

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}		
4/026	• • • {using orientation information, e.g. compass}		
4/027	• • • {using movement velocity, acceleration information}		
4/029	• • Location-based management or tracking services		
4/06	• Selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS]; Services to user groups; One-way selective calling services		

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"> <ul style="list-style-type: none"> {Processing at user equipment or user record carrier}
4/30	<ul style="list-style-type: none"> Services specially adapted for particular environments, situations or purposes 	8/186	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {Processing of subscriber group data}
4/33	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for indoor environments, e.g. buildings 	8/20	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Transfer of user or subscriber data
4/35	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for the management of goods or merchandise 	8/205	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {Transfer to or from user equipment or user record carrier}
4/38	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for collecting sensor information 	8/22	<ul style="list-style-type: none"> Processing or transfer of terminal data, e.g. status or physical capabilities
4/40	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for vehicles, e.g. vehicle-to-pedestrians [V2P] 	8/24	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Transfer of terminal data
4/42	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for mass transport vehicles, e.g. buses, trains or aircraft 	8/245	<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> {from a network towards a terminal}
4/44	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for communication between vehicles and infrastructures, e.g. vehicle-to-cloud [V2C] or vehicle-to-home [V2H] 	8/26	<ul style="list-style-type: none"> Network addressing or numbering for mobility support
4/46	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for vehicle-to-vehicle communication [V2V] 	8/265	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {for initial activation of new user}
4/48	<ul style="list-style-type: none"> <ul style="list-style-type: none"> for in-vehicle communication 	8/28	<ul style="list-style-type: none"> Number portability {; Network address portability}
4/50	<ul style="list-style-type: none"> Service provisioning or reconfiguring 	8/30	<ul style="list-style-type: none"> Network data restoration; {Network data reliability; Network data fault tolerance}
4/60	<ul style="list-style-type: none"> Subscription-based services using application servers or record carriers, e.g. SIM application toolkits 	12/00	Security arrangements; Authentication; Protecting privacy or anonymity
4/70	<ul style="list-style-type: none"> Services for machine-to-machine communication [M2M] or machine type communication [MTC] 	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}
4/80	<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 	12/02	<ul style="list-style-type: none"> Protecting privacy or anonymity, e.g. protecting personally identifiable information [PII]
4/90	<ul style="list-style-type: none"> Services for handling of emergency or hazardous situations, e.g. earthquake and tsunami warning systems [ETWS] 	12/03	<ul style="list-style-type: none"> Protecting confidentiality, e.g. by encryption
8/00	Network data management	12/033	<ul style="list-style-type: none"> <ul style="list-style-type: none"> of the user plane, e.g. user's traffic
8/005	<ul style="list-style-type: none"> {Discovery of network devices, e.g. terminals} 	12/037	<ul style="list-style-type: none"> <ul style="list-style-type: none"> of the control plane, e.g. signalling traffic
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 	12/04	<ul style="list-style-type: none"> Key management, e.g. using generic bootstrapping architecture [GBA]
8/04	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Registration at HLR or HSS [Home Subscriber Server] 	12/041	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Key generation or derivation
8/06	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Registration at serving network Location Register, VLR or user mobility server 	12/043	<ul style="list-style-type: none"> <ul style="list-style-type: none"> using a trusted network node as an anchor
8/065	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {involving selection of the user mobility server} 	12/0431	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Key distribution or pre-distribution; Key agreement
8/08	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Mobility data transfer 	12/0433	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Key management protocols
8/082	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents} 	12/047	<ul style="list-style-type: none"> <ul style="list-style-type: none"> without using a trusted network node as an anchor
8/085	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIP]} 	12/0471	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Key exchange
8/087	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {for preserving data network PoA address despite hand-offs} 	12/06	<ul style="list-style-type: none"> Authentication
8/10	<ul style="list-style-type: none"> <ul style="list-style-type: none"> between location register and external networks 	12/062	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Pre-authentication
8/12	<ul style="list-style-type: none"> <ul style="list-style-type: none"> between location registers or mobility servers 	12/065	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Continuous authentication
8/14	<ul style="list-style-type: none"> <ul style="list-style-type: none"> between corresponding nodes 	12/068	<ul style="list-style-type: none"> <ul style="list-style-type: none"> {using credential vaults, e.g. password manager applications or one time password [OTP] applications}
8/16	<ul style="list-style-type: none"> <ul style="list-style-type: none"> selectively restricting mobility {data} tracking 	12/069	<ul style="list-style-type: none"> <ul style="list-style-type: none"> using certificates or pre-shared keys
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 	12/08	<ul style="list-style-type: none"> Access security
		12/082	<ul style="list-style-type: none"> <ul style="list-style-type: none"> using revocation of authorisation
		12/084	<ul style="list-style-type: none"> <ul style="list-style-type: none"> using delegated authorisation, e.g. open authorisation [OAuth] protocol
		12/086	<ul style="list-style-type: none"> <ul style="list-style-type: none"> using security domains
		12/088	<ul style="list-style-type: none"> <ul style="list-style-type: none"> using filters or firewalls
		12/10	<ul style="list-style-type: none"> Integrity
		12/102	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Route integrity, e.g. using trusted paths
		12/104	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Location integrity, e.g. secure geotagging
		12/106	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Packet or message integrity
		12/108	<ul style="list-style-type: none"> <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"> <ul style="list-style-type: none"> Wireless intrusion detection systems [WIDS]; Wireless intrusion prevention systems [WIPS]
		12/122	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Counter-measures against attacks; Protection against rogue devices
		12/125	<ul style="list-style-type: none"> <ul style="list-style-type: none"> Protection against power exhaustion attacks
		12/126	<ul style="list-style-type: none"> <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	16/26	. . Cell enhancers {or enhancement}, e.g. for tunnels, building shadow
12/30	. Security of mobile devices; Security of mobile applications	16/28	. . using beam steering
12/33	. . using wearable devices, e.g. using a smartwatch or smart-glasses	16/30	. . Special cell shapes, e.g. doughnuts or ring cells
12/35	. . {Protecting application or service provisioning, e.g. securing SIM application provisioning}	16/32	. . Hierarchical cell structures
12/37	. . Managing security policies for mobile devices or for controlling mobile applications	24/00	Supervisory, monitoring or testing arrangements
12/40	. Security arrangements using identity modules	24/02	. Arrangements for optimising operational condition
12/42	. . using virtual identity modules	24/04	. Arrangements for maintaining operational condition
12/43	. . using shared identity modules, e.g. SIM sharing	24/06	. Testing, {supervising or monitoring} using simulated traffic
12/45	. . using multiple identity modules	24/08	. Testing, {supervising or monitoring} using real traffic
12/47	. . using near field communication [NFC] or radio frequency identification [RFID] modules	24/10	. Scheduling measurement reports {; Arrangements for measurement reports}
12/48	. . using secure binding, e.g. securely binding identity modules to devices, services or applications	28/00	Network traffic management; Network resource management
12/50	. Secure pairing of devices	28/02	. Traffic management, e.g. flow control or congestion control
12/55	. . involving three or more devices, e.g. group pairing	28/0205	. . {at the air interface (dynamic wireless traffic scheduling H04W 72/12)}
12/60	. Context-dependent security	28/021	. . {in wireless networks with changing topologies, e.g. ad-hoc networks (self-organizing networks H04W 84/18)}
12/61	. . Time-dependent	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)}
12/63	. . Location-dependent; Proximity-dependent	28/0221	. . . {power availability or consumption}
12/64	. . . using geofenced areas	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)}
12/65	. . Environment-dependent, e.g. using captured environmental data	28/0231	. . {based on communication conditions (dynamic wireless traffic scheduling definition based on channel quality criteria H04W 72/54)}
12/66	. . {Trust-dependent, e.g. using trust scores or trust relationships}	28/0236	. . . {radio quality, e.g. interference, losses or delay}
12/67	. . Risk-dependent, e.g. selecting a security level depending on risk profiles	28/0242	. . . {Determining whether packet losses are due to overload or to deterioration of radio communication conditions}
12/68	. . Gesture-dependent or behaviour-dependent	28/0247	. . {based on conditions of the access network or the infrastructure network (central resource management H04W 28/16)}
12/69	. . Identity-dependent	28/0252	. . {per individual bearer or channel (dynamic wireless traffic scheduling H04W 72/12)}
12/71	. . . Hardware identity	28/0257	. . . {the individual bearer or channel having a maximum bit rate or a bit rate guarantee}
12/72	. . . Subscriber identity	28/0263	. . . {involving mapping traffic to individual bearers or channels, e.g. traffic flow template [TFT]}
12/73	. . . Access point logical identity	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)}
12/75	. . . Temporary identity	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)}
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		

28/0278	. . {using buffer status reports (dynamic wireless traffic scheduling definition H04W 72/12)}	28/0858	. . . {among entities in the uplink}
28/0284	. . {detecting congestion or overload during communication (monitoring arrangements H04L 43/00)}	28/086	. . . among access entities
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)}	28/0861	. . . . {between base stations}
	WARNING	28/0862	. . . . . {of same hierarchy level}
	Group H04W 28/0289 is impacted by reclassification into group H04W 28/084 .	28/0864	. . . . . {of different hierarchy levels, e.g. Master Evolved Node B [MeNB] or Secondary Evolved node B [SeNB]}
	Groups H04W 28/0289 and H04W 28/084 should be considered in order to perform a complete search.	28/0865	. . . . . {of different Radio Access Technologies [RATs], e.g. LTE or WiFi}
28/0294	. . {forcing collision (non-scheduled or contention based wireless access channel H04W 74/08)}	28/0866	. . . . . {between wireless and wire-based access points, e.g. via LTE and via DSL connected access points}
28/04	. . Error control	28/0867	. . . {among entities in the downlink}
	NOTE	28/0875	. . . {to or through Device to Device [D2D] links, e.g. direct-mode links}
	When classifying in this group, classification is also made in the appropriate groups under H04L 1/00 .	28/088	. . . among core entities
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)}	28/0883	. . . {between entities in ad-hoc networks}
28/065	. . . {using assembly or disassembly of packets}	28/0892	. . . . {between different intermediate nodes}
28/08	. . Load balancing or load distribution (transferring a connection for handling the traffic H04W 36/22 ; wireless traffic scheduling H04W 72/12)	28/09	. . . {Management thereof}
	WARNING	28/0908	. . . . {based on time, e.g. for a critical period only}
	Group H04W 28/08 is impacted by reclassification into groups H04W 28/084 , H04W 36/22 , and H04W 72/12 .	28/0917	. . . . {based on the energy state of entities}
	All groups listed in this Warning should be considered in order to perform a complete search.	28/0925	. . . . {using policies}
28/082	. . . among bearers or channels	28/0933	. . . . . {based on load-splitting ratios}
28/0827	. . . {Triggering entity}	28/0942	. . . . . {based on measured or predicted load of entities- or links}
28/0831	. . . . {Core entity}	28/095	. . . . . {based on usage history, e.g. usage history of devices}
28/0835	. . . . {Access entity, e.g. eNB}	28/0958	. . . . . {based on metrics or performance parameters}
28/0838	. . . . {User device}	28/0967	. . . . . {Quality of Service [QoS] parameters}
28/084	. . . among network function virtualisation [NFV] entities; among edge computing entities, e.g. multi-access edge computing	28/0975	. . . . . {for reducing delays}
	WARNING	28/0983	. . . . . {for optimizing bandwidth or throughput}
	Group H04W 28/084 is incomplete pending reclassification of documents from groups H04W 28/0289 and H04W 28/08 .	28/0992	. . . . . {based on the type of application}
	Groups H04W 28/0289 , H04W 28/08 and H04W 28/084 should be considered in order to perform a complete search.	28/10	. . Flow control {between communication endpoints}
28/0846	. . . {between network providers, e.g. operators (selecting a network or a communication service H04W 40/18)}	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	<ul style="list-style-type: none"> Reselection being triggered by specific parameters <p>WARNING</p> <p>Group H04W 36/24 is impacted by reclassification into groups H04W 36/247 and H04W 36/249.</p> <p>Groups H04W 36/24, H04W 36/247 and H04W 36/249 should be considered in order to perform a complete search.</p>	36/304	<ul style="list-style-type: none"> . . . {due to measured or perceived resources with higher communication quality} <p>WARNING</p> <p>Group H04W 36/304 is incomplete pending reclassification of documents from group H04W 36/30.</p> <p>Groups H04W 36/30 and H04W 36/304 should be considered in order to perform a complete search.</p>
36/247	<ul style="list-style-type: none"> . . {by using coverage extension} <p>WARNING</p> <p>Group H04W 36/247 is incomplete pending reclassification of documents from groups H04W 36/165 and H04W 36/24.</p> <p>Groups H04W 36/165, H04W 36/24 and H04W 36/247 should be considered in order to perform a complete search.</p>	36/305	<ul style="list-style-type: none"> . . . {Handover due to radio link failure (control signalling for hand-off failure H04W 36/0079)}
36/249	<ul style="list-style-type: none"> . . {according to timing information} <p>WARNING</p> <p>Group H04W 36/249 is incomplete pending reclassification of documents from groups H04W 36/0072 and H04W 36/24.</p> <p>Groups H04W 36/0072, H04W 36/24 and H04W 36/249 should be considered in order to perform a complete search.</p>	36/32	<ul style="list-style-type: none"> . . by location or mobility data, e.g. speed data <p>WARNING</p> <p>Group H04W 36/32 is impacted by reclassification into groups H04W 36/322, H04W 36/324, H04W 36/326 and H04W 36/328.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>
36/26	<ul style="list-style-type: none"> . . by agreed or negotiated communication parameters 	36/322	<ul style="list-style-type: none"> . . . {by location data} <p>WARNING</p> <p>Group H04W 36/322 is incomplete pending reclassification of documents from group H04W 36/32.</p> <p>Groups H04W 36/32 and H04W 36/322 should be considered in order to perform a complete search.</p>
36/28	<ul style="list-style-type: none"> . . . involving a plurality of connections, e.g. multi-call or multi-bearer connections <p>WARNING</p> <p>Group H04W 36/28 is impacted by reclassification into groups H04W 36/0069, H04W 36/00692, H04W 36/00695 and H04W 36/00698.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	36/324	<ul style="list-style-type: none"> . . . {by mobility data, e.g. speed data} <p>WARNING</p> <p>Group H04W 36/324 is incomplete pending reclassification of documents from group H04W 36/32.</p> <p>Groups H04W 36/32 and H04W 36/324 should be considered in order to perform a complete search.</p>
36/30	<ul style="list-style-type: none"> . . by measured or perceived connection quality data <p>WARNING</p> <p>Group H04W 36/30 is impacted by reclassification into groups H04W 36/302 and H04W 36/304.</p> <p>Groups H04W 36/30, H04W 36/302 and H04W 36/304 should be considered in order to perform a complete search.</p>	36/326	<ul style="list-style-type: none"> . . . {by proximity to another entity} <p>WARNING</p> <p>Group H04W 36/326 is incomplete pending reclassification of documents from group H04W 36/32.</p> <p>Groups H04W 36/32 and H04W 36/326 should be considered in order to perform a complete search.</p>
36/302	<ul style="list-style-type: none"> . . . {due to low signal strength} <p>WARNING</p> <p>Group H04W 36/302 is incomplete pending reclassification of documents from group H04W 36/30.</p> <p>Groups H04W 36/30 and H04W 36/302 should be considered in order to perform a complete search.</p>	36/328	<ul style="list-style-type: none"> . . . {by altitude} <p>WARNING</p> <p>Group H04W 36/328 is incomplete pending reclassification of documents from group H04W 36/32.</p> <p>Groups H04W 36/32 and H04W 36/328 should be considered in order to perform a complete search.</p>
		36/34	<ul style="list-style-type: none"> 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
- 40/12 . . based on transmission quality or channel quality
- 40/125 . . . {using a measured number of retransmissions as a link metric}
- 40/14 . . . based on stability
- 40/16 . . . based on interference
- 40/18 . . based on predicted events
- 40/20 . . based on geographic position or location
- 40/205 . . . {using topographical information, e.g. hills, high rise buildings}
- 40/22 . . using selective relaying for reaching a BTS [Base Transceiver Station] or an access point
- 40/24 . Connectivity information management, e.g. connectivity discovery or connectivity update
- 40/242 . . {aging of topology database entries}
- 40/244 . . {using a network of reference devices, e.g. beaconing}
- 40/246 . . {Connectivity information discovery}
- 40/248 . . {Connectivity information update}
- 40/26 . . for hybrid routing by combining proactive and reactive routing
- 40/28 . . for reactive routing
- 40/30 . . for proactive routing
- 40/32 . . for defining a routing cluster membership
- 40/34 . Modification of an existing route
- 40/36 . . due to handover
- 40/38 . . adapting due to varying relative distances between nodes

48/00 Access restriction (access security to prevent unauthorised access [H04W 12/08](#)); Network selection; Access point selection

- 48/02 . Access restriction performed under specific conditions
- 48/04 . . based on user or terminal location or mobility data, e.g. moving direction, speed
- 48/06 . . based on traffic conditions
- 48/08 . Access restriction or access information delivery, e.g. discovery data delivery ([signalling during connection \[H04W 76/00\]\(#\)](#))
- 48/10 . . using broadcasted information
- 48/12 . . using downlink control channel
- 48/14 . . using user query {or user detection}
- 48/16 . Discovering, processing access restriction or access information
- 48/17 . {Selecting a data network PoA [Point of Attachment]}
- 48/18 . Selecting a network or a communication service
- 48/20 . Selecting an access point

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](#))}

- 52/02 . Power saving arrangements {(in wired systems [H04L 12/12](#); signaling of mobile application services, e.g. low battery notifications [H04W 4/20](#))}
- 52/0203 . . {in the radio access network or backbone network of wireless communication networks}
- 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](#))}
- 52/0212 . . . {managed by the network, e.g. network or access point is master and terminal is slave}
- 52/0216 {using a pre-established activity schedule, e.g. traffic indication frame}
- 52/0219 {where the power saving management affects multiple terminals}
- 52/0222 {in packet switched networks}
- 52/0225 . . . {using monitoring of external events, e.g. the presence of a signal}
- 52/0229 {where the received signal is a wanted signal}
- 52/0232 {according to average transmission signal activity}
- 52/0235 {where the received signal is a power saving command}
- 52/0238 {where the received signal is an unwanted signal, e.g. interference or idle signal}
- 52/0241 {where no transmission is received, e.g. out of range of the transmitter}
- 52/0245 {according to signal strength}
- 52/0248 {dependent on the time of the day, e.g. according to expected transmission activity}
- 52/0251 . . . {using monitoring of local events, e.g. events related to user activity}
- 52/0254 {detecting a user operation or a tactile contact or a motion of the device}
- 52/0258 {controlling an operation mode according to history or models of usage information, e.g. activity schedule or time of day}

- 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	68/08	. using multi-step notification by increasing the notification area
52/545	. . . {modifying TPC bits in special situations}	68/10	. using simulcast notification
52/56	. . . Detection of errors of TPC bits	68/12	. Inter-network notification
52/58	. . . Format of the TPC bits		
52/60	. . . using different transmission rates for TPC commands	72/00	Local resource management
		72/02	. Selection of wireless resources by user or terminal
56/00	Synchronisation arrangements		<u>WARNING</u>
56/0005	. {synchronizing of arrival of multiple uplinks}		Group H04W 72/02 is impacted by reclassification into group H04W 72/40 .
56/001	. {Synchronization between nodes}		Groups H04W 72/02 and H04W 72/40 should be considered in order to perform a complete search.
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}	72/04	. Wireless resource allocation
56/0035	. {detecting errors in frequency or phase}		<u>WARNING</u>
56/004	. {compensating for timing error of reception due to propagation delay}		Group H04W 72/04 is impacted by reclassification into groups H04W 72/11 , H04W 72/115 and H04W 72/40 .
56/0045	. . {compensating for timing error by altering transmission time}		All groups listed in this Warning should be considered in order to perform a complete search.
56/005	. . {compensating for timing error by adjustment in the receiver}		
56/0055	. {determining timing error of reception due to propagation delay}	72/044	. . based on the type of the allocated resource
56/006	. . {using known positions of transmitter and receiver}		<u>WARNING</u>
56/0065	. . {using measurement of signal travel time}		Group H04W 72/044 is impacted by reclassification into group H04W 72/0457 .
56/007	. . . {Open loop measurement}		Groups H04W 72/044 and H04W 72/0457 should be considered in order to perform a complete search.
56/0075	. . . . {based on arrival time vs. expected arrival time}		
56/008	. . . . . {detecting arrival of signal based on received raw signal}	72/0446	. . . Resources in time domain, e.g. slots or frames
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}		<u>WARNING</u>
60/00	Affiliation to network, e.g. registration; Terminating affiliation with the network, e.g. de-registration		Group H04W 72/0457 is incomplete pending reclassification of documents from group H04W 72/044 .
60/005	. {Multiple registrations, e.g. multihoming}		Groups H04W 72/044 and H04W 72/0457 should be considered in order to perform a complete search.
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	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		<u>WARNING</u>
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		
68/06	. using multi-step notification by changing the notification area		

- 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	In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout H04W	88/12	. Access point controller devices
84/005	. { Moving wireless networks }	88/14	. Backbone network devices
84/02	. Hierarchically pre-organised networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop]	88/16	. Gateway arrangements
84/022	. . { One-way selective calling networks, e.g. wide area paging }	88/18	. Service support devices; Network management devices
84/025	. . . { with acknowledge back capability }	88/181	. . { Transcoding devices; Rate adaptation devices }
84/027	. . . { providing paging services }	88/182	. . { Network node acting on behalf of an other network entity, e.g. proxy }
84/04	. . Large scale networks; Deep hierarchical networks	88/184	. . { Messaging devices, e.g. message centre }
84/042	. . . { Public Land Mobile systems, e.g. cellular systems }	88/185	. . { Selective call encoders for paging networks, e.g. paging centre devices }
84/045	. . . . {using private Base Stations, e.g. femto Base Stations, home Node B }	88/187	. . . { using digital or pulse address codes }
84/047	. . . . {using dedicated repeater stations }	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

H04W

- 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**