

CPC COOPERATIVE PATENT CLASSIFICATION

H ELECTRICITY

(NOTE omitted)

H04 ELECTRIC COMMUNICATION TECHNIQUE

(NOTE omitted)

H04W WIRELESS COMMUNICATION NETWORKS (broadcast communication [H04H](#); communication systems using wireless links for non-selective communication, e.g. wireless extensions [H04M 1/72](#))

NOTES

1. 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 techniques specially adapted for the operation of the above-mentioned wireless networks.
2. 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](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<p>4/00</p> <p>Services specially adapted for wireless communication networks; Facilities therefor</p> <p>NOTES</p> <p>1. This group covers mobile application services or application service signalling for communication over wireless networks.</p> <p>2. This group focuses on application services specially adapted for wireless networks or adjusted to the wireless environment.</p> <p>4/02 . . Services making use of location information</p> <p>4/021 . . . Services related to particular areas, e.g. point of interest [POI] services, venue services or geofences</p> <p>4/022 . . . {with dynamic range variability}</p> <p>4/023 . . {using mutual or relative location information between multiple location based services [LBS] targets or of distance thresholds}</p> <p>4/024 . . Guidance services</p> <p>4/025 . . {using location based information parameters}</p> <p>4/026 . . . {using orientation information, e.g. compass}</p> <p>4/027 . . . {using movement velocity, acceleration information}</p> <p>4/029 . . Location-based management or tracking services</p> <p>4/06 . . Selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS]; Services to user groups; One-way selective calling services</p>	<p>4/08 . . . User group management</p> <p>4/10 . . . Push-to-Talk [PTT] or Push-On-Call services</p> <p>4/12 . . Messaging; Mailboxes; Announcements</p> <p>4/14 . . . Short messaging services, e.g. short message services [SMS] or unstructured supplementary service data [USSD]</p> <p>4/16 . . Communication-related supplementary services, e.g. call-transfer or call-hold</p> <p>4/18 . . 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</p> <p>4/185 . . {by embedding added-value information into content, e.g. geo-tagging}</p> <p>4/20 . . Services signaling; Auxiliary data signalling, i.e. transmitting data via a non-traffic channel</p> <p>4/203 . . {for converged personal network application service interworking, e.g. OMA converged personal network services [CPNS]}</p> <p>4/21 . . . for social networking applications</p> <p>4/23 . . . for mobile advertising</p>
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4/24	<ul style="list-style-type: none"> • Accounting or billing <p>WARNING</p> <p>Group H04W 4/24 is incomplete pending reclassification of documents from group G06Q 50/40.</p> <p>Groups G06Q 50/40 and H04W 4/24 should be considered in order to perform a complete search.</p>	8/183	<ul style="list-style-type: none"> • • {Processing at user equipment or user record carrier}
		8/186	<ul style="list-style-type: none"> • • {Processing of subscriber group data}
		8/20	<ul style="list-style-type: none"> • • Transfer of user or subscriber data
		8/205	<ul style="list-style-type: none"> • • • {Transfer to or from user equipment or user record carrier}
		8/22	<ul style="list-style-type: none"> • Processing or transfer of terminal data, e.g. status or physical capabilities
		8/24	<ul style="list-style-type: none"> • • Transfer of terminal data
4/30	<ul style="list-style-type: none"> • Services specially adapted for particular environments, situations or purposes 	8/245	<ul style="list-style-type: none"> • • • {from a network towards a terminal}
4/33	<ul style="list-style-type: none"> • • for indoor environments, e.g. buildings 	8/26	<ul style="list-style-type: none"> • Network addressing or numbering for mobility support
4/35	<ul style="list-style-type: none"> • • for the management of goods or merchandise 	8/265	<ul style="list-style-type: none"> • • {for initial activation of new user}
4/38	<ul style="list-style-type: none"> • • for collecting sensor information 	8/28	<ul style="list-style-type: none"> • • Number portability {; Network address portability}
4/40	<ul style="list-style-type: none"> • • for vehicles, e.g. vehicle-to-pedestrians [V2P] 	8/30	<ul style="list-style-type: none"> • Network data restoration; {Network data reliability; Network data fault tolerance}
4/42	<ul style="list-style-type: none"> • • • for mass transport vehicles, e.g. buses, trains or aircraft 		
4/44	<ul style="list-style-type: none"> • • • for communication between vehicles and infrastructures, e.g. vehicle-to-cloud [V2C] or vehicle-to-home [V2H] 	12/00	Security arrangements; Authentication; Protecting privacy or anonymity
4/46	<ul style="list-style-type: none"> • • • for vehicle-to-vehicle communication [V2V] 	12/009	<ul style="list-style-type: none"> • {specially adapted for networks, e.g. wireless sensor networks, ad-hoc networks, RFID networks or cloud networks}
4/48	<ul style="list-style-type: none"> • • • for in-vehicle communication 	12/02	<ul style="list-style-type: none"> • Protecting privacy or anonymity, e.g. protecting personally identifiable information [PII]
4/50	<ul style="list-style-type: none"> • Service provisioning or reconfiguring 	12/03	<ul style="list-style-type: none"> • Protecting confidentiality, e.g. by encryption
4/60	<ul style="list-style-type: none"> • Subscription-based services using application servers or record carriers, e.g. SIM application toolkits 	12/033	<ul style="list-style-type: none"> • • of the user plane, e.g. user's traffic
4/70	<ul style="list-style-type: none"> • Services for machine-to-machine communication [M2M] or machine type communication [MTC] 	12/037	<ul style="list-style-type: none"> • • of the control plane, e.g. signalling traffic
4/80	<ul style="list-style-type: none"> • Services using short range communication, e.g. near-field communication [NFC], radio-frequency identification [RFID] or low energy communication 	12/04	<ul style="list-style-type: none"> • Key management, e.g. using generic bootstrapping architecture [GBA]
4/90	<ul style="list-style-type: none"> • Services for handling of emergency or hazardous situations, e.g. earthquake and tsunami warning systems [ETWS] 	12/041	<ul style="list-style-type: none"> • • Key generation or derivation
		12/043	<ul style="list-style-type: none"> • • using a trusted network node as an anchor
		12/0431	<ul style="list-style-type: none"> • • • Key distribution or pre-distribution; Key agreement
		12/0433	<ul style="list-style-type: none"> • • • Key management protocols
8/00	Network data management	12/047	<ul style="list-style-type: none"> • • without using a trusted network node as an anchor
8/005	<ul style="list-style-type: none"> • {Discovery of network devices, e.g. terminals} 	12/0471	<ul style="list-style-type: none"> • • • Key exchange
8/02	<ul style="list-style-type: none"> • 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 	12/06	<ul style="list-style-type: none"> • Authentication
8/04	<ul style="list-style-type: none"> • • Registration at HLR or HSS [Home Subscriber Server] 	12/062	<ul style="list-style-type: none"> • • Pre-authentication
8/06	<ul style="list-style-type: none"> • • Registration at serving network Location Register, VLR or user mobility server 	12/065	<ul style="list-style-type: none"> • • Continuous authentication
8/065	<ul style="list-style-type: none"> • • • {involving selection of the user mobility server} 	12/068	<ul style="list-style-type: none"> • • {using credential vaults, e.g. password manager applications or one time password [OTP] applications}
8/08	<ul style="list-style-type: none"> • • Mobility data transfer 	12/069	<ul style="list-style-type: none"> • • using certificates or pre-shared keys
8/082	<ul style="list-style-type: none"> • • • {for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents} 	12/08	<ul style="list-style-type: none"> • Access security
8/085	<ul style="list-style-type: none"> • • • {involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIP]} 	12/082	<ul style="list-style-type: none"> • • using revocation of authorisation
8/087	<ul style="list-style-type: none"> • • • {for preserving data network PoA address despite hand-offs} 	12/084	<ul style="list-style-type: none"> • • using delegated authorisation, e.g. open authorisation [OAuth] protocol
8/10	<ul style="list-style-type: none"> • • • between location register and external networks 	12/086	<ul style="list-style-type: none"> • • using security domains
8/12	<ul style="list-style-type: none"> • • • between location registers or mobility servers 	12/088	<ul style="list-style-type: none"> • • using filters or firewalls
8/14	<ul style="list-style-type: none"> • • • between corresponding nodes 	12/10	<ul style="list-style-type: none"> • Integrity
8/16	<ul style="list-style-type: none"> • • • selectively restricting mobility {data} tracking 	12/102	<ul style="list-style-type: none"> • • Route integrity, e.g. using trusted paths
8/18	<ul style="list-style-type: none"> • Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data 	12/104	<ul style="list-style-type: none"> • • Location integrity, e.g. secure geotagging
		12/106	<ul style="list-style-type: none"> • • Packet or message integrity
		12/108	<ul style="list-style-type: none"> • • Source integrity
		12/12	<ul style="list-style-type: none"> • Detection or prevention of fraud
		12/121	<ul style="list-style-type: none"> • • Wireless intrusion detection systems [WIDS]; Wireless intrusion prevention systems [WIPS]
		12/122	<ul style="list-style-type: none"> • • • Counter-measures against attacks; Protection against rogue devices
		12/125	<ul style="list-style-type: none"> • • Protection against power exhaustion attacks
		12/126	<ul style="list-style-type: none"> • • Anti-theft arrangements, e.g. protection against subscriber identity module [SIM] cloning

- 12/128 . . Anti-malware arrangements, e.g. protection against SMS fraud or mobile malware
- 12/30 . Security of mobile devices; Security of mobile applications
- 12/33 . . using wearable devices, e.g. using a smartwatch or smart-glasses
- 12/35 . . {Protecting application or service provisioning, e.g. securing SIM application provisioning}
- 12/37 . . Managing security policies for mobile devices or for controlling mobile applications
- 12/40 . Security arrangements using identity modules
- 12/42 . . using virtual identity modules
- 12/43 . . using shared identity modules, e.g. SIM sharing
- 12/45 . . using multiple identity modules
- 12/47 . . using near field communication [NFC] or radio frequency identification [RFID] modules
- 12/48 . . using secure binding, e.g. securely binding identity modules to devices, services or applications
- 12/50 . Secure pairing of devices
- 12/55 . . involving three or more devices, e.g. group pairing
- 12/60 . Context-dependent security
- 12/61 . . Time-dependent
- 12/63 . . Location-dependent; Proximity-dependent
- 12/64 . . . using geofenced areas
- 12/65 . . Environment-dependent, e.g. using captured environmental data
- 12/66 . . {Trust-dependent, e.g. using trust scores or trust relationships}
- 12/67 . . Risk-dependent, e.g. selecting a security level depending on risk profiles
- 12/68 . . Gesture-dependent or behaviour-dependent
- 12/69 . . Identity-dependent
- 12/71 . . . Hardware identity
- 12/72 . . . Subscriber identity
- 12/73 . . . Access point logical identity
- 12/75 . . . Temporary identity
- 12/76 . . . Group identity
- 12/77 . . . Graphical identity
- 12/79 . . . Radio fingerprint
- 12/80 . Arrangements enabling lawful interception [LI]
- 16/00 Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cells structures**
- 16/02 . Resource partitioning among network components, e.g. reuse partitioning
- 16/04 . . Traffic adaptive resource partitioning
- 16/06 . . Hybrid resource partitioning, e.g. channel borrowing
- 16/08 . . . Load shedding arrangements
- 16/10 . . Dynamic resource partitioning
- 16/12 . . Fixed resource partitioning
- 16/14 . Spectrum sharing arrangements {between different networks}
- 16/16 . . for PBS [Private Base Station] arrangements
- 16/18 . Network planning tools
- 16/20 . . for indoor coverage or short range network deployment
- 16/22 . Traffic simulation tools or models
- 16/225 . . {for indoor or short range network}
- 16/24 . Cell structures
- 16/26 . . Cell enhancers {or enhancement}, e.g. for tunnels, building shadow
- 16/28 . . using beam steering
- 16/30 . . Special cell shapes, e.g. doughnuts or ring cells
- 16/32 . . Hierarchical cell structures
- 24/00 Supervisory, monitoring or testing arrangements**
- 24/02 . Arrangements for optimising operational condition
- 24/04 . Arrangements for maintaining operational condition
- 24/06 . Testing, {supervising or monitoring} using simulated traffic
- 24/08 . Testing, {supervising or monitoring} using real traffic
- 24/10 . Scheduling measurement reports {; Arrangements for measurement reports}
- 28/00 Network traffic management; Network resource management**
- 28/02 . Traffic management, e.g. flow control or congestion control
- 28/0205 . . {at the air interface (dynamic wireless traffic scheduling [H04W 72/12](#))}
- 28/021 . . {in wireless networks with changing topologies, e.g. ad-hoc networks (self-organizing networks [H04W 84/18](#))}
- 28/0215 . . {based on user or device properties, e.g. MTC-capable devices (services for machine-to-machine communication [M2M] or machine type communication [MTC] [H04W 4/70](#); wireless resource selection or allocation plan definition based on terminal or device properties [H04W 72/51](#))}
- 28/0221 . . . {power availability or consumption}
- 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](#))}
- 28/0231 . . {based on communication conditions (dynamic wireless traffic scheduling definition based on channel quality criteria [H04W 72/54](#))}
- 28/0236 . . . {radio quality, e.g. interference, losses or delay}
- 28/0242 . . . {Determining whether packet losses are due to overload or to deterioration of radio communication conditions}
- 28/0247 . . {based on conditions of the access network or the infrastructure network (central resource management [H04W 28/16](#))}
- 28/0252 . . {per individual bearer or channel (dynamic wireless traffic scheduling [H04W 72/12](#))}
- 28/0257 . . . {the individual bearer or channel having a maximum bit rate or a bit rate guarantee}
- 28/0263 . . . {involving mapping traffic to individual bearers or channels, e.g. traffic flow template [TFT]}
- 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](#))}
- 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](#))}

- 28/0278 . . {using buffer status reports (dynamic wireless traffic scheduling definition [H04W 72/12](#))}
 - 28/0284 . . {detecting congestion or overload during communication (monitoring arrangements [H04L 43/00](#))}
 - 28/0289 . . {Congestion control (load shedding arrangements in network planning [H04W 16/08](#); performing reselection for handling the traffic [H04W 36/22](#); wireless traffic scheduling [H04W 72/12](#))}
- WARNING**
- Group [H04W 28/0289](#) is impacted by reclassification into group [H04W 28/084](#). Groups [H04W 28/0289](#) and [H04W 28/084](#) should be considered in order to perform a complete search.
- 28/0294 . . {forcing collision (non-scheduled or contention based wireless access channel [H04W 74/08](#))}
 - 28/04 . . Error control
- NOTE**
- When classifying in this group, classification is also made in the appropriate groups under [H04L 1/00](#).
- 28/06 . . Optimizing {the usage of the radio link}, e.g. header compression, information sizing {, discarding information (system modifying transmission characteristic according to link quality by modifying frame length [H04L 1/0007](#); dynamic adaptation of the packet size for flow control or congestion control [H04L 47/365](#))}
 - 28/065 . . . {using assembly or disassembly of packets}
 - 28/08 . . Load balancing or load distribution (transferring a connection for handling the traffic [H04W 36/22](#); wireless traffic scheduling [H04W 72/12](#))
- WARNING**
- Group [H04W 28/08](#) is impacted by reclassification into groups [H04W 28/084](#), [H04W 36/22](#), and [H04W 72/12](#). All groups listed in this Warning should be considered in order to perform a complete search.
- 28/082 . . . among bearers or channels
 - 28/0827 . . . {Triggering entity}
 - 28/0831 {Core entity}
 - 28/0835 {Access entity, e.g. eNB}
 - 28/0838 {User device}
 - 28/084 . . . among network function virtualisation [NFV] entities; among edge computing entities, e.g. multi-access edge computing
- WARNING**
- Group [H04W 28/084](#) is incomplete pending reclassification of documents from groups [H04W 28/0289](#) and [H04W 28/08](#). Groups [H04W 28/0289](#), [H04W 28/08](#) and [H04W 28/084](#) should be considered in order to perform a complete search.
- 28/0846 . . . {between network providers, e.g. operators (selecting a network or a communication service [H04W 40/18](#))}
 - 28/0858 . . . {among entities in the uplink}
 - 28/086 . . . among access entities
 - 28/0861 {between base stations}
 - 28/0862 {of same hierarchy level}
 - 28/0864 {of different hierarchy levels, e.g. Master Evolved Node B [MeNB] or Secondary Evolved node B [SeNB]}
 - 28/0865 {of different Radio Access Technologies [RATs], e.g. LTE or WiFi}
 - 28/0866 {between wireless and wire-based access points, e.g. via LTE and via DSL connected access points}
 - 28/0867 . . . {among entities in the downlink}
 - 28/0875 . . . {to or through Device to Device [D2D] links, e.g. direct-mode links}
 - 28/088 . . . among core entities
 - 28/0883 . . . {between entities in ad-hoc networks}
 - 28/0892 {between different intermediate nodes}
 - 28/09 . . . {Management thereof}
 - 28/0908 {based on time, e.g. for a critical period only}
 - 28/0917 {based on the energy state of entities}
 - 28/0925 {using policies}
 - 28/0933 {based on load-splitting ratios}
 - 28/0942 {based on measured or predicted load of entities- or links}
 - 28/095 {based on usage history, e.g. usage history of devices}
 - 28/0958 {based on metrics or performance parameters}
 - 28/0967 {Quality of Service [QoS] parameters}
 - 28/0975 {for reducing delays}
 - 28/0983 {for optimizing bandwidth or throughput}
 - 28/0992 {based on the type of application}
 - 28/10 . . Flow control {between communication endpoints}
 - 28/12 . . . using signalling between network elements
 - 28/14 . . . using intermediate storage
 - 28/16 . . Central resource management; Negotiation of resources or communication parameters, e.g. negotiating bandwidth or QoS [Quality of Service]
 - 28/18 . . Negotiating wireless communication parameters
 - 28/20 . . . Negotiating bandwidth
 - 28/22 . . . Negotiating communication rate
 - 28/24 . . Negotiating SLA [Service Level Agreement]; Negotiating QoS [Quality of Service]
 - 28/26 . . Resource reservation
- 36/00 Hand-off or reselection arrangements**
- NOTE**
- In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)
- 36/0005 . {Control or signalling for completing the hand-off}
 - 36/0007 . . {for multicast or broadcast services, e.g. MBMS (multicast or broadcast application services [H04W 4/06](#); resource management for broadcast services [H04W 72/30](#); connection management for selective distribution or broadcast [H04W 76/40](#))}

- 36/0009 . . {for a plurality of users or terminals, e.g. group communication or moving wireless networks (user group management [H04W 4/08](#); processing of subscriber group data [H04W 8/186](#))}
- 36/0011 . . {for data sessions of end-to-end connection}

WARNING

Group [H04W 36/0011](#) is impacted by reclassification into group [H04W 36/0019](#). Groups [H04W 36/0011](#) and [H04W 36/0019](#) should be considered in order to perform a complete search.

- 36/0016 . . . {Hand-off preparation specially adapted for end-to-end data sessions}
- 36/0019 . . . {adapted for mobile IP [MIP]}

WARNING

Group [H04W 36/0019](#) is incomplete pending reclassification of documents from group [H04W 36/0011](#). Groups [H04W 36/0011](#) and [H04W 36/0019](#) should be considered in order to perform a complete search.

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

WARNING

Group [H04W 36/0022](#) is impacted by reclassification into groups [H04W 36/00222](#), [H04W 36/00224](#) and [H04W 36/00226](#). All groups listed in this Warning should be considered in order to perform a complete search.

- 36/00222 {between different packet switched [PS] network technologies, e.g. transferring data sessions between LTE and WLAN or LTE and 5G}

WARNING

Group [H04W 36/00222](#) is incomplete pending reclassification of documents from group [H04W 36/0022](#). Groups [H04W 36/0022](#) and [H04W 36/00222](#) should be considered in order to perform a complete search.

- 36/00224 {between packet switched [PS] and circuit switched [CS] network technologies, e.g. circuit switched fallback [CSFB]}

WARNING

Groups [H04W 36/00224](#) and [H04W 36/00226](#) are incomplete pending reclassification of documents from group [H04W 36/0022](#). Groups [H04W 36/0022](#), [H04W 36/00224](#) and [H04W 36/00226](#) should be considered in order to perform a complete search.

- 36/00226 {wherein the core network technologies comprise IP multimedia system [IMS], e.g. single radio voice call continuity [SRVCC]}

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

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

- 36/0038 {of security context information}

- 36/0044 {of quality context information}

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

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

WARNING

Group [H04W 36/0055](#) is impacted by reclassification into groups [H04W 36/0064](#) and [H04W 36/13](#).

Groups [H04W 36/0055](#), [H04W 36/0064](#) and [H04W 36/13](#) should be considered in order to perform a complete search.

- 36/0058 . . . {Transmission of hand-off measurement information, e.g. measurement reports}

- 36/0061 . . . {of neighbour cell information}

- 36/0064 . . . {of control information between different access points}

WARNING

Group [H04W 36/0064](#) is incomplete pending reclassification of documents from group [H04W 36/0055](#).

Groups [H04W 36/0055](#) and [H04W 36/0064](#) should be considered in order to perform a complete search.

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

- 36/0069 . . . {in case of dual connectivity, e.g. decoupled uplink/downlink}

WARNING

Group [H04W 36/0069](#) is incomplete pending reclassification of documents from groups [H04W 36/18](#) and [H04W 36/28](#).

Group [H04W 36/0069](#) is also impacted by reclassification into groups [H04W 36/00692](#), [H04W 36/00695](#) and [H04W 36/00698](#).

All groups listed in this Warning should be considered in order to perform a complete search.

36/00692 {using simultaneous multiple data streams, e.g. cooperative multipoint [CoMP], carrier aggregation [CA] or multiple input multiple output [MIMO] (allocation of physical resources in CoMP or in CA [H04L 5/0035](#))}

WARNING

Group [H04W 36/00692](#) is incomplete pending reclassification of documents from groups [H04W 36/0069](#), [H04W 36/18](#) and [H04W 36/28](#).

All groups listed in this Warning should be considered in order to perform a complete search.

36/00695 {using split of the control plane or user plane}

WARNING

Group [H04W 36/00695](#) is incomplete pending reclassification of documents from groups [H04W 36/0069](#), [H04W 36/18](#) and [H04W 36/28](#).

All groups listed in this Warning should be considered in order to perform a complete search.

36/00698 {using different RATs}

WARNING

Group [H04W 36/00698](#) is incomplete pending reclassification of documents from groups [H04W 36/0069](#), [H04W 36/18](#) and [H04W 36/28](#).

All groups listed in this Warning should be considered in order to perform a complete search.

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

WARNING

Group [H04W 36/0072](#) is impacted by reclassification into groups [H04W 36/00725](#) and [H04W 36/249](#).

Groups [H04W 36/0072](#), [H04W 36/00725](#) and [H04W 36/249](#) should be considered in order to perform a complete search.

36/00725 {Random access channel [RACH]-less handover}

WARNING

Group [H04W 36/00725](#) is incomplete pending reclassification of documents from group [H04W 36/0072](#).

Groups [H04W 36/0072](#) and [H04W 36/00725](#) should be considered in order to perform a complete search.

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

36/0079 {in case of hand-off failure or rejection}

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

WARNING

Group [H04W 36/0083](#) is impacted by reclassification into groups [H04W 36/00833](#) and [H04W 36/00838](#).

Groups [H04W 36/0083](#), [H04W 36/00833](#) and [H04W 36/00838](#) should be considered in order to perform a complete search.

36/00833 {Handover statistics}

WARNING

Group [H04W 36/00833](#) is incomplete pending reclassification of documents from group [H04W 36/0083](#).

Groups [H04W 36/0083](#) and [H04W 36/00833](#) should be considered in order to perform a complete search.

36/00835 {Determination of neighbour cell lists}

WARNING

Group [H04W 36/00835](#) is impacted by reclassification into groups [H04W 36/008355](#), [H04W 36/008357](#) and [H04W 36/00838](#).

All groups listed in this Warning should be considered in order to perform a complete search.

36/008355 {Determination of target cell based on user equipment [UE] properties, e.g. UE service capabilities}

WARNING

Group [H04W 36/008355](#) is incomplete pending reclassification of documents from group [H04W 36/00835](#).

Groups [H04W 36/00835](#) and [H04W 36/008355](#) should be considered in order to perform a complete search.

36/008357 {Determination of target cell based on access point [AP] properties, e.g. AP service capabilities}

WARNING

Group [H04W 36/008357](#) is incomplete pending reclassification of documents from group [H04W 36/00835](#).

Groups [H04W 36/00835](#) and [H04W 36/008357](#) should be considered in order to perform a complete search.

- 36/00837 . . . {Determination of triggering parameters for hand-off}
 - WARNING**
 - Group [H04W 36/00837](#) is impacted by reclassification into groups [H04W 36/008375](#) and [H04W 36/00838](#).
 - Groups [H04W 36/00837](#), [H04W 36/008375](#) and [H04W 36/00838](#) should be considered in order to perform a complete search.
- 36/008375 {based on historical data}
 - WARNING**
 - Group [H04W 36/008375](#) is incomplete pending reclassification of documents from group [H04W 36/00837](#).
 - Groups [H04W 36/00837](#) and [H04W 36/008375](#) should be considered in order to perform a complete search.
- 36/00838 . . . {Resource reservation for handover}
 - WARNING**
 - Group [H04W 36/00838](#) is incomplete pending reclassification of documents from groups [H04W 36/0083](#), [H04W 36/00835](#) and [H04W 36/00837](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.
- 36/0085 . . . {Hand-off measurements}
- 36/0088 {Scheduling hand-off measurements}
- 36/0094 {Definition of hand-off measurement parameters}
- 36/02 . . Buffering or recovering information during reselection ; Modification of the traffic flow during hand-off
- 36/023 . . {Buffering or recovering information during reselection}
 - WARNING**
 - Group [H04W 36/023](#) is impacted by reclassification into group [H04W 36/0235](#).
 - Groups [H04W 36/023](#) and [H04W 36/0235](#) should be considered in order to perform a complete search.
- 36/0235 . . . {by transmitting sequence numbers, e.g. SN status transfer}
 - WARNING**
 - Group [H04W 36/0235](#) is incomplete pending reclassification of documents from group [H04W 36/023](#).
 - Groups [H04W 36/023](#) and [H04W 36/0235](#) should be considered in order to perform a complete search.
- 36/026 . . {Multicasting of data during hand-off}
- 36/03 . . {Reselecting a link using a direct mode connection}
 - WARNING**
 - Group [H04W 36/03](#) is impacted by reclassification into groups [H04W 36/033](#), [H04W 36/035](#) and [H04W 36/037](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.
- 36/033 . . {in pre-organised networks}
 - WARNING**
 - Group [H04W 36/033](#) is incomplete pending reclassification of documents from group [H04W 36/03](#).
 - Groups [H04W 36/03](#) and [H04W 36/033](#) should be considered in order to perform a complete search.
- 36/035 . . {in self-organising networks}
 - WARNING**
 - Group [H04W 36/035](#) is incomplete pending reclassification of documents from group [H04W 36/03](#).
 - Groups [H04W 36/03](#) and [H04W 36/035](#) should be considered in order to perform a complete search.
- 36/037 . . {by reducing handover delay, e.g. latency}
 - WARNING**
 - Group [H04W 36/037](#) is incomplete pending reclassification of documents from group [H04W 36/03](#).
 - Groups [H04W 36/03](#) and [H04W 36/037](#) should be considered in order to perform a complete search.
- 36/04 . . Reselecting a cell layer in multi-layered cells
- 36/06 . . Reselecting a communication resource in the serving access point
- 36/08 . . Reselecting an access point
 - WARNING**
 - Group [H04W 36/08](#) is impacted by reclassification into groups [H04W 36/083](#), [H04W 36/085](#), [H04W 36/087](#) and [H04W 36/13](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.
- 36/083 . . {wherein at least one of the access points is a moving node}
 - WARNING**
 - Group [H04W 36/083](#) is incomplete pending reclassification of documents from group [H04W 36/08](#).
 - Groups [H04W 36/08](#) and [H04W 36/083](#) should be considered in order to perform a complete search.

- 36/085 . . {involving beams of access points}
 - WARNING**
 - Group [H04W 36/085](#) is incomplete pending reclassification of documents from group [H04W 36/08](#).
 - Groups [H04W 36/08](#) and [H04W 36/085](#) should be considered in order to perform a complete search.

- 36/087 . . {between radio units of access points}
 - WARNING**
 - Group [H04W 36/087](#) is incomplete pending reclassification of documents from group [H04W 36/08](#).
 - Groups [H04W 36/08](#) and [H04W 36/087](#) should be considered in order to perform a complete search.

- 36/10 . Reselecting an access point controller
- 36/12 . Reselecting a serving backbone network switching or routing node
- 36/125 . . {involving different types of service backbones}
 - WARNING**
 - Group [H04W 36/125](#) is impacted by reclassification into group [H04W 36/13](#).
 - Groups [H04W 36/125](#) and [H04W 36/13](#) should be considered in order to perform a complete search.

- 36/13 . {Cell handover without a predetermined boundary, e.g. virtual cells}
 - WARNING**
 - Group [H04W 36/13](#) is incomplete pending reclassification of documents from groups [H04W 36/0055](#), [H04W 36/08](#), [H04W 36/125](#) and [H04W 36/14](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.

- 36/14 . Reselecting a network or an air interface
 - WARNING**
 - Group [H04W 36/14](#) is impacted by reclassification into groups [H04W 36/142](#), [H04W 36/144](#), [H04W 36/1443](#), [H04W 36/1446](#) and [H04W 36/13](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.

- 36/142 . . {over the same radio air interface technology}
 - WARNING**
 - Group [H04W 36/142](#) is incomplete pending reclassification of documents from group [H04W 36/14](#).
 - Groups [H04W 36/14](#) and [H04W 36/142](#) should be considered in order to perform a complete search.

- 36/144 . . {over a different radio air interface technology}
 - WARNING**
 - Groups [H04W 36/144](#), [H04W 36/1443](#) and [H04W 36/1446](#) are incomplete pending reclassification of documents from group [H04W 36/14](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.

- 36/1443 . . . {between licensed networks}
- 36/1446 . . . {wherein at least one of the networks is unlicensed}
- 36/16 . Performing reselection for specific purposes
- 36/165 . . {for reducing network power consumption ([H04W 36/18](#) - [H04W 36/22](#) take precedence)}

- WARNING**
- Group [H04W 36/165](#) is impacted by reclassification into group [H04W 36/247](#).
- Groups [H04W 36/165](#) and [H04W 36/247](#) should be considered in order to perform a complete search.

- 36/18 . . for allowing seamless reselection, e.g. soft reselection
 - WARNING**
 - Group [H04W 36/18](#) is impacted by reclassification into groups [H04W 36/185](#), [H04W 36/0069](#), [H04W 36/00692](#), [H04W 36/00695](#) and [H04W 36/00698](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.

- 36/185 . . . {using make before break}
 - WARNING**
 - Group [H04W 36/185](#) is incomplete pending reclassification of documents from group [H04W 36/18](#).
 - Groups [H04W 36/18](#) and [H04W 36/185](#) should be considered in order to perform a complete search.

- 36/20 . . for optimising the interference level
- 36/22 . . for handling the traffic
 - WARNING**
 - Group [H04W 36/22](#) is incomplete pending reclassification of documents from group [H04W 28/08](#).
 - Groups [H04W 28/08](#) and [H04W 36/22](#) should be considered in order to perform a complete search.

- 36/24 . . Reselection being triggered by specific parameters
WARNING
 Group [H04W 36/24](#) is impacted by reclassification into groups [H04W 36/247](#) and [H04W 36/249](#).
 Groups [H04W 36/24](#), [H04W 36/247](#) and [H04W 36/249](#) should be considered in order to perform a complete search.
- 36/247 . . {by using coverage extension}
WARNING
 Group [H04W 36/247](#) is incomplete pending reclassification of documents from groups [H04W 36/165](#) and [H04W 36/24](#).
 Groups [H04W 36/165](#), [H04W 36/24](#) and [H04W 36/247](#) should be considered in order to perform a complete search.
- 36/249 . . {according to timing information}
WARNING
 Group [H04W 36/249](#) is incomplete pending reclassification of documents from groups [H04W 36/0072](#) and [H04W 36/24](#).
 Groups [H04W 36/0072](#), [H04W 36/24](#) and [H04W 36/249](#) should be considered in order to perform a complete search.
- 36/26 . . by agreed or negotiated communication parameters
- 36/28 . . . involving a plurality of connections, e.g. multi-call or multi-bearer connections
WARNING
 Group [H04W 36/28](#) is impacted by reclassification into groups [H04W 36/0069](#), [H04W 36/00692](#), [H04W 36/00695](#) and [H04W 36/00698](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- 36/30 . . by measured or perceived connection quality data
WARNING
 Group [H04W 36/30](#) is impacted by reclassification into groups [H04W 36/302](#) and [H04W 36/304](#).
 Groups [H04W 36/30](#), [H04W 36/302](#) and [H04W 36/304](#) should be considered in order to perform a complete search.
- 36/302 . . . {due to low signal strength}
WARNING
 Group [H04W 36/302](#) is incomplete pending reclassification of documents from group [H04W 36/30](#).
 Groups [H04W 36/30](#) and [H04W 36/302](#) should be considered in order to perform a complete search.
- 36/304 . . . {due to measured or perceived resources with higher communication quality}
WARNING
 Group [H04W 36/304](#) is incomplete pending reclassification of documents from group [H04W 36/30](#).
 Groups [H04W 36/30](#) and [H04W 36/304](#) should be considered in order to perform a complete search.
- 36/305 . . . {Handover due to radio link failure (control signalling for hand-off failure [H04W 36/0079](#))}
- 36/32 . . by location or mobility data, e.g. speed data
WARNING
 Group [H04W 36/32](#) is impacted by reclassification into groups [H04W 36/322](#), [H04W 36/324](#), [H04W 36/326](#) and [H04W 36/328](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- 36/322 . . . {by location data}
WARNING
 Group [H04W 36/322](#) is incomplete pending reclassification of documents from group [H04W 36/32](#).
 Groups [H04W 36/32](#) and [H04W 36/322](#) should be considered in order to perform a complete search.
- 36/324 . . . {by mobility data, e.g. speed data}
WARNING
 Group [H04W 36/324](#) is incomplete pending reclassification of documents from group [H04W 36/32](#).
 Groups [H04W 36/32](#) and [H04W 36/324](#) should be considered in order to perform a complete search.
- 36/326 . . . {by proximity to another entity}
WARNING
 Group [H04W 36/326](#) is incomplete pending reclassification of documents from group [H04W 36/32](#).
 Groups [H04W 36/32](#) and [H04W 36/326](#) should be considered in order to perform a complete search.
- 36/328 . . . {by altitude}
WARNING
 Group [H04W 36/328](#) is incomplete pending reclassification of documents from group [H04W 36/32](#).
 Groups [H04W 36/32](#) and [H04W 36/328](#) should be considered in order to perform a complete search.
- 36/34 . Reselection control

<p>36/36 . . by user or terminal equipment</p> <p>WARNING</p> <p>Group H04W 36/36 is impacted by reclassification into group H04W 36/362.</p> <p>Groups H04W 36/36 and H04W 36/362 should be considered in order to perform a complete search.</p> <p>36/362 . . . {Conditional handover}</p> <p>WARNING</p> <p>Group H04W 36/362 is incomplete pending reclassification of documents from group H04W 36/36.</p> <p>Groups H04W 36/36 and H04W 36/362 should be considered in order to perform a complete search.</p> <p>36/365 . . . {by manual user interaction}</p> <p>36/38 . . by fixed network equipment</p> <p>36/385 . . . {of the core network}</p> <p>40/00 Communication routing or communication path finding</p> <p>40/005 . {Routing actions in the presence of nodes in sleep or doze mode}</p> <p>40/02 . Communication route or path selection, e.g. power-based or shortest path routing</p> <p>40/023 . . {Limited or focused flooding to selected areas of a network}</p> <p>40/026 . . {Route selection considering the moving speed of individual devices}</p> <p>40/04 . . based on wireless node resources</p> <p>40/06 . . . based on characteristics of available antennas</p> <p>40/08 . . . based on transmission power</p> <p>40/10 . . . based on available power or energy</p> <p>40/12 . . based on transmission quality or channel quality</p> <p>40/125 . . . {using a measured number of retransmissions as a link metric}</p> <p>40/14 . . . based on stability</p> <p>40/16 . . . based on interference</p> <p>40/18 . . based on predicted events</p> <p>40/20 . . based on geographic position or location</p> <p>40/205 . . . {using topographical information, e.g. hills, high rise buildings}</p> <p>40/22 . . using selective relaying for reaching a BTS [Base Transceiver Station] or an access point</p> <p>40/24 . Connectivity information management, e.g. connectivity discovery or connectivity update</p> <p>40/242 . . {aging of topology database entries}</p> <p>40/244 . . {using a network of reference devices, e.g. beaconing}</p> <p>40/246 . . {Connectivity information discovery}</p> <p>40/248 . . {Connectivity information update}</p> <p>40/26 . . for hybrid routing by combining proactive and reactive routing</p> <p>40/28 . . for reactive routing</p> <p>40/30 . . for proactive routing</p> <p>40/32 . . for defining a routing cluster membership</p> <p>40/34 . Modification of an existing route</p> <p>40/36 . . due to handover</p> <p>40/38 . . adapting due to varying relative distances between nodes</p>	<p>48/00 Access restriction (access security to prevent unauthorised access H04W 12/08); Network selection; Access point selection</p> <p>48/02 . Access restriction performed under specific conditions</p> <p>48/04 . . based on user or terminal location or mobility data, e.g. moving direction, speed</p> <p>48/06 . . based on traffic conditions</p> <p>48/08 . Access restriction or access information delivery, e.g. discovery data delivery (signalling during connection H04W 76/00)</p> <p>48/10 . . using broadcasted information</p> <p>48/12 . . using downlink control channel</p> <p>48/14 . . using user query {or user detection}</p> <p>48/16 . Discovering, processing access restriction or access information</p> <p>48/17 . {Selecting a data network PoA [Point of Attachment]}</p> <p>48/18 . Selecting a network or a communication service</p> <p>48/20 . Selecting an access point</p> <p>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)}</p> <p>52/02 . Power saving arrangements {(in wired systems H04L 12/12; signaling of mobile application services, e.g. low battery notifications H04W 4/20)}</p> <p>52/0203 . . {in the radio access network or backbone network of wireless communication networks}</p> <p>52/0206 . . . {in access points, e.g. base stations (access point devices per se H04W 88/08)}</p> <p>52/0209 . . {in terminal devices (terminal devices per se H04W 88/02)}</p> <p>52/0212 . . . {managed by the network, e.g. network or access point is master and terminal is slave}</p> <p>52/0216 {using a pre-established activity schedule, e.g. traffic indication frame}</p> <p>52/0219 {where the power saving management affects multiple terminals}</p> <p>52/0222 {in packet switched networks}</p> <p>52/0225 . . . {using monitoring of external events, e.g. the presence of a signal}</p> <p>52/0229 {where the received signal is a wanted signal}</p> <p>52/0232 {according to average transmission signal activity}</p> <p>52/0235 {where the received signal is a power saving command}</p> <p>52/0238 {where the received signal is an unwanted signal, e.g. interference or idle signal}</p> <p>52/0241 {where no transmission is received, e.g. out of range of the transmitter}</p> <p>52/0245 {according to signal strength}</p> <p>52/0248 {dependent on the time of the day, e.g. according to expected transmission activity}</p> <p>52/0251 . . . {using monitoring of local events, e.g. events related to user activity}</p> <p>52/0254 {detecting a user operation or a tactile contact or a motion of the device}</p> <p>52/0258 {controlling an operation mode according to history or models of usage information, e.g. activity schedule or time of day}</p>
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- 52/0261 . . . {managing power supply demand, e.g. depending on battery level}
- 52/0264 {by selectively disabling software applications}
- 52/0267 {by controlling user interface components}
- 52/027 {by controlling a display operation or backlight unit}
- 52/0274 {by switching on or off the equipment or parts thereof}
- 52/0277 {according to available power supply, e.g. switching off when a low battery condition is detected}
- 52/028 {switching on or off only a part of the equipment circuit blocks}
- 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}
- 52/0287 {changing the clock frequency of a controller in the equipment}
- 52/029 {reducing the clock frequency of the controller}
- 52/0293 {having a sub-controller with a low clock frequency switching on and off a main controller with a high clock frequency}
- 52/0296 {switching to a backup power supply}
- 52/04 . . TPC
- 52/06 . . TPC algorithms
- 52/08 . . . Closed loop power control
- 52/10 . . . Open loop power control
- 52/12 . . . Outer and inner loops
- 52/125 {cascaded outer loop power control}
- 52/14 . . . Separate analysis of uplink or downlink
- 52/143 {Downlink power control}
- 52/146 {Uplink power control}
- 52/16 . . . Deriving transmission power values from another channel
- 52/18 . . TPC being performed according to specific parameters
- 52/20 . . . using error rate
- 52/22 . . . taking into account previous information or commands
- 52/221 {using past power control commands}
- 52/223 {predicting future states of the transmission}
- 52/225 {Calculation of statistics, e.g. average, variance}
- 52/226 {using past references to control power, e.g. look-up-table}
- 52/228 {using past power values or information}
- 52/24 . . . using SIR [Signal to Interference Ratio] or other wireless path parameters
- 52/241 {taking into account channel quality metrics, e.g. SIR, SNR, CIR, Eb/lo}
- 52/242 {taking into account path loss}
- 52/243 {taking into account interferences}
- 52/244 {Interferences in heterogeneous networks, e.g. among macro and femto or pico cells or other sector / system interference [OSI]}
- 52/245 {taking into account received signal strength}
- 52/246 {where the output power of a terminal is based on a path parameter calculated in said terminal}
- 52/247 {where the output power of a terminal is based on a path parameter sent by another terminal}
- 52/248 {where transmission power control commands are generated based on a path parameter}
- 52/26 . . . using transmission rate or quality of service QoS [Quality of Service]
- 52/262 {taking into account adaptive modulation and coding [AMC] scheme ([AMC per se H04L 1/0001](#))}
- 52/265 {taking into account the quality of service QoS}
- 52/267 {taking into account the information rate}
- 52/28 . . . using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle or non transmission
- 52/281 {taking into account user or data type priority}
- 52/282 {taking into account the speed of the mobile}
- 52/283 {Power depending on the position of the mobile}
- 52/285 {taking into account the mobility of the user}
- 52/286 {during data packet transmission, e.g. high speed packet access [HSPA]}
- 52/287 {when the channel is in stand-by}
- 52/288 {taking into account the usage mode, e.g. hands-free, data transmission, telephone}
- 52/30 . . . using constraints in the total amount of available transmission power
- 52/32 . . . TPC of broadcast or control channels
- 52/322 {Power control of broadcast channels}
- 52/325 {Power control of control or pilot channels}
- 52/327 {Power control of multicast channels}
- 52/34 . . . TPC management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading
- 52/343 {taking into account loading or congestion level}
- 52/346 {distributing total power among users or channels}
- 52/36 . . . with a discrete range or set of values, e.g. step size, ramping or offsets
- 52/362 {Aspects of the step size}
- 52/365 {Power headroom reporting}
- 52/367 {Power values between minimum and maximum limits, e.g. dynamic range}
- 52/38 . . . TPC being performed in particular situations
- 52/383 {power control in peer-to-peer links}
- 52/386 {centralized, e.g. when the radio network controller or equivalent takes part in the power control}
- 52/40 . . . during macro-diversity or soft handoff
- 52/42 . . . in systems with time, space, frequency or polarisation diversity
- 52/44 . . . in connection with interruption of transmission
- 52/46 . . . in multi hop networks, e.g. wireless relay networks
- 52/48 . . . during retransmission after error or non-acknowledgment
- 52/50 . . . at the moment of starting communication in a multiple access environment
- 52/52 . . . using AGC [Automatic Gain Control] circuits or amplifiers

- 52/54 . . . Signalisation aspects of the TPC commands, e.g. frame structure
- 52/545 . . . {modifying TPC bits in special situations}
- 52/56 . . . Detection of errors of TPC bits
- 52/58 . . . Format of the TPC bits
- 52/60 . . . using different transmission rates for TPC commands

- 56/00 Synchronisation arrangements**
- 56/0005 . {synchronizing of arrival of multiple uplinks}
- 56/001 . {Synchronization between nodes}
- 56/0015 . . {one node acting as a reference for the others}
- 56/002 . . {Mutual synchronization}
- 56/0025 . . {synchronizing potentially movable access points}
- 56/003 . {Arrangements to increase tolerance to errors in transmission or reception timing}
- 56/0035 . {detecting errors in frequency or phase}
- 56/004 . {compensating for timing error of reception due to propagation delay}
- 56/0045 . . {compensating for timing error by altering transmission time}
- 56/005 . . {compensating for timing error by adjustment in the receiver}
- 56/0055 . {determining timing error of reception due to propagation delay}
- 56/006 . . {using known positions of transmitter and receiver}
- 56/0065 . . {using measurement of signal travel time}
- 56/007 . . . {Open loop measurement}
- 56/0075 {based on arrival time vs. expected arrival time}
- 56/008 {detecting arrival of signal based on received raw signal}
- 56/0085 {detecting a given structure in the signal}
- 56/009 . . . {Closed loop measurements}
- 56/0095 . . {estimated based on signal strength}

- 60/00 Affiliation to network, e.g. registration; Terminating affiliation with the network, e.g. de-registration**
- 60/005 . {Multiple registrations, e.g. multihoming}
- 60/02 . by periodical registration
- 60/04 . using triggered events
- 60/06 . De-registration or detaching

- 64/00 Locating users or terminals {or network equipment} for network management purposes, e.g. mobility management**
- 64/003 . {locating network equipment}
- 64/006 . {with additional information processing, e.g. for direction or speed determination}

- 68/00 User notification, e.g. alerting and paging, for incoming communication, change of service or the like**
- 68/005 . {Transmission of information for alerting of incoming communication}
- 68/02 . Arrangements for increasing efficiency of notification or paging channel
- 68/025 . . {Indirect paging}
- 68/04 . multi-step notification using statistical or historical mobility data
- 68/06 . using multi-step notification by changing the notification area

- 68/08 . using multi-step notification by increasing the notification area
- 68/10 . using simulcast notification
- 68/12 . Inter-network notification

- 72/00 Local resource management**
- 72/02 . Selection of wireless resources by user or terminal

- WARNING**
- Group [H04W 72/02](#) is impacted by reclassification into group [H04W 72/40](#).
- Groups [H04W 72/02](#) and [H04W 72/40](#) should be considered in order to perform a complete search.

- 72/04 . Wireless resource allocation

- WARNING**
- Group [H04W 72/04](#) is impacted by reclassification into groups [H04W 72/11](#), [H04W 72/115](#) and [H04W 72/40](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- 72/044 . . . based on the type of the allocated resource

- WARNING**
- Group [H04W 72/044](#) is impacted by reclassification into group [H04W 72/0457](#).
- Groups [H04W 72/044](#) and [H04W 72/0457](#) should be considered in order to perform a complete search.

- 72/0446 . . . Resources in time domain, e.g. slots or frames
- 72/0453 . . . Resources in frequency domain, e.g. a carrier in FDMA
- 72/0457 . . . Variable allocation of band or rate

- WARNING**
- Group [H04W 72/0457](#) is incomplete pending reclassification of documents from group [H04W 72/044](#).
- Groups [H04W 72/044](#) and [H04W 72/0457](#) should be considered in order to perform a complete search.

- 72/046 . . . {the resource being in the space domain, e.g. beams}
- 72/0466 . . . {the resource being a scrambling code}
- 72/0473 . . . {the resource being transmission power}
- 72/11 . . Semi-persistent scheduling

- WARNING**
- Group [H04W 72/11](#) is incomplete pending reclassification of documents from group [H04W 72/04](#).
- Groups [H04W 72/04](#) and [H04W 72/11](#) should be considered in order to perform a complete search.

- 72/115 . . Grant-free or autonomous transmission
 - WARNING**
 - Group [H04W 72/115](#) is incomplete pending reclassification of documents from group [H04W 72/04](#).
 - Groups [H04W 72/04](#) and [H04W 72/115](#) should be considered in order to perform a complete search.
- 72/12 . Wireless traffic scheduling
 - WARNING**
 - Group [H04W 72/12](#) is incomplete pending reclassification of documents from group [H04W 28/08](#).
 - Group [H04W 72/12](#) is also impacted by reclassification into groups [H04W 72/40](#), [H04W 72/50](#), [H04W 72/51](#), and [H04W 72/512](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.
- 72/121 . . for groups of terminals or users
- 72/1215 . . {for collaboration of different radio technologies}
- 72/1221 . . {based on age of data to be sent}
- 72/1263 . . Mapping of traffic onto schedule, e.g. scheduled allocation or multiplexing of flows
- 72/1268 . . . of uplink data flows
- 72/1273 . . . of downlink data flows
- 72/20 . Control channels or signalling for resource management
 - WARNING**
 - Group [H04W 72/20](#) is impacted by reclassification into groups [H04W 72/25](#), [H04W 72/27](#) and [H04W 72/29](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.
- 72/21 . . in the uplink direction of a wireless link, i.e. towards the network
- 72/23 . . in the downlink direction of a wireless link, i.e. towards a terminal
 - WARNING**
 - Group [H04W 72/23](#) is impacted by reclassification into groups [H04W 72/231](#) and [H04W 72/232](#).
 - Groups [H04W 72/23](#), [H04W 72/231](#) and [H04W 72/232](#) should be considered in order to perform a complete search.
- 72/231 . . . the control data signalling from the layers above the physical layer, e.g. RRC or MAC-CE signalling
 - WARNING**
 - Group [H04W 72/231](#) is incomplete pending reclassification of documents from group [H04W 72/23](#).
 - Groups [H04W 72/23](#) and [H04W 72/231](#) should be considered in order to perform a complete search.

- 72/232 . . . the control data signalling from the physical layer, e.g. DCI signalling
 - WARNING**
 - Group [H04W 72/232](#) is incomplete pending reclassification of documents from group [H04W 72/23](#).
 - Groups [H04W 72/23](#) and [H04W 72/232](#) should be considered in order to perform a complete search.
- 72/25 . . between terminals via a wireless link, e.g. sidelink
 - WARNING**
 - Group [H04W 72/25](#) is incomplete pending reclassification of documents from group [H04W 72/20](#).
 - Groups [H04W 72/20](#) and [H04W 72/25](#) should be considered in order to perform a complete search.
- 72/27 . . between access points
 - WARNING**
 - Group [H04W 72/27](#) is incomplete pending reclassification of documents from group [H04W 72/20](#).
 - Groups [H04W 72/20](#) and [H04W 72/27](#) should be considered in order to perform a complete search.
- 72/29 . . between an access point and the access point controlling device
 - WARNING**
 - Group [H04W 72/29](#) is incomplete pending reclassification of documents from group [H04W 72/20](#).
 - Groups [H04W 72/20](#) and [H04W 72/29](#) should be considered in order to perform a complete search.
- 72/30 . Resource management for broadcast services
- 72/40 . Resource management for direct mode communication, e.g. D2D or sidelink
 - WARNING**
 - Group [H04W 72/40](#) is incomplete pending reclassification of documents from groups [H04W 72/02](#), [H04W 72/04](#) and [H04W 72/12](#).
 - All groups listed in this Warning should be considered in order to perform a complete search.
- 72/50 . Allocation or scheduling criteria for wireless resources
 - WARNING**
 - Group [H04W 72/50](#) is incomplete pending reclassification of documents from group [H04W 72/12](#).
 - Groups [H04W 72/12](#) and [H04W 72/50](#) should be considered in order to perform a complete search.

- 72/51 . . based on terminal or device properties
WARNING
 Group [H04W 72/51](#) is incomplete pending reclassification of documents from group [H04W 72/12](#).
 Group [H04W 72/51](#) is also impacted by reclassification into group [H04W 72/512](#).
 Groups [H04W 72/12](#), [H04W 72/51](#) and [H04W 72/512](#) should be considered in order to perform a complete search.
- 72/512 . . . for low-latency requirements, e.g. URLLC
WARNING
 Group [H04W 72/512](#) is incomplete pending reclassification of documents from groups [H04W 72/12](#) and [H04W 72/51](#).
 Groups [H04W 72/12](#), [H04W 72/51](#) and [H04W 72/512](#) should be considered in order to perform a complete search.
- 72/52 . . based on load
- 72/53 . . based on regulatory allocation policies
- 72/535 . . {based on resource usage policies}
- 72/54 . . based on quality criteria
WARNING
 Group [H04W 72/54](#) is impacted by reclassification into group [H04W 72/541](#).
 Groups [H04W 72/54](#) and [H04W 72/541](#) should be considered in order to perform a complete search.
- 72/541 . . . using the level of interference
WARNING
 Group [H04W 72/541](#) is incomplete pending reclassification of documents from group [H04W 72/54](#).
 Groups [H04W 72/54](#) and [H04W 72/541](#) should be considered in order to perform a complete search.
- 72/542 . . . using measured or perceived quality
- 72/543 . . . based on requested quality, e.g. QoS
- 72/56 . . based on priority criteria
WARNING
 Group [H04W 72/56](#) is impacted by reclassification into group [H04W 72/566](#).
 Groups [H04W 72/56](#) and [H04W 72/566](#) should be considered in order to perform a complete search.
- 72/563 . . . of the wireless resources
- 72/566 . . . of the information or information source or recipient
WARNING
 Group [H04W 72/566](#) is incomplete pending reclassification of documents from group [H04W 72/56](#).
 Groups [H04W 72/56](#) and [H04W 72/566](#) should be considered in order to perform a complete search.

- 72/569 {of the traffic information}
- 74/00 Wireless channel access**
- 74/002 . {Transmission of channel access control information}
- 74/004 . . {in the uplink, i.e. towards network}
- 74/006 . . {in the downlink, i.e. towards the terminal}
- 74/02 . Hybrid access
- 74/04 . Scheduled access (hybrid access [H04W 74/02](#))
- 74/06 . . using polling
- 74/08 . Non-scheduled access, e.g. ALOHA (hybrid access [H04W 74/02](#))
- 74/0808 . . using carrier sensing, e.g. carrier sense multiple access [CSMA]
- 74/0816 . . . with collision avoidance
- 74/0825 . . . {with collision detection}
- 74/0833 . . Random access procedures, e.g. with 4-step access
WARNING
 Group [H04W 74/0833](#) is impacted by reclassification into groups [H04W 74/0836](#) and [H04W 74/0838](#).
 Groups [H04W 74/0833](#), [H04W 74/0836](#) and [H04W 74/0838](#) should be considered in order to perform a complete search.
- 74/0836 . . . with 2-step access
WARNING
 Group [H04W 74/0836](#) is incomplete pending reclassification of documents from group [H04W 74/0833](#).
 Groups [H04W 74/0833](#) and [H04W 74/0836](#) should be considered in order to perform a complete search.
- 74/0838 . . . using contention-free random access [CFRA]
WARNING
 Group [H04W 74/0838](#) is incomplete pending reclassification of documents from group [H04W 74/0833](#).
 Groups [H04W 74/0833](#) and [H04W 74/0838](#) should be considered in order to perform a complete search.
- 74/0841 . . . {with collision treatment}
- 74/085 {collision avoidance}
- 74/0858 {collision detection}
- 74/0866 . . {using a dedicated channel for access}
- 74/0875 . . . {with assigned priorities based access}
- 74/0883 . . . {for un-synchronized access}
- 74/0891 . . . {for synchronized access}
- 76/00 Connection management**
- 76/10 . Connection setup
- 76/11 . . Allocation or use of connection identifiers
- 76/12 . . Setup of transport tunnels
- 76/14 . . Direct-mode setup
- 76/15 . . Setup of multiple wireless link connections
- 76/16 . . . Involving different core network technologies, e.g. a packet-switched [PS] bearer in combination with a circuit-switched [CS] bearer
- 76/18 . . Management of setup rejection or failure

76/19	. . Connection re-establishment	84/06	. . . Airborne or Satellite Networks (space-based or airborne stations H04B 7/185)
76/20	. Manipulation of established connections	84/08	. . . Trunked mobile radio systems
76/22	. . Manipulation of transport tunnels	84/10	. . Small scale networks; Flat hierarchical networks
76/23	. . Manipulation of direct-mode connections	84/105	. . . { PBS [Private Base Station] network (H04W 84/12 - H04W 84/16 take precedence) }
76/25	. . Maintenance of established connections	84/12	. . . WLAN [Wireless Local Area Networks]
76/27	. . Transitions between radio resource control [RRC] states	84/14	. . . WLL [Wireless Local Loop]; RLL [Radio Local Loop]
76/28	. . Discontinuous transmission [DTX]; Discontinuous reception [DRX]	84/16	. . . WPBX [Wireless Private Branch Exchange]
76/30	. Connection release	84/18	. Self-organising networks, e.g. ad-hoc networks or sensor networks
76/32	. . Release of transport tunnels	84/20	. . Master-slave {selection or change} arrangements
76/34	. . Selective release of ongoing connections	84/22	. . with access to wired networks
76/36	. . . for reassigning the resources associated with the released connections	88/00	Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices
76/38	. . triggered by timers	88/005	. { Data network PoA devices }
76/40	. for selective distribution or broadcast	88/02	. Terminal devices
76/45	. . for Push-to-Talk [PTT] or Push-to-Talk over cellular [PoC] services	88/021	. . {adapted for Wireless Local Loop operation}
76/50	. for emergency connections	88/022	. . {Selective call receivers}
80/00	Wireless network protocols or protocol adaptations to wireless operation	88/023	. . . {with message or information receiving capability}
80/02	. Data link layer protocols	88/025	. . . {Selective call decoders}
80/04	. Network layer protocols, e.g. mobile IP [Internet Protocol]	88/026 {using digital address codes}
80/045	. . {involving different protocol versions, e.g. MIPv4 and MIPv6}	88/027 {using frequency address codes}
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)}	88/028 {using pulse address codes}
80/08	. Upper layer protocols {(network arrangements or communication protocols for networked applications H04L 67/00)}	88/04	. . adapted for relaying to or from another terminal or user
80/085	. . {involving different upper layer protocol versions, e.g. LCS - SUPL or WSN-SOA-WSDP}	88/06	. . adapted for operation in multiple networks {or having at least two operational modes} , e.g. multi-mode terminals
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)}	88/08	. Access point devices
80/12	. . Application layer protocols, e.g. WAP [Wireless Application Protocol]	88/085	. . {Access point devices with remote components}
84/00	Network topologies	88/10	. . adapted for operation in multiple networks, e.g. multi-mode access points
	NOTE	88/12	. Access point controller devices
	In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout H04W	88/14	. Backbone network devices
84/005	. {Moving wireless networks}	88/16	. Gateway arrangements
84/02	. Hierarchically pre-organised networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop]	88/18	. Service support devices; Network management devices
84/022	. . {One-way selective calling networks, e.g. wide area paging}	88/181	. . {Transcoding devices; Rate adaptation devices}
84/025	. . . {with acknowledge back capability}	88/182	. . {Network node acting on behalf of an other network entity, e.g. proxy}
84/027	. . . {providing paging services}	88/184	. . {Messaging devices, e.g. message centre}
84/04	. . Large scale networks; Deep hierarchical networks	88/185	. . {Selective call encoders for paging networks, e.g. paging centre devices}
84/042	. . . {Public Land Mobile systems, e.g. cellular systems}	88/187	. . . {using digital or pulse address codes}
84/045 {using private Base Stations, e.g. femto Base Stations, home Node B}	88/188	. . . {using frequency address codes}
84/047 {using dedicated repeater stations}	92/00	Interfaces specially adapted for wireless communication networks
		92/02	. Inter-networking arrangements
		92/04	. Interfaces between hierarchically different network devices
		92/045	. . {between access point and backbone network device}
		92/06	. . between gateways and public network devices
		92/08	. . between user and terminal device
		92/10	. . between terminal device and access point, i.e. wireless air interface
		92/12	. . between access points and access point controllers

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- 92/14 . . between access point controllers and backbone network device
 - 92/16 . Interfaces between hierarchically similar devices
 - 92/18 . . between terminal devices
 - 92/20 . . between access points
 - 92/22 . . between access point controllers
 - 92/24 . . between backbone network devices
- 99/00 Subject matter not provided for in other groups of this subclass**