call detail and billing records	Published 12/01
TIA/EIA-660	Cellular Dialing Plan (formerly IS-52)	Published 07/96 Rescinded
TIA/EIA-664	Cellular Feature Descriptions (formerly IS-53)	Published 06/96
TIA/EIA-664-A	Cellular Features Stage I Description	Published 12/00
TIA/EIA-664-B	Addition of part 804 (enhanced security)	Ballot 07/03

TIA TR-45.2 Published Standards

Standard	Description	Status
J-STD-025-A	CALEA Surveillance Support (joint with ATIS T1) including FCC Report and Order Requirements	Published 05/00
J-STD-025-A	Upgrade to ANSI [ballot extended to January, 2003]	Published 04/03
J-STD-034	Enhanced Wireless 9-1-1, Phase I: Identify Mobile and Cell/Sector Location	Published 12/97
J-STD-036	Enhanced 9-1-1 (E911), Phase II (125 m. location accuracy)	Published 08/00
J-STD-036-1	Corrected and Enhanced Emergency Services with Support for SMS, Inter-System Handoff and SAMPS	Published 12/00
J-STD-036-A	Enhanced 9-1-1 (E911), Phase II (125 m. location accuracy)	Published 06/02

J-STD-036-A-1	Addendum to Support Interim Position for Routing Emergency Calls More Accurately	Published 03/03
TIA/EIA-1020	IP-based Location Services (LCS)	Development
TIA/EIA-1021	Transcoder Free Operations (TrFO)	Development
TIA/EIA-1022	Legacy MS Domain Step-2 (LMSD-2)	Development
IS-725-A	IS-725 enhanced to include Over-the-air Parameter Administration (OTAPA)	Published 07/99
IS-771	WIN (Wireless Intelligent Network) Phase I: voice controlled services and call screening	Published 07/99
IS-771-1	WIN Phase I addendum	Published 08/01
IS-778	Authentication Enhancements	Published 03/99
IS-786	Automatic Code Gapping (ACG) Overload Control	Published 11/00
IS-807	Internationalization of TIA/EIA-41	Published 08/99
IS-807-1	Updates global title translation types in IS-807	Published 03/00
IS-808	User Identification Module (R-UIM) for use in 3G systems	Published 12/00
IS-812	TIA/EIA-41 Message Segmentation (to overcome SS7 network packet size limitations)	Published 08/99
IS-824	Broadcast/Multicast Short Message Service (BTTC)	Published 11/99
IS-826	WIN Phase II: Prepaid calling	Published 08/00
IS-826-A	WIN Phase II: Prepaid calling	Ballot 09/03
IS-837	Answer Hold (AH)	Published 07/00
IS-838	User Selective Call Forwarding (USCF)	Published 08/00
IS-841	MDN Based Message Centers	Published 09/00
IS-847	VLR Roamer Database Verification (RDV)	Published 03/01
IS-847-A	RDV, allowing MDN range verification and query of nodes other than VLR	Published 07/02
IS-848	WIN Phase II: Enhanced Charging Services (Premium Rate Charging, Wireless Freephone)	Published 12/00
IS-872	IP Core Network Support for Legacy Mobiles (LMSD) - Step 1	Published 12/02
IS-872-A	IP Core Network Support for Legacy Mobiles (LMSD) - Step 1	Ballot 10/03
IS-875	Network Based Enhancements for International Dialing, Calling Number ID and Callback	Published 05/01
IS-880	Intersystem Support for CDMA Packet Data, Phase I	Published 07/02
TIA-728	Inter-System Link Protocol (ISLP). Supports data calls after inter-MSC handoff.	Published 04/98
TIA-730	TIA/EIA-41 Support for IS-136 DCCH (TDMA digital control channel)	Published 08/97
TIA-735	TIA/EIA-41 Support for CDMA (Network directed system selection (NDSS) and Temporary MS Identifiers (TMSI))	Published 02/98
TIA-737	TIA/EIA-41 Support for Circuit Switched Data Services for CDMA and TDMA Terminals	Published 04/98
TIA-751	TIA/EIA-41 support for International Mobile Station Identity (E.212 IMSI)	Published 02/98
TIA-756-A	Wireless Number Portability (WNP), Phase II (MDN/MIN separation to allow porting to or from wireless phone numbers)	Published 12/98
TIA-756-A-1	Allow emergency numbers to be portable	Published 10/02
TIA-764	Calling Name Presentation/Restriction	Published 06/98
TIA-934-000	Multimedia Messaging Service (MMS) Overview	Published 05/03
TIA-934-200	MMS Stage-2, Functional Description	Published 05/03
TIA-934-310	MMS MM1 Interface Stage-3 using OMA/WAP	Published 05/03
TIA-934-311	MMS MM1 Interface Stage-3 using M-IMAP for Message Submission and Retrieval	Published 05/03
TIA-934-333	MMS MM3 Interface Stage-3 for Internet Mail Exchange	Published 05/03
TIA-934-340	MMS MM4 Interface Stage-3 Intercarrier Interworking	Published 05/03
TIA-934-370	MMS MM7 Interface. VASP Interworking Stage-3	Published 05/03
TIA-935	Circuit-switched (e.g. voice) call precedence over CDMA packet data session (CPOP)	Published 06/03
TIA-937	Open Service Access (OSA): Application Programming Interface (API)	Published 06/03

TIA TR-45.2 Telecommunications Systems Bulletins (TSBs)

TSB	Description	Status
TSB-29-E	TSB-29 revision with SID block assignments removed	Published 12/02
TSB-56-A	Application Level Testing for IS-41 Rev. B, IS-53 Rev. 0 and TSB-51	Published 06/94
TSB-76	PCS Multi-Band Support	Published 09/96
TSB-114	Broadcast of Emergency Alert Messages to Wireless Phones (EAS)	Published 12/99
TSB-124	Support for WIN Prepaid (IS-826)	Published 10/00

TIA TR-45.2 Projects Being Balloted

Standard	Project	Description	Status
J-STD-025-B	PN-4465-RV1	Surveillance of Packet Data Communications (Wireline and Wireless)	Ballot 09/03
J-STD-038-B	PN-4926	TIA/EIA-41/CDMA roaming to a GSM	Ballot 02/04
TIA/EIA-41-E	PN-3590-RV5	Intersystem Operations, including TSB76, IS-730, 735, 737, 751, 756-A, 764, 771, 778, 807, 812, J-STD-034, N.S0015	Re-ballot 06/03
IS-873	PN-4935	IP Core Network Support for Multimedia Terminals (MMD). Parts 00, 02, 03 (Stage 2), 04 (SIP/SDP), 05/06	Ballot 10/03
IS-880-A	PN-4720-RV1	Intersystem Support for CDMA Packet Data, Phase II	Development
TIA-756-A-2	PN-4186-AD2	Allow TLDNs to be pooled	Development
TIA-756-B	PN-4186-AD1	Number Pooling Enhancements	Development
TIA-881	PN-4747	Location Service Enhancements, Including Security	Ballot 10/03

TIA TR-45.2 Developing Projects

Standard	Project	Description	Status
J-STD-025-C	PN-4465-RV2	Addition of CGVoP	Development
J-STD-036-B	PN-3890-RV2	Enhanced 9-1-1 (E911) Revisions to Incorporate Field Experience	Development
TIA/EIA-41-F	PN-3590-RV6	Intersystem Operations, including IS-786, 808, 824, 826, 837, 838, 841, 847, 848, 880, J-STD-036	Development
TIA/EIA-124-E	PN-xxxx	Further enhancements to call detail and billing records, including support for location services and IP-based telephony	Development
IS-843	PN-4818	WIN Phase III: Location Based Services	Development
IS-847-A-1	PN-4785-RV1	Erratum to correct error code handling tables	Development
IS-868	PN-4925	SIM roaming from TIA/EIA-41 (CDMA) to GSM	Development
TIA-906	PN-0045	Secure Mode Over-the-Air Service Provisioning (OTASP) and Parameter Administration (OTAPA)	Development
TIA-917	PN-0054	Wireless Priority Service	Development
	PN-4288	Enhanced Emergency Services (E9-1-1), Phase III: Optional features beyond FCC mandate	On hold
	PN-4393	Enhanced Security (authentication and encryption) for TIA/EIA-41 (ESA/AKA)	Development
	PN-4927	Interworking and interoperability (IIF) enhancements to support IS-868	Completed

TIA TR-45.2 Superseded Specifications

Standard	Description	Status
J-STD-025	CALEA surveillance support (joint with ATIS T1) - Interim Standard	Published 12/97 Rescinded 05/01
J-STD-025-1	Addendum to J-STD-025	Published 07/00 Rescinded 05/01
J-STD-025-2	Addendum to J-STD-025	Published 07/00 Rescinded 05/01
IS-41-C	Cellular Radio Telecommunications Intersystem Operations	Published 02/96
IS-52-A	Uniform Dialing Procedures for use in Cellular Radiotelephone Systems	Published 03/95
IS-53-A	Cellular Features Description	Published 04/95
IS-725	IS-41 support for Over-the-air Service Provisioning (OTASP)	Published 09/97
IS-756	Wireless Number Portability (WNP), Phase I (database query)	Published 04/98
TSB-29-A	International Implementation of Cellular Systems Compliant with TIA-553	Rescinded
TSB-29-B	International Implementation of Wireless Systems	Rescinded
TSB-29-B.1	TSB-29-B addendum including IFAST#6 updates (11/97)	Rescinded
TSB-29-B.2	TSB-29-B addendum, including IFAST #7 updates (02/98)	Rescinded
TSB-29-C	International Implementations of Wireless Systems	Published 09/99 Rescinded 12/00
TSB-29-C-1	Addendum to International Implementations of Wireless Systems	Published 12/99 Rescinded 12/00
TSB-29-D	TSB-29 revision with IFAST-assigned IRM codes removed	Published 12/00
TSB-41	Technical Notes for IS-41 Revision B	Published 11/94
TSB-51	Inter-System Authentication, Signaling Message Encryption and Voice Privacy	Published 05/93
TSB-55	IS-41 Rev. A/B Forward Compatibility ("Tech Notes")	Published 05/94
TSB-64	Wideband Spread Spectrum Intersystem Operations	Published 02/94
TSB-65	Border Cell Problems	Replaced by TIA/EIA-41-D

TIA TR-45.6 3G Packet Data Standards

Standard	Description	Status
IS-835	CDMA2000 Wireless IP Network Standard	Published 12/00
IS-835-1	Addendum to IS-835	Replaced by IS-835-A
IS-835-A	CDMA2000 Wireless IP Network Standard	Published 05/01
IS-835-B	Supports IPv6, Dynamic Home Agent, QoS and Push Services	Published 09/02
IS-835-B-1	Addendum to IS-835-B-1	Development
IS-835-C	CDMA2000 Wireless IP Network Standard	Published 08/03
TIA-930	Legacy Mobile Station Domain (LMSD) Step 1 for CDMA2000 (IP-based call setup)	Published 01/03
TSB-115	CDMA2000 Wireless IP Architecture based on IETF Protocols	Published 12/00

TIA TR-45.6 CDPD - Cellular Digital Packet Data

Standard	Description	Status
TIA/EIA-732	Revisions to CDPD and Upgrade to ANSI	Published 06/01
IS-732	Cellular Digital Packet Data (CDPD) - multiple parts	Published 12/97 Rescinded
TSB-87	CDPD support services (Directory, Authentication, DNS, Testing, Identifiers, Numbering)	Published 12/97