3GPP TR 21.905 V15.0.0 (2018-03)

Technical Report

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications (Release 15)

The present document has been developed within the 3rd Generation Partnership Project (3GPP ™) and may be further elaborated for the purposes of 3GPP.
The present document has not been subject to any approval process by the 3GPP Organisational Partners and shall not be implemented.
This Specification is provided for future development work within 3GPP only. The Organisational Partners accept no liability for any use of this Specification.
Specifications and reports for implementation of the 3GPP ™ system should be obtained via the 3GPP Organisational Partners' Publications Offices.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 001

Keywords

GSM, UMTS, LTE, Vocabulary

3GPP

Postal address

3GPP support office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet

http://www.3gpp.org

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© 2017, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
All rights reserved.

UMTS™ is a Trade Mark of ETSI registered for the benefit of its members
3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners
LTE™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners
GSM® and the GSM logo are registered and owned by the GSM Association

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 002

Contents

Foreword 5
1 Scope 5
2 References 5
3 Terms and definitions 6
0-9 6
A 6
B 8
C 9
D 11
E 12
F 14
G 14
H 15
I 15
J 17
K 17
L 17
M 18
N 21
O 22
P 22
Q 24
R 25
S 27
T 31
U 33
V 34
W 34
X 34
Y 35
Z 35
4 Abbreviations 35
0-9 35
A 35
B 36
C 37
D 40
E 41
F 42
G 43
H 43
I 44
J 45
K 45
L 46
M 47
N 48
O 49
P 50
Q 52
R 52
S 54

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 003

T 56
U 58
V 58
W 59
X 59
Y 59
Z 60

5 Equations 61

Annex A: Change history 63

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 004

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The purpose of this report is to identify specialist technical terms used within the 3GPP project for the purposes of specifying service requirements. The motivations for this are:

- To ensure that editors use terminology that is consistent across specifications.
- To provide a reader with convenient reference for technical terms that are used across multiple documents.
- To prevent inconsistent use of terminology across documents.

This document is a collection of terms, definitions and abbreviations related to the baseline documents defining 3GPP objectives and systems framework. This document provides a tool for further work on 3GPP technical documentation and facilitates their understanding.

The terms, definitions and abbreviations as given in this document are either imported from existing documentation (ETSI, ITU or elsewhere) or newly created by 3GPP experts whenever the need for precise vocabulary was identified.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] Void

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 005

[2] Void

[3] "The Path towards UMTS - Technologies for the Information Society" – Report #2, UMTS Forum.

[4] 3GPP TS 23.122: "Non-Access-Statum (NAS) functions related to Mobile Station (MS) in idle mode".

[5] ETSI TR 180 000: "NGN terminology".

[6] IEC 60050-161: "International Electrotechnical Vocabulary - Chapter 161: Electromagnetic compatibility".

[7] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[8] 3GPP TS 23.101: "General Universal Mobile Telecommunications System (UMTS) architecture".

[9] 3GPP TS 23.682: "Architecture enhancements to facilitate communications with packet data networks and applications".

3 Terms and definitions

0-9

1.8V technology Smart Card: A Smart Card operating at 1.8V ± 10% and 3V ± 10%.

1.8V technology Terminal: A terminal operating the Smart Card - Terminal interface at 1.8V ± 10% and 3V ± 10%.

3GPP Generic User Profile (GUP): The 3GPP Generic User Profile is the collection of user related data which affects the way in which an individual user experiences services and which may be accessed in a standardised manner.

3GPP system: A telecommunication system conforming to 3GPP specifications, consisting of one or more 3GPP core networks, one or more 3GPP access networks (providing GSM/EDGE, UTRA, E-UTRA, or NR radio access), and/or non-3GPP access networks (such as WLAN), and User Equipment.

3GPP System core network: refers in this specification to an evolved GSM core network infrastructure.

3GPP System coverage: see coverage area.

3GPP System IC Card: An IC card (or 'smartcard') of defined electromechanical specification which contains at least one USIM.

3GPP System mobile termination: part of the 3GPP System Mobile Station which provides functions specific to the management of the radio interface (Um).

3GPP-WLAN Interworking: Used to generically refer to interworking between the 3GPP system and the WLAN family of standards.

3V technology Smart Card: A Smart Card operating at 3V± 10% and 5V ± 10%.

3V technology Terminal: A terminal operating the Smart Card - Terminal interface at 3V-± 10% and 5V ± 10%.

A

A/Gb mode: mode of operation of the MS when connected to the Core Network via GERAN and the A and/or Gb interfaces.

Acceptable Cell: A cell that the UE may camp on to make emergency calls. It must satisfy certain conditions.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 006

Access conditions: A set of security attributes associated with a file.

Access delay: The value of elapsed time between an access request and a successful access (source: ITU-T X.140).

Access Stratum: functional grouping consisting of the parts in the infrastructure and in the user equipment and the protocols between these parts being specific to the access technique (i.e. the way the specific physical media between the User Equipment and the Infrastructure is used to carry information).

Note: For full definition, see 23.101 [8], clause 6.2.

Access Stratum SDU (Service Data Unit): Unit of data transferred over the access stratum SAP (Service Access Point) in the Core Network or in the User Equipment.

Access protocol: A defined set of procedures that is adopted at an interface at a specified reference point between a user and a network to enable the user to employ the services and/or facilities of that network (source: ITU-T I.112).

Accounting: The process of apportioning charges between the Home Environment, Serving Network and User.

Accuracy: A performance criterion that describes the degree of correctness with which a function is performed. (The function may or may not be performed with the desired speed.) (source: ITU-T I.350).

Active communication: a UE is in active communication when it has a CS connection established. For PS active communication is defined by the existence of one or more Activated PDP contexts. Either one or both of the mentioned active communications may occur in the UE.

Active Set: Set of radio links simultaneously involved in a specific communication service between an UE and a UTRAN.

Adjacent Channel Leakage power Ratio (ACLR): The ratio of the average power centered on the assigned channel frequency to the average power centered on an adjacent channel frequency. In both cases the average power is measured with a filter that has Root Raised Cosine (RRC) filter response with roll-off $\alpha = 0.22$ and a bandwidth equal to the chip rate.

Air Interface User Rate: The user rate between Mobile Termination and IWF. For T services it is the maximum possible AIUR not including padding. For NT services it is the maximum possible AIUR.

ALCAP: Generic name for the transport signalling protocols used to set-up and tear-down transport bearers.

Allowable PLMN: A PLMN which is not in the list of forbidden PLMN in the UE.

Allowed CSG list: A list stored in the UE containing the CSG identities and associated PLMN identities of the CSGs to which the subscriber belongs.

Ancillary equipment: Equipment (apparatus), used in connection with a receiver, transmitter or transceiver is considered as an ancillary equipment (apparatus) if:

- the equipment is intended for use in conjunction with a receiver, transmitter or transceiver to provide additional operational and/or control features to the radio equipment, (e.g. to extend control to another position or location); and
- the equipment cannot be used on a stand alone basis to provide user functions independently of a receiver, transmitter or transceiver; and
- the receiver, transmitter or transceiver to which it is connected, is capable of providing some intended operation such as transmitting and/or receiving without the ancillary equipment (i.e. it is not a sub unit of the main equipment essential to the main equipment basic functions).

Applet: A small program that is intended not to be run on its own, but rather to be embedded inside another application

Application: an application is a service enabler deployed by service providers, manufacturers or users. Individual applications will often be enablers for a wide range of services. (UMTS Forum report #2) [3]

Applications / Clients: These are services, which are designed using service capability features.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 007

Application Dedicated File (ADF): an application DF is the entry point to an application on the UICC.

Application Interface: Standardised Interface used by application/clients to access service capability features.

Application protocol: The set of procedures required by the application.

ASCI Generic name to identify the services VGCS, VBS and eMLPP.

Authentication: A property by which the correct identity of an entity or party is established with a required assurance. The party being authenticated could be a user, subscriber, home environment or serving network.

Available PLMN: A PLMN where the UE has found a cell that satisfies certain conditions.

Average power: The thermal power as measured through a root raised cosine filter with roll-off $\alpha = 0.22$ and a bandwidth equal to the chip rate of the radio access mode. The period of measurement shall be one power control group (timeslot) unless otherwise stated.

B

Band category: A group of operating bands for which the same MSR scenarios apply

Base Station: A base station is a network element in radio access network responsible for radio transmission and reception in one or more cells to or from the user equipment. A base station can have an integrated antenna or be connected to an antenna by feeder cables. In UTRAN it terminates the I_{ub} interface towards the RNC. In GERAN it terminates the Abis interface towards the BSC.

Baseline capabilities: Capabilities that are required for a service-less UE to operate within a network. The baseline capabilities for a UE include the capabilities to search for, synchronise with and register (with authentication) to a network. The negotiation of the UE and the network capabilities, as well as the maintenance and termination of the registration are also part of the required baseline capabilities.

Base Station Controller: This equipment in the BSS is in charge of controlling the use and the integrity of the radio resources.

Base station receive period: The time during which the base station is receiving data subframes or UpPTS.

Base Station RF bandwidth: The bandwidth in which a Base Station transmits and receives multiple carriers and/or RATs simultaneously

Base Station RF bandwidth edge: The frequency of one of the edges of the Base Station RF bandwidth

Base Station Subsystem: Either a full network or only the access part of a GERAN offering the allocation, release and management of specific radio resources to establish means of connection between an MS and the GERAN.
A Base Station Subsystem is responsible for the resources and transmission/reception in a set of cells.

Baseline Implementation Capabilities: Set of Implementation capabilities, in each technical domain, required to enable a UE to support the required Baseline capabilities.

Basic OR Basic Optimal Routeing

Basic telecommunication service: This term is used as a common reference to both bearer services and teleservices.

Bearer: A information transmission path of defined capacity, delay and bit error rate, etc.

Bearer capability: A transmission function which the UE requests to the network.

Bearer independent protocol: (UICC) Mechanism by which the ME provides the (U)SIM applications on the UICC with access to the data bearers supported by the ME and the network.

Bearer service: A type of telecommunication service that provides the capability of transmission of signals between access points.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 008

Best effort QoS: The lowest of all QoS traffic classes. If the guaranteed QoS cannot be delivered, the bearer network delivers the QoS which can also be called best effort QoS.

Best effort service: A service model which provides minimal performance guarantees, allowing an unspecified variance in the measured performance criteria.

Billing: A function whereby CDRs generated by the charging function are transformed into bills requiring payment.

Broadcast: A value of the service attribute "communication configuration", which denotes unidirectional distribution to all users (source: ITU-T I.113).

Byte code: (UICC) A hardware machine independent representation of a primitive computer operation that serves as an instruction to a software program called an interpreter or a virtual machine that simulates the hypothetical computer's central processing unit. code generated by a Java compiler and executed by the Java interpreter.

C

Cable, Connector, and Combiner Losses (Transmitter) (dB): The combined losses of all transmission system components between the transmitter output and the antenna input (all losses in positive dB values).

Cable, Connector, and Splitter Losses (Receiver) (dB): The combined losses of all transmission system components between the receiving antenna output and the receiver input.

CAC (Connection Admission Control): A set of measures taken by the network to balance between the QoS requirements of new connections request and the current network utilisation without affecting the grade of service of existing/already established connections.

Call: a logical association between several users (this could be connection oriented or connection less).

Carrier: The modulated waveform conveying the E-UTRA, UTRA or GSM/EDGE physical channels

Carrier frequency: center frequency of the cell

Camped on a cell: The UE is in idle mode and has completed the cell selection/reselection process and has chosen a cell. The UE monitors system information and (in most cases) paging information. Note that the services may be limited, and that the PLMN may not be aware of the existence of the UE within the chosen cell.

Capability Class: A piece of information which indicates general 3GPP System mobile station characteristics (e.g. supported radio interfaces,...) for the interest of the network.

Card session: A link between the card and the external world starting with the ATR and ending with a subsequent reset or a deactivation of the card.

CBS DRX cycle: The time interval between successive readings of BMC messages.

Cell: Radio network object that can be uniquely identified by a User Equipment from a (cell) identification that is broadcasted over a geographical area from one UTRAN Access Point. A Cell is either FDD or TDD mode.

Cell Radio Network Temporary Identifier (C-RNTI): The C-RNTI is a UE identifier allocated by a controlling RNC and it is unique within one cell controlled by the allocating CRNC. C-RNTI can be reallocated when a UE accesses a new cell with the cell update procedure.

Cellular Text telephone Modem (CTM): A modulation and coding method intended for transmission of text in voice channels for the application of real time text conversation.

Channel bandwidth: The RF bandwidth supporting a single RF carrier with the transmission bandwidth configured in the uplink or downlink of a cell. The channel bandwidth is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

Channel edge: The lowest and highest frequency of the carrier, separated by the channel bandwidth.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 009

Chargeable Event: An activity utilising telecommunications network infrastructure and related services for user to user communication (e.g. a single call, a data communication session or a short message), or for user to network communication (e.g. service profile administration), or for inter-network communication (e.g. transferring calls, signalling, or short messages), or for mobility (e.g. roaming or inter-system handover), which the network operator wants to charge for. The cost of a chargeable event may cover the cost of sending, transporting, delivery and storage. The cost of call related signalling may also be included.

Charged Party: A user involved in a chargeable event who has to pay parts or the whole charges of the chargeable event, or a third party paying the charges caused by one or all users involved in the chargeable event, or a network operator.

Charging: A function whereby information related to a chargeable event is formatted and transferred in order to make it possible to determine usage for which the charged party may be billed.

Charging Data Record (CDR): A formatted collection of information about a chargeable event (e.g. time of call set-up, duration of the call, amount of data transferred, etc) for use in billing and accounting. For each party to be charged for parts of or all charges of a chargeable event a separate CDR shall be generated, i.e more than one CDR may be generated for a single chargeable event, e.g. because of its long duration, or because more than one charged party is to be charged.

Cipher key: A code used in conjunction with a security algorithm to encode and decode user and/or signalling data.

Closed group: A group with a pre-defined set of members. Only defined members may participate in a closed group.

Closed Subscriber Group (CSG): A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells).

Coded Composite Transport Channel: A data stream resulting from encoding and multiplexing of one or several transport channels.

Common Channel: A Channel not dedicated to a specific UE.

Confidentiality: The avoidance of disclosure of information without the permission of its owner.

Connected Mode: Connected mode is the state of User Equipment switched on and an RRC connection established.

Connection: A communication channel between two or more end-points (e.g. terminal, server etc.).

Connection mode: The type of association between two points as required by the bearer service for the transfer of information. A bearer service is either connection-oriented or connectionless. In a connection oriented mode, a logical association called *connection* needs to be established between the source and the destination entities before information can be exchanged between them. Connection oriented bearer services lifetime is the period of time between the establishment and the release of the connection. In a connectionless mode, no connection is established beforehand between the source and the destination entities; the source and destination network addresses need to be specified in each message. Transferred information cannot be guaranteed of ordered delivery. Connectionless bearer services lifetime is reduced to the transport of one message.

Connectionless (for a bearer service): In a connectionless bearer, no connection is established beforehand between the source and the destination entities ; the source and destination network addresses need to be specified in each message. Transferred information cannot be guaranteed of ordered delivery. Connectionless bearer services lifetime is reduced to the transport of one message.

Connectionless service: A service which allows the transfer of information among service users without the need for end-to-end call establishment procedures (source: ITU-T I.113).

Continuous phenomena (continuous disturbance): Electromagnetic disturbance, the effects of which on a particular device or equipment cannot be resolved into a succession of distinct effects (IEC 60050-161 [6]).

Control channel: A logical channel that carries system control information.

Controlling RNC: A role an RNC can take with respect to a specific set of UTRAN access points. There is only one Controlling RNC for any UTRAN access point. The Controlling RNC has the overall control of the logical resources of its UTRAN access point's.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 010

Conversational service: An interactive service which provides for bi-directional communication by means of real-time (no store-and-forward) end-to-end information transfer from user to user (source: ITU-T I.113).

Core network: An architectural term relating to the part of 3GPP System which is independent of the connection technology of the terminal (eg radio, wired).

Core Network Operator: Operator that offers core network services.

Corporate code: Code which when combined with the network and SP codes refers to a unique Corporate. The code is provided in the GID2 file on the (U)SIM (see Annex A.1.) and is correspondingly stored on the ME.

Corporate code group combination of the Corporate code and the associated SP and network codes.

Corporate personalisation: Allows a corporate customer to personalise MEs that he provides for his employees or customers use so that they can only be used with the company's own (U)SIMs.

Coverage area (of a mobile cellular system): An area where mobile cellular services are provided by that mobile cellular system to the level required of that system.

Coverage area: Area over which a 3GPP System service is provided with the service probability above a certain threshold.

CSG cell: A cell, part of the PLMN, broadcasting a specific CSG Identity. A CSG cell is accessible by the members of the closed subscribers group for that CSG Identity. All the CSG cells sharing the same identity are identifiable as a single group.

CSG Identity (CSGID): An identity broadcast by a CSG cell or cells and used by the UE to facilitate access for authorised members of the associated Closed Subscriber Group.

CSG Indicator: An indication transmitted on the broadcast channel of the CSG cell that allows the UE to identify such as CSG cell.

CSG manager: A CSG manager can, under the operator's supervision, add, remove and view the list of CSG members.

Current directory: The latest MF or DF selected on the UICC.

Current EF: The latest EF selected.

Current serving cell: This is the cell on which the MS is camped.

D

Data field: Obsolete term for Elementary File.

Data Object: Information coded as TLV objects, i.e. consisting of a Tag, a Length and a Value part.

Dedicated Channel: A channel dedicated to a specific UE.

De-personalisation: Is the process of deactivating the personalisation so that the ME ceases to carry out the verification checks.

Dedicated File (DF): A file containing access conditions and, optionally, Elementary Files (EFs) or other Dedicated Files (DFs).

Delivered QoS: Actual QoS parameter values with which the content was delivered over the lifetime of a QoS session.

Demand service: A type of telecommunication service in which the communication path is established almost immediately, in response to a user request effected by means of user-network signalling (source: ITU-T I.112).

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 011

Dependability: A performance criterion that describes the degree of certainty (or surety) with which a function is performed regardless of speed or accuracy, but within a given observational interval (source: ITU-T I.350).

Destination user: Entity to which calls to the General Packet Radio Service (GPRS) are directed.

Directory: General term for the MF or a DF on the UICC.

Directory Number: A string consisting of one or more of the characters from the set {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, #, a, b, c} associated with a nature of address indicator and number plan indicator. When using the public MMI for the control of supplementary services however, * and # cannot be part of any SC or SI field.

NOTE 1: No such restriction on the SC and SI fields exists when using other (e.g. menu-driven) MMI for the control of supplementary services.

NOTE 2: When using the public MMI, certain limitations on the use of one and two digit directory numbers may apply. The use of other MMI can remove these restrictions.

NOTE 3: This definition is not intended to require the support of all these characters in the MMI itself.

Distribution service: Service characterised by the unidirectional flow of information from a given point in the network to other (multiple) locations (source: ITU-T I.113).

DL RS power: The resource element power of Downlink Reference Symbol.

Domain: The highest-level group of physical entities. Reference points are defined between domains.

Domain Specific Access Control: Access control functionality for access barring in either domain (i.e. CS domain or PS domain).

Donor coupling loss: the coupling loss between the repeater and the donor base station.

Donor network: The subscription network from which a number is ported in the porting process. This may or may not be the number range owner network.

Downlink: Unidirectional radio link for the transmission of signals from a UTRAN access point to a UE. Also in general the direction from Network to UE.

Downlink operating band: The part of the operating band designated for downlink.

Downlink Pilot Timeslot: Downlink part of the special subframe (for TDD operation)

Drift RNS: The role an RNS can take with respect to a specific connection between a UE and UTRAN. An RNS that supports the Serving RNS with radio resources when the connection between the UTRAN and the User Equipment need to use cell(s) controlled by this RNS is referred to as Drift RNS.

E

Element Manager: Provides a package of end-user functions for management of a set of closely related types of network elements. These functions can be divided into two main categories.

Element Management Functions: Set of functions for management of network elements on an individual basis. These are basically the same functions as supported by the corresponding local terminals.

Elementary File (EF): A file containing access conditions and data and no other files on the UICC.

Elementary procedure (EP): The RANAP, RNSAP, NBAP, S1AP, X2AP, PCAP, HNBAP, LPPa, RNA, RUA, RETAP and TMAAP protocols consist of elementary procedures (EPs).

An EP consists of an initiating message and possibly a response message.

Three kinds of EP are used:

- Class 1: Elementary Procedures with response (success or failure).

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 012

- Class 2: Elementary Procedures without response.
- Class 3: Elementary Procedures with possibility of multiple responses (RANAP only).

For Class 1 EPs, the types of responses can be as follows:

Successful

- A signalling message explicitly indicates that the elementary procedure has been successfully completed with the receipt of the response.

Unsuccessful

- A signalling message explicitly indicates that the EP failed.

Class 2 EPs are considered always successful.

Class 3 EPs have one or several response messages reporting both successful and unsuccessful outcome of the requests, and temporary status information about the requests. This type of EP only terminates through response(s) or EP timer expiry.

End-User: An End-User is an entity (typically a user), associated with one or multiple subscriptions through identities (e.g. IMSIs, MSISDNs, IMPIs, IMPUs and application-specific identities). In the 3GPP system an End-User is characterised by an End-User Identity.

End-User Identity (EUI): An End-User Identity is an identity that uniquely characterises an End-User in the 3GPP system. An End-User Identity is mainly intended for administration purposes of the operator.

Enterprise Systems: Information Systems that are used in the telecommunication organisation but are not directly or essentially related to the telecommunications aspects (Call Centre's, Fraud Detection and Prevention Systems, Invoicing etc).

Equivalent HPLMN / Equivalent Home PLMN (EHPLMN): Any of the PLMN entries contained in the Equivalent HPLMN list.

Equivalent HPLMN list: To allow provision for multiple HPLMN codes, PLMN codes that are present within this list shall replace the HPLMN code derived from the IMSI for PLMN selection purposes. This list is stored on the USIM and is known as the EHPLMN list. The EHPLMN list may also contain the HPLMN code derived from the IMSI. If the HPLMN code derived from the IMSI is not present in the EHPLMN list then it shall be treated as a Visited PLMN for PLMN selection purposes.

E-UTRAN Radio Access Bearer (E-RAB): An E-RAB uniquely identifies the concatenation of an S1 Bearer and the corresponding Data Radio Bearer. When an E-RAB exists, there is a one-to-one mapping between this E-RAB and an EPS bearer of the Non Access Stratum as defined in [7].

Essential UE Requirement (Conditional): Requirement which has to be implemented under certain Service conditions. e.g. AMR codec in UE which supports speech service

Essential UE Requirement (Unconditional): Requirement which has to be implemented in any 3G UE in order to exist in and communicate with 3G network (e.g. Chiprate of 3.84Mcps).

Evolved Packet Core: Is a framework for an evolution or migration of the 3GPP system to a higher-data-rate, lower-latency, packet-optimized system that supports, multiple RATs.

Evolved Packet System: Is an evolution of the 3G UMTS characterized by higher-data-rate, lower-latency, packet-optimized system that supports multiple RATs. The Evolved Packet System comprises the Evolved Packet Core together with the evolved radio access network (E-UTRA and E-UTRAN).

Evolved UTRA: Evolved UTRA is an evolution of the 3G UMTS radio-access technology towards a high-data-rate, low-latency and packet-optimized radio-access technology.

Evolved UTRAN: Evolved UTRAN is an evolution of the 3G UMTS radio-access network towards a high-data-rate, low-latency and packet-optimized radio-access network.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 013

Explicit Diversity Gain (dB): The effective gain achieved using diversity techniques.

Extended DRX: A power saving feature where paging cycles can range from seconds to several hours, depending on Radio Access Technology.

Extra SDU delivery probability: The ratio of total (unrequested) extra service data units (SDUs) to total service data units received by a destination user in a specified sample (source: ITU-T X.140).

NOTE: the term "user information unit" has been replaced by the term "service data unit".

F

File: A named and hierarchically-classified data set on the UICC.

File identifier (FID): The 2-byte name of a file or a directory on the UICC.

Fixed Network User Rate: The user rate between IWF and the fixed network.

FC (Flow Control): A set of mechanisms used to prevent the network from becoming overloaded by regulating the input rate transmissions.

Flexible Layer One (FLO): GERAN feature that allows the channel coding of the layer one to be configured at call setup.

Fixed Mobile Convergence (FMC): In a given network configuration, the capabilities that provide service and application to the end-user irrespective of the fixed or mobile access technologies and independent of user's location. In the NGN environment, it means to provide NGN services to end-users regardless of the access technology.

Framework: A framework defines a set of Application Programming Interface (API) classes for developing applications and for providing system services to those applications.

Frequency layer: set of cells with the same carrier frequency.

Functional group: A set of functions that may be performed by a single equipment (source: ITU-T I.112).

G

Geographical routing: The conversion of the PDU's geographical area definition, which specifies the area in which the PDU will be broadcast, into an equivalent radio coverage map.

GERAN Radio Network Temporary Identifier (G-RNTI): G-RNTI is an MS identifier which is allocated by the Serving BSC and is unique within this SBSC. It is allocated for all MSs having an RRC connection. The G-RNTI is always reallocated when the Serving BSC for the RRC connection is changed and deallocated when the RRC connection is released. The G-RNTI is also used at RLC/MAC during contention resolution.

GPRS MS: An MS capable of GPRS services is a GPRS MS**.**

Group: A set of members allowed to participate in the group call service. The group is defined by a set of rules that identifies a collection of members implicitly or explicitly. These rules may associate members for the purpose of participating in a group call, or may associate members who do not participate in data transfer but do participate in management, security, control, or accounting for the group.

Group call: The relationship that exists between the members of a group for the purpose of transferring data. More than one group call may exist in a group. A group call establishes an active group.

Group call initiator: A member (or third party) authorised to initiate a group call. More than one member may initiate group calls.

Group call participant: A member of a group participating in a particular group call at a given time.

Group call server: A logical entity that provides the group call service to the members.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 014

Group call service: A PTM service in which a relationship exists between participants of the group, and in which a single data unit transmitted by a source participant is received by multiple destination participants; it is a one-in, many-out service.

Group controller: The member (or third party) responsible for the group creation and membership control.

GSM/EDGE Radio Access Network: GERAN is a conceptual term identifying that part of the network which consists of BSCs and BTSs between A/Gb or Iu and Um interfaces.

GSM BSS: refers in this specification to the GSM/GPRS access network.

GSM core network: refers in this specification to the GSM NSS and GPRS backbone infrastructure.

GSM coverage: an area where mobile cellular services are provided in accordance with GSM standards

GSM session: That part of the card session dedicated to the GSM operation.

Guaranteed service: A service model which provides highly reliable performance, with little or no variance in the measured performance criteria.

H

Handoff Gain/Loss (dB): This is the gain/loss factor (+ or -) brought by handoff to maintain specified reliability at the cell boundary.

Handover: The transfer of a user's connection from one radio channel to another (can be the same or different cell).

Handover: The process in which the radio access network changes the radio transmitters or radio access mode or radio system used to provide the bearer services, while maintaining a defined bearer service QoS.

Hard Handover: Hard handover is a category of handover procedures where all the old radio links in the UE are abandoned before the new radio links are established.

Heterogeneous Network: a 3GPP access network consisting of multiple cells with different characteristics (e.g., for the case of E-UTRA: a variety of e-NodeBs, Home e-NodeBs, e-UTRA Relays).

HE-VASP: Home Environment Value Added Service Provider. This is a VASP that has an agreement with the Home Environment to provide services. The Home Environment provides services to the user in a managed way, possibly by collaborating with HE-VASPs, but this is transparent to the user. The same service could be provided by more than one HE-VASP and each HE-VASP can provide more than one service.

Home Environment: responsible for overall provision and control of the Personal Service Environment of its subscribers.

HNB Name: The HNB Name is a broadcast string in free text format that provides a human readable name for the Home NodeB/eNodeB.

Home PLMN: This is a PLMN where the MCC and MNC of the PLMN identity match the MCC and MNC of the IMSI. Matching criteria are defined in TS 23.122.

Hybrid cell: A cell broadcasting a CSG indicator set to false and a specific CSG identity. This cell is accessible as a CSG cell by UEs which are members of the CSG and as a normal cell by all other UEs.

I

IC Card: A card holding an Integrated Circuit containing subscriber, end user, authentication and/or application data for one or more applications.

IC card SIM: Obsolete term for ID-1 SIM.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 015

ICS proforma: A document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS.

ID-000 SIM: A UICC having the form on an ID-000 card (see ISO 7816-1 [24]) that contains a SIM application.

ID-1 SIM: A UICC having the format of an ID-1 card (see ISO 7816-1 [24]) that contains a SIM.

Idle mode: The state of UE switched on but which does not have any established RRC connection.

IP Flow Mobility: distribution of IP flows on a UE between 3GPP and WLAN available accesses based on the different characteristics of the IP flows, the operator policies and the capabilities of the available accesses.

Implementation capability: A capability that relates to a particular technical domain. Examples: a spreading factor of 128 (in the domain of the physical layer); the A5 algorithm; a 64 bit key length (in the domain of security); a power output of 21 dBm (in the domain of transmitter performance); support of AMR Codec (in the domain of the Codec); support of CHV1 (in the domain of the USIM).

Implementation Conformance Statement (ICS): A statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

Information Data Rate: Rate of the user information, which must be transmitted over the Air Interface. For example, output rate of the voice codec.

Initial paging information: This information indicates if the UE needs to continue to read more paging information and eventually receive a page message.

Initial paging occasion: The paging occasion the UE uses as starting point for its paging DRX cycle.

Integrity: (in the context of security) The avoidance of unauthorised modification of information.

Inter-cell handover: A handover between different cells. An inter-cell handover requires network connections to be altered.

Inter PLMN handover: Handover between different PLMNs, ie having different MCC-MNC.

Inter system handover: Handover between networks using different radiosystems , e.g. UMTS – GSM.

Interactive service: A service which provides the means for bi-directional exchange of information between users. Interactive services are divided into three classes of services: conversational services, messaging services and retrieval services (source: ITU-T I.113).

Interface: The common boundary between two associated systems (source: ITU-T I.112).

International Mobile Station Equipment Identity (IMEI): An "International Mobile Station Equipment Identity" is a unique number which shall be allocated to each individual mobile station equipment in the PLMN and shall be unconditionally implemented by the MS manufacturer.

International mobile user number (IMUN): The International Mobile User Number is a diallable number allocated to a 3GPP System user.

Interference Signal Code Power (ISCP): Given only interference power is received, the average power of the received signal after despreading and combining.

Interpreter: A software program that simulates a hypothetical computer by performing the operations defined by the instructions of this computer.(see also 'byte code' and 'virtual machine').

Interworking WLAN (I-WLAN): A WLAN that interworks with a 3GPP system.

Intra-cell handover: A handover within one sector or between different sectors of the same cell. An intra-cell handover does not require network connections to be altered.

Intra PLMN handover: Handover within the same network, ie having the same MCC-MNC regardless of radio access system.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 016

Note: this includes the case of UMTS <>GSM handover where MCC-MNC are the same in both cases.

IP-Connectivity Access Network (IP-CAN): The collection of network entities and interfaces that provides the underlying IP transport connectivity between the UE and the IMS entities**.** An example of an "IP-Connectivity Access Network" is GPRS.

IP-Connectivity Access Network bearer (IP-CAN bearer): The data communications bearer provided by the IP-Connectivity Access Network. When using GPRS, the IP-Connectivity Access Network bearers are provided by PDP Contexts.

IRP Information Model: An IRP Information Model consists of an IRP Information Service and a Network Resource Model (see below for definitions of IRP Information Service and Network Resource Model).

IRP Information Service: An IRP Information Service describes the information flow and support objects for a certain functional area, e.g. the alarm information service in the fault management area. As an example of support objects, for the Alarm IRP there is the alarm record and alarm list.

IRP Solution Set: An IRP Solution Set is a mapping of the IRP Information Service to one of several technologies (CORBA/IDL, SNMP/SMI, CMIP/GDMO, etc.). An IRP Information Service can be mapped to several different IRP Solution Sets. Different technology selections may be done for different IRPs.

Inter System Change: a change of radio access between different radio access technologies such as GSM and UMTS.

IMS Credentials (IMC): A set of IMS security data and functions for IMS access by a terminal that does not support any 3GPP access technology.. The IMC is not including an ISIM or a USIM. The IMC is not used if ISIM or USIM is present.

IMS Multimedia Telephony: A service that allows multimedia conversational communications between two or more users. It provides real time bidirectional conversational transfer of media, e.g. speech, video, text or other types of data. The IMS multimedia telephony service includes Supplementary Services and takes account of regulatory requirements.

IMS SIM (ISIM): An application residing on the UICC that provides access to IP Multimedia Services.

Iu: Interconnection point between an RNC or a BSC and a 3G Core Network. It is also considered as a reference point.

Iu-flex: Routing functionality for intra domain connection of RAN nodes to multiple CN nodes.

Iu mode: mode of operation of the MS when connected to the Core Network via GERAN or UTRAN and the Iu interface.

Iub: Interface between an RNC and a Node B.

Iur: A logical interface between two RNC. Whilst logically representing a point to point link between RNC, the physical realisation may not be a point to point link.

J

<void>

K

Key pair: Key pairs are matching private and public keys. If a block of data is encrypted using the private key, the public key from the pair can be used to decrypt it. The private key is never divulged to any other party, but the public key is available, e.g. in a certificate.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 017

L

Local Service: Services, which are provided by current roamed to network that are not HE services. The same service can be provided by a network as a local service to inbound roamers and as a HE service to the subscribers of this network.

Local IP Access (LIPA): Allows an IP-capable UE connected via a H(e)NB direct access to other IP-capable devices in the local residential/corporate IP network.

Localised Service Area (LSA): A LSA is an operator-defined group of cells, for which specific access conditions apply. This may correspond to an area in which the Core Network offers specific services. A LSA may be defined within a PLMN or globally. Therefore, a LSA may offer a non-contiguous radio coverage.

Location Registration (LR): The UE registers its presence in a registration area, for instance regularly or when entering a new registration area.

Logical Channel: A logical channel is an information stream dedicated to the transfer of a specific type of information over the radio interface. Logical Channels are provided on top of the MAC layer.

Logical Channel (UICC): A command/response communication context multiplexed on the physical channel between the ME and the UICC.

Logical Model: A Logical Model defines an abstract view of a network or network element by means of information objects representing network element, aggregations of network elements, the topological relationship between the elements, endpoints of connections (termination points), and transport entities (such as connections) that transport information between two or more termination points.
The information objects defined in the Logical Model are used, among others, by connection management functions. In this way a physical implementation independent management is achieved.

Logical O&M: Logical O&M is the signalling associated with the control of logical resources (channels, cells,) owned by the RNC but physically implemented in the Node B. The RNC controls these logical resources. A number of O&M procedures physically implemented in Node B impact on the logical resources and therefore require an information exchange between RNC and Node B. All messages needed to support this information exchange are classified as Logical O&M forming an integral part of NBAP.

Lower RF bandwidth edge: The frequency of the lower edge of the Base Station RF bandwidth, used as a frequency reference point for transmitter and receiver requirements

LSA exclusive access cell: A UE may only camp on this cell if the cell belongs to the LSAs to which the user has subscribed. Nevertheless, if no other cells are available, the UE of non-LSA users may originate emergency calls from this cell.

LSA only access: When LSA only access applies to the user, the UE can only access cells that belong to the LSAs to which the user has subscribed. Outside the coverage area of the subscribed LSAs, the UE may camp on other cells and limited services apply.

LSA preferential access cell: A LSA preferential access cell is a cell which is part of the LSA. UEs of users that have subscribed to a LSA of a LSA-preferential-access cell have higher priority to resources than non-LSA users in the same cell.

M

Macro cells: "Macro cells" are outdoor cells with a large cell radius.

Macro diversity handover: "Macro diversity" is a operation state in which a User Equipment simultaneously has radio links with two or more UTRAN access points for the sole aim of improving quality of the radio connection or providing seamless.

Management Infrastructure: The collection of systems (computers and telecommunications) a 3GPP System Organisation has in order to manage a 3GPP System.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 018

Mandatory UE Requirement: Regulatory requirement which is applicable to 3G UEs. It is determined by each country/region and beyond the scope of 3GPP specification (e.g. spurious emission in UK).

Master File (MF): The root directory of the file system hierarchy on the UICC.

Maximum Base Station RF bandwidth: The maximum RF bandwidth supported by a BS within an operating band.

Maximum output Power: For UE, this is a measure of the maximum power supported by the UE (i.e. the actual power as would be measured assuming no measurement error) (TS 25.101). For FDD BS, the mean power level per carrier of the base station measured at the antenna connector in a specified reference condition (TS 25.104). For TDD BS this refers to the measure of power when averaged over the transmit timeslot at the maximum power setting (TS 25.105). For LTE: the mean power level per carrier of the base station measured at the antenna connector in a specified reference condition.

Maximum possible AIUR: The highest possible AIUR that the multiple TCH/F can provide, e.g. 2 TCH/F using TCH/F9.6 provides a maximum possible AIUR of 19,2 kbit/s.

Maximum throughput: maximum achievable throughput for a reference measurement channel.

Maximum total output power: sum of the power of all carriers available at the antenna connector for a specified reference condition.

Maximum Transmitter Power Per Traffic Channel (dBm): The maximum power at the transmitter output for a single traffic channel.

MBMS-service-associated signalling: When M2AP messages associated to one MBMS service uses the MBMS-service-associated logical M2-connection for association of the message to the respective MBMS service in eNB and EPC.

Mean bit rate: A measure of throughput. The average (mean) bit rate available to the user for the given period of time (source: ITU-T I.210).

Mean power: When applied to E-UTRA transmission this is the power measured in the operating system bandwidth of the carrier. The period of measurement shall be at least one subframe (1ms) unless otherwise stated.

Mean transit delay: The average transit delay experienced by a (typically) large sample of PDUs within the same service category.

Measurement bandwidth: The bandwidth in which an emission level is specified.

Medium Access Control: A sub-layer of radio interface layer 2 providing unacknowledged data transfer service on logical channels and access to transport channels.

Messaging service: An interactive service which offers user-to-user communication between individual users via storage units with store-and-forward, mailbox and/or message handling, (e.g., information editing, processing and conversion) functions (source: ITU-T I.113).

MExE Classmark: A MExE classmark identifies a category of MExE UE supporting MExE functionality with a minimum level of processing, memory, display, and interactive capabilities. Several MExE classmarks may be defined to differentiate between the functionalities offered by different MExE UEs. A MExE application or applet defined as being of a specific MExE Classmark indicates that it is supportable by a MExE UE of that Classmark.

MExE executable: An executable is an applet, application, or executable content, which conforms to the MExE specification and may execute on the ME.

MExE server: A node supporting MExE services in the MExE service environment.

MExE service: a service enhanced (or made possible) by MExE technology.

MExE service environment: Depending on the configuration of the PLMN, the operator may be able to offer support to MExE services in various ways. Examples of possible sources are from traditional GSM nodes, IN nodes, operator-specific nodes, operator franchised nodes and services provider nodes, together with access to nodes external (i.e. vendor-specific) to the PLMN depending on the nature of the MExE service. These nodes are considered to constitute

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 019

the MExE service environment. The MExE service environment shall support direct MExE UE to MExE UE interaction of MExE services.

MExE service provider: an organisation which delivers MExE services to the subscriber. This is normally the PLMN operator, but could be an organisation with MExE responsibility (which may have been delegated by the PLMN operator).

MExE SIM: A (U)SIM application that is capable of storing a security certificate that is accessible using standard mechanisms.

MExE subscriber: The owner of a subscription who has entered into an agreement with a MExE service provider for MExE services.

Micro cells: "Micro cells" are small cells.

Minimum transmit power: The minimum controlled output power of the TDD BS is when the power control setting is set to a minimum value. Thei si when the power control indicates a miminum transmit output power is required (TS 25.105).

Mobile Equipment (ME): The Mobile Equipment is functionally divided into several entities, i.e.one or more Mobile Terminations (MT) and one or more Terminal Equipments (TE)**.**

Mobile evaluated handover: Mobile evaluated handover (MEHO) is a type of handover triggered by an evaluation made in the mobile. The mobile evaluates the necessity of handover based on the measured radio environment and based on criteria defined by the network. When the evaluation meets the hand-off criteria the necessary information is sent from the mobile to the network. The network then decides on the necessity of the handover based on the reported evaluation result and other conditions, e.g. uplink radio environment and/or availability of network resources, the network may then execute the handover.

Mobile Station (MS): A Mobile Station (MS) corresponds to a User Equipment (UE). See 3GPP TS 24.002.

Mobile number portability: The ability for a mobile subscriber to change subscription network within the same country whilst retaining their original MSISDN(s).

Mobile Termination (MT): The Mobile Termination is the component of the Mobile Equipment (ME) which supports functions specific to management of the PLMN access interface (3GPP or non-3GPP). The MT is realized as a single functional entity..

Mobility: The ability for the user to communicate whilst moving independent of location.

Mobility Management: A relation between the mobile station and the UTRAN that is used to set-up, maintain and release the various physical channels.

MSR Base station: Base Station characterized by the ability of its receiver and transmitter to process two or more carriers in common active RF components simultaneously in a declared RF bandwidth, where at least one carrier is of a different RAT than the other carrier(s).

MTC Device: A MTC Device is a UE equipped for Machine Type Communication, which communicates through a PLMN with MTC Server(s) and/or other MTC Device(s).

NOTE: A MTC Device might also communicate locally (wirelessly, possibly through a PAN, or hardwired) with other entities which provide the MTC Device "raw data" for processing and communication to the MTC Server(s) and/or other MTC Device(s). Local communication between MTC Device(s) and other entities is out of scope of this technical specification.

MTC Server: A MTC Server is a server, which communicates to the PLMN itself, and to MTC Devices through the PLMN. The MTC Server can also have an interface which can be accessed by the MTC User. The MTC Server can:

- Provide services for other servers (e.g. The MTC Server is a Services Capability Server [9] for an Application Server [9]), and/or
- Provide services for applications and can host the application (e.g. The MTC Server is an Application Server [x]).

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 020

MTC User: A MTC User uses the service provided by the MTC Server.

MTC Subscriber: A MTC Subscriber is a subscriber, i.e. a legal entity having a contractual relationship with the network operator to provide service to one or more MTC Devices.

NOTE: Typically a M2M service provider is the party holding subscriptions in order to provide connectivity between MTC Devices and the MTC Server. In practise certain roles can collapse, e.g. the network operator acts as the same time as Service Provider.

Multi-carrier transmission configuration: A set of one or more contiguous carriers that a BS is able to transmit simultaneously according to the manufacturer's specification.

Multi mode terminal: UE that can obtain service from at least one UTRA radio access mode, and one or more different systems such as GSM bands or possibly other radio systems such IMT-2000 family members.

Multicast service: A unidirectional PTM service in which a message is transmitted from a single source entity to all subscribers currently located within a geographical area. The message contains a group identifier indicating whether the message is of interest to all subscribers or to only the subset of subscribers belonging to a specific multicast group.

Multipoint: A value of the service attribute "communication configuration", which denotes that the communication involves more than two network terminations (source: ITU-T I.113).

Multimedia service: Services that handle several types of media such as audio and video in a synchronised way from the user's point of view. A multimedia service may involve multiple parties, multiple connections, and the addition or deletion of resources and users within a single communication session.

N

Name: A name is an alpha numeric label used for identification of end users and may be portable.

Negotiated QoS: In response to a QoS request, the network shall negotiate each QoS attribute to a level that is in accordance with the available network resources. After QoS negotiation, the bearer network shall always attempt to provide adequate resources to support all of the negotiated QoS profiles.

Network code: MCC and MNC.

Network code group: Same as network code.

Network connection: An association established by a network layer between two users for the transfer of data, which provides explicit identification of a set of network data transmissions and agreement concerning the services to be provided by the set (source: ITU-T X.213 / ISO-IEC 8348).

Network Element: A discrete telecommunications entity which can be managed over a specific interface e.g. the RNC.

Network Manager: Provides a package of end-user functions with the responsibility for the management of a network, mainly as supported by the EM(s) but it may also involve direct access to the network elements. All communication with the network is based on open and well standardized interfaces supporting management of multi-vendor and multi-technology network elements.

Network operator: See PLMN operator.

Network personalisation: Allows the network operator to personalise a ME so that it can only be used with that particular network operator's (U)SIMs.

Network Resource Model: A protocol independent model describing managed objects representing network resources, e.g. an RNC or NodeB.

Network service data unit (NSDU): A unit of data passed between the user and the GPRS network across a Network Service Access Point (NSAP).

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 021

Network subset code: digits 6 and 7 of the IMSI.

Network subset code group: Combination of a network subset code and the associated network code.

Network subset personalisation: A refinement of network personalisation, which allows network operators to limit the usage of a ME to a subset of (U)SIMs

Network termination: A functional group on the network side of a user-network interface (source: ITU-T I.112).

Node B: A logical node responsible for radio transmission / reception in one or more cells to/from the User Equipment. Terminates the Iub interface towards the RNC.

Nomadic Operating Mode: Mode of operation where the terminal is transportable but being operated while stationary and may in addition require user co-operation (e.g. close to open spaces, antenna setup...).

Nominal Maximum Output Power: This is the nominal power defined by the UE power class.

Non-Access Stratum: Protocols between UE and the core network that are not terminated in the UTRAN.

Normal GSM operation: Relating to general, CHV related, GSM security related and subscription related procedures.

Normal mode of operation: The mode of operation into which the ME would have gone if it had no personalisation checks to process.

NTDD: Narrow TDD – the 1.28 Mcps chip rate UTRA-TDD option

Number: A string of decimal digits that uniquely indicates the public network termination point. The number contains the information necessary to route the call to this termination point.

A number can be in a format determined nationally or in an international format. The international format is known as the International Public Telecommunication Number which includes the country code and subsequent digits, but not the international prefix.

Number portability: A capability that allows a user to retain the same public telecommunication number when changing from one service provider to another. Additional regulatory constraints may apply in different regions.

Number range owner network: The network to which the number range containing the ported number has been allocated.

O

Occupied bandwidth: The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage β/2 of the total mean power of a given emission.

Offline charging: charging mechanism where charging information does not affect, in real time, the service rendered.

Offline Charging System: the entity that collects and processes offline charging information prior to delivery to the Billing Domain.

Online Charging: charging mechanism where charging information can affect, in real time, the service rendered and therefore a direct interaction of the charging mechanism with the bearer/session/service control is required.

Online Charging System: the entity that performs real-time Credit-Control and includes transaction handling, rating, online correlation and management of subscriber accounts/balances.

One Stop Billing: One bill for all charges incurred using the 3GPP System.

Open group: A group that does not have a pre-defined set of members. Any user may participate in an open group.

Open Service Access: Concept for introducing a vendor independent means for introduction of new services.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 022

Operating band: A frequency range in which E-UTRA operates (paired or unpaired), that is defined with a specific set of technical requirements. **Operations System:** This abbreviation indicates a generic management system, independent of its location level within the management hierarchy.

Optional UE Requirement: Any other requirements than mandatory UE requirement, essential UE requirement (conditional), essential UE requirement (unconditional). It is totally up to individual manufacturer to decide whether it should be implemented or not (e.g. Network initiated MM connection establishment).

Originating network: The network where the calling party is located.

Orthogonal Channel Noise Simulator a mechanism used to simulate the users or control signals on the other orthogonal channels of a downlink

OSA Interface: Standardised Interface used by application/clients to access service capability features.

Output power (P_{out}): The mean power of one carrier of the UE, delivered to a load with resistance equal to the nominal load impedance of the transmitter.

P

Packet: An information unit identified by a label at layer 3 of the OSI reference model (source: ITU-T I.113). A network protocol data unit (NPDU).

Packet data protocol (PDP): Any protocol which transmits data as discrete units known as packets, e.g., IP, or X.25.

Packet transfer mode: Also known as packet mode. A transfer mode in which the transmission and switching functions are achieved by packet oriented techniques, so as to dynamically share network transmission and switching resources between a multiplicity of connections (source: ITU-T I.113).

Padding: One or more bits appended to a message in order to cause the message to contain the required number of bits or bytes.

Paging: The act of seeking a User Equipment.

Paging DRX cycle: The individual time interval between monitoring Paging Occasion for a specific UE

Paging Block Periodicity (PBP): The period of the occurrence of Paging Blocks. (For FDD, PBP = 1).

Paging Message Receiving Occasion: The frame where the UE receives actual paging message.

Paging occasion: The frame where the UE monitors in FDD or the paging block, which consists of several frames, for TDD. For Paging Blocks, the value of Paging Occasion is equal to the first frame of the Paging Block.

Pass band: The frequency range that the repeater operates in with operational configuration. This frequency range can correspond to one or several consecutive nominal channels. If they are not consecutive each subset of channels shall be considered as an individual pass band.

Peak bit rate: A measure of throughput. The maximum bit rate offered to the user for a given time period (to be defined) for the transfer of a bursty signal (source: ITU-T I.210). (The maximum user information transfer rate achievable by a user for a single service data unit transfer.)

Performance: The ability to track service and resource usage levels and to provide feedback on the responsiveness and reliability of the network.

Personal Service Environment: contains personalised information defining how subscribed services are provided and presented towards the user. Each subscriber of the Home Environment has her own Personal Service Environment. The Personal Service Environment is defined in terms of one or more User Profiles.

Personalisation: The process of storing information in the ME and activating the procedures which verify this information against the corresponding information stored in applications on the (U)SIM whenever the ME is powered up or when a UICC containing network access applications (SIM, USIM, etc.) is inserted, in order to limit the applications with which the ME will operate.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 023

Personalisation entity: Network, network subset, SP, Corporate or (U)SIM to which the ME is personalised

Phonebook: A dataset of personal or entity attributes. The simplest form is a set of name-subscriber phone number pairs as supported by GSM (U)SIMs.

Physical channel data stream: In the uplink, a data stream that is transmitted on one physical channel. In the downlink, a data stream that is transmitted on one physical channel in each cell of the active set.

Physical Channel: In FDD mode, a physical channel is defined by code, frequency and, in the uplink, relative phase (I/Q). In TDD mode, a physical channel is defined by code, frequency, and time-slot.

Pico cells: "Pico cells" are cells, mainly indoor cells, with a radius typically less than 50 metres.

PICH Monitoring Occasion: The time instance where the UE monitors PICH within Paging Occasion.

Pilot Identity: A service specific public address used for initial contact, associated with a group of publicly addressable identities (e.g. E.164 numbers or SIP URI).

PLMN Area: The PLMN area is the geographical area in which a PLMN provides communication services according to the specifications to mobile users. In the PLMN area, the mobile user can set up calls to a user of a terminating network. The terminating network may be a fixed network, the same PLMN, another PLMN or other types of PLMN. Terminating network users can also set up calls to the PLMN. The PLMN area is allocated to a PLMN. It is determined by the service and network provider in accordance with any provisions laid down under national law. In general the PLMN area is restricted to one country. It can also be determined differently, depending on the different telecommunication services, or type of MS. If there are several PLMNs in one country, their PLMN areas may overlap. In border areas, the PLMN areas of different countries may overlap. Administrations will have to take precautions to ensure that cross border coverage is minimised in adjacent countries unless otherwise agreed.

PLMN Operator: Public Land Mobile Network operator. The entity which offers telecommunications services over an air interface..

Plug-in SIM: A physical form factor of SIM (see ID-000 SIM).

point-to-multipoint service: A service type in which data is sent to "all service subscribers or a pre-defined subset of all subscribers" within an area defined by the Service Requester.

Point-to-point: A value of the service attribute "communication configuration", which denotes that the communication involves only two network terminations.

Point-to-point service: A service type in which data is sent from a single network termination to another network termination.

Port: A particular interface, of the specified equipment (apparatus), with the electromagnetic environment. For example, any connection point on an equipment intended for connection of cables to or from that equipment is considered as a port.

Ported number: A MSISDN that has undergone the porting process.

Ported subscriber: The subscriber of a ported number.

Porting process: A description of the transfer of a number between network operators.

Power control dynamic range: The difference between the maximum and the minimum total transmit output power for a specified reference condition (TS 25.104).

Power Saving Mode: A mode of operation similar to power-off, allowing a UE to greatly reduce its power consumption while remaining registered with the network, without the need to re-attach or to re-establish PDN connections.

Predictive service: A service model which provides reliable performance, but allowing a specified variance in the measured performance criteria.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 024

Prepay billing: Billing arrangement between customer and operator/service provider where the customer deposits an amount of money in advance, which is subsequently used to pay for service usage.

Postpay billing: Billing arrangement between customer and operator/service provider where the customer periodically receives a bill for service usage in the past period.

Proactive SIM: A SIM, which is capable of issuing commands to the Terminal. Part of SIM Application Toolkit.

ProSe Communication: A communication between two or more ProSe-enabled UEs in proximity by means of a ProSe Communication path. Unless explicitly stated otherwise, the term "ProSe Communication" refers to any/all of the following:

- ProSe E-UTRA Communication between only two ProSe-enabled UEs; or
- ProSe Group Communication or ProSe Broadcast Communication among Public Safety ProSe-enabled UEs; or
- ProSe-assisted WLAN direct communication.

ProSe Discovery: A process that identifies that a ProSe-enabled UE is in proximity of another, using E-UTRA (with or without E-UTRAN) or EPC.

ProSe-enabled UE: a UE that fulfills ProSe requirements for ProSe Discovery and/or ProSe Communication. Unless explicitly stated otherwise, a ProSe-enabled UE refers to any ProSe-enabled UE (i.e. Public Safety or not).

Protocol: A formal set of procedures that are adopted to ensure communication between two or more functions within the within the same layer of a hierarchy of functions (source: ITU-T I.112).

Protocol data unit: In the reference model for OSI, a unit of data specified in an (N)-protocol layer and consisting of (N)-protocol control information and possibly (N)-user data (source: ITU-T X.200 / ISO-IEC 7498-1).

Public land mobile network: A telecommunications network providing mobile cellular services.

Q

QoS profile: a QoS profile comprises a number of QoS parameters. A QoS profile is associated with each QoS session. The QoS profile defines the performance expectations placed on the bearer network.

QoS session: Lifetime of PDP context. The period between the opening and closing of a network connection whose characteristics are defined by a QoS profile. Multiple QoS sessions may exist, each with a different QoS profile.

Quality of Service: The collective effect of service performances which determine the degree of satisfaction of a user of a service. It is characterised by the combined aspects of performance factors applicable to all services, such as;

- service operability performance;
- service accessibility performance;
- service retainability performance;
- service integrity performance; and
- other factors specific to each service.

R

Radio access bearer: The service that the access stratum provides to the non-access stratum for transfer of user data between User Equipment and CN.

Radio Access Mode: Mode of the cell, FDD or TDD.

Radio Access Network Information Management: Functionality supporting the exchange of information, via the Core Network, between peer application entities located in a GERAN or in a UTRAN access network.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 025

RAN sharing: Two or more CN operators share the same RAN, i.e. a RAN node (RNC or BSC) is connected to multiple CN nodes (SGSNs and MSC/VLRs) belonging to different CN operators.

Radio Access Network Application Part: Radio Network Signalling over the Iu.

Radio Access Network Operator: Operator that offers radio access to one or more core network operators.

Radio Access Technology: Type of technology used for radio access, for instance E-UTRA, UTRA, GSM, CDMA2000 1xEV-DO (HRPD) or CDMA2000 1x (1xRTT).

Radio Bearer: The service provided by the Layer 2 for transfer of user data between User Equipment and UTRAN.

Radio communications equipment: Telecommunications equipment which includes one or more transmitters and/or receivers and/or parts thereof for use in a fixed, mobile or portable application. It can be operated with ancillary equipment but if so, is not dependent on it for basic functionality.

Radio digital unit: Equipment which contains base band and functionality for controlling Radio unit.

Radio equipment: Equipment which contains Radio digital unit and Radio unit.

Radio frame: A radio frame is a numbered time interval of 10 ms duration used for data transmission on the radio physical channel. A radio frame is divided into 15 time slots of 0.666 ms duration. The unit of data that is mapped to a radio frame (10 ms time interval) may also be referred to as radio frame.

Radio interface: The "radio interface" is the tetherless interface between User Equipment and a UTRAN access point. This term encompasses all the functionality required to maintain such interfaces.

Radio link: A "radio link" is a logical association between single User Equipment and a single UTRAN access point. Its physical realisation comprises one or more radio bearer transmissions.

Radio link addition: The procedure where a new radio link is added to the active set.

Radio Link Control: A sublayer of radio interface layer 2 providing transparent, unacknowledged and acknowledged data transfer service.

Radio link removal: The procedure where a radio link is removed from the active set.

Radio Link Set: A set of one or more Radio Links that has a common generation of Transmit Power Control (TPC) commands in the DL

Radio Network Controller: This equipment in the RNS is in charge of controlling the use and the integrity of the radio resources.

Radio Network Subsystem Application Part: Radio Network Signalling over the Iur.

Radio Network Subsystem: Either a full network or only the access part of a UTRAN offering the allocation and the release of specific radio resources to establish means of connection in between an UE and the UTRAN.
A Radio Network Subsystem is responsible for the resources and transmission/reception in a set of cells.

Radio Network Temporary Identifier: A Radio Network Temporary Identifier is a generic term of an identifier for a UE when an RRC connection exists. Following types of RNTI are defined: Cell RNTI (C-RNTI), Serving RNC RNTI (S-RNTI), UTRAN RNTI (U-RNTI) and GERAN RNTI (G-RNTI).

Radio Resource Control: A sublayer of radio interface Layer 3 existing in the control plane only which provides information transfer service to the non-access stratum. RRC is responsible for controlling the configuration of radio interface Layers 1 and 2.

Radio system: the selected 2nd or 3rd generation radio access technology, eg UTRAN or GERAN.

Radio unit: Equipment which contains transmitter and receiver.

Rated Output Power: For FDD BS, rated output power is the mean power level per carrier that the manufacturer has decared to be available at the antenna connector. For TDD BS rated output power is the mean power level per carrier over an active timeslot that the manufacturer has declared to be available at the antenna connector.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 026

RE power control dynamic range: The difference between the power of a RE and the average RE power for a BS at maximum output power for a specified reference condition.

Real time: Time, typically in number of seconds, to perform the on-line mechanism used for fraud control and cost control.

Received Signal Code Power: Given only signal power is received, the average power of the received signal after despreading and combining.

Receiver Antenna Gain (dBi): The maximum gain of the receiver antenna in the horizontal plane (specified as dB relative to an isotropic radiator).

Receiver exclusion band: The receiver exclusion band is the band of frequencies over which no tests of radiated immunity of a receiver are made. The exclusion band for receivers is expressed relative to the base station receive band.

Receiver Noise Figure (dB): Receiver noise figure is the noise figure of the receiving system referenced to the receiver input.

Receiver Sensitivity (dBm): This is the signal level needed at the receiver input that just satisfies the required Eb/(No+Io).

Recipient network: The network which receives the number in the porting process. This network becomes the subscription network when the porting process is complete.

Record: A string of bytes within an EF handled as a single entity.

Record number: The number, which identifies a record within an EF.

Record pointer: The pointer, which addresses one record in an EF.

Reference bandwidth: The bandwidth in which an emission level is specified.

Reference configuration: A combination of functional groups and reference points that shows possible network arrangements (source: ITU-T I.112).

Reference point: A conceptual point at the conjunction of two non-overlapping functional groups (source: ITU-T I.112).

Regionally Provided Service: A service entitlement to only certain geographical part(s) of a PLMN, as controlled by the network operator.

Registration: This is the process of camping on a cell of the PLMN and doing any necessary LRs.

Registered PLMN (RPLMN): This is the PLMN on which the UE has performed a location registration successfully.

Registration Area: A (NAS) registration area is an area in which the UE may roam without a need to perform location registration, which is a NAS procedure.

Relay: Terminal devices capable of ODMA relay communications.

Relay/Seed Gateway: Relay or Seed that communicates with the UTRAN, in either TDD or FDD mode.

Relaylink: Relaylink is a communications link between two ODMA relay nodes.

Release 99: A particular version of the 3GPP System standards produced by the 3GPP project. Also: Release 4, Release 5, Release 6 etc..

Repeater: A device that receives, amplifies and transmits the radiated or conducted RF carrier both in the down-link direction (from the base station to the mobile area) and in the up-link direction (from the mobile to the base station)

Requested QoS: a QoS profile is requested at the beginning of a QoS session. QoS modification requests are also possible during the lifetime of a QoS session.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 027

Required Eb/(No+Io) (dB): The ratio between the received energy per information bit to the total effective noise and interference power density needed to satisfy the quality objectives.

Residual error rate: A parameter describing service accuracy. The frequency of lost SDUs, and of corrupted or duplicated network SDUs delivered at the user-network interface.

Restricted local operator services: communication services provided by an operator that involve either automated or human assistance (e.g., credit card billing, directory assistance, customer care) for which successful authentication is not necessary.

Retrieval service: An interactive service which provides the capability of accessing information stored in data base centres. The information will be sent to the user on demand only. The information is retrieved on an individual basis, i.e., the time at which an information sequence is to start is under the control of the user (source ITU-T I.113).

Roaming: The ability for a user to function in a serving network different from the home network. The serving network could be a shared network operated by two or more network operator.

Root directory: Obsolete term for Master File.

Root Relay: ODMA relay node where communications originate or terminate.

RRC Connection: A point-to-point bi-directional connection between RRC peer entities on the UE and the UTRAN sides, respectively. An UE has either zero or one RRC connection.

RRC filtered mean power: The mean power of a UTRA carrier as measured through a root raised cosine filter with roll-off factor a and a bandwidth equal to the chip rate of the radio access mode.

NOTE 1: The RRC filtered mean power of a perfectly modulated UTRA signal is 0.246 dB lower than the mean power of the same signal.

S

S1: interface between an eNB and an EPC, providing an interconnection point between the EUTRAN and the EPC. It is also considered as a reference point.

SDU error probability: The ratio of total incorrect service data units (SDUs) to total successfully transferred service data units plus incorrect service data units in a specified sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU loss probability: The ratio of total lost service data units (SDUs) to total transmitted service data units in a specified sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU misdelivery probability: The ratio of total misdelivered service data units (SDUs) to total service data units transferred between a specified source and destination user in a specified sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU transfer delay: The value of elapsed time between the start of transfer and successful transfer of a specified service data unit (SDU) (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU transfer rate: The total number of successfully transferred service data units (SDUs) in a transfer sample divided by the input/output time for that sample. The input/output time is the larger of the input time or the output time for the sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

Seamless handover: "Seamless handover" is a handover without perceptible interruption of the radio connection.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 028

Sector: A "sector" is a sub-area of a cell. All sectors within one cell are served by the same base station. A radio link within a sector can be identified by a single logical identification belonging to that sector.

Secured Packet: The information flow on top of which the level of required security has been applied. An Application Message is transformed with respect to a chosen Transport Layer and chosen level of security into one or more Secured Packets.

Security: The ability to prevent fraud as well as the protection of information availability, integrity and confidentiality.

Seed: Deployed ODMA relay node with or without a display/keypad.

Selected IP Traffic Offload (SIPTO): Offload of selected types of IP traffic (e.g. internet traffic) towards a defined IP network close to the UE's point of attachment to the access network. SIPTO is applicable to traffic offload for the macro-cellular access network and for the H(e)NB subsystem.

Selected PLMN: This is the PLMN that has been selected by the non-access stratum, either manually or automatically.

Service: a component of the portfolio of choices offered by service providers to a user, a functionality offered to a user.

Service-less UE: A UE that has only the Baseline capabilities.

Service Access Point: A conceptual point where a protocol layer offers access to its services to upper layer.

Service Area: The Service Area is defined in the same way as the Service Area according to ITU-T Recommendation Q.1001 [4]. In contrast to the PLMN area it is not based on the coverage of a PLMN. Instead it is based on the area in which a fixed network user can call a mobile user without knowing his location. The Service Area can therefore change when the signalling system is being extended, for example.

Service attribute: A specified characteristic of a telecommunication service (source: ITU-T I.112).

NOTE: the value(s) assigned to one or more service attributes may be used to distinguish that telecommunications service from others.

Service bit rate: The bit rate that is available to a user for the transfer of user information (source: ITU-T I.113).

Service Capabilities: Bearers defined by parameters, and/or mechanisms needed to realise services. These are within networks and under network control.

Service Capability Feature: Functionality offered by service capabilities that are accessible via the standardised application interface

Service Capability Server: Network functionality providing open interfaces towards the functionality offered by 3GPP System service capabilities.

Service category or service class: A service offered to the users described by a set of performance parameters and their specified values, limits or ranges. The set of parameters provides a comprehensive description of the service capability.

Service Continuity: The uninterrupted user experience of a service that is using an active communication (e.g. an ongoing voice call) when a UE undergoes a radio access technology change or a CS/PS domain change without, as far as possible, the user noticing the change.

NOTE: In particular Service Continuity encompasses the possibility that after a RAT / domain change the user experience is maintained by a different telecommunication service (e.g. tele- or bearer service) than before the RAT / domain change.

Service Control: The ability of the user, home environment or serving environment to determine what a particular service does, for a specific invocation of that service, within the limitations of that service.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 029

Service Data Unit (SDU): In the reference model for OSI, an amount of information whose identity is preserved when transferred between peer (N+1)-layer entities and which is not interpreted by the supporting (N)-layer entities (source: ITU-T X.200 / ISO-IEC 7498-1).

Service delay: The time elapsed from the invocation of the service request, to the corresponding service request indication at the Service Receiver, indicating the arrival of application data.

Service Enabler: a capability which may be used, either by itself or in conjunction with other service enablers, to provide a service to the end user.

Service Execution Environment: A platform on which an application or programme is authorised to perform a number of functionalities; examples of service execution environments are the user equipment, integrated circuit card and a network platform or any other server.

Service Feature: Functionality that a 3GPP System shall offer to enable provision of services. Services, are made up of different service features.

Service Implementation Capabilities: Set of implementation capabilities, in each technical domain, required to enable a UE to support a set of UE Service Capabilities.

Service model: A general characterisation of services based upon a QoS paradigm, without specifying the actual performance targets.

Service Provider: A Service Provider is either a network operator or an other entity that provides services to a subscriber (e.g. a MVNO)

Service receiver: The entity which receives the service request indication primitive, containing the SDU.

Service relationship: The association between two or more entities engaged in the provision of services.

Service request: This is defined as being one invocation of the service through a service request primitive.

Service requester: The entity which requests the initiation of a GPRS operation, through a service request.

Service Specific Entities: Entities dedicated to the provisioning of a given (set of) service(s). The fact that they are implemented or not in a given PLMN should have limited impact on all the other entities of the PLMN.

Service subscriber: Entity which subscribes to the General Packet Radio Service (GPRS) service.

Services (of a mobile cellular system): The set of unctions that the mobile cellular system can make available to the user.

Serving BSS: A role a BSS can take with respect to a specific connection between an MS and GERAN. There is one Serving BSS for each MS that has a connection to GERAN. The Serving BSS is in charge of the RRC connection between an MS and the GERAN. The Serving BSS terminates the Iu for this connection.

Serving Network: The serving network provides the user with access to the services of home environment.

Serving RNS: A role an RNS can take with respect to a specific connection between an UE and UTRAN. There is one Serving RNS for each UE that has a connection to UTRAN. The Serving RNS is in charge of the RRC connection between a UE and the UTRAN. The Serving RNS terminates the Iu for this connection.

Settlement: Payment of amounts resulting from the accounting process.

Shared Channel: A radio resource (transport channel or physical channel) that can be shared dynamically between several UEs.

Shared Network: When two or more network operator sharing network elements.

Short File Identifier (SFI): A 5-bit abbreviated name for a file in a directory on the UICC.

Short time: Time, typically in number of minutes, to perform the off-line mechanism used for accounting.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 030

Signalling: The exchange of information specifically concerned with the establishment and control of connections, and with management, in a telecommunications network (source: ITU-T I.112).

Signalling connection: An acknowledged-mode link between the user equipment and the core network to transfer higher layer information between the entities in the non-access stratum**.**

Signalling link: Provides an acknowledged-mode link layer to transfer the UE-UTRAN signalling messages as well as UE - Core Network signalling messages (using the signalling connection.

SIM application toolkit procedures: The portion of the communication protocol between the ME and the UICC that enables applications on the UICC to send commands to the ME.

SIM code: Code which when combined with the network and NS codes refers to a unique SIM. The code is provided by the digits 8 to 15 of the IMSI

(U)SIM code group: Combination of the (U)SIM code and the associated network subset and network codes (it is equivalent to the IMSI).

(U)SIM personalisation: Enables a user to personalise a ME so that it may only be used with particular (U)SIM(s).

Simultaneous use of services: The concurrent use of a circuit-mode service (voice or data) and packet-mode services (GPRS) by a single mobile station.

Soft Handover: Soft handover is a category of handover procedures where the radio links are added and abandoned in such manner that the UE always keeps at least one radio link to the UTRAN.

SP code: code which when combined with the network code refers to a unique SP. The code is provided in the GID1 file on the SIM (see Annex A.1.) and is correspondingly stored on the ME.

SP code group: Combination of the SP code and the associated network code.

SP personalisation: Allows the service provider to personalise a ME so that it can only be used with that particular service provider's (U)SIMs.

Speed: A performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.) (source: ITU-T I.350).

SRNC Radio Network Temporary Identifier (S-RNTI): S-RNTI is UE identifier which is allocated by the Serving RNC and unique within this SRNC. It is allocated for all UEs having a RRC connection. S-RNTI is reallocated always when the Serving RNC for the RRC connection is changed and deallocated when the RRC connection is released.

SRNS Relocation: The change of Iu instance and transfer of the SRNS role to another RNS.

Stratum: Grouping of protocols related to one aspect of the services provided by one or several domains.

Steering of Roaming: A technique whereby a roaming UE is encouraged to roam to a preferred VPLMN by the HPLMN.

Sub Network Management Functions: Set of functions that are related to a network model for a set of network elements constituting a clearly defined sub-network, which may include relations between the network elements. This model enables additional functions on the sub-network level (typically in the areas of network topology presentation, alarm correlation, service impact analysis and circuit provisioning).

Subscribed QoS: The network will not grant a QoS greater than the subscribed. The QoS profile subscription parameters are held in the HLR. An end user may have several QoS subscriptions. For security and the prevention of damage to the network, the end user cannot directly modify the QoS subscription profile data.

Subscriber: A Subscriber is an entity (associated with one or more users) that is engaged in a Subscription with a service provider. The subscriber is allowed to subscribe and unsubscribe services, to register a user or a list of users authorised to enjoy these services, and also to set the limits relative to the use that associated users make of these services.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 031

Subscription: A subscription describes the commercial relationship between the subscriber and the service provider.

Subscription Management (SuM): set of capabilities that allow Operators, Service Providers, and indirectly subscribers, to provision, control, monitor the Subscription Profile.

Suitable Cell: This is a cell on which an UE may camp. It must satisfy certain conditions.

Supplementary service: A service which modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a standalone service. It must be offered together with or in association with a basic telecommunication service. The same supplementary service may be common to a number of basic telecommunication services.

System Area: The System Area is defined as the group of PLMN areas accessible by MSs. Interworking of several PLMNs and interworking between PLMNs and fixed network(s) permit public land mobile communication services at international level.

T

Teleaction service: A type of telecommunication service that uses short messages, requiring a low transmission rate, between the user and the network (source: ITU-T I.112).

Telecommunication port: Ports which are intended to be connected to telecommunication networks (e.g. public switched telecommunication networks, integrated services digital networks), local area networks (e.g. Ethernet, Token Ring) and similar networks.

Telecommunication service: What is offered by a PLMN operator or service provider to its customers in order to satisfy a specific telecommunication requirement. (source: ITU-T I.112). Telecommunication services are divided into two broad families: bearer services and teleservices (source: ITU-T I.210).

Teleservice: Is a type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to standardised protocols and transmission capabilities established by agreement between operators.

Terminal: A device into which a UICC can be inserted and which is capable of providing access to 3GPP System services to users, either alone or in conjunction with a UICC.

Terminal Equipment (TE): Equipment that provides the functions necessary for the operation of the access protocols by the user. A functional group on the user side of a user-network interface (source: ITU-T I.112).

Test environment: A "test environment" is the combination of a test propagation environment and a deployment scenario, which together describe the parameters necessary to perform a detailed analysis of a radio transmission technology.

Text conversation: Real time transfer of text between users in at least two locations.

Text Telephony: An audiovisual conversation service providing bi-directional real time transfer of text and optionally audio between users in two locations. Audio may be transmitted alternating with text or simultaneously with text. (Source ITU-T F.703)

Transient phenomenon: Pertaining to or designating a phenomenon or a quantity which varies between two consecutive steady states during a time interval short compared with the time-scale of interest (IEC 60050-161 [6]).

Throughput: A parameter describing service speed. The number of data bits successfully transferred in one direction between specified reference points per unit time (source: ITU-T I.113).

Toolkit applet: An application on the UICC that generates proactive commands to the ME.

Total Conversation: An audiovisual conversation service providing bi-directional symmetric real-time transfer of motion video, text and voice between users in two or more locations. (source ITU-T F.703)

Total power dynamic range: The difference between the maximum and the minimum total transmit output power for a specified reference condition (TS25.104).

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 032

Traffic channel: A "traffic channel" is a logical channel which carries user information.

Transit delay: A parameter describing service speed. The time difference between the instant at which the first bit of a protocol data unit (PDU) crosses one designated boundary (reference point), and the instant at which the last bit of the PDU crosses a second designated boundary (source: ITU-T I.113).

Transmission bandwidth: Bandwidth of an instantaneous transmission from a UE or BS, measured in Resource Block units.

Transmission bandwidth configuration: The highest transmission bandwidth allowed for uplink or downlink in a given channel bandwidth, measured in Resource Block units.

Transmission Time Interval: Transmission Time Interval is defined as the inter-arrival time of Transport Block Sets, i.e. the time it shall take to transmit a Transport Block Set.

Transmitter Antenna Gain (dBi): The maximum gain of the transmitter antenna in the horizontal plane (specified as dB relative to an isotropic radiator.

Transmitter exclusion band: The transmitter exclusion band is the band of frequencies over which no tests of radiated immunity of a transmitter are made. The exclusion band for transmitters is expressed relative to the carrier frequencies used (the carrier frequencies of the base stations activated transmitter(s).

Transmitter OFF period: The time period during which the BS transmitter is not allowed to transmit.

Transmitter ON period: The time period during which the BS transmitter is transmitting data and/or reference symbols, i.e. data subframes or DwPTS.

Transmitter transient period: The time period during which the transmitter is changing from the OFF period to the ON period or vice versa.

Transport Block: Transport Block is defined as the basic data unit exchanged between L1 and MAC. An equivalent term for Transport Block is "MAC PDU".

Transport Block Set: Transport Block Set is defined as a set of Transport Blocks that is exchanged between L1 and MAC at the same time instance using the same transport channel. An equivalent term for Transport Block Set is "MAC PDU Set".

Transport Block Set Size: Transport Block Set Size is defined as the number of bits in a Transport Block Set.

Transport Block Size: Transport Block Size is defined as the size (number of bits) of a Transport Block.

Transport channel: The channels offered by the physical layer to Layer 2 for data transport between peer L1 entities are denoted as Transport Channels. Different types of transport channels are defined by how and with which characteristics data is transferred on the physical layer, e.g. whether using dedicated or common physical channels.

Transport Format: A Transport Format is defined as a format offered by L1 to MAC for the delivery of a Transport Block Set during a Transmission Time Interval on a Transport Channel. The Transport Format constitutes of two parts – one dynamic part and one semi-static part.

Transport Format Combination: A Transport Format Combination is defined as the combination of currently valid Transport Formats on all Transport Channels of an UE, i.e. containing one Transport Format from each Transport Channel.

Transport Format Combination Set: A Transport Format Combination Set is defined as a set of Transport Format Combinations to be used by an UE.

Transport Format Combination Indicator (TFCI): A Transport Format Combination Indicator is a representation of the current Transport Format Combination.

Transport Format Identification (TFI in UTRAN, TFIN in GERAN): A label for a specific Transport Format within a Transport Format Set.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 033

Transport Format Set: A set of Transport Formats. For example, a variable rate DCH has a Transport Format Set (one Transport Format for each rate), whereas a fixed rate DCH has a single Transport Format.

U

UE Service Capabilities: Capabilities that can be used either singly or in combination to deliver services to the user. The characteristic of UE Service Capabilities is that their logical function can be defined in a way that is independent of the implementation of the 3GPP System (although all UE Service Capabilities are of course constrained by the implementation of the 3GPP System). Examples: a data bearer of 144 kbps; a high quality speech teleservice; an IP teleservice; a capability to forward a speech call.

UICC: a physically secure device, an IC card (or 'smart card'), that can be inserted and removed from the terminal. It may contain one or more applications. One of the applications may be a USIM.

Universal Subscriber Identity Module (USIM): An application residing on the UICC used for accessing services provided by mobile networks, which the application is able to register on with the appropriate security.

Universal Terrestrial Radio Access Network (UTRAN): UTRAN is a conceptual term identifying that part of the network which consists of RNCs and Node Bs between Iu and Uu interfaces.

Usage Parameter Control (UPC): Set of actions taken by the network to monitor and control the offered traffic and the validity of the connection with respect to the traffic contract negotiated between the user and the network.

Uplink: An "uplink" is a unidirectional radio link for the transmission of signals from a UE to a base station, from a Mobile Station to a mobile base station or from a mobile base station to a base station.

Uplink operating band: The part of the operating band designated for uplink.

Uplink Pilot Timeslot: Uplink part of the special subframe (for TDD operation)

Upper RF bandwidth edge: The frequency of the upper edge of the Base Station RF bandwidth, used as a frequency reference point for transmitter and receiver requirements

URA updating: URA updating is a family of procedures that updates the UTRAN registration area of a UE when a RRC connection exists and the position of the UE is known on URA level in the UTRAN.

User: An entity, not part of the 3GPP System , which uses 3GPP System services. Example: a person using a 3GPP System mobile station as a portable telephone.

User-network interface: The interface between the terminal equipment and a network termination at which interface the access protocols apply (source: ITU-T I.112).

User-user protocol: A protocol that is adopted between two or more users in order to ensure communication between them (source: ITU-T I.112).

User access or user network access: The means by which a user is connected to a telecommunication network in order to use the services and/or facilities of that network (source: ITU-T I.112).

User Equipment (UE): Allows a user access to network services. For the purpose of 3GPP specifications the interface between the UE and the network is the radio interface. A User Equipment can be subdivided into a number of domains, the domains being separated by reference points. Currently the User Equipment is subdivided into the UICC domain and the ME Domain. The ME Domain can further be subdivided into one or more Mobile Termination (MT) and Terminal Equipment (TE) components showing the connectivity between multiple functional groups.

In the context of Fixed Broadband Access to IMS, TISPAN defines the term UE in ETSI TR180 000 [5].

User Interface Profile: Contains information to present the personalised user interface within the capabilities of the terminal and serving network.

User Services Profile: Contains identification of subscriber services, their status and reference to service preferences.

UTRA Radio access mode: the selected UTRA radio access mode ie UTRA-FDD;UTRA-TDD.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 034

UTRA-NTDD: Time Division Duplex UTRA access mode 1.28 Mcps option

UTRA-TDD: Time Division Duplex UTRA Radio access mode (Includes UTRA-NTDD and UTRA-WTDD)

UTRA-WTDD: Time Division Duplex UTRA access mode 3.84 Mcps option

UTRAN access point: A conceptual point within the UTRAN performing radio transmission and reception. A UTRAN access point is associated with one specific cell, i.e. there exists one UTRAN access point for each cell. It is the UTRAN-side end point of a radio link.

UTRAN Registration Area: The UTRAN Registration Area is an area covered by a number of cells. The URA is only internally known in the UTRAN.

UTRAN Radio Network Temporary Identifier: The U-RNTI is a unique UE identifier that consists of two parts, an SRNC identifier and a C-RNTI. U-RNTI is allocated to an UE having a RRC connection. It identifies the UE within UTRAN and is used as an UE identifier in cell update, URA update, RRC connection reestablishment and (UTRAN originated) paging messages and associated responses on the radio interface.

User Profile: Is the set of information necessary to provide a user with a consistent, personalised service environment, irrespective of the user's location or the terminal used (within the limitations of the terminal and the serving network).

Uu: The Radio interface between UTRAN and the User Equipment.

V

Value Added Service Provider: Provides services other than basic telecommunications service for which additional charges may be incurred.

Variable bit rate service: A type of telecommunication service characterised by a service bit rate specified by statistically expressed parameters which allow the bit rate to vary within defined limits (source: ITU-T I.113).

Virtual Home Environment: A concept for personal service environment portability across network boundaries and between terminals.

Virtual Machine: A software program that simulates a hypothetical computer central processing unit. The programs executed by a virtual machine are represented as byte codes, which are primitive operations for this hypothetical computer.

Visited PLMN: This is a PLMN different from the HPLMN (if the EHPLMN list is not present or is empty) or different from an EHPLMN (if the EHPLMN list is present).

Visited PLMN of home country: This is a Visited PLMN where the MCC part of the PLMN identity is the same as the MCC of the IMSI.

W

WTDD: Wide TDD – the 3.84 Mcps chip rate UTRA-TDD option.

WLAN UE: WLAN User Equipment: – a UE (equipped with UICC card including (U)SIM) utilized by a subscriber capable of accessing a WLAN network. A WLAN UE may include entities whose configuration, operation and software environment are not under the exclusive control of the 3GPP system operator, such as a laptop computer or PDA with a WLAN card, UICC card reader and suitable software applications.

X

<void>

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 035

Y

<void>

Z

<void>

4 Abbreviations

0-9

1x RTT	CDMA2000 1x Radio Transmission Technology
2G	2nd Generation
3G	3rd Generation
3GPP	Third Generation Partnership Project
8-PSK	8-state Phase Shift Keying

A

A-SGW	Access Signalling Gateway
A3	Authentication algorithm A3
A38	A single algorithm performing the functions of A3 and A8
A5/1	Encryption algorithm A5/1
A5/2	Encryption algorithm A5/2
A5/X	Encryption algorithm A5/0-7
A8	Ciphering key generating algorithm A8
AAL	ATM Adaptation Layer
AAL2	ATM Adaptation Layer type 2
AAL5	ATM Adaptation Layer type 5
AB	Access Burst
AC	Access Class (C0 to C15)
	Access Condition
	Application Context
	Authentication Centre
ACC	Automatic Congestion Control
ACELP	Algebraic Code Excited Linear Prediction
ACCH	Associated Control Channel
ACIR	Adjacent Channel Interference Ratio
ACK	Acknowledgement
ACL	APN Control List
ACLR	Adjacent Channel Leakage Power Ratio
ACM	Accumulated Call Meter
	Address Complete Message
ACMmax	ACM (Accumulated Call Meter) maximal value
ACRR	Adjacent Channel Rejection Ratio
ACS	Adjacent Channel Selectivity
ACU	Antenna Combining Unit
ADC	Administration Centre
	Analogue to Digital Converter
ADCH	Associated Dedicated Channel
ADF	Application Dedicated File

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 036

ADM	Access condition to an EF which is under the control of the authority which creates this file
ADN	Abbreviated Dialling Numbers
ADPCM	Adaptive Differential Pulse Code Modulation
AE	Application Entity
AEC	Acoustic Echo Control
AEF	Additional Elementary Functions
AESA	ATM End System Address
AFC	Automatic Frequency Control
AGCH	Access Grant CHannel
Ai	Action indicator
AI	Acquisition Indicator
AICH	Acquisition Indicator Channel
AID	Application IDentifier
AIUR	Air Interface User Rate
AK	Anonymity Key
AKA	Authentication and Key Agreement
AKI	Asymmetric Key Index
ALCAP	Access Link Control Application Protocol
ALSI	Application Level Subscriber Identity
ALW	ALWays
AM	Acknowledged Mode
AMF	Authentication Management Field
AMN	Artificial Mains Network
AMR	Adaptive Multi Rate
AMR-WB	Adaptive Multi Rate Wide Band
AN	Access Network
ANP	Access Network Provider
AoC	Advice of Charge
AoCC	Advice of Charge Charging
AoCI	Advice of Charge Information
AP	Access preamble
APDU	Application Protocol Data Unit
API	Application Programming Interface
APN	Access Point Name
ARFCN	Absolute Radio Frequency Channel Number
ARP	Address Resolution Protocol
ARQ	Automatic Repeat ReQuest
ARR	Access Rule Reference
AS	Access Stratum
ASC	Access Service Class
ASCI	Advanced Speech Call Items
ASE	Application Service Element
ASN.1	Abstract Syntax Notation One
AT command	ATtention Command
ATM	Asynchronous Transfer Mode
ATR	Answer To Reset
ATT (flag)	Attach
AU	Access Unit
AuC	Authentication Centre
AUT(H)	Authentication
AUTN	Authentication token
AWGN	Additive White Gaussian Noise

B

B-ISDN	Broadband ISDN
BA	BCCH Allocation
BAIC	Barring of All Incoming Calls

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 037

BAOC	Barring of All Outgoing Calls
BC	Band Category
BCC	Base Transceiver Station (BTS) Colour Code
BCCH	Broadcast Control Channel
BCD	Binary Coded Decimal
BCF	Base station Control Function
BCFE	Broadcast Control Functional Entity
BCH	Broadcast Channel
BCIE	Bearer Capability Information Element
BDN	Barred Dialling Number
BER	Bit Error Ratio
	Basic Encoding Rules (of ASN.1)
BFI	Bad Frame Indication
BG	Border Gateway
BGT	Block Guard Time
BI	all Barring of Incoming call
BIC	Baseline Implementation Capabilities
BIC-Roam	Barring of Incoming Calls when Roaming outside the home PLMN country
BID	Binding Identity
BLER	Block Error Ratio
Bm	Full-rate traffic channel
BMC	Broadcast/Multicast Control
BN	Bit Number
BO	all Barring of Outgoing call
BOC	Bell Operating Company
BOIC	Barring of Outgoing International Calls
BOIC-exHC	Barring of Outgoing International Calls except those directed to the Home PLMN Country
BPSK	Binary Phase Shift Keying
BS	Base Station
	Basic Service (group)
	Bearer Service
BSG	Basic Service Group
BSC	Base Station Controller
BSIC	Base transceiver Station Identity Code
BSIC-NCELL	BSIC of an adjacent cell
BSR	Buffer Status Report
BSS	Base Station Subsystem
BSSAP	Base Station Subsystem Application Part
BSSGP	Base Station Subsystem GPRS Protocol
BSSMAP	Base Station Subsystem Management Application Part
BSSOMAP	Base Station Subsystem Operation and Maintenance Application Part
BTFD	Blind Transport Format Detection
BTS	Base Transceiver Station
BVC	BSS GPRS Protocol Virtual Connection
BVCI	BSS GPRS Protocol Virtual Connection Identifier
BW	Bandwidth
BWT	Block Waiting Time

C

C	Conditional
C-	Control-
C/I	Carrier-to-Interference Power Ratio
CA	Carrier Aggregation
C-APDU	Command APDU
C-RNTI	Cell Radio Network Temporary Identity
C-TPDU	Command TPDU
CA	Capacity Allocation
	Cell Allocation

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 038

	Certification Authority
CAA	Capacity Allocation Acknowledgement
CAD	Card Acceptance Device
CAI	Charge Advice Information
CAMEL	Customised Application for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CAZAC	Constant Amplitude Zero Auto-Correlation
CB	Cell Broadcast
CBC	Cell Broadcast Centre
	Cipher Block Chaining
CBCH	Cell Broadcast CHannel
CBMI	Cell Broadcast Message Identifier
CBR	Constant Bit Rate
CBS	Cell Broadcast Service
CC	Call Control
	Country Code
	Cryptographic Checksum
	Component Carrier
CC/PP	Composite Capability/Preference Profiles
CCBS	Completion of Calls to Busy Subscriber
CCCH	Common Control Channel
CCE	Control Channel Element
CCF	Call Control Function
CCH	Control Channel
CCI	Capability / Configuration Identifier
CCITT	Comité Consultatif International Télégraphique et Téléphonique (The International Telegraph and Telephone Consultative Committee)
CCK	Corporate Control Key
CCM	Certificate Configuration Message
	Current Call Meter
CCO	Cell Change Order
CCP	Capability/Configuration Parameter
CCPCH	Common Control Physical Channel
Cct	Circuit
CCTrCH	Coded Composite Transport Channel
CD	Capacity Deallocation
	Collision Detection
CDA	Capacity Deallocation Acknowledgement
CDCH	Control-plane Dedicated CHannel
CDMA	Code Division Multiple Access
CDN	Coupling/Decoupling Network
CDR	Charging Data Record
CDUR	Chargeable DURation
CED	called station identifier
CEIR	Central Equipment Identity Register
CEND	end of charge point
CEPT	Conférence des administrations Européennes des Postes et Telecommunications
CF	Conversion Facility
	all Call Forwarding services
CFB	Call Forwarding on mobile subscriber Busy
CFN	Connection Frame Number
CFNRc	Call Forwarding on mobile subscriber Not Reachable
CFNRy	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CGI	Common Gateway Interface
	Cell Global Identifier
CHAP	Challenge Handshake Authentication Protocol
CHP	CHarging Point
CHV	Card Holder Verification information

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 039

CI	Cell Identity
	CUG index
CID	Cell-ID (positioning method)
CIM	Common Information Model
CIR	Carrier to Interference Ratio
CK	Cipher Key
CKSN	Ciphering Key Sequence Number
CLA	CLAss
CLI	Calling Line Identity
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CLK	Clock
CM	Connection Management
CMAS	Commercial Mobile Alert Service
CMC	Connection Mobility Control
CMD	Command
CMIP	Common Management Information Protocol
CMISE	Common Management Information Service
CMM	Channel Mode Modify
CN	Core Network
	Comfort Noise
CNAP	Calling Name Presentation
CNG	Calling Tone
CNL	Co-operative Network List
CNTR	Counter
CLNP	Connectionless network protocol
CLNS	Connectionless network service
COLI	COnnected Line Identity
COLP	COnnected Line identification Presentation
COLR	COnnected Line identification Restriction
COM	COMplete
CONNACK	Connect Acknowledgement
CONS	Connection-oriented network service
CORBA	Common Object Request Broker Architecture
CP	Cyclic prefix
CP-Admin	Certificate Present (in the MExE SIM)-Administrator
CP-TP	Certificate Present (in the MExE SIM)-Third Party
CPBCCH	COMPACT Packet BCCH
CPICH	Common Pilot Channel
CPCH	Common Packet Channel
CPCS	Common Part Convergence Sublayer
CPS	Common Part Sublayer
CPU	Central Processing Unit
C-plane	Control Plane
C/R	Command/Response field bit
CQI	Channel Quality Indicator
CRC	Cyclic Redundancy Check
CRE	Call Ree-establishment procedure
CRNC	Controlling Radio Network Controller
CS-GW	Circuit Switched Gateway
CS	Circuit Switched
	Coding Scheme
CSCF	Call Server Control Function
CSD	Circuit Switched Data
CSE	Camel Service Environment
CSG	Closed Subscriber Group
CSGID	Closed Subscriber Group Identity
CSI	Channel State Information
CSPDN	Circuit Switched Public Data Network

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 040

CT	Call Transfer supplementary service
	Channel Tester
	Channel Type
CTCH	Common Traffic Channel
CTDMA	Code Time Division Multiple Access
CTFC	Calculated Transport Format Combination
CTM	Cellular Text telephone Modem
CTR	Common Technical Regulation
CTS	Cordless Telephony System
CUG	Closed User Group
CW	Call Waiting
	Continuous Wave (unmodulated signal)
CWI	Character Waiting Integer
CWT	Character Waiting Time
C-RNTI	Cell RNTI

D

DAC	Digital to Analog Converter
DAD	Destination ADress
DAM	DECT Authentication Module
DB	Dummy Burst
DC	Dedicated Control (SAP)
	Direct Current
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCE	Data Circuit terminating Equipment
DCF	Data Communication Function
DCH	Dedicated Channel
DCI	Downlink Control Information
DCK	Depersonalisation Control Key
DCN	Data Communication Network
DCS	Data Coding Scheme
DCS1800	Digital Cellular Network at 1800MHz
DC-HSDPA	Dual Cell HSDPA
DDI	Direct Dial In
DECT	Digital Enhanced Cordless Telecommunications
DET	Detach
DES	Data Encryption Standard
DF	Dedicated File
DFT	Discrete Fourier Transformation
DHCP	Dynamic Host Configuration Protocol
DHO	Diversity Handover
diff-serv	Differentiated services
DISC	Disconnect
DL	Data Layer
	Downlink (Forward Link)
DLCI	Data Link Connection Identifier
DLD	Data Link Discriminator
DL-SCH	Downlink Shared channel
Dm	Control channel (ISDN terminology applied to mobile service)
DMR	Digital Mobile Radio
DMTF	Distributed Management Task Force
DN	Destination Network
DNIC	Data Network Identifier
DNS	Directory Name Service
DO	Data Object
DP	Dial/Dialled Pulse

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 041

DPCCH	Dedicated Physical Control Channel
DPCH	Dedicated Physical Channel
DPDCH	Dedicated Physical Data Channel
DRAC	Dynamic Resource Allocation Control
DRB	Data Radio Bearer
DRNC	Drift Radio Network Controller
DRNS	Drift RNS
DRX	Discontinuous Reception
DS-CDMA	Direct-Sequence Code Division Multiple Access
DSAC	Domain Specific Access Control
DSCH	Downlink Shared Channel
DSE	Data Switching Exchange
DSI	Digital Speech Interpolation
DSS1	Digital Subscriber Signalling No1
DTAP	Direct Transfer Application Part
DTCH	Dedicated Traffic Channel
DTE	Data Terminal Equipment
DTMF	Dual Tone Multiple Frequency
DTT	Digital Terrestrial Television
DTX	Discontinuous Transmission
DUT	Device Under Test
DwPTS	Downlink Pilot Timeslot

E

E-CID	Enhanced Cell-ID (positioning method)
E-GGSN	Enhanced GGSN
E-HLR	Enhanced HLR
E-RAB	E-UTRAN Radio Access Bearer
E-SMLC	Enhanced Serving Mobile Location Centre
E-TM	E-UTRA Test Model
EA	External Alarms
EARFCN	E-UTRA Absolute Radio Frequency Channel Number
EBSG	Elementary Basic Service Group
ECB	Electronic Code-book
ECC	Emergency Call Code
	Elliptic Curve Cryptography
ECEF	Earth Centred, Earth Fixed
EC-EGPRS	Extended Coverage EGPRS [deprecated: replaced by EC-GSM-IoT]
ECGI	E-UTRAN Cell Global Identifier
EC-GSM-IoT	Extended Coverage GSM Internet of Things
ECI	Earth-Centered-Inertial
ECM	Error Correction Mode (facsimile)
	EPS Connection Management
Ec/No	Ratio of energy per modulating bit to the noise spectral density
ECSD	Enhanced CSD
ECT	Explicit Call Transfer supplementary service
ECTRA	European Committee of Telecommunications Regulatory Affairs
EDC	Error Detection Code byte
EDGE	Enhanced Data rates for GSM Evolution
eDRX	Extended Discontinous Reception
EEL	Electric Echo Loss
EF	Elementary File (on the UICC)
EFR	Enhanced Full Rate
EFS	Error free seconds
EGPRS	Enhanced GPRS
EHPLMN	Equivalent Home PLMN
EIR	Equipment Identity Centre
	Equipment Identity Register

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 042

EIRP	Equivalent Isotropic Radiated Power
EL	Echo Loss
EF	Elementary File
EM	Element Manager
EMC	ElectroMagnetic Compatibility
eMLPP	enhanced Multi-Level Precedence and Pre-emption
EMMI	Electrical Man Machine Interface
eNB	E-UTRAN Node B
	evolved Node B
EP	Elementary Procedure
EPA	Extended Pedestrian A model
EPC	Enhanced Power Control
	Evolved Packet Core
EPRE	Energy Per Resource Element
E-UTRA	Evolved UTRA
	Evolved Universal Terrestrial Radio Access
E-UTRAN	Evolved UTRAN
	Evolved Universal Terrestrial Radio Access Network
EPS	Evolved Packet System
EPCCH	Enhanced Power Control Channel
EPROM	Erasable Programmable Read Only Memory
ERP	Ear Reference Point
	Equivalent Radiated Power
ERR	Error
ESD	Electrostatic discharge
ETNS	European Telecommunications Numbering Space
ETR	ETSI Technical Report
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
etu	elementary time unit
ETU	Extended Typical Urban model
ETWS	Earthquake and Tsunami Warning System
EUI	End-User Identity
EVA	Extended Vehicular A model
EVM	Error Vector Magnitude

F

FA	Full Allocation
	Fax Adaptor
FAC	Final Assembly Code
FACCH	Fast Associated Control CHannel
FACCH/F	Fast Associated Control Channel/Full rate
FACCH/H	Fast Associated Control Channel/Half rate
FACH	Forward Access Channel
FAUSCH	Fast Uplink Signalling Channel
FAX	Facsimile
FB	Frequency correction Burst
FBI	Feedback Information
FCC	Federal Communications Commission
FCCH	Frequency Correction CHannel
FCI	File Control Information
FCP	File Control Parameter
FCS	Frame Check Sequence
FDD	Frequency Division Duplex
FDM	Frequency Division Multiplex
FDMA	Frequency Division Multiple Access
FDN	Fixed Dialling Number
FDR	False transmit format Detection Ratio

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 043

FEC	Forward Error Correction
FER	Frame Erasure Rate, Frame Error Rate
FFS	For Further Study
FFT	Fast Fourier Transformation
FH	Frequency Hopping
FLO	Flexible Layer One
FM	Fault Management
FMC	Fixed Mobile Convergence
FN	Frame Number
FNUR	Fixed Network User Rate
FP	Frame Protocol
FPLMN	Forbidden PLMN
FR	Full Rate
FRC	Fixed Reference Channel
FTAM	File Transfer Access and Management
ftn	forwarded-to number

G

G-RNTI	GERAN Radio Network Temporary Identity
GAGAN	GPS Aided Geo Augmented Navigation
GBR	Guaranteed Bit Rate
GC	General Control (SAP)
GCR	Group Call Register
GERAN	GSM EDGE Radio Access Network
GGSN	Gateway GPRS Support Node
GID1	Group Identifier (level 1)
GID2	Group Identifier (level 2)
GLONASS	GLObal'naya NAvigatsionnaya Sputnikovaya Sistema (Engl.: Global Navigation Satellite System)
GMLC	Gateway Mobile Location Centre
GMM	GPRS Mobility Management
GMSC	Gateway MSC
GMSK	Gaussian Minimum Shift Keying
GP	Guard Period
GPA	GSM PLMN Area
GPRS	General Packet Radio Service
GPS	Global Positioning System
GRA	GERAN Registration Area
GSA	GSM System Area
GSIM	GSM Service Identity Module
GSM	Global System for Mobile communications
GSN	GPRS Support Nodes
GT	Global Title
GTP	GPRS Tunneling Protocol
GTP-U	GPRS Tunnelling Protocol for User Plane
GTT	Global Text Telephony
GUMMEI	Globally Unique MME Identifier
GUP	3GPP Generic User Profile

H

H-CSCF	Home CSCF
HANDO	Handover
HARQ	Hybrid ARQ, Hybrid Automatic Repeat Request
HCS	Hierarchical Cell Structure
HDLC	High Level Data Link Control
HE	Home Environment
HE-VASP	Home Environment Value Added Service Provider

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 044

HF	Human Factors
HFN	HyperFrame Number
HHO	Hard Handover
HLC	High Layer Compatibility
HLR	Home Location Register
HN	Home Network
HO	Handover
HOLD	Call hold
HPLMN	Home Public Land Mobile Network
HPS	Handover Path Switching
HPU	Hand Portable Unit
HR	Half Rate
HRPD	CDMA2000 High Rate Packet Data
HRR	Handover Resource Reservation
HSCSD	High Speed Circuit Switched Data
HSDPA	High Speed Downlink Packet Access
HSN	Hopping Sequence Number
HSPA	High Speed Packet Access
HSS	Home Subscriber Server
HSUPA	High Speed Uplink Packet Access
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure (https is http/1.1 over SSL, i.e. port 443)
HU	Home Units

I

I-Block	Information Block
I-ETS	Interim European Telecommunications Standard
I/O	Input/Output
I	Information frames (RLP)
IA	Incoming Access (closed user group SS)
IAM	Initial Address Message
IC	Integrated Circuit
	Interlock Code (CUG SS)
IC(pref)	Interlock Code of the preferential CUG
ICB	Incoming Calls Barred (within the CUG)
ICC	Integrated Circuit Card
ICCID	Integrated Circuit Card Identification
ICD	Interface Control Document
ICGW	Incoming Call Gateway
ICI	Incoming Call Information
ICIC	Inter-Cell Interference Coordination
ICM	In-Call Modification
ICMP	Internet Control Message Protocol
ICS	In-Channel Selectivity
ICT	Incoming Call Timer
ID	Identifier
IDFT	Inverse Discrete Fourier Transform
IDL	Interface Definition Language
IDN	Integrated Digital Network
IDNNS	Intra Domain NAS Node Selector
IE	Information Element
IEC	International Electrotechnical Commission
IED	Information Element Data
IEI	Information Element Identifier
IEIDL	Information Element Identifier Data Length
IETF	Internet Engineering Task Force
IF	Infrastructure
IFD	Interface Device

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 045

IFOM	IP FlOw Mobility
IFS	Information Field Sizes
IFSC	Information Field Size for the UICC
IFSD	Information Field Size for the Terminal
IHOSS	Internet Hosted Octet Stream Service
IIOP	Internet Inter-ORB Protocol
IK	Integrity key
IM	Intermodulation
	IP Multimedia
IMA	Inverse Multiplexing on ATM
IMC	IMS Credentials
IMEI	International Mobile Equipment Identity
IMGI	International mobile group identity
IMPI	IP Multimedia Private Identity
IMPU	IP Multimedia PUblic identity
IMS	IP Multimedia Subsystem
IMSI	International Mobile Subscriber Identity
IMT-2000	International Mobile Telecommunications 2000
IMUN	International Mobile User Number
IN	Intelligent Network
	Interrogating Node
INAP	Intelligent Network Application Part
INF	INFormation field
IP	Internet Protocol
IP-CAN	IP-Connectivity Access Network
IP-M	IP Multicast
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
IR	Infrared
IRP	Integration Reference Point
IS	Interface Specification
ISC	International Switching Centre
ISCP	Interference Signal Code Power
ISDN	Integrated Services Digital Network
ISIM	IM Services Identity Module
ISO	International Organisation for Standardisation
ISP	Internet Service Provider
ISUP	ISDN User Part
ITC	Information Transfer Capability
ITU	International Telecommunication Union
ITU-R	Radiocommunication Sector of the ITU
IUI	International USIM Identifier
IUT	Implementation Under Test
IWF	InterWorking Function
I-WLAN	Interworking WLAN
IWMSC	InterWorking MSC
IWU	Inter Working Unit

J

JAR file	Java Archive File
JCRE	Java Card™ Run Time Environment
JD	Joint Detection
JNDI	Java Naming Directory Interface
JP	Joint Predistortion
JPEG	Joint Photographic Experts Group
JTAPI	Java Telephony Application Programming Interface
JVM	Java™ Virtual Machine

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 046

K

k	Windows size
K	Constraint length of the convolutional code
	USIM Individual key
kbps	kilo-bits per second
Kc	Ciphering key
Ki	Individual subscriber authentication key
KSI	Key Set Identifier
ksps	kilo-symbols per second

L

L1	Layer 1 (physical layer)
L2	Layer 2 (data link layer)
L2ML	Layer 2 Management Link
L2R	Layer 2 Relay
L2R BOP	L2R Bit Orientated Protocol
L2R COP	L2R Character Orientated Protocol
L3	Layer 3 (network layer)
LA	Location Area
LAC	Link Access Control
	Location Area Code
LAI	Location Area Identity
LAN	Local Area Network
LAPB	Link Access Protocol Balanced
LAPDm	Link Access Protocol on the Dm channel
LATA	Local Access and Transport Area
LAU	Location Area Update
LB	Load Balancing
LCD	Low Constrained Delay
LCG	Logical Channel Group
LCN	Local Communication Network
LCP	Link Control Protocol
LCR	Low Chip Rate
LCS	Location Services
LCSC	LCS Client
LCSS	LCS Server
LE	Local Exchange
LEN	LENgth
LI	Language Indication
	Length Indicator
	Line Identity
LIPA	Local IP Access
LLC	Logical Link Control
	Low Layer Compatibility
Lm	Traffic channel with capacity lower than a Bm
LMSI	Local Mobile Station Identity
LMU	Location Measurement Unit
LN	Logical Name
LNA	Low Noise Amplifier
LND	Last Number Dialled
LNS	L2TP Network Server
LPLMN	Local PLMN
LPP	LTE Positioning Protocol
LPPa	LTE Positioning Protocol Annex
LR	Location Register
	Location Registration
LSA	Localised Service Area

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 047

LSB	Least Significant Bit
LSTR	Listener SideTone Rating
LTE	Local Terminal Emulator
	Long Term Evolution
LTZ	Local Time Zone
LU	Local Units
	Location Update
LV	Length and Value

M

M	Mandatory
M	Mandatory
MA	Mobile Allocation
	Multiple Access
MAC	Medium Access Control (protocol layering context)
	Message authentication code (encryption context)
MAC-A	MAC used for authentication and key agreement (TSG T WG3 context)
MAC-I	MAC used for data integrity of signalling messages (TSG T WG3 context)
MACN	Mobile Allocation Channel Number
MAF	Mobile Additional Function
MAH	Mobile Access Hunting supplementary service
MAHO	Mobile Assisted Handover
MAI	Mobile Allocation Index
MAIO	Mobile Allocation Index Offset
MAP	Mobile Application Part
MBMS	Multimedia Broadcast and Multicast Service
MBSFN	
	Multimedia Broadcast multicast service Single Frequency Network
MCC	Mobile Country Code
MCCH	Multicast Control Channel
MCE	Multi-cell/multicast Coordination Entity
MCH	Multicast channel
MCI	Malicious Call Identification supplementary service
MCML	Multi-Class Multi-Link PPP
Mcps	Mega-chips per second
MCS	Modulation and Coding Scheme
MCU	Media Control Unit
MD	Mediation Device
MDL	(mobile) Management (entity) - Data Link (layer)
MDS	Multimedia Distribution Service
MDT	Minimization of Drive Tests
ME	Maintenance Entity
	Mobile Equipment
MEF	Maintenance Entity Function
MEHO	Mobile evaluated handover
MER	Message Error Ratio
MExE	Mobile Execution Environment
MF	Master File
	MultiFrame
MGCF	Media Gateway Control Function
MGCP	Media Gateway Control Part
MGT	Mobile Global Title
MGW	Media GateWay
MHEG	Multimedia and Hypermedia Information Coding Expert Group
MHS	Message Handling System
MIB	Management Information Base
	Master Information Block

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 048

MIC	Mobile Interface Controller
MIM	Management Information Model
MIMO	Multiple Input Multiple Output
MIP	Mobile IP
MIPS	Million Instructions Per Second
MLC	Mobile Location Centre
MM	Man Machine
	Mobility Management
	Multimedia
MME	Mobile Management Entity
MMI	Man Machine Interface
MNC	Mobile Network Code
MNP	Mobile Number Portability
MO	Mobile Originated
MO-LR	Mobile Originating Location Request
MO-SMS	Mobile Originated Short Message Service
MOHO	Mobile Originated Handover
MOS	Mean Opinion Score
MoU	Memorandum of Understanding
MP	Multi-link PPP
MPEG	Moving Pictures Experts Group
MPH	(mobile) Management (entity) - PHysical (layer) [primitive]
MPTY	MultiParTY
MRF	Media Resource Function
MRP	Mouth Reference Point
MS	Mobile Station
MSA	MCH Subframe Allocation
MSB	Most Significant Bit
MSC	Mobile Switching Centre
MSCM	Mobile Station Class Mark
MSCU	Mobile Station Control Unit
MSD	Maximum Sensitivity Degradation
MSE	MExE Service Environment
MSID	Mobile Station Identifier
MSD	Maximum Sensitivity Degradation
MSI	MCH Scheduling Information
MSIN	Mobile Station Identification Number
MSISDN	Mobile Subscriber ISDN Number
MSP	Multiple Subscriber Profile
MSR	Multi-Standard Radio
MSRN	Mobile Station Roaming Number
MT	Mobile Terminated
	Mobile Termination
MTCH	Multicast Traffic Channel
MT-LR	Mobile Terminating Location Request
MT-SMS	Mobile Terminated Short Message Service
MTM	Mobile-To-Mobile (call)
MTP	Message Transfer Part
MTP3-B	Message Transfer Part level 3
MTU	Maximum Transfer Unit
MU	Mark Up
MUI	Mobile User Identifier
MUMS	Multi User Mobile Station
MVNO	Mobile Virtual Network Operator

N

NACC	Network Assisted Cell Change
NACK	Negative Acknowledgement

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 049

NAD	Node Address byte
NAI	Network Access Identifier
NAS	Non-Access Stratum
NBAP	Node B Application Part
NB	Normal Burst
NCELL	Neighbouring (of current serving) Cell
NBAP	Node B Application Part
NBIN	A parameter in the hopping sequence
NCC	Network (PLMN) Colour Code
NCH	Notification CHannel
NCK	Network Control Key
NCP	Network Control Protocol
NDC	National Destination Code
NDUB	Network Determined User Busy
NE	Network Element
NEF	Network Element Function
NEHO	Network evaluated handover
NET	NETwork
	Norme Europeenne de Télécommunications
NEV	NEVer
NF	Network Function
NI-LR	Network Induced Location Request
NIC	Network Independent Clocking
NITZ	Network Identity and Time Zone
NM	Network Manager
NMC	Network Management Centre
NMR	Network Measurement Results
NMO	Network Mode of Operation
NMS	Network Management Subsystem
NMSI	National Mobile Station Identifier
NNI	Network-Node Interface
NO	Network Operator
NP	Network Performance
NPA	Numbering Plan Area
NPI	Numbering Plan Identifier
NRI	Network Resource Identifier
NRM	Network Resource Model
NRT	Non-Real Time
NSAP	Network Service Access Point
NSAPI	Network Service Access Point Identifier
NSCK	Network Subset Control Key
NSDU	Network service data unit
NSS	Network Sub System
Nt	Notification (SAP)
NT	Network Termination
	Non Transparent
NTAAB	New Type Approval Advisory Board
NTDD	Narrow-band Time Division Duplexing
NUA	Network User Access
NUI	National User / USIM Identifier
	Network User Identification
NUP	National User Part (SS7)
NW	Network

O

O	Optional
O&M	Operations & Maintenance
OA	Outgoing Access (CUG SS)

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 050

OACSU	Off-Air-Call-Set-Up
OCB	Outgoing Calls Barred within the CUG
OCCCH	ODMA Common Control Channel
OCF	Open Card Framework
OCI	Outgoing Call Information
OCNG	OFDMA Channel Noise Generator
OCNS	Orthogonal Channel Noise Simulator
OCS	Online Charging System
OCT	Outgoing Call Timer
OD	Optional for operators to implement for their aim
ODB	Operator Determined Barring
ODCCH	ODMA Dedicated Control Channel
ODCH	ODMA Dedicated Channel
OLR	Overall Loudness Rating
ODMA	Opportunity Driven Multiple Access
ODTCH	ODMA Dedicated Traffic Channel
OID	Object Identifier
OFCS	Offline Charging System
OFDM	Orthogonal Frequency Division Multiplex Orthogonal Frequency Division Multiplexing
OFDMA	Orthogonal Frequency Division Multiple Access
OFM	Operational Feature Monitor
OMC	Operation and Maintenance Centre
OML	Operations and Maintenance Link
OOB	Out-of-band
OPLMN	Operator Controlled PLMN (Selector List)
OR	Optimal Routeing
ORACH	ODMA Random Access CHannel
ORLCF	Optimal Routeing for Late Call Forwarding
OS	Operations System
OSA	Open Service Access
OSI	Open System Interconnection
OSI RM	OSI Reference Model
OSP	Octet Stream Protocol
OSP:IHOSS	Octet Stream Protocol for Internet Hosted Octet Stream Service
OTA	Over-The-Air
OTDOA	Observed Time Difference Of Arrival (positioning method)
OTP	One Time Password
OVSF	Orthogonal Variable Spreading Factor

P

P-CCPCH	Primary Common Control Physical Channel
P-CPIH	Primary Common Pilot Channel
P-RNTI	Paging RNTI
P-TMSI	Packet TMSI
PA	Power Amplifier
PAPR	Peak-to-Average Power Ratio
PABX	Private Automatic Branch eXchange
PACCH	Packet Associated Control Channel
PAD	Packet Assember/Disassembler
PAGCH	Packet Access Grant Channel
PAP	Password Authentication Protocol
PAR	Peak to Average Ratio
PB	Pass Band
PBID	PhoneBook IDentifier
PBCCH	Packet Broadcast Control Channel
PBCH	Physical Broadcast Channel
PBP	Paging Block Periodicity

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 051

PBX	Private Branch eXchange
PC	Power Control
	Personal Computer
PCB	Protocol Control Byte
PCCC	Parallel Concatenated Convolutional Code
PCCCH	Packet Common Control Channel
PCCH	Paging Control Channel
PCDE	Peak Code Domain Error
PCell	Primary Cell
PCFICH	Physical control format indicator channel
PCG	Project Co-ordination Group
PCH	Paging Channel
PCK	Personalisation Control Key
PCM	Pulse Code Modulation
PCMCIA	Personal Computer Memory Card International Association
PCPCH	Physical Common Packet Channel
PCS	Personal Communication System
PCU	Packet Control Unit
PD	Protocol Discriminator
	Public Data
PDCCH	Physical Downlink Control Channel
PDCP	Packet Data Convergence Protocol
PDCH	Packet Data Channel
PDH	Plesiochronous Digital Hierarchy
PDN	Public Data Network
	Packet Data Network
PDP	Packet Data Protocol
PDSCH	Physical Downlink Shared Channel
PDTCH	Packet Data Traffic Channel
PDU	Protocol Data Unit
PG	Processing Gain
PH	Packet Handler
	PHysical (layer)
PHF	Packet Handler Function
PHI	Packet Handler Interface
PHICH	Physical hybrid-ARQ indicator channel
PHS	Personal Handyphone System
PHY	Physical layer
PhyCH	Physical Channel
PI	Page Indicator
	Presentation Indicator
PICH	Page Indicator Channel
PICS	Protocol Implementation Conformance Statement
PID	Packet Identification
PIN	Personal Identification Number
PIXT	Protocol Implementation eXtra information for Testing
PKCS	Public-Key Cryptography Standards
PL	Preferred Languages
PLMN	Public Land Mobile Network
PMCH	Physical Multicast Channel
PMD	Physical Media Dependent
PMI	Precoding Matrix Indicator
PN	Pseudo Noise
PNE	Présentation des Normes Européennes
PNP	Private Numbering Plan
POI	Point Of Interconnection (with PSTN)
PoR	Proof of Receipt
POTS	Plain Old Telephony Service
PP	Point-to-Point

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 052

PPCH	Packet Paging Channel
PPE	Primative Procedure Entity
PPF	Paging Proceed Flag
PPM	Parts Per Million
PPP	Point-to-Point Protocol
PPS	Protocol and Parameter Select (response to the ATR)
PRACH	Physical Random Access Channel
	Packet Random Access Channel
PRB	Physical Resource Block
Pref CUG	Preferential CUG
ProSe	Proximity-based Services
PRS	Positioning Reference Signal
PS	Packet Switched
	Location Probability
PSC	Primary Synchronisation Code
	Packet Scheduling
PSCH	Physical Shared Channel
PSE	Personal Service Environment
PSM	Power Saving Mode
PSPDN	Packet Switched Public Data Network
PSTN	Public Switched Telephone Network
PTCCH	Packet Timing advance Control Channel
PTM	Point-to-Multipoint
PTM-G	PTM Group Call
PTM-M	PTM Multicast
PTP	Point to point
PU	Payload Unit
PUCCH	Physical Uplink Control Channel
PUCT	Price per Unit Currency Table
PUK	PIN Unblocking Key
PUSCH	Physical Uplink Shared Channel
PVC	Permanent Virtual Circuit
PW	Pass Word
PWS	Public Warning System

Q

QA	Q (Interface) - Adapter
QAF	Q - Adapter Function
QAM	Quadrature Amplitude Modulation
QCI	QoS Class Identifier
QoS	Quality of Service
QPSK	Quadrature (Quaternary) Phase Shift Keying
QZSS	Quasi-Zenith Satellite System

R

R	Value of Reduction of the MS transmitted RF power relative to the maximum allowed output power of the highest power class of MS (A)
R-APDU	Response APDU
R-Block	Receive-ready Block
R-PDCCH	Relay Physical Downlink Control Channel
R-SGW	Roaming Signalling Gateway
R-TPDU	Response TPDU
R99	Release 1999
RA	Routing Area
	Random mode request information field
RA-RNTI	Random Access RNTI

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 053

RAB	Radio Access Bearer
	Random Access Burst
RAC	Routing Area Code
RACH	Random Access Channel
RADIUS	Remote Authentication Dial In User Service
RAI	Routing Area Identity
RAN	Radio Access Network
RANAP	Radio Access Network Application Part
RAND	RANDom number (used for authentication)
RAT	Radio Access Technology
RAU	Routing Area Update
RB	Radio Bearer
RBC	Radio Bearer Control
RBER	Residual Bit Error Ratio
RDF	Resource Description Format
RDI	Restricted Digital Information
RE	Resource Element
REC	RECommendation
REG	Resource Element Group
REJ	REJect(ion)
REL	RELease
Rel-4	Release 4
Rel-5	Release 5
REQ	REQuest
RES	user RESponse
	64-bit signed RESponse that is the output of the function f2 in a 3G AKA
RET	Remote Electrical Tilting
RETAP	Remote Electrical Tilting Application Part
RF	Radio Frequency
RFC	Request For Comments
	Radio Frequency Channel
RFCH	Radio Frequency CHannel
RFE	Routing Functional Identity
RFN	Reduced TDMA Frame Number
RFU	Reserved for Future Use
RI	Rank Indication
RIM	RAN Information Management
RL	Radio Link
RLC	Radio Link Control
RLCP	Radio Link Control Protocol
RLP	Radio Link Protocol
RLR	Receiver Loudness Rating
RLS	Radio Link Set
RMS	Root Mean Square (value)
RN	Relay Node
RNC	Radio Network Controller
RNL	Radio Network Layer
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RNTABLE	Table of 128 integers in the hopping sequence
RNTI	Radio Network Temporary Identity
ROHC	Robust Header Compression
RPLMN	Registered Public Land Mobile Network
RPOA	Recognised Private Operating Agency
RR	Radio Resources
RRC	Radio Resource Control
RRM	Radio Resource Management
RS	Reference Symbol
RSA	Algorithm invented by Rivest, Adleman and Shamir

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 054

RSCP	Received Signal Code Power
RSE	Radio System Entity
RSL	Radio Signalling Link
RSRQ	Reference Signal Received Quality
RSSI	Received Signal Strength Indicator
RST	Reset
RSTD	Reference Signal Time Difference
RSVP	Resource ReserVation Protocol
RSZI	Regional Subscription Zone Identity
RT	Real Time
RTE	Remote Terminal Emulator
RTP	Real Time Protocol
RU	Resource Unit
RWB	Resolution Bandwidth
RX	Receive
RXLEV	Received signal level
RXQUAL	Received Signal Quality

S

S1AP	S1 Application Protocol
S1-MME	S1 for the control plane
S1-U	S1 for the user plane
S-Block	Supervisory Block
S-CCPCH	Secondary Common Control Physical Channel
S-CPICH	Secondary Common Pilot Channel
S-CSCF	Serving CSCF
S-GW	Serving Gateway
S-RNTI	SRNC Radio Network Temporary Identity
S-TMSI	SAE Temporary Mobile Station Identifier
SAAL	Signalling ATM Adaptation Layer
SABM	Set Asynchronous Balanced Mode
SACCH	Slow Associated Control Channel
SACCH/C4	Slow Associated Control CHannel/SDCCH/4
SACCH/C8	Slow Associated Control CHannel/SDCCH/8
SACCH/T	Slow Associated Control CHannel/Traffic channel
SACCH/TF	Slow Associated Control CHannel/Traffic channel Full rate
SACCH/TH	Slow Associated Control CHannel/Traffic channel Half rate
SAD	Source Address
SAE	System Architecture Evolution
SAP	Service Access Point
SAPI	Service Access Point Identifier
SAR	Segmentation and Reassembly
SAT	SIM Application Toolkit
SB	Synchronization Burst
SBAS	Space Based Augmentation System
SBLP	Service Based Local Policy
SBSC	Serving Base Station Controller
SBSS	Serving Base Station Subsystem
SC	Service Centre (used for SMS)
	Service Code
SC-FDMA	Single-Carrier Frequency Division Multiple Access
SCCH	Synchronisation Control Channel
SCCP	Signalling Connection Control Part
SCell	Secondary Cell
SCF	Service Control Function (IN context), Service Capability Feature (VHE/OSA context)
SCH	Synchronisation Channel
SCI	Subscriber Controlled Input

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 055

SCN	Sub-Channel Number
SCP	Service Control Point
SCTP	S Common Transport Protocol
SCUDIF	Service Change and UDI/RDI Fallback
SDCCH	Stand-Alone Dedicated Control Channel
SDH	Synchronous Digital Hierarchy
SDL	Specification Description Language
SDMA	Spatial Division Multiple Access
SDN	Service Dialling Number
SDP	Service Discovery Protocol (Bluetooth related)
	Session Description Protocol
SDT	SDL Development Tool
SDU	Service Data Unit
SE	Security Environment
	Sending Entity
	Support Entity
SEF	Support Entity Function
SET	SUPL Enabled Terminal
SF	Spreading Factor
SFH	Slow Frequency Hopping
SFI	Short EF Identifier
SFN	System Frame Number
SGSN	Serving GPRS Support Node
SHCCH	Shared Channel Control Channel
SI	Screening Indicator
	Service Interworking
	Supplementary Information (SIA = Supplemenatary Information A)
	System Information
SI-RNTI	System Information RNTI
SIB	System Information Block
SIC	Service Implementation Capabilities
SID	SIlence Descriptor
SIM	GSM Subscriber Identity Module
SIP	Session Initiated Protocol
SIPTO	Selected IP Traffic Offload
SIR	Signal-to-Interference Ratio
SLA	Service Level Agreement
SLP	SUPL Location Platform
SLPP	Subscriber LCS Privacy Profile
SLR	Send Loudness Rating
SLTM	Signalling Link Test Message
SM	Session Management
	Short Message
SMDS	Switched Multimegabit Data Service
SME	Short Message Entity
SMG	Special Mobile Group
SMI	Structure of Management Information (RFC 1155)
SMLC	Serving Mobile Location Centre
SMS	Short Message Service
SMS-CB	SMS Cell Broadcast
SMS-PP	Short Message Service/Point-to-Point
SMS-SC	Short Message Service - Service Centre
Smt	Short message terminal
SN	Serial Number
	Serving Network
	Sequence Number
	Subscriber Number
SNDCP	Sub-Network Dependent Convergence Protocol
SNMP	Simple Network Management Protocol

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 056

SNR	Serial NumbeR
	Signal-to-Noise Ratio
SOA	Suppress Outgoing Access (CUG SS)
SoLSA	Support of Localised Service Area
SON	Self Organizing Networks
SoR	Steering of Roaming
SP	Switching Point
	Service Provider
SPC	Signalling Point Code
	Suppress Preferential CUG
SPCK	Service Provider Control Key
SPI	Security Parameters Indication
SQN	Sequence number
SR	Scheduling Request
SRB	Signalling Radio Bearer
SRES	Signed RESponse (authentication value returned by the SIM or by the USIM in 2G AKA)
SRNC	Serving Radio Network Controller
SRNS	Serving RNS
SRS	Sounding Reference Signal
SS	Supplementary Service
	System Simulator
SS7	Signalling System No. 7
SSC	Secondary Synchronisation Code
	Supplementary Service Control string
SSCOP	Service Specific Connection Oriented Protocol
SSCF	Service Specific Co-ordination Function
SSCF-NNI	Service Specific Coordination Function – Network Node Interface
SSCS	Service Specific Convergence Sublayer
SSDT	Site Selection Diversity Transmission
SSE	Service Specific Entities
SSF	Service Switching Function
SSN	Sub-System Number
SSSAR	Service Specific Segmentation and Re-assembly sublayer
STC	Signalling Transport Converter
STMR	SideTone Masking Rating
STP	Signalling Transfer Point
STTD	Space Time Transmit Diversity
SuM	Subscription Management
SUPL	Secure User Plane Location
SV	Space Vehicle
SVC	Switched virtual circuit
SVN	Software Version Number
SW	Status Word
	Software
SW1/SW2	Status Word 1/Status Word 2

T

T-SGW	Transport Signalling Gateway
T	Timer
	Transparent
	Type only
TA	Terminal Adaptation
	Timing Advance
	Tracking Area
TAC	Type Approval Code
TAF	Terminal Adaptation Function
TAR	Toolkit Application Reference
TB	Transport Block

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 057

TBD	To Be Defined
TBF	Temporary Block Flow
TBR	Technical Basis for Regulation
TC	Transaction Capabilities
	TransCoder
	Transmission Convergence
TCH	Traffic Channel
TCH/F	A full rate TCH
TCH/F2,4	A full rate data TCH (≤2,4kbit/s)
TCH/F4,8	A full rate date TCH (4,8kbit/s)
TCH/F9,6	A full rate data TCH (9,6kbit/s)
TCH/FS	A full rate Speech TCH
TCH/H	A half rate TCH
TCH/H2,4	A half rate data TCH (≤2,4kbit/s)
TCH/H4,8	A half rate data TCH (4,8kbit/s)
TCH/HS	A half rate Speech TCH
TC-TR	Technical Committee Technical Report
TCI	Transceiver Control Interface
TCP	Transmission Control Protocol
TD-CDMA	Time Division-Code Division Multiple Access
TDD	Time Division Duplex(ing)
TDMA	Time Division Multiple Access
TDoc	Temporary Document
TE	Terminal Equipment
TE9	Terminal Equipment 9 (ETSI sub-technical committee)
Tei	Terminal endpoint identifier
TEID	Tunnel End Point Identifier
TF	Transport Format
TFA	TransFer Allowed
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
TFI	Transport Format Indicator
	Temporary Flow Identity
TFIN	Transport Format INdicator
TFP	TransFer Prohibited
TFS	Transport Format Set
TFT	Traffic Flow Template
TI	Transaction Identifier
TLLI	Temporary Logical Link Identity
TLM	TeLeMetry word
TLS	Transport Layer Security
TLV	Tag Length Value
TM	Telecom Management
	Transparent Mode
TMA	Tower Mounted Amplifier
TMAAP	Tower Mounted Amplifier application part
TMF	Telecom Management Forum
TMN	Telecom Management Network
TMSI	Temporary Mobile Subscriber Identity
TN	Termination Node
	Timeslot Number
TNL	Transport Network Layer
TO	Telecom Operations Map
TOA	Time of Arrival
TON	Type Of Number
TP	Third Party
TPC	Transmit Power Control
TPDU	Transfer Protocol Data Unit

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 058

TR	Technical Report
TRAU	Transcoder and Rate Adapter Unit
TrCH	Transport Channel
TRX	Transceiver
TS	Technical Specification
	Teleservice
	Time Slot
TSC	Training Sequence Code
TSDI	Transceiver Speech & Data Interface
TSG	Technical Specification Group
TSTD	Time Switched Transmit Diversity
TTCN	TTCN-2 or TTCN-3
TTCN-2	Tree and Tabular Combined Notation version 2
TTCN-3	Testing and Test Control Notation version 3
TTI	Transmission Timing Interval
TUP	Telephone User Part (SS7)
TV	Type and Value
TX	Transmit
TXPWR	Transmit PoWeR; Tx power level in the MS_TXPWR_REQUEST and MS_TXPWR_CONF parameters

U

U-plane	User plane
U-RNTI	UTRAN Radio Network Temporary Identity
UARFCN	UTRA Absolute Radio Frequency Channel Number
UARFN	UTRA Absolute Radio Frequency Number
UART	Universal Asynchronous Receiver and Transmitter
UCS2	Universal Character Set 2
UDD	Unconstrained Delay Data
UDI	Unrestricted Digital Information
UDP	User Datagram Protocol
UDUB	User Determined User Busy
UDCH	User-plane Dedicated CHannel
UE	User Equipment
UE_R	User Equipment with ODMA relay operation enabled
UEM	operating band Unwanted Emissions Mask
UI	User Interface
	Unnumbered Information (Frame)
UIA	3G Integrity Algorithm
UIC	Union Internationale des Chemins de Fer
UL	Uplink (Reverse Link)
UL-SCH	Uplink Shared channel
UM	Unacknowledged Mode
UML	Unified Modelling Language
UMS	User Mobility Server
UMSC	UMTS Mobile Services Switching Centre
UMTS	Universal Mobile Telecommunications System
UNI	User-Network Interface
UP	User Plane
UPCMI	Uniform PCM Interface (13-bit)
UPE	User Plane Entity
UPD	Up to date
UpPTS	Uplink Pilot Timeslot
UPT	Universal Personal Telecommunication
URA	User Registration Area
	UTRAN Registration Area
URAN	UMTS Radio Access Network

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 059

URB	User Radio Bearer
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
USAT	USIM Application Toolkit
USB	Universal Serial Bus
USC	UE Service Capabilities
USCH	Uplink Shared Channel
USF	Uplink State Flag
USIM	Universal Subscriber Identity Module
USSD	Unstructured Supplementary Service Data
UT	Universal Time
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network
UUI	User-to-User Information
UUS	Uu Stratum User-to-User Signalling

V

V	Value only
VA	Voice Activity factor
VAD	Voice Activity Detection
VAP	Videotex Access Point
VASP	Value Added Service Provider
VBR	Variable Bit Rate
VBS	Voice Broadcast Service
VC	Virtual Circuit
VGCS	Voice Group Call Service
VHE	Virtual Home Environment
VLR	Visitor Location Register
VMSC	Visited MSC
VoIP	Voice Over IP
VPLMN	Visited Public Land Mobile Network
VPN	Virtual Private Network
VRB	Virtual Resource Block
VSC	Videotex Service Centre
V(SD)	Send state variable
VTX host	The components dedicated to Videotex service

W

WA	Wide Area
WAAS	Wide Area Augmentation System
WAE	Wireless Application Environment
WAP	Wireless Application Protocol
WBEM	Web Based Enterprise Management
WCDMA	Wideband Code Division Multiple Access
WDP	Wireless Datagram Protocol
WG	Working Group
WGS-84	World Geodetic System 1984
WIM	Wireless Identity Module
WIN	Wireless Intelligent Network
WLAN	Wireless Local Area Network
WLAN UE	WLAN User Equipment
WPA	Wrong Password Attempts (counter)
WS	Work Station

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 060

WSP	Wireless Session Protocol
WTA	Wireless Telephony Applications
WTAI	Wireless Telephony Applications Interface
WTDD	Wideband Time Division Duplexing
WTLS	Wireless Transport Layer Security
WTP	Wireless Transaction Protocol
WTX	Waiting Time eXtenstion
WWT	Work Waiting Time
WWW	World Wide Web

X

X2-C	X2-Control plane
X2-U	X2-User plane
XID	eXchange IDentifier
XMAC	exXpected Message Authentication Code (calculated by the USIM application in 3G AKA)
XML	eXtensible Markup Language
XRES	EXpected user RESponse

Y

<void>

Z

ZC	Zone Code

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 061

5 Equations

$\frac{CPICH_E_c}{I_{or}}$	The ratio of the received energy per PN chip of the CPICH to the total transmit power spectral density at the Node_B (SS) antenna connector.
$DPCH_E_c$	Average energy per PN chip for DPCH.
$\frac{DPCH_E_c}{I_{or}}$	The ratio of the transmit energy per PN chip of the DPCH to the total transmit power spectral density at the Node_B antenna connector.
$\frac{DPCCH_E_c}{I_{or}}$	The ratio of the transmit energy per PN chip of the DPCCH to the total transmit power spectral density at the Node B antenna connector.
$\frac{DPDCH_E_c}{I_{or}}$	The ratio of the transmit energy per PN chip of the DPDCH to the total transmit power spectral density at the Node B antenna connector.
E_c	Average energy per PN chip.
$\frac{E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for different fields or physical channels to the total transmit power spectral density.
F_{uw}	Frequency of unwanted signal
I_o	The total received power spectral density, including signal and interference, as measured at the UE antenna connector.
I_{oac}	The power spectral density of the adjacent frequency channel as measured at the UE antenna connector.
I_{oc}	The power spectral density of a band limited white noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the UE antenna connector.The power spectral density of a band limited white noise source (simulating interference from other cells) as measured at the UE antenna connector.
I_{or}	The total transmit power spectral density of the Forward down link at the base stationNode_B antenna connector.
$\hat{I}_{or}$	The received power spectral density of the down link as measured at the UE antenna connector.
I_{ouw}	Unwanted signal power level.
$OCNS_E_c$	Average energy per PN chip for the OCNS.
$\frac{OCNS_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the OCNS to the total transmit power spectral density.
$P-CCPCH_E_c$	Average* energy per PN chip for P-CCPCH.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 062

$P-CCPCH\ \frac{E_c}{I_o}$	The ratio of the received P-CCPCH energy per chip to the total received power spectral density at the UE antenna connector.
$\frac{P-CCPCH_E_c}{I_{or}}$	The ratio of the average* transmit energy per PN chip for the P-CCPCH to the total transmit power spectral density.
$P-CPICH_E_c$	Average* energy per PN chip for P-CPICH.
$PICH_E_c$	Average* energy per PN chip for PICH.
$\frac{PICH_E_c}{I_{or}}$	The ratio of the received energy per PN chip of the PICH to the total transmit power spectral density at the Node B (SS) antenna connector.
$PCCPCH\ \frac{E_c}{I_o}$	The ratio of the received PCCPCH energy per chip to the total received power spectral density at the UE antenna connector.
$\frac{PCCPCH_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the PCCPCH to the total transmit power spectral density.
$\frac{\sum DPCH_E_c}{I_{or}}$	The ratio of the sum DPCH_Ex for one service in case of multicode to the total tramsmit power spectral density of the downlink at the BS antenna connector.
$S-CCPCH_E_c$	Average energy per PN chip for S-CCPCH.
$S-CPICH_E_c$	Average* energy per PN chip for S-CPICH.
SCH_E_c	Average* energy per PN chip for SCH.
$SCCPCH_E_c$	Average energy per PN chip for SCCPCH.

*Note: Averaging period for energy/power of discontinuously transmitted channels should be defined.

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 063

Annex A: Change history

TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	WI
SP-07	-	-	21.905	-	-	-	-	Approved at SA#07 as version 3.0.0		3.0.0	
SP-08	SP-000209	S1-000369	21.905	0001		R99	B	New Abbreviations and Definitions for R99, language alignment and editorial changes	3.0.0	3.1.0	
08/2000	-	-	21.905	-	-	-	-	MCC correction of CR001 implementation; editorial update.	3.1.0	3.1.1	
SP-09	SP-000380	S1-000477	21.905	0002		R99	D	New Abbreviations and Definitions for R99	3.1.1	3.2.0	
SP-09	SP-000381	S1-000627	21.905	0003		R4	D	Change of Name of MExE	3.1.1	4.0.0	
SP-10	SP-000659	S1-000731	21.905	0004		Rel-4	B	Introduces ASCI definition	4.0.0	4.1.0	ASCI
SP-10	SP-000659	S1-000736	21.905	0005	1	Rel-4	B	Inclusion of GSM 01.04 v 7.0.0 acronyms and abbreviations in the vocabulary	4.0.0	4.1.0	CORREC T
SP-11	SP-010038	S1-010233	21.905	0006		Rel-4	D	Editorial changes and new definitions	4.1.0	4.2.0	Vocab
SP-11	SP-010038	S1-010234	21.905	0007		Rel-4	B	Inclusion of commonly used definition contained in 23.122	4.1.0	4.2.0	Vocab
SP-12	SP-010256	S1-010366	21.905	0008		Rel-4	F	Corrections to the vocabulary requested by RAN-4	4.2.0	4.3.0	Vocab
SP-12	SP-010256	S1-010582	21.905	0009		Rel-4	F	CR to 21.905 on Definitions in 22.101 subscription and service provider	4.2.0	4.3.0	Vocab
SP-12	SP-010258	S1-010537	21.905	0010		Rel-5	D	Addition of definition of Service Provider and Subscription. Modification of definition of Subscriber	4.3.0	5.0.0	Vocab
SP-13	SP-010430	S1-010649	21.905	0013		Rel-5	B	CR to 21.905v5.0.0 (Rel-5) on Alignment of definitions requested by RAN 4	5.0.0	5.1.0	Vocab
SP-13	SP-010431	S1-010838	21.905	0016		Rel-5	B	CR to 21.905 version 5.0.0 Nomenclature for GTT	5.0.0	5.1.0	GTT
SP-14	SP-010671	S1-011276	21.905	0021	1	Rel-5	F	Defintion of Local Services	5.1.0	5.2.0	IMS
SP-15	SP-020046	S1-020393	21.905	0030		Rel-5	B	CR to 21.905: new definition of the term 'service'	5.2.0	5.3.0	TEI
SP-15	SP-020063	S1-020431	21.905	0031		Rel-5	B	CR 21.905 Rel. 5 Introduction of new abbreviations derived of the approval of 3GPP TS 23.236	5.2.0	5.3.0	PSS-E
SP-15	SP-020046	S1-020452	21.905	0032		Rel-5	B	CR 21.905 Rel.5 B Introduction of the definitions of "pre-pay" and "post-pay" billing	5.2.0	5.3.0	TEI
SP-15	SP-020046	S1-020526	21.905	0033		Rel-5	F	CR to 21.905: Replacement of the term UMTS with 3GPP system	5.2.0	5.3.0	TEI
SP-15	SP-020046	S1-020527	21.905	0034		Rel-5	B	CR to 21.905: missing abbreviations	5.2.0	5.3.0	TEI
SP-15	SP-020046	S1-020528	21.905	0035		Rel-5	B	CR to 21.905: new definition	5.2.0	5.3.0	TEI

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 064

								of the term 'application'			
SP-15	SP-020046	S1-020617	21.905	0036		Rel-5	B	CR to 21905: definitions of online and offline charging	5.2.0	5.3.0	TEI
SP-15	SP-020046	S1-020620	21.905	0037		Rel-5	B	CR to 21.905: Improved definition of the term "application"	5.2.0	5.3.0	TEI
SP-16	SP-020243	S1-020973	21.905	0038		Rel-5	F	CR to 21.905 5.3.0 - removal of obsolete reference	5.3.0	5.4.0	Vocab
SP-17	SP-020596		21.905	0039	1	Rel-5	F	Addition of GERAN definitions and abbreviations	5.4.0	5.5.0	TEI
SP-17	SP-020596		21.905	0040	1	Rel-5	F	Addition of missing GSM/GPRS abbreviations	5.4.0	5.5.0	TEI
SP-17	SP-020555	S1-021762	21.905	0041		Rel-6	B	CR to 21.905 definitions from TR 22.951	5.4.0	6.0.0	TEI
SP-17	SP-020555	S1-021715	21.905	0042		Rel-6	F	Enhancement of the definition of the 'Subscriber'	5.4.0	6.0.0	TEI
SP-18	SP-020654	S1-022223	21.905	0043		Rel-6	D	Update to 3GPP TR 21.905, Vocabulary for 3GPP Specifications	6.0.0	6.1.0	TEI6
SP-18	SP-020666	S1-022264	21.905	0044		Rel-6	B	CR to 21.905 to introduce WLAN terminology	6.0.0	6.1.0	WLAN
SP-19	SP-030012	S1-030238	21.905	0046	-	Rel-6	A	CR on Entities of the mobile system	6.1.0	6.2.0	OAM-AR
SP-20	SP-030247	S1-030391	21.905	0047	-	Rel-6	B	Addition of the definition and acronym of 3GPP Generic User Profile	6.2.0	6.3.0	GUP
SP-20	SP-030240	S1-030576	21.905	0050	-	Rel-6	A	Correction of acronyms in TR21.905	6.2.0	6.3.0	TEI4
SP-21	SP-030456	S1-030971	21.905	0052	-	Rel-6	A	Correction of the Defintion of CDR	6.3.0	6.4.0	OAM-CH
SP-22	SP-030694	S1-031145	21.905	0053	-	Rel-6	F	Terminology addtions for IP-CAN and IP-CAN bearer	6.4.0	6.5.0	TEI6
SP-22	SP-030694	S1-031311	21.905	0054	-	Rel-6	F	Modified base station definition	6.4.0	6.5.0	Vocab
SP-23	SP-040087	S1-040115	21.905	0055	-	Rel-6	B	Acronyms for the Flexible Layer One	6.5.0	6.6.0	FLOGER
SP-23	SP-040107	S5-042112	21.905	0056	-	Rel-6	F	Add Subscription Management (SuM) Definition and Abbreviation to SA1's 21.905 - Align with SA5's 32.140/1, 32.171/2/... & 3GPP Work Plan (WI Acronym)	6.5.0	6.6.0	SuM
SP-24	SP-040286	S1-040507	21.905	0057	-	Rel-6	F	Inclusion of ANP abbreviation as requested by SA3	6.6.0	6.7.0	Vocab
SP-24	SP-040476	-	21.905	0058	2	Rel-6	F	TR 21.905 Addition WLAN UE definition and classes of equipment and abbreviation	6.6.0	6.7.0	WLAN
SP-27	SP-050055	S1-050143	21.905	0061	-	Rel-6	A	Introduction of RAN Information Management	6.7.0	6.8.0	TEI5
SP-28	SP-050213	S1-050487	21.905	0062	-	Rel-6	F	Correction of OSA acronym	6.8.0	6.9.0	Vocab
SP-29	SP-050509	S1-050780	21.905	0065	-	Rel-6	A	Abbreviation for SCUDIF	6.9.0	6.10.0	Vocab
SP-29	SP-050515	S1-050781	21.905	0066	-	Rel-6	F	Definition and abbreviation for DSAC	6.9.0	6.10.0	Vocab
SP-29	SP-050524	S1-050828	21.905	0067	-	Rel-7	B	Introduction of SBLP abbreviation	6.9.0	7.0.0	Vocab
SP-31	SP-060033	S1-060266	21.905	0068	-	Rel-7	F	Correction of terminology	7.0.0	7.1.0	NSP-CR
SP-32	SP-060428	-	21.905	0069	1	Rel-7	F	TISPAN UE definition	7.1.0	7.2.0	FBI
SP-35	SP-070231	-	21.905	0071	3	Rel-7	F	Terminology clarification for User Equipment and User Equipment components	7.2.0	7.3.0	Vocab
SP-35	SP-070135	S1-070248	21.905	0072	-	Rel-8	D	Adding FMC to terms and	7.3.0	8.0.0	Vocab

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 065

								abbreviations			
SP-36	SP-070475	S1-070442	21.905	0074	1	Rel-8	A	Addition of "Steering of Roaming" to definitions and abbreviations	8.0.0	8.1.0	TEI
SP-37	SP-070562	S1-070949	21.905	76		Rel-8	B	To define 'Service Continuity' in the vocabulary	8.1.0	8.2.0	TEI8
SP-37	SP-070562	S1-070986	21.905	77		Rel-8	B	Proposal to add E-UTRA and E-UTRAN	8.1.0	8.2.0	TEI8
SP-37	SP-070562	S1-071102	21.905	75	1	Rel-8	B	Proposal to add Evolved Packet System Evolved Packet Core	8.1.0	8.2.0	TEI8
SP-37	SP-070562	S1-071233	21.905	78	2	Rel-8	C	NP definition	8.1.0	8.2.0	TEI8
SP-38	SP-070848	S1-071893	21.905	0079	1	Rel-8	B	Addition of definitions of an End-User and End-User Identity	8.2.0	8.3.0	EUI
SP-39	SP-080045	S1-080276	21.905	0080	2	Rel-8	F	Proposal to add abbreviation for Evolved Packet Core	8.3.0	8.4.0	TEI8
SP-39	SP-080045	S1-080275	21.905	0081	2	Rel-8	F	Correction of UICC definition	8.3.0	8.4.0	TEI8
SP-40	SP-080298	S1-080565	21.905	0082	1	Rel-8	B	Addition of definition of Pilot Identity	8.4.0	8.5.0	TEI8
SP-41	SP-080493	S1-082395	21.905	0083	2	Rel-8	B	Add definitions and abbreviations related to Home NodeB and Home eNodeB	8.5.0	8.6.0	TEI8
SP-42	SP-080769	S1-083441	21.905	0089	1	Rel-9	B	Addition of definition of IMS Credentials and IMC abbreviation	8.6.0	9.0.0	CIMS_3GPP2
SP-43	SP-090080	S1-090167	21.905	0092	1	Rel-9	A	Introduce the definition of CSG manager (Mirror CR to rel-9)	9.0.0	9.1.0	HomeNB
SP-43	SP-090081	S1-090160	21.905	0094	2	Rel-9	A	Editorial changes in IMC definition	9.0.0	9.1.0	CIMS_3GPP2
SP-44	SP-090373	S1-091277	21.905	0095	1	Rel-9	F	Align definition of Allowed CSG list	9.1.0	9.2.0	TEI-9
SP-45	SP-090484	S1-093342	21.905	0098	-	Rel-10	B	Definition for Local IP Access and Selected IP Traffic Offload	9.2.0	10.0.0	LIPA_SIPTO
SP-46	SP-090844	S1-094274	21.905	0101	1	Rel-10	A	Clarify the term "Active Set" in 21.905	10.0.0	10.1.0	TEI9
SP-46	SP-090848	S1-094467	21.905	0102	3	Rel-10	B	Adding IFOM (IP Flow Mobility)	10.0.0	10.1.0	IFOM
SP-47	SP-100188	S1-100438	21.905	0103	1	Rel-10	A	Adding definition of IMS Multimedia Telephony	10.1.0	10.2.0	TEI10
SP-47	SP-100189	S1-100248	21.905	0104	4	Rel-10	B	Definition of Heterogeneous networks	10.1.0	10.2.0	TEI10
SP-51	SP-110091		21.905	105	4	Rel-10	F	Addition of new terms and abbreviations	10.2.0	10.3.0	TEI10
SP-54	SP-110825		21.905	106		Rel-11	B	Adding of MTC terms and definitions	10.3.0	11.0.0	SIMTC
								Remove unwanted character formatting from definition of "Elementary procedure".	11.0.0	11.0.1	
SP-56	SP-120318		21.905	107		Rel-11	F	Removal of invalid reference	11.0.1	11.1.0	TEI11
SP-57	SP-120521		21.905	108		Rel-11		Update MTC definitions	11.1.0	11.2.0	SIMTC
SP-58	SP-120783		21.905	109	1	Rel-11		Correction of the definition of the term "3GPP system"	11.2.0	11.3.0	OAM11
SP-60	SP-130315		21.905	110	3	Rel-12		Add common definitions from ProSe	11.3.0	12.0.0	ProSe
SP-70	SP-150711		21.905	0111		Rel-13		Correction and addition of definitions for Online and Offline Charging	12.0.0	13.0.0	TEI13

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 066

SP-70	SP-150841		21.905	0112		Rel-13		Definition of extended DRX and Power Saving Mode in the 3GPP vocabulary	12.0.0	13.0.0	eDRX

Change history

Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2016-06	SA#72	SP-160466	0113		F	Correction of 3GPP vocabulary due to renaming to EC-GSM-IoT (i.e. change abbreviation EC-GPRS to EC-GSM-IoT)	13.1.0
2017-03	SA#75					Promotion to Release 14 without technical change	14.0.0
2017-06	SA#76	SP-170410	0114		F	Update to the definition of TTCN	14.1.0
2017-06	SA#76	SP-170575	0115		B	Proposed Definition for Restricted Local Operator Services	14.1.1
2018-03	SA#79	SP-180179	0116	3	B	Addition of 5G in the definition of 3GPP system	15.0.0

Unified Patents, LLC v. Togail Technologies, Ltd.
Ex-1020
Page 067