CPC COOPERATIVE PATENT CLASSIFICATION

H04W WIRELESS COMMUNICATIONS NETWORKS (radio transmission systems H04B 7/00 ; transmission systems using electromagnetic waves other than radio waves, e.g. light, infrared H04B 10/00 ; communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones H04M 1/72 ; broadcast communication H04H)

NOTE

This subclass covers :

communication networks for selectively establishing one or a plurality of wireless communication links between a desired number of users or between users and network equipment, for the purpose of transferring information via these wireless communication links;

networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, WLAN [Wireless Local Area Network], wireless access networks, e.g. WLL [Wireless Local Loop] or self-organising wireless communication networks, e.g. ad hoc networks;

planning or deployment specially adapted for the above-mentioned wireless networks;

services or facilities specially adapted for the above-mentioned wireless networks;

arrangements or echniques specially adapted for the operation of the above-mentioned wireless networks.

This subclass does not cover :

communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones, which are covered by group H04M 1/72 ;

broadcast communication, which is covered by subclass H04H.

In this subclass, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

H04W 4/00 { Mobile application }**services or facilities specially adapted for wireless communication networks** {(network arrangements or communication protocols for networked applications H04L 67/00 ; network arrangements or protocols for real-time communications H04L 65/00 ; network arrangements or network protocols for addressing or naming H04L 61/00 ; application independent communication protocol aspects and techniques in packet data networks H04L 69/00 ; network architectures or network communication protocols for network security H04L 63/00 ; wireless network security H04W 12/00 ; message switching systems H04L 12/58 ; arrangements for broadcast or conference H04L 12/18 ; telephonic communication, substation extension arrangements, cordless telephones, portable communication terminals with improved user interface to control a main telephone operation mode or to indicate the communication status H04M 1/72522 ; automatic or semi-automatic exchanges for telephonic communication - systems providing special services or facilities to subscribers H04M 3/42)}

NOTE

1. This groups covers mobile application services or application service signalling for communication over wireless networks. 2. This group focuses on application services specially adapted for wireless networks or adjusted to the wireless environment

H04W 4/001 . { Provisioning or reconfiguring application services e.g. OMA DM (network management H04L 12/24 ; network arrangements or communication protocols for networked applications involving the movement of software or configuration parameters, e.g. applets H04L 67/34 ; program loading or initiating G06F 9/445 ; mobile agents G06F 9/4862)}

H04W 4/003 . { Mobile application execution environments for application services, e.g. communicating with application store or appstore servers in the application service network and vice versa, 3GPP SIM Application toolkit [SAT], 3GPP OSA or 3GPP MEXE (processing of user or subscriber data at user equipment or user record carrier H04W 8/183)}

H04W 4/005 . { for Machine-to-Machine communication [M2M, MTC], e.g. 3GPP M2M, OMA M2M, 3GPP MTC or Wireless Sensor Networks [WSN] (self-organizing networks H04W 84/18 ; network arrangements or communication protocols for networked applications adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car, remote metering networks H04L 67/12 ; mechanical means for transferring the output of a sensing member G01D 5/00)}

H04W 4/006 . . { using cooperative applications for harvesting, aggregating or forwarding data, e.g. data fusion, aggregation or diffusion in WSN, master/slave node hierarchy negotiations in WSN }

H04W 4/008 . { using short range communication, e.g. NFC, RFID or PAN (telephonic substation extension arrangements interfacing with an external accessory using a two-way short-range wireless interface H04M 1/7253 ; mechanical means for transferring the output of a sensing member G01D 5/00; near-field transmission systems H04B 5/00)}

H04W 4/02 . { Mobile application }Services making use of the location of users or terminals { , e.g. OMA SUPL, OMA MLP or 3GPP LCS } (mobility data transfer H04W 8/08 ; access restriction based on user location or mobility data H04W 48/04 ; registration, e.g. affiliation to network, de-registration, e.g. terminating affiliation H04W 60/00 ; locating users or terminals for network management purpose H04W 64/00 ; navigation or navigational instruments G01C 21/00 ; radio direction-finding, radio navigation, determining distance or velocity by use of radio waves, locating or presence-detecting by use of the reflection or re-radiation of radio waves or analogous arrangements using other waves G01S)

H04W 4/021 . . { based on location controlled areas, e.g. geofencing }

H04W 4/022 . . . { with dynamic range variability }

H04W 4/023 . . { using mutual or relative location information between multiple location based services [LBS] targets or of distance thresholds }

H04W 4/025 . . { using location based information parameters }

H04W 4/026 . . . { using orientation information, e.g. compass }

H04W 4/027 . . . { using movement velocity, acceleration information }

H04W 4/028 . . . { using historical or predicted position information, e.g. trajectory data }

H04W 4/04 . . { using association of physical positions and logical data }in a dedicated environment, e.g. buildings or vehicles

H04W 4/043 . . . { using ambient awareness, e.g. involving buildings using floor or room numbers }

H04W 4/046 . . . { involving vehicles, e.g. floating traffic data [FTD] or vehicle traffic prediction }

H04W 4/06 . Selective distribution or broadcast { application services; Mobile application }services to user groups; One-way selective calling services {(connection management for selective distribution or broadcast **H04W 76/08** ; resource management for broadcast services **H04W 72/01**)}

H04W 4/08 . . User group management (group management mechanisms in peer-to-peer network applications H04L 67/1044 ; processing of subscriber group data H04W 8/186)]

H04W 4/10 . . Push-to-Talk { mobile application services }or Push-on-Call { mobile application }services {(arrangements for real-time multimedia Push-to-X-Services H04L 65/4061 ; connection management for Push-to-Talk or Push-on-Call services **H04W 76/08A**)}

H04W 4/12 . { Mobile application service signalling using }messaging, e.g. SMS [Short Message Service]; { Mobile application service signalling using }mailboxes; { Mobile application service signalling using }announcements, e.g. informing users on the status or progress of a communication request {(message switching systems H04L 12/58 ; voice mail systems H04M 3/533 ; arrangements for providing announcements H04M 3/487)}

H04W 4/14 . . { Mobile application service signalling using }short messaging services, e.g. SMS or USSD [Unstructured Supplementary Service Data]

H04W 4/16 . { Mobile application service signalling using }communication-related supplementary services, e.g. call-transfer or call-hold {(automatic or semi-automatic exchange systems providing special services or facilities to subscribers H04M 3/42)}

H04W 4/18 . { Customizing content of application services or }information format or content conversion, e.g. adaptation by the network of the transmitted or received information for the purpose of wireless delivery to users or terminals {(network arrangements or communication protocols for networked applications involving intermediate processing or storage in the network, e.g. proxy, H04L 67/28 ; message adaptation based on network or terminal capabilities for message switching systems H04L 12/5825)}

H04W 4/185 . . { by embedding added-value information into content, e.g. geo-tagging (intermediate arrangements for adding application control or application functional data H04L 67/2804)}

H04W 4/20 . { Signalling of application services or }auxiliary data signalling, i.e. transmitting data via a non-traffic channel

H04W 4/203 . . { for converged personal network application service interworking, e.g. OMA converged personal network services [CPNS] }

H04W 4/206 . . { for socializing or targeting users of the same wireless application service, e.g. joint gesture signalling or mobile advertising signalling (marketing **G06Q 30/00A** ; input arrangements for transferring data to be processed into a form capable of being handled by the computer for entering handwritten data G06F 3/04883)}

H04W 4/22 . { Mobile application service }emergency connection handling { or mobile application services handling urgent or hazardous situations, e.g. 3GPP earthquake and tsunami warning system [ETWS] (connection management for emergency connection handling **H04W 76/10** ; centralised arrangements for answering calls for emergency

applications requiring operator intervention H04M 3/5116)}

H04W 4/24 . Accounting or billing

H04W 4/26 . . Usage measurement

H04W 8/00 Network data management

H04W 8/005 . { Discovery of network devices, e.g. terminals }

H04W 8/02 . Processing of mobility data, e.g. registration information at HLR [Home Location Register] or VLR [Visitor Location Register]; Transfer of mobility data, e.g. between HLR,VLR or external networks

H04W 8/04 . . Registration at HLR or HSS [Home Subscriber Server]

H04W 8/06 . . Registration at serving network Location Register, VLR or user mobility server

H04W 8/065 . . . { involving selection of the user mobility server }

H04W 8/08 . . Mobility data transfer

H04W 8/082 . . . { for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents }

H04W 8/085 . . . { involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIP }]

H04W 8/087 . . . { for preserving data network PoA address despite hand-offs }

H04W 8/10 . . . between location register and external networks

H04W 8/12 . . . between location registers or mobility servers

H04W 8/14 . . . between corresponding nodes

H04W 8/16 . . . selectively restricting mobility { data }tracking

H04W 8/18 . Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data

H04W 8/183 . . { Processing at user equipment or user record carrier }

H04W 8/186 . . { Processing of subscriber group data }

H04W 8/20 . . Transfer of user or subscriber data

H04W 8/205 . . . { Transfer to or from user equipment or user record carrier }

H04W 8/22 . Processing or transfer of terminal data, e.g. status or physical capabilities

H04W 8/24 . . Transfer of terminal data

H04W 8/245 . . . { from a network towards a terminal }

H04W 8/26 . Network addressing or numbering for mobility support

H04W 8/265 . . { for initial activation of new user }

H04W 8/28 . . Number portability; { Network address portability }

H04W 8/30 . Network data restoration; { Network data reliability; Network data fault tolerance }

H04W 12/00 Security arrangements, e.g. access security or fraud detection; Authentication, e.g. verifying user identity or authorisation; Protecting privacy or anonymity

H04W 12/02 . Protecting privacy or anonymity

H04W 12/04 . Key management

H04W 12/06 . Authentication

H04W 12/08 . Access security

H04W 12/10 . Integrity

H04W 12/12 . Fraud detection

H04W 16/00 Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cells structures

H04W 16/02 . Resource partitioning among network components, e.g. reuse partitioning
H04W 16/04 . . Traffic adaptive resource partitioning
H04W 16/06 . . Hybrid resource partitioning, e.g. channel borrowing
H04W 16/08 . . . Load shedding arrangements
H04W 16/10 . . Dynamic resource partitioning
H04W 16/12 . . Fixed resource partitioning

H04W 16/14 . Spectrum sharing arrangements { between different networks }
H04W 16/16 . . for PBS [Private Base Station] arrangements

H04W 16/18 . Network planning tools
H04W 16/20 . . for indoor coverage or short range network deployment

H04W 16/22 . Traffic simulation tools or models
H04W 16/225 . . { for indoor or short range network }

H04W 16/24 . Cell structures
H04W 16/26 . . Cell enhancers { or enhancement }, e.g. for tunnels, building shadow
H04W 16/28 . . using beam steering
H04W 16/30 . . Special cell shapes, e.g. doughnuts or ring cells
H04W 16/32 . . Hierarchical cell structures

H04W 24/00 Supervisory, monitoring or testing arrangements

H04W 24/02 . Arrangements for optimizing operational condition

H04W 24/04 . Arrangements for maintaining operational condition

H04W 24/06 . Testing, { supervising or monitoring }using simulated traffic

H04W 24/08 . Testing, { supervising or monitoring }using real traffic

H04W 24/10 . Scheduling measurement reports; { Arrangements for measurement reports }

H04W 28/00 **Network traffic or resource management**

H04W 28/02 . Traffic management, e.g. flow control or congestion control

H04W 28/0205 . . { at the air interface (dynamic wireless traffic scheduling H04W 72/12)}

H04W 28/021 . . { in wireless networks with changing topologies, e.g. ad-hoc networks (self-organizing networks H04W 84/18)}

H04W 28/0215 . . { based on user or device properties, e.g. MTC-capable devices (mobile application services or facilities specially adapted for wireless communication networks for machine-to-machine communication H04W 4/005 ; wireless resource selection or allocation plan definition based on terminal or device properties H04W 72/048)}

H04W 28/0221 . . . { power availability or consumption }

H04W 28/0226 . . { based on location or mobility (handoff or reselection H04W 36/00 ; mobile application services making use of the location of users or terminals H04W 4/02)}

H04W 28/0231 . . { based on communication conditions (dynamic wireless traffic scheduling definition based on channel quality criteria H04W 72/1226)}

H04W 28/0236 . . . { radio quality, e.g. interference, losses or delay }

H04W 28/0242 . . . { Determining whether packet losses are due to overload or to deterioration of radio communication conditions }

H04W 28/0247 . . { based on conditions of the access network or the infrastructure network (central resource management H04W 28/16)}

H04W 28/0252 . . { per individual bearer or channel (dynamic wireless traffic scheduling H04W 72/12)}

H04W 28/0257 . . . { the individual bearer or channel having a maximum bit rate or a bit rate guarantee }

H04W 28/0263 . . . { involving mapping traffic to individual bearers or channels, e.g. traffic flow template [TFT] }

H04W 28/0268 . . { using specific QoS parameters for wireless networks, e.g. QoS class identifier [QCI] or guaranteed bit rate [GBR] (negotiating SLA or negotiating QoS H04W 28/24)}

H04W 28/0273 . . { adapting protocols for flow control or congestion control to wireless environment, e.g. adapting transmission control protocol [TCP] (wireless network protocols or protocol adaptations to wireless operation, e.g. wireless application protocol H04W 80/00)}

H04W 28/0278 . . { using buffer status reports (dynamic wireless traffic scheduling definition H04W 72/1205)}

H04W 28/0284 . . { detecting congestion or overload during communication (monitoring arrangements H04L 12/2602)}

H04W 28/0289 . . { Congestion control (performing reselection for handling the traffic H04W 36/22 ; load shedding arrangements in network planning H04W 16/08 ; dynamic wireless traffic scheduling H04W 72/12)}

H04W 28/0294 . . { forcing collision (non-scheduled or contention based wireless access channel H04W 74/08)}

H04W 28/04 . . Error control { , e.g. treating errors, collisions, noise or interference (arrangements for detecting or preventing errors in the information received H04L 1/00)}

H04W 28/042 . . . { Treating collisions }

H04W 28/044 . . . . { Collision avoidance }

H04W 28/046 . . . . { Collision detection }

H04W 28/048 . . . { Treating noise or interference (means associated with receiver for limiting or suppressing noise or interference induced by transmission H04B 1/10 ; baseband systems or shaping networks in transmitter or receiver H04L 25/03)}

H04W 28/06 . . Optimizing , e.g. header compression, information sizing

H04W 28/065 . . . { using assembly or disassembly of packets }

H04W 28/08 . . Load balancing or load distribution

H04W 28/085 . . . { among bearers or channels }

H04W 28/10 . . Flow control { between communication endpoints }

H04W 28/12 . . . using signaling between network elements

H04W 28/14 . . . using intermediate storage

H04W 28/16 . Central resource management; Negotiation of resources { or communication parameters }, e.g. negotiating bandwidth or QoS [Quality of Service]

H04W 28/18 . . Negotiating wireless communication parameters

H04W 28/20 . . . Negotiating bandwidth

H04W 28/22 . . . Negotiating communication rate

H04W 28/24 . . Negotiating SLA [Service Level Agreement]; Negotiating QoS [Quality of Service]

H04W 28/26 . . Resource reservation

H04W 36/00 Hand-off or reselection arrangements

NOTE

In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout H04W

H04W 36/0005 . { Control or signalling for completing the hand-off }

H04W 36/0011 . . { for data session or connection }

H04W 36/0016 . . . { for hand-off preparation }

H04W 36/0022 . . . { for transferring sessions between adjacent core network technologies }

H04W 36/0027 . . . { for a plurality of sessions or connections, e.g. multi-call, multi-bearer connections }

H04W 36/0033 . . . { with transfer of context information }

H04W 36/0038 . . . . { of security context information }

H04W 36/0044 . . . . { of quality context information }

H04W 36/005 . . { involving radio access media independent information, e.g. MIH [Media independent Hand-off }]

H04W 36/0055 . . { Transmission and use of information for re-establishing the radio link }

H04W 36/0061 . . . { of neighbor cell information }

H04W 36/0066 . . . { of control information between different types of networks in order to establish a new radio link in the target network }

H04W 36/0072 . . . { of resource information of target access point }

H04W 36/0077 . . . { of access information of target access point }

H04W 36/0083 . . { Determination of parameters used for hand-off, e.g. generation or modification of neighbour cell lists }

H04W 36/0088 . . . { Scheduling hand-off measurements }
H04W 36/0094 . . . { Definition of hand-off measurement parameters }

H04W 36/02 . Buffering or recovering information during reselection; { Modification of the traffic flow during hand-off }
H04W 36/023 . . { Buffering or recovering information during reselection }
H04W 36/026 . . { Multicasting of data during hand-off }

H04W 36/04 . Reselecting a cell layer in multi-layered cells

H04W 36/06 . Reselecting a communication resource in the serving access point

H04W 36/08 . Reselecting an access point

H04W 36/10 . Reselecting an access point controller

H04W 36/12 . Reselecting a serving backbone network switching or routing node

H04W 36/14 . Reselecting a network or an air interface

H04W 36/16 . Performing reselection for specific purposes
H04W 36/165 . . { for improving the overall network performance (H04W 36/18 to H04W 36/22 take precedence)}
H04W 36/18 . . for allowing seamless reselection, e.g. soft reselection
H04W 36/20 . . for optimizing the interference level
H04W 36/22 . . for handling the traffic

H04W 36/24 . Reselection being triggered by specific parameters { used to improve the performance of a single terminal }
H04W 36/245 . . { by historical data }
H04W 36/26 . . by agreed or negotiated communication parameters
H04W 36/28 . . . involving a plurality of connections, e.g. multi-call, multi-bearer connections
H04W 36/30 . . by measured or perceived connection quality data
H04W 36/32 . . by location or mobility data, e.g. speed data

H04W 36/34 . Reselection control
H04W 36/36 . . by user or terminal equipment
H04W 36/365 . . . { by manual user interaction }
H04W 36/38 . . by fixed network equipment
H04W 36/385 . . . { of the core network }

H04W 40/00 Communication routing or communication path finding

H04W 40/005 . { Routing actions in the presence of nodes in sleep or doze mode }

H04W 40/02 . Communication route or path selection, e.g. power-based or shortest path routing
H04W 40/023 . . { Limited or focused flooding to selected areas of a network }

H04W 40/026 . . { Route selection considering the moving speed of individual devices }
H04W 40/04 . . based on wireless node resources
H04W 40/06 . . . based on characteristics of available antennas
H04W 40/08 . . . based on transmission power
H04W 40/10 . . . based on available power or energy
H04W 40/12 . . based on transmission quality or channel quality
H04W 40/125 . . . { using a measured number of retransmissions as a link metric }
H04W 40/14 . . . based on stability
H04W 40/16 . . . based on interference
H04W 40/18 . . based on predicted events
H04W 40/20 . . based on geographic position or location
H04W 40/205 . . . { using topographical information, e.g. hills, high rise buildings }
H04W 40/22 . . using selective relaying for reaching a BTS [Base Transceiver Station] or an access point

H04W 40/24 . Connectivity information management, e.g. connectivity discovery or connectivity update
H04W 40/242 . . { aging of topology database entries }
H04W 40/244 . . { using a network of reference devices, e.g. beaconing }
H04W 40/246 . . { Connectivity information discovery }
H04W 40/248 . . { Connectivity information update }
H04W 40/26 . . for hybrid routing by combining proactive and reactive routing
H04W 40/28 . . for reactive routing
H04W 40/30 . . for proactive routing
H04W 40/32 . . for defining a routing cluster membership

H04W 40/34 . Modification of an existing route
H04W 40/36 . . due to handover
H04W 40/38 . . adapting due to varying relative distances between nodes

H04W 48/00 Access restriction; Network selection; Access point selection

WARNING

Group H04W 48/17 does not correspond to former or future IPC groups.

H04W 48/02 . Access restriction performed under specific conditions
H04W 48/04 . . based on user or terminal location or mobility data, e.g. moving direction, speed
H04W 48/06 . . based on traffic conditions

H04W 48/08 . Access restriction or access information delivery, e.g. discovery data delivery
H04W 48/10 . . using broadcasted information
H04W 48/12 . . using downlink control channel
H04W 48/14 . . using user query { or user detection }

H04W 48/16 . Discovering, processing access restriction or access information

H04W 48/17 . { Selecting a data network PoA [Point of Attachment }]

H04W 48/18 . Selecting a network or a communication service

H04W 48/20 . Selecting an access point

H04W 52/00 **Power Management, e.g. TPC [Transmission Power Control], power saving or power classes** {(gain control in transmitters or power amplifiers H03G 3/3042)}

H04W 52/02 . Power saving arrangements {(in wired systems H04L 12/12 ; signaling of mobile application services, e.g. low battery notifications H04W 4/20)}

H04W 52/0203 .. { in the radio access network or backbone network of wireless communication networks }

H04W 52/0206 ... { in access points, e.g. base stations (access point devices per se H04W 88/08)}

H04W 52/0209 .. { in terminal devices (terminal devices per se H04W 88/02)}

H04W 52/0212 ... { managed by the network, e.g. network or access point is master and terminal is slave }

H04W 52/0216 .... { using a pre-established activity schedule, e.g. traffic indication frame }

H04W 52/0219 .... { where the power saving management affects multiple terminals }

H04W 52/0222 .... { in packet switched networks }

H04W 52/0225 ... { using monitoring of external events, e.g. the presence of a signal }

H04W 52/0229 .... { where the received signal is a wanted signal }

H04W 52/0232 ..... { according to average transmission signal activity }

H04W 52/0235 .... { where the received signal is a power saving command }

H04W 52/0238 .... { where the received signal is an unwanted signal, e.g. interference or idle signal }

H04W 52/0241 .... { where no transmission is received, e.g. out of range of the transmitter }

H04W 52/0245 .... { according to signal strength }

H04W 52/0248 .... { dependent on the time of the day, e.g. according to expected transmission activity }

H04W 52/0251 ... { using monitoring of local events, e.g. events related to user activity }

H04W 52/0254 .... { detecting a user operation or a tactile contact or a motion of the device }

H04W 52/0258 .... { controlling an operation mode according to history or models of usage information, e.g. activity schedule or time of day }

H04W 52/0261 ... { managing power supply demand, e.g. depending on battery level }

H04W 52/0264 .... { by selectively disabling software applications }

H04W 52/0267 .... { by controlling user interface components }

H04W 52/027 ..... { by controlling a display operation or backlight unit }

H04W 52/0274 .... { by switching on or off the equipment or parts thereof }

H04W 52/0277 ..... { according to available power supply, e.g. switching off when a low battery condition is detected }

H04W 52/028 ..... { switching on or off only a part of the equipment circuit blocks }

H04W 52/0283 . . . . . { with sequential power up or power down of successive circuit blocks, e.g. switching on the local oscillator before RF or mixer stages }

H04W 52/0287 . . . . { changing the clock frequency of a controller in the equipment }

H04W 52/029 . . . . . { reducing the clock frequency of the controller }

H04W 52/0293 . . . . . { having a sub-controller with a low clock frequency switching on and off a main controller with a high clock frequency }

H04W 52/0296 . . . . { switching to a backup power supply }

H04W 52/04 . TPC [Transmission power control]

H04W 52/06 . . TPC algorithms

H04W 52/08 . . . Closed loop power control

H04W 52/10 . . . Open loop power control

H04W 52/12 . . . Outer and inner loops

H04W 52/125 . . . . { cascaded outer loop power control }

H04W 52/14 . . . Separate analysis of uplink or downlink

H04W 52/143 . . . . { Downlink power control }

H04W 52/146 . . . . { Uplink power control }

H04W 52/16 . . . Deriving transmission power values from another channel

H04W 52/18 . . TPC being performed according to specific parameters

H04W 52/20 . . . using error rate

H04W 52/22 . . . taking into account previous information or commands

H04W 52/221 . . . . { using past power control commands }

H04W 52/223 . . . . { predicting future states of the transmission }

H04W 52/225 . . . . { Calculation of statistics, e.g. average, variance }

H04W 52/226 . . . . { using past references to control power, e.g. look-up-table }

H04W 52/228 . . . . { using past power values or information }

H04W 52/24 . . . using SIR [Signal to Interference Ratio] or other wireless path parameters

H04W 52/241 . . . . { taking into account channel quality metrics, e.g. SIR, SNR, CIR, Eb/lo }

H04W 52/242 . . . . { taking into account path loss }

H04W 52/243 . . . . { taking into account interferences }

H04W 52/244 . . . . . { Interferences in heterogeneous networks, e.g. among macro and femto or pico cells or other sector / system interference (OSI) }

H04W 52/245 . . . . { taking into account received signal strength }

H04W 52/246 . . . . { where the output power of a terminal is based on a path parameter calculated in said terminal }

H04W 52/247 . . . . { where the output power of a terminal is based on a path parameter sent by another terminal }

H04W 52/248 . . . . { where transmission power control commands are generated based on a path parameter }

H04W 52/26 . . . using transmission rate or quality of service QoS [Quality of Service]

H04W 52/262 . . . . { taking into account adaptive modulation and coding (AMC)scheme (AMC per se H04L 1/0001)}

H04W 52/265 . . . . { taking into account the quality of service QoS }

H04W 52/267 . . . . { taking into account the information rate }

H04W 52/28 . . . using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle

or non transmission

H04W 52/281 . . . . { taking into account user or data type priority }
H04W 52/282 . . . . { taking into account the speed of the mobile }
H04W 52/283 . . . . { Power depending on the position of the mobile }
H04W 52/285 . . . . { taking into account the mobility of the user }
H04W 52/286 . . . . { during data packet transmission, e.g. high speed packet access (HSPA) }
H04W 52/287 . . . . { when the channel is in stand-by }
H04W 52/288 . . . . { taking into account the usage mode, e.g. hands-free, data transmission, telephone }
H04W 52/30 . . using constraints in the total amount of available transmission power
H04W 52/32 . . . TPC of broadcast or control channels
H04W 52/322 . . . . { Power control of broadcast channels }
H04W 52/325 . . . . { Power control of control or pilot channels }
H04W 52/327 . . . . { Power control of multicast channels }
H04W 52/34 . . . TPC management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading
H04W 52/343 . . . . { taking into account loading or congestion level }
H04W 52/346 . . . . { distributing total power among users or channels }
H04W 52/36 . . . with a discrete range or set of values, e.g. step size, ramping or offsets
H04W 52/362 . . . . { Aspects of the step size }
H04W 52/365 . . . . { Power headroom reporting }
H04W 52/367 . . . . { Power values between minimum and maximum limits, e.g. dynamic range }
H04W 52/38 . . TPC being performed in particular situations
H04W 52/383 . . . { power control in peer-to-peer links }
H04W 52/386 . . . { centralized, e.g. when the radio network controller or equivalent takes part in the power control }
H04W 52/40 . . . during macro-diversity or soft handoff
H04W 52/42 . . . in systems with time, space, frequency or polarisation diversity
H04W 52/44 . . . in connection with interruption of transmission
H04W 52/46 . . . in multi hop networks, e.g. wireless relay networks
H04W 52/48 . . . during retransmission after error or non-acknowledgment
H04W 52/50 . . . at the moment of starting communication in a multiple access environment
H04W 52/52 . . using AGC [Automatic Gain Control] circuits or amplifiers
H04W 52/54 . . Signalisation aspects of the TPC commands, e.g. frame structure
H04W 52/545 . . . { modifying TPC bits in special situations }
H04W 52/56 . . . detection of errors of TPC bits
H04W 52/58 . . . format of the TPC bits
H04W 52/60 . . . using different transmission rates for TPC commands

H04W 56/00 Synchronization arrangements

H04W 56/0005 . { synchronizing of arrival of multiple uplinks }

H04W 56/001 . { Synchronization between nodes }

H04W 56/0015 . . { one node acting as a reference for the others }
H04W 56/002 . . { Mutual synchronization }
H04W 56/0025 . . { synchronizing potentially movable access points }

H04W 56/003 . { Arrangements to increase tolerance to errors in transmission or reception timing }

H04W 56/0035 . { detecting errors in frequency or phase }

H04W 56/004 . { compensating for timing error of reception due to propagation delay }
H04W 56/0045 . . { compensating for timing error by altering transmission time }
H04W 56/005 . . { compensating for timing error by adjustment in the receiver }

H04W 56/0055 . { determining timing error of reception due to propagation delay }
H04W 56/006 . . { using known positions of transmitter and receiver }
H04W 56/0065 . . { using measurement of signal travel time }
H04W 56/007 . . . { Open loop measurement }
H04W 56/0075 . . . . { based on arrival time vs. expected arrival time }
H04W 56/008 . . . . . { detecting arrival of signal based on received raw signal }
H04W 56/0085 . . . . . { detecting a given structure in the signal }
H04W 56/009 . . . { Closed loop measurements }
H04W 56/0095 . . { estimated based on signal strength }

H04W 60/00 **Registration, e.g. affiliation to network; De-registration, e.g. terminating affiliation**

H04W 60/005 . { Multiple registrations, e.g. multihoming }

H04W 60/02 . by periodical registration

H04W 60/04 . using triggered events

H04W 60/06 . De-registration or Detaching

H04W 64/00 **Locating users or terminals** { or network equipment }**for network management purposes, e.g. mobility management**

H04W 64/003 . { locating network equipment }

H04W 64/006 . { with additional information processing, e.g. for direction or speed determination }

H04W 68/00 **Notification of users, e.g. alerting for incoming communication or change of service**

H04W 68/005 . { Transmission of information for alerting of incoming communication }

H04W 68/02 . Arrangements for increasing efficiency of notification or paging channel
H04W 68/025 . . { Indirect paging }

H04W 68/04 . multi-step notification using statistical or historical mobility data

H04W 68/06 . using multi-step notification by changing the notification area

H04W 68/08 . using multi-step notification by increasing the notification area

H04W 68/10 . using simulcast notification

H04W 68/12 . Inter-network notification

H04W 72/00 Local resource management, e.g. wireless traffic scheduling or selection or allocation of wireless resources

NOTE

In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout H04W

H04W 72/005 . { Resource management for broadcast services }

H04W 72/02 . Selection of wireless resources by user or terminal

H04W 72/04 . Wireless resource allocation

H04W 72/0406 . . { involving control information exchange between nodes }

H04W 72/0413 . . . { in uplink direction of a wireless link, i.e. towards network }

H04W 72/042 . . . { in downlink direction of a wireless link, i.e. towards terminal }

H04W 72/0426 . . . { between access points }

H04W 72/0433 . . . { between access point and access point controlling device }

H04W 72/044 . . { where an allocation plan is defined based on the type of the allocated resource }

H04W 72/0446 . . . { the resource being a slot, sub-slot or frame }

H04W 72/0453 . . . { the resource being a frequency, carrier or frequency band }

H04W 72/046 . . . { the resource being in the space domain, e.g. beams }

H04W 72/0466 . . . { the resource being a scrambling code }

H04W 72/0473 . . . { the resource being transmission power }

H04W 72/048 . . { where an allocation plan is defined based on terminal or device properties }

H04W 72/0486 . . { where an allocation plan is defined based on load }

H04W 72/0493 . . { where an allocation plan is defined based on a resource usage policy }

H04W 72/06 . . { where an allocation plan is defined }based on a ranking criteria of the wireless resources

H04W 72/08 . . { where an allocation plan is defined }based on quality criteria

H04W 72/082 . . . { using the level of interference }

H04W 72/085 . . . { using measured or perceived quality }

H04W 72/087 . . . { using requested quality }

H04W 72/10 . . { where an allocation plan is defined }based on priority criteria

H04W 72/12 . { Dynamic }Wireless traffic scheduling; { Dynamically scheduled allocation on shared channel }

H04W 72/1205 . . { Schedule definition, set-up or creation }

H04W 72/121 . . . { for groups of terminals or users }
H04W 72/1215 . . . { for collaboration of different radio technologies }
H04W 72/1221 . . . { based on age of data to be sent }
H04W 72/1226 . . . { based on channel quality criteria, e.g. channel state dependent scheduling }
H04W 72/1231 . . . . { using measured or perceived quality }
H04W 72/1236 . . . . { using requested quality }
H04W 72/1242 . . . { based on precedence or priority of the traffic information }
H04W 72/1247 . . . { based on priority of the information source or recipient }
H04W 72/1252 . . . { based on load }
H04W 72/1257 . . . { based on resource usage policy }
H04W 72/1263 . . { Schedule usage, i.e. actual mapping of traffic onto schedule; Multiplexing of flows into one or several streams; Mapping aspects; Scheduled allocation }
H04W 72/1268 . . . { of uplink data flows }
H04W 72/1273 . . . { of downlink data flows }
H04W 72/1278 . . { Transmission of control information for scheduling }
H04W 72/1284 . . . { in the uplink, i.e. from terminal to network }
H04W 72/1289 . . . { in the downlink, i.e. towards the terminal }
H04W 72/1294 . . . . { using a grant or specific channel (H04W 72/14 takes precedence)}
H04W 72/14 . . using a grant { or specific }channel

H04W 74/00 Wireless channel access, e.g. scheduled or random access

H04W 74/002 . { Transmission of channel access control information }
H04W 74/004 . . { in the uplink, i.e. towards network }
H04W 74/006 . . { in the downlink, i.e. towards the terminal }
H04W 74/008 . . { with additional processing of random access related information at receiving side }

H04W 74/02 . Hybrid access techniques

H04W 74/04 . Scheduled { or contention-free }access
H04W 74/06 . . using polling

H04W 74/08 . Non-scheduled { or contention based }access, e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access]
H04W 74/0808 . . { using carrier sensing, e.g. as in CSMA }
H04W 74/0816 . . . { carrier sensing with collision avoidance }
H04W 74/0825 . . . { carrier sensing with collision detection }
H04W 74/0833 . . { using a random access procedure }
H04W 74/0841 . . . { with collision treatment }
H04W 74/085 . . . . { collision avoidance }
H04W 74/0858 . . . . { collision detection }
H04W 74/0866 . . { using a dedicated channel for access }
H04W 74/0875 . . . { with assigned priorities based access }

H04W 74/0883 . . . { for un-synchronized access }
H04W 74/0891 . . . { for synchronized access }

H04W 76/00 **Connection management, e.g. connection set-up, manipulation or release**

H04W 76/002 . { for selective distribution or broadcast }
H04W 76/005 . . { for Push-to-Talk or Push-on-Call services }

H04W 76/007 . { for emergency connection handling }

H04W 76/02 . Connection set-up
H04W 76/021 . . { Allocation or use of connection identifiers }
H04W 76/022 . . { Set-up of transport tunnels }
H04W 76/023 . . { Direct mode set-up }
H04W 76/025 . . { Set-up of multiple wireless link connections }
H04W 76/026 . . . { involving adjacent core network technologies }
H04W 76/027 . . { Management of set-up rejection or failure }
H04W 76/028 . . { Connection re-establishment }

H04W 76/04 . Connection manipulation
H04W 76/041 . . { Manipulation of transport tunnels }
H04W 76/043 . . { Direct mode connection manipulation }
H04W 76/045 . . { Maintenance of an established connection }
H04W 76/046 . . { Transitions among RRC [Radio Resource Control }states]
H04W 76/048 . . { Discontinuous transmission or reception [DTX, DRX }]

H04W 76/06 . Connection release
H04W 76/062 . . { Release of transport tunnels }
H04W 76/064 . . { Selective release of ongoing connections }
H04W 76/066 . . . { for the purpose of reassigning the resources associated with the released connections }
H04W 76/068 . . { Connection release triggered by timers }

H04W 80/00 **Wireless network protocols or protocol adaptations to wireless operation, e.g. WAP [Wireless Application Protocol]**

H04W 80/02 . Data link layer protocols

WARNING

This group is used only for indicating additional information when it is of interest for search

H04W 80/04 . Network layer protocols, e.g. mobile IP [Internet Protocol]

WARNING

This group is used only for indicating additional information when it is of interest for search

H04W 80/045 . . involving different protocol versions, e.g. MIPv4 and MIPv6

WARNING

This group is used only for indicating additional information when it is of interest for search

H04W 80/06 . Transport layer protocols, e.g. TCP [Transport Control Protocol] over wireless ({(transmission control protocol/Internet protocol [TCP/IP)} or user datagram protocol [UDP] H04L 69/16)]

H04W 80/08 . Upper layer protocols {(network arrangements or communication protocols for networked applications H04L 67/00)}

H04W 80/085 . . involving different upper layer protocol versions, e.g. LCS - SUPL or WSN-SOA-WSDP

H04W 80/10 . . adapted for { application }session management, e.g. SIP [Session Initiation Protocol] {(connection management H04W 76/00 ; arrangements for session management H04L 67/14)}

H04W 80/12 . . Application layer protocols, e.g. WAP

H04W 84/00 Network topologies

NOTE

In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout H04W

H04W 84/005 . { Moving wireless networks }

H04W 84/02 . Hierarchical pre-organized networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop]

H04W 84/022 . . { One-way selective calling networks, e.g. wide area paging }

H04W 84/025 . . . { with acknowledge back capability }

H04W 84/027 . . . { providing paging services }

H04W 84/04 . . Large scale networks; Deep hierarchical networks

H04W 84/042 . . . { Public Land Mobile systems, e.g. cellular systems }

H04W 84/045 . . . . { using private Base Stations, e.g. femto Base Stations, home Node B }

H04W 84/047 . . . . { using dedicated repeater stations }

H04W 84/06 . . . Airborne or Satellite Networks

H04W 84/08 . . . Trunked mobile radio systems

H04W 84/10 . . Small scale networks; Flat hierarchical networks

H04W 84/105 . . . { PBS [Private Base Station }network (H04W 84/12 to H04W 84/16 take precedence)]

H04W 84/12 . . . WLAN [Wireless Local Area Networks]
H04W 84/14 . . . WLL [Wireless Local Loop]; RLL [Radio Local Loop]
H04W 84/16 . . . WPBX [Wireless Private Branch Exchange]

H04W 84/18 . Self-organizing networks, e.g. ad-hoc networks or sensor networks
H04W 84/20 . . Master-slave { selection or change }arrangements
H04W 84/22 . . with access to wired networks

H04W 88/00 Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices

H04W 88/005 . { Data network PoA devices }

H04W 88/02 . Terminal devices
H04W 88/021 . . { adapted for Wireless Local Loop operation }
H04W 88/022 . . { Selective call receivers }
H04W 88/023 . . . { with message or information receiving capability }
H04W 88/025 . . . { Selective call decoders }
H04W 88/026 . . . . { using digital address codes }
H04W 88/027 . . . . { using frequency address codes }
H04W 88/028 . . . . { using pulse address codes }
H04W 88/04 . . adapted for relaying to or from another terminal or user
H04W 88/06 . . adapted for operation in multiple networks { or having at least two operational modes }, e.g. multi-mode terminals

H04W 88/08 . Access point devices
H04W 88/085 . . { Access point devices with remote components }
H04W 88/10 . . adapted for operation in multiple networks, e.g. multi-mode access points

H04W 88/12 . Access point controller devices

H04W 88/14 . Backbone network devices

H04W 88/16 . Gateway arrangements

H04W 88/18 . Service Support; Network management devices
H04W 88/181 . . { Transcoding devices; Rate adaptation devices }
H04W 88/182 . . { Network node acting on behalf of an other network entity, e.g. proxy }
H04W 88/184 . . { Messaging devices, e.g. message centre }
H04W 88/185 . . { Selective call encoders for paging networks, e.g. paging centre devices }
H04W 88/187 . . . { using digital or pulse address codes }
H04W 88/188 . . . { using frequency address codes }

H04W 92/00 Interfaces specially adapted for wireless communication networks

H04W 92/02 . Inter-networking arrangements

H04W 92/04 . Interfaces between hierarchically different network devices
H04W 92/045 . . { between access point and backbone network device }
H04W 92/06 . . between gateways and public network devices
H04W 92/08 . . between user and terminal device
H04W 92/10 . . between terminal device and access point, i.e. wireless air interface
H04W 92/12 . . between access points and access point controllers
H04W 92/14 . . between access point controllers and backbone network device N0801]

H04W 92/16 . Interfaces between hierarchically similar devices
H04W 92/18 . . between terminal devices
H04W 92/20 . . between access points
H04W 92/22 . . between access point controllers
H04W 92/24 . . between backbone network devices

H04W 99/00 Subject matter not provided for in other groups of this subclass