

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.

4/00	Services specially adapted for wireless communication networks; Facilities therefor	4/08	• . User group management
		4/10	• . Push-to-Talk [PTT] or Push-On-Call services
		4/12	• Messaging; Mailboxes; Announcements
		4/14	• . Short messaging services, e.g. short message services [SMS] or unstructured supplementary service data [USSD]
		4/16	• Communication-related supplementary services, e.g. call-transfer or call-hold
		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
4/02	• Services making use of location information	4/185	• . {by embedding added-value information into content, e.g. geo-tagging}
4/021	• . Services related to particular areas, e.g. point of interest [POI] services, venue services or geofences	4/20	• Services signaling; Auxiliary data signalling, i.e. transmitting data via a non-traffic channel
4/022	• . . {with dynamic range variability}	4/203	• . {for converged personal network application service interworking, e.g. OMA converged personal network services [CPNS]}
4/023	• . {using mutual or relative location information between multiple location based services [LBS] targets or of distance thresholds}	4/21	• . for social networking applications
4/024	• . Guidance services	4/23	• . for mobile advertising
4/025	• . {using location based information parameters}	4/24	• Accounting or billing
4/026	• . . {using orientation information, e.g. compass}	4/30	• Services specially adapted for particular environments, situations or purposes
4/027	• . . {using movement velocity, acceleration information}	4/33	• . for indoor environments, e.g. buildings
4/029	• . Location-based management or tracking services	4/35	• . for the management of goods or merchandise
4/06	• Selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS]; Services to user groups; One-way selective calling services	4/38	• . for collecting sensor information
		4/40	• . for vehicles, e.g. vehicle-to-pedestrians [V2P]

4/42	. . . for mass transport vehicles, e.g. buses, trains or aircraft	8/30	. Network data restoration; {Network data reliability; Network data fault tolerance}
4/44	. . . 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	. . . for vehicle-to-vehicle communication [V2V]	12/009	. {specially adapted for networks, e.g. wireless sensor networks, ad-hoc networks, RFID networks or cloud networks}
4/48	. . . for in-vehicle communication	12/02	. Protecting privacy or anonymity, e.g. protecting personally identifiable information [PII]
4/50	. Service provisioning or reconfiguring	12/03	. Protecting confidentiality, e.g. by encryption
4/60	. Subscription-based services using application servers or record carriers, e.g. SIM application toolkits	12/033	. . of the user plane, e.g. user's traffic
4/70	. Services for machine-to-machine communication [M2M] or machine type communication [MTC]	12/037	. . of the control plane, e.g. signalling traffic
4/80	. Services using short range communication, e.g. near-field communication [NFC], radio-frequency identification [RFID] or low energy communication	12/04	. Key management, e.g. using generic bootstrapping architecture [GBA]
4/90	. Services for handling of emergency or hazardous situations, e.g. earthquake and tsunami warning systems [ETWS]	12/041	. . Key generation or derivation
8/00	Network data management	12/043	. . using a trusted network node as an anchor
8/005	. {Discovery of network devices, e.g. terminals}	12/0431	. . . Key distribution or pre-distribution; Key agreement
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	12/0433	. . . Key management protocols
8/04	. . Registration at HLR or HSS [Home Subscriber Server]	12/047	. . without using a trusted network node as an anchor
8/06	. . Registration at serving network Location Register, VLR or user mobility server	12/0471	. . . Key exchange
8/065	. . . {involving selection of the user mobility server}	12/06	. Authentication
8/08	. . Mobility data transfer	12/062	. . Pre-authentication
8/082	. . . {for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents}	12/065	. . Continuous authentication
8/085	. . . {involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIP]}	12/068	. . {using credential vaults, e.g. password manager applications or one time password [OTP] applications}
8/087	. . . {for preserving data network PoA address despite hand-offs}	12/069	. . using certificates or pre-shared keys
8/10	. . . between location register and external networks	12/08	. Access security
8/12	. . . between location registers or mobility servers	12/082	. . using revocation of authorisation
8/14	. . . between corresponding nodes	12/084	. . using delegated authorisation, e.g. open authorisation [OAuth] protocol
8/16	. . . selectively restricting mobility {data} tracking	12/086	. . using security domains
8/18	. Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data	12/088	. . using filters or firewalls
8/183	. . {Processing at user equipment or user record carrier}	12/10	. Integrity
8/186	. . {Processing of subscriber group data}	12/102	. . Route integrity, e.g. using trusted paths
8/20	. . Transfer of user or subscriber data	12/104	. . Location integrity, e.g. secure geotagging
8/205	. . . {Transfer to or from user equipment or user record carrier}	12/106	. . Packet or message integrity
8/22	. Processing or transfer of terminal data, e.g. status or physical capabilities	12/108	. . Source integrity
8/24	. . Transfer of terminal data	12/12	. Detection or prevention of fraud
8/245	. . . {from a network towards a terminal}	12/121	. . Wireless intrusion detection systems [WIDS]; Wireless intrusion prevention systems [WIPS]
8/26	. Network addressing or numbering for mobility support	12/122	. . . Counter-measures against attacks; Protection against rogue devices
8/265	. . {for initial activation of new user}	12/125	. . Protection against power exhaustion attacks
8/28	. . Number portability {; Network address portability}	12/126	. . 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	<ul style="list-style-type: none"> using near field communication [NFC] or radio frequency identification [RFID] modules 	24/10	<ul style="list-style-type: none"> Scheduling measurement reports {; Arrangements for measurement reports}
12/48	<ul style="list-style-type: none"> using secure binding, e.g. securely binding identity modules to devices, services or applications 	28/00	Network traffic management; Network resource management
12/50	<ul style="list-style-type: none"> Secure pairing of devices 	28/02	<ul style="list-style-type: none"> Traffic management, e.g. flow control or congestion control
12/55	<ul style="list-style-type: none"> involving three or more devices, e.g. group pairing 	28/0205	<ul style="list-style-type: none"> {at the air interface (dynamic wireless traffic scheduling H04W 72/12)}
12/60	<ul style="list-style-type: none"> Context-dependent security 	28/021	<ul style="list-style-type: none"> {in wireless networks with changing topologies, e.g. ad-hoc networks (self-organizing networks H04W 84/18)}
12/61	<ul style="list-style-type: none"> Time-dependent 	28/0215	<ul style="list-style-type: none"> {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)}
12/63	<ul style="list-style-type: none"> Location-dependent; Proximity-dependent 	28/0221	<ul style="list-style-type: none"> {power availability or consumption}
12/64	<ul style="list-style-type: none"> using geofenced areas 	28/0226	<ul style="list-style-type: none"> {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)}
12/65	<ul style="list-style-type: none"> Environment-dependent, e.g. using captured environmental data 	28/0231	<ul style="list-style-type: none"> {based on communication conditions (dynamic wireless traffic scheduling definition based on channel quality criteria H04W 72/54)}
12/66	<ul style="list-style-type: none"> {Trust-dependent, e.g. using trust scores or trust relationships} 	28/0236	<ul style="list-style-type: none"> {radio quality, e.g. interference, losses or delay}
12/67	<ul style="list-style-type: none"> Risk-dependent, e.g. selecting a security level depending on risk profiles 	28/0242	<ul style="list-style-type: none"> {Determining whether packet losses are due to overload or to deterioration of radio communication conditions}
12/68	<ul style="list-style-type: none"> Gesture-dependent or behaviour-dependent 	28/0247	<ul style="list-style-type: none"> {based on conditions of the access network or the infrastructure network (central resource management H04W 28/16)}
12/69	<ul style="list-style-type: none"> Identity-dependent 	28/0252	<ul style="list-style-type: none"> {per individual bearer or channel (dynamic wireless traffic scheduling H04W 72/12)}
12/71	<ul style="list-style-type: none"> Hardware identity 	28/0257	<ul style="list-style-type: none"> {the individual bearer or channel having a maximum bit rate or a bit rate guarantee}
12/72	<ul style="list-style-type: none"> Subscriber identity 	28/0263	<ul style="list-style-type: none"> {involving mapping traffic to individual bearers or channels, e.g. traffic flow template [TFT]}
12/73	<ul style="list-style-type: none"> Access point logical identity 	28/0268	<ul style="list-style-type: none"> {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)}
12/75	<ul style="list-style-type: none"> Temporary identity 	28/0273	<ul style="list-style-type: none"> {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)}
12/76	<ul style="list-style-type: none"> Group identity 	28/0278	<ul style="list-style-type: none"> {using buffer status reports (dynamic wireless traffic scheduling definition H04W 72/12)}
12/77	<ul style="list-style-type: none"> Graphical identity 	28/0284	<ul style="list-style-type: none"> {detecting congestion or overload during communication (monitoring arrangements H04L 43/00)}
12/79	<ul style="list-style-type: none"> Radio fingerprint 		
12/80	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Resource partitioning among network components, e.g. reuse partitioning 		
16/04	<ul style="list-style-type: none"> Traffic adaptive resource partitioning 		
16/06	<ul style="list-style-type: none"> Hybrid resource partitioning, e.g. channel borrowing 		
16/08	<ul style="list-style-type: none"> Load shedding arrangements 		
16/10	<ul style="list-style-type: none"> Dynamic resource partitioning 		
16/12	<ul style="list-style-type: none"> Fixed resource partitioning 		
16/14	<ul style="list-style-type: none"> Spectrum sharing arrangements {between different networks} 		
16/16	<ul style="list-style-type: none"> for PBS [Private Base Station] arrangements 		
16/18	<ul style="list-style-type: none"> Network planning tools 		
16/20	<ul style="list-style-type: none"> for indoor coverage or short range network deployment 		
16/22	<ul style="list-style-type: none"> Traffic simulation tools or models 		
16/225	<ul style="list-style-type: none"> {for indoor or short range network} 		
16/24	<ul style="list-style-type: none"> Cell structures 		
16/26	<ul style="list-style-type: none"> Cell enhancers {or enhancement}, e.g. for tunnels, building shadow 		
16/28	<ul style="list-style-type: none"> using beam steering 		
16/30	<ul style="list-style-type: none"> Special cell shapes, e.g. doughnuts or ring cells 		
16/32	<ul style="list-style-type: none"> Hierarchical cell structures 		
24/00	Supervisory, monitoring or testing arrangements		
24/02	<ul style="list-style-type: none"> Arrangements for optimising operational condition 		
24/04	<ul style="list-style-type: none"> Arrangements for maintaining operational condition 		
24/06	<ul style="list-style-type: none"> Testing, {supervising or monitoring} using simulated traffic 		
24/08	<ul style="list-style-type: none"> Testing, {supervising or monitoring} using real traffic 		

- 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

- 36/36 . . by user or terminal equipment

WARNING

Group [H04W 36/36](#) is impacted by reclassification into group [H04W 36/362](#).

Groups [H04W 36/36](#) and [H04W 36/362](#) should be considered in order to perform a complete search.

- 36/362 . . . {Conditional handover}

WARNING

Group [H04W 36/362](#) is incomplete pending reclassification of documents from group [H04W 36/36](#).

Groups [H04W 36/36](#) and [H04W 36/362](#) should be considered in order to perform a complete search.

- 36/365 . . . {by manual user interaction}

- 36/38 . . by fixed network equipment

- 36/385 . . . {of the core network}

40/00 Communication routing or communication path finding

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

- 40/02 . Communication route or path selection, e.g. power-based or shortest path routing

- 40/023 . . {Limited or focused flooding to selected areas of a network}

- 40/026 . . {Route selection considering the moving speed of individual devices}

- 40/04 . . based on wireless node resources

- 40/06 . . . based on characteristics of available antennas

- 40/08 . . . based on transmission power

40/10	. . . based on available power or energy	52/0212	. . . {managed by the network, e.g. network or access point is master and terminal is slave}
40/12	. . based on transmission quality or channel quality	52/0216	. . . . {using a pre-established activity schedule, e.g. traffic indication frame}
40/125	. . . {using a measured number of retransmissions as a link metric}	52/0219	. . . . {where the power saving management affects multiple terminals}
40/14	. . . based on stability	52/0222	. . . . {in packet switched networks}
40/16	. . . based on interference	52/0225	. . . {using monitoring of external events, e.g. the presence of a signal}
40/18	. . based on predicted events	52/0229	. . . . {where the received signal is a wanted signal}
40/20	. . based on geographic position or location	52/0232	. . . . . {according to average transmission signal activity}
40/205	. . . {using topographical information, e.g. hills, high rise buildings}	52/0235	. . . . {where the received signal is a power saving command}
40/22	. . using selective relaying for reaching a BTS [Base Transceiver Station] or an access point	52/0238	. . . . {where the received signal is an unwanted signal, e.g. interference or idle signal}
40/24	. Connectivity information management, e.g. connectivity discovery or connectivity update	52/0241	. . . . {where no transmission is received, e.g. out of range of the transmitter}
40/242	. . {aging of topology database entries}	52/0245	. . . . {according to signal strength}
40/244	. . {using a network of reference devices, e.g. beaconing}	52/0248	. . . . {dependent on the time of the day, e.g. according to expected transmission activity}
40/246	. . {Connectivity information discovery}	52/0251	. . . {using monitoring of local events, e.g. events related to user activity}
40/248	. . {Connectivity information update}	52/0254	. . . . {detecting a user operation or a tactile contact or a motion of the device}
40/26	. . for hybrid routing by combining proactive and reactive routing	52/0258	. . . . {controlling an operation mode according to history or models of usage information, e.g. activity schedule or time of day}
40/28	. . for reactive routing	52/0261	. . . {managing power supply demand, e.g. depending on battery level}
40/30	. . for proactive routing	52/0264	. . . . {by selectively disabling software applications}
40/32	. . for defining a routing cluster membership	52/0267	. . . . {by controlling user interface components}
40/34	. Modification of an existing route	52/027	. . . . . {by controlling a display operation or backlight unit}
40/36	. . due to handover	52/0274	. . . . {by switching on or off the equipment or parts thereof}
40/38	. . adapting due to varying relative distances between nodes	52/0277	. . . . . {according to available power supply, e.g. switching off when a low battery condition is detected}
48/00	Access restriction (access security to prevent unauthorised access H04W 12/08); Network selection; Access point selection	52/028	. . . . . {switching on or off only a part of the equipment circuit blocks}
48/02	. Access restriction performed under specific conditions	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}
48/04	. . based on user or terminal location or mobility data, e.g. moving direction, speed	52/0287	. . . . {changing the clock frequency of a controller in the equipment}
48/06	. . based on traffic conditions	52/029	. . . . . {reducing the clock frequency of the controller}
48/08	. Access restriction or access information delivery, e.g. discovery data delivery (signalling during connection H04W 76/00)	52/0293	. . . . . {having a sub-controller with a low clock frequency switching on and off a main controller with a high clock frequency}
48/10	. . using broadcasted information	52/0296	. . . . . {switching to a backup power supply}
48/12	. . using downlink control channel	52/04	. TPC
48/14	. . using user query {or user detection}	52/06	. . TPC algorithms
48/16	. Discovering, processing access restriction or access information	52/08	. . . Closed loop power control
48/17	. {Selecting a data network PoA [Point of Attachment]}	52/10	. . . Open loop power control
48/18	. Selecting a network or a communication service	52/12	. . . Outer and inner loops
48/20	. Selecting an access point	52/125	. . . . {cascaded outer loop power control}
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)}	52/14	. . . Separate analysis of uplink or downlink
52/02	. Power saving arrangements {(in wired systems H04L 12/12 ; signaling of mobile application services, e.g. low battery notifications H04W 4/20)}	52/143	. . . . {Downlink power control}
52/0203	. . {in the radio access network or backbone network of wireless communication networks}	52/146	. . . . {Uplink power control}
52/0206	. . . {in access points, e.g. base stations (access point devices per se H04W 88/08)}		
52/0209	. . {in terminal devices (terminal devices per se H04W 88/02)}		

52/16	. . . Deriving transmission power values from another channel	52/34	. . . TPC management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading
52/18	. . TPC being performed according to specific parameters	52/343	. . . . {taking into account loading or congestion level}
52/20	. . . using error rate	52/346	. . . . {distributing total power among users or channels}
52/22	. . . taking into account previous information or commands	52/36	. . . with a discrete range or set of values, e.g. step size, ramping or offsets
52/221	. . . . {using past power control commands}	52/362	. . . . {Aspects of the step size}
52/223	. . . . {predicting future states of the transmission}	52/365	. . . . {Power headroom reporting}
52/225	. . . . {Calculation of statistics, e.g. average, variance}	52/367	. . . . {Power values between minimum and maximum limits, e.g. dynamic range}
52/226	. . . . {using past references to control power, e.g. look-up-table}	52/38	. . TPC being performed in particular situations
52/228	. . . . {using past power values or information}	52/383	. . . {power control in peer-to-peer links}
52/24	. . . using SIR [Signal to Interference Ratio] or other wireless path parameters	52/386	. . . {centralized, e.g. when the radio network controller or equivalent takes part in the power control}
52/241	. . . . {taking into account channel quality metrics, e.g. SIR, SNR, CIR, Eb/Io}	52/40	. . . during macro-diversity or soft handoff
52/242	. . . . {taking into account path loss}	52/42	. . . in systems with time, space, frequency or polarisation diversity
52/243	. . . . {taking into account interferences}	52/44	. . . in connection with interruption of transmission
52/244	. . . . . {Interferences in heterogeneous networks, e.g. among macro and femto or pico cells or other sector / system interference [OSI]}	52/46	. . . in multi hop networks, e.g. wireless relay networks
52/245	. . . . {taking into account received signal strength}	52/48	. . . during retransmission after error or non-acknowledgment
52/246	. . . . {where the output power of a terminal is based on a path parameter calculated in said terminal}	52/50	. . . at the moment of starting communication in a multiple access environment
52/247	. . . . {where the output power of a terminal is based on a path parameter sent by another terminal}	52/52	. . using AGC [Automatic Gain Control] circuits or amplifiers
52/248	. . . . {where transmission power control commands are generated based on a path parameter}	52/54	. . Signalisation aspects of the TPC commands, e.g. frame structure
52/26	. . . using transmission rate or quality of service QoS [Quality of Service]	52/545	. . . {modifying TPC bits in special situations}
52/262	. . . . {taking into account adaptive modulation and coding [AMC] scheme (AMC per se H04L 1/0001)}	52/56	. . . Detection of errors of TPC bits
52/265	. . . . {taking into account the quality of service QoS}	52/58	. . . Format of the TPC bits
52/267	. . . . {taking into account the information rate}	52/60	. . . using different transmission rates for TPC commands
52/28	. . . using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle or non transmission	56/00	Synchronisation arrangements
52/281	. . . . {taking into account user or data type priority}	56/0005	. {synchronizing of arrival of multiple uplinks}
52/282	. . . . {taking into account the speed of the mobile}	56/001	. {Synchronization between nodes}
52/283	. . . . {Power depending on the position of the mobile}	56/0015	. . {one node acting as a reference for the others}
52/285	. . . . {taking into account the mobility of the user}	56/002	. . {Mutual synchronization}
52/286	. . . . {during data packet transmission, e.g. high speed packet access [HSPA]}	56/0025	. . {synchronizing potentially movable access points}
52/287	. . . . {when the channel is in stand-by}	56/003	. {Arrangements to increase tolerance to errors in transmission or reception timing}
52/288	. . . . {taking into account the usage mode, e.g. hands-free, data transmission, telephone}	56/0035	. {detecting errors in frequency or phase}
52/30	. . using constraints in the total amount of available transmission power	56/004	. {compensating for timing error of reception due to propagation delay}
52/32	. . . TPC of broadcast or control channels	56/0045	. . {compensating for timing error by altering transmission time}
52/322	. . . . {Power control of broadcast channels}	56/005	. . {compensating for timing error by adjustment in the receiver}
52/325	. . . . {Power control of control or pilot channels}	56/0055	. {determining timing error of reception due to propagation delay}
52/327	. . . . {Power control of multicast channels}	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}	72/0453	. . . Resources in frequency domain, e.g. a carrier in FDMA
56/009	. . . {Closed loop measurements}	72/0457	. . . Variable allocation of band or rate
56/0095	. . {estimated based on signal strength}		
60/00	Affiliation to network, e.g. registration; Terminating affiliation with the network, e.g. de-registration		WARNING
60/005	. {Multiple registrations, e.g. multihoming}		Group H04W 72/0457 is incomplete pending reclassification of documents from group H04W 72/044 .
60/02	. by periodical registration		Groups H04W 72/044 and H04W 72/0457 should be considered in order to perform a complete search.
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	72/046	. . . {the resource being in the space domain, e.g. beams}
64/003	. {locating network equipment}	72/0466	. . . {the resource being a scrambling code}
64/006	. {with additional information processing, e.g. for direction or speed determination}	72/0473	. . . {the resource being transmission power}
		72/11	. . Semi-persistent scheduling
68/00	User notification, e.g. alerting and paging, for incoming communication, change of service or the like		WARNING
68/005	. {Transmission of information for alerting of incoming communication}		Group H04W 72/11 is incomplete pending reclassification of documents from group H04W 72/04 .
68/02	. Arrangements for increasing efficiency of notification or paging channel		Groups H04W 72/04 and H04W 72/11 should be considered in order to perform a complete search.
68/025	. . {Indirect paging}		
68/04	. multi-step notification using statistical or historical mobility data	72/115	. . Grant-free or autonomous transmission
68/06	. using multi-step notification by changing the notification area		WARNING
68/08	. using multi-step notification by increasing the notification area		Group H04W 72/115 is incomplete pending reclassification of documents from group H04W 72/04 .
68/10	. using simulcast notification		Groups H04W 72/04 and H04W 72/115 should be considered in order to perform a complete search.
68/12	. Inter-network notification		
72/00	Local resource management	72/12	. Wireless traffic scheduling
72/02	. Selection of wireless resources by user or terminal		WARNING
	WARNING		Group H04W 72/12 is incomplete pending reclassification of documents from group H04W 28/08 .
	Group H04W 72/02 is impacted by reclassification into group H04W 72/40 .		Group H04W 72/12 is also impacted by reclassification into groups H04W 72/40 , H04W 72/50 , H04W 72/51 , and H04W 72/512 .
	Groups H04W 72/02 and H04W 72/40 should be considered in order to perform a complete search.		All groups listed in this Warning 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 .	72/121	. . for groups of terminals or users
	All groups listed in this Warning should be considered in order to perform a complete search.	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
72/044	. . based on the type of the allocated resource	72/1268	. . . of uplink data flows
	WARNING	72/1273	. . . of downlink data flows
	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		

72/20	<ul style="list-style-type: none"> Control channels or signalling for resource management <p>WARNING</p> <p>Group H04W 72/20 is impacted by reclassification into groups H04W 72/25, H04W 72/27 and H04W 72/29.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	72/27	<ul style="list-style-type: none"> between access points <p>WARNING</p> <p>Group H04W 72/27 is incomplete pending reclassification of documents from group H04W 72/20.</p> <p>Groups H04W 72/20 and H04W 72/27 should be considered in order to perform a complete search.</p>
72/21	<ul style="list-style-type: none"> in the uplink direction of a wireless link, i.e. towards the network 	72/29	<ul style="list-style-type: none"> between an access point and the access point controlling device <p>WARNING</p> <p>Group H04W 72/29 is incomplete pending reclassification of documents from group H04W 72/20.</p> <p>Groups H04W 72/20 and H04W 72/29 should be considered in order to perform a complete search.</p>
72/23	<ul style="list-style-type: none"> in the downlink direction of a wireless link, i.e. towards a terminal <p>WARNING</p> <p>Group H04W 72/23 is impacted by reclassification into groups H04W 72/231 and H04W 72/232.</p> <p>Groups H04W 72/23, H04W 72/231 and H04W 72/232 should be considered in order to perform a complete search.</p>	72/30	<ul style="list-style-type: none"> Resource management for broadcast services
72/231	<ul style="list-style-type: none"> the control data signalling from the layers above the physical layer, e.g. RRC or MAC-CE signalling <p>WARNING</p> <p>Group H04W 72/231 is incomplete pending reclassification of documents from group H04W 72/23.</p> <p>Groups H04W 72/23 and H04W 72/231 should be considered in order to perform a complete search.</p>	72/40	<ul style="list-style-type: none"> Resource management for direct mode communication, e.g. D2D or sidelink <p>WARNING</p> <p>Group H04W 72/40 is incomplete pending reclassification of documents from groups H04W 72/02, H04W 72/04 and H04W 72/12.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>
72/232	<ul style="list-style-type: none"> the control data signalling from the physical layer, e.g. DCI signalling <p>WARNING</p> <p>Group H04W 72/232 is incomplete pending reclassification of documents from group H04W 72/23.</p> <p>Groups H04W 72/23 and H04W 72/232 should be considered in order to perform a complete search.</p>	72/50	<ul style="list-style-type: none"> Allocation or scheduling criteria for wireless resources <p>WARNING</p> <p>Group H04W 72/50 is incomplete pending reclassification of documents from group H04W 72/12.</p> <p>Groups H04W 72/12 and H04W 72/50 should be considered in order to perform a complete search.</p>
72/25	<ul style="list-style-type: none"> between terminals via a wireless link, e.g. sidelink <p>WARNING</p> <p>Group H04W 72/25 is incomplete pending reclassification of documents from group H04W 72/20.</p> <p>Groups H04W 72/20 and H04W 72/25 should be considered in order to perform a complete search.</p>	72/51	<ul style="list-style-type: none"> based on terminal or device properties <p>WARNING</p> <p>Group H04W 72/51 is incomplete pending reclassification of documents from group H04W 72/12.</p> <p>Group H04W 72/51 is also impacted by reclassification into group H04W 72/512.</p> <p>Groups H04W 72/12, H04W 72/51 and H04W 72/512 should be considered in order to perform a complete search.</p>
		72/512	<ul style="list-style-type: none"> for low-latency requirements, e.g. URLLC <p>WARNING</p> <p>Group H04W 72/512 is incomplete pending reclassification of documents from groups H04W 72/12 and H04W 72/51.</p> <p>Groups H04W 72/12, H04W 72/51 and H04W 72/512 should be considered in order to perform a complete search.</p>
		72/52	<ul style="list-style-type: none"> 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, e.g. scheduled or random 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}
- 74/008 . . {with additional processing of random access related information at receiving side}
- 74/02 . Hybrid access techniques
- 74/04 . Scheduled {or contention-free} access ([H04W 74/02 takes precedence](#))
- 74/06 . . using polling
- 74/08 . Non-scheduled {or contention based} access, e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access] ([H04W 74/02 takes precedence](#))
- 74/0808 . . {using carrier sensing, e.g. as in CSMA}
- 74/0816 . . . {carrier sensing with collision avoidance}
- 74/0825 . . . {carrier sensing with collision detection}
- 74/0833 . . {using a random access procedure}
- 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
- 76/20 . Manipulation of established connections
- 76/22 . . Manipulation of transport tunnels
- 76/23 . . Manipulation of direct-mode connections
- 76/25 . . Maintenance of established connections
- 76/27 . . Transitions between radio resource control [RRC] states
- 76/28 . . Discontinuous transmission [DTX]; Discontinuous reception [DRX]
- 76/30 . Connection release
- 76/32 . . Release of transport tunnels
- 76/34 . . Selective release of ongoing connections
- 76/36 . . . for reassigning the resources associated with the released connections
- 76/38 . . triggered by timers
- 76/40 . for selective distribution or broadcast
- 76/45 . . for Push-to-Talk [PTT] or Push-to-Talk over cellular [PoC] services
- 76/50 . for emergency connections

80/00**Wireless network protocols or protocol adaptations to wireless operation**

- 80/02 . Data link layer protocols
- 80/04 . Network layer protocols, e.g. mobile IP [Internet Protocol]
- 80/045 . . {involving different protocol versions, e.g. MIPv4 and MIPv6}
- 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](#))}
- 80/08 . Upper layer protocols {(network arrangements or communication protocols for networked applications [H04L 67/00](#))}
- 80/085 . . {involving different upper layer protocol versions, e.g. LCS - SUPL or WSN-SOA-WSDP}
- 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](#))}
- 80/12 . . Application layer protocols, e.g. WAP [Wireless Application Protocol]

84/00 Network topologies**NOTE**

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

- 84/005 . {Moving wireless networks}
- 84/02 . Hierarchically pre-organised networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop]
- 84/022 . . {One-way selective calling networks, e.g. wide area paging}
- 84/025 . . . {with acknowledge back capability}
- 84/027 . . . {providing paging services}
- 84/04 . . Large scale networks; Deep hierarchical networks
- 84/042 . . . {Public Land Mobile systems, e.g. cellular systems}
- 84/045 {using private Base Stations, e.g. femto Base Stations, home Node B}
- 84/047 {using dedicated repeater stations}
- 84/06 . . . Airborne or Satellite Networks (space-based or airborne stations [H04B 7/185](#))
- 84/08 . . . Trunked mobile radio systems
- 84/10 . . Small scale networks; Flat hierarchical networks
- 84/105 . . . {PBS [Private Base Station] network ([H04W 84/12](#) - [H04W 84/16](#) take precedence)}
- 84/12 . . . WLAN [Wireless Local Area Networks]
- 84/14 . . . WLL [Wireless Local Loop]; RLL [Radio Local Loop]
- 84/16 . . . WPBX [Wireless Private Branch Exchange]
- 84/18 . Self-organising networks, e.g. ad-hoc networks or sensor networks
- 84/20 . . Master-slave {selection or change} arrangements
- 84/22 . . with access to wired networks

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

- 88/005 . {Data network PoA devices}
- 88/02 . Terminal devices
- 88/021 . . {adapted for Wireless Local Loop operation}
- 88/022 . . {Selective call receivers}
- 88/023 . . . {with message or information receiving capability}
- 88/025 . . . {Selective call decoders}
- 88/026 {using digital address codes}
- 88/027 {using frequency address codes}
- 88/028 {using pulse address codes}
- 88/04 . . adapted for relaying to or from another terminal or user
- 88/06 . . adapted for operation in multiple networks {or having at least two operational modes}, e.g. multi-mode terminals
- 88/08 . Access point devices
- 88/085 . . {Access point devices with remote components}
- 88/10 . . adapted for operation in multiple networks, e.g. multi-mode access points
- 88/12 . Access point controller devices
- 88/14 . Backbone network devices
- 88/16 . Gateway arrangements
- 88/18 . Service support devices; Network management devices

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

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
- 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