COOPERATIVE PATENT CLASSIFICATION

ELECTRICITY

(NOTE omitted)

ELECTRIC COMMUNICATION TECHNIQUE

(NOTE omitted)

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.
3. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

Services specially adapted for wireless communication networks; Facilities therefor

NOTES
1. This group covers mobile application services or application service signalling for communication over wireless networks.
2. This group focuses on application services specially adapted for wireless networks or adjusted to the wireless environment.
3. In this group, the first place priority rule is not applied, i.e. the common rule is applied.

Services making use of location information

WARNING
Group H04W 4/02 is incomplete pending reclassification of documents from groups H04W 4/04, H04W 4/043, and H04W 4/046.

Group H04W 4/02 is also impacted by reclassification into groups H04W 4/024 and H04W 4/029.

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

Services related to particular areas, e.g. point of interest [POI] services, venue services or geofences

WARNING
Groups H04W 4/04, H04W 4/043, H04W 4/046 and H04W 4/021 should be considered in order to perform a complete search.

[with dynamic range variability]

WARNING
Groups H04W 4/04, H04W 4/043, H04W 4/046 and H04W 4/022 should be considered in order to perform a complete search.
{ using mutual or relative location information between multiple location based services [LBS] targets or of distance thresholds }

**WARNING**


Groups H04W 4/04, H04W 4/043, H04W 4/046 and H04W 4/023 should be considered in order to perform a complete search.

**Guidance services**

**WARNING**


Groups H04W 4/02, H04W 4/04, H04W 4/043 and H04W 4/046 should be considered in order to perform a complete search.

**Location-based management or tracking services**

**WARNING**


Groups H04W 4/04, H04W 4/043, H04W 4/046 and H04W 4/025 should be considered in order to perform a complete search.

**Selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS]; Services to user groups; One-way selective calling services**

**User group management**

**Push-to-Talk [PTT] or Push-On-Call services**

**Messaging; Mailboxes; Announcements**

**Short messaging services, e.g. short message services [SMS] or unstructured supplementary service data [USSD]**

**Communication-related supplementary services, e.g. call-transfer or call-hold**

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

4/185 [by embedding added-value information into content, e.g. geo-tagging]

4/20 Services signaling; Auxiliary data signalling, i.e. transmitting data via a non-traffic channel

WARNING Group H04W 4/20 is impacted by reclassification into groups H04W 4/21 and H04W 4/23.
Groups H04W 4/20, H04W 4/21, and H04W 4/23 should be considered in order to perform a complete search.

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

4/21 for social networking applications

WARNING Group H04W 4/21 is incomplete pending reclassification of documents from group H04W 4/20.
Groups H04W 4/20 and H04W 4/21 should be considered in order to perform a complete search.

4/23 for mobile advertising

WARNING Group H04W 4/23 is incomplete pending reclassification of documents from group H04W 4/20.
Groups H04W 4/20 and H04W 4/23 should be considered in order to perform a complete search.

4/24 Accounting or billing

4/30 Services specially adapted for particular environments, situations or purposes

WARNING Group H04W 4/30 is incomplete pending reclassification of documents from group H04W 4/04.
Groups H04W 4/04 and H04W 4/30 should be considered in order to perform a complete search.

4/33 for indoor environments, e.g. buildings

WARNING Group H04W 4/33 is incomplete pending reclassification of documents from groups H04W 4/04 and H04W 4/043.
Groups H04W 4/04, H04W 4/043 and H04W 4/33 should be considered in order to perform a complete search.

4/35 for the management of goods or merchandise

WARNING Group H04W 4/35 is incomplete pending reclassification of documents from group H04W 4/04.
Groups H04W 4/04 and H04W 4/35 should be considered in order to perform a complete search.

4/38 for collecting sensor information

WARNING Group H04W 4/38 is incomplete pending reclassification of documents from group H04W 4/04.
Groups H04W 4/04 and H04W 4/38 should be considered in order to perform a complete search.

4/40 for vehicles, e.g. vehicle-to-pedestrians [V2P]

WARNING Group H04W 4/40 is incomplete pending reclassification of documents from groups H04W 4/04 and H04W 4/046.
Groups H04W 4/04, H04W 4/046 and H04W 4/40 should be considered in order to perform a complete search.

4/42 for mass transport vehicles, e.g. buses, trains or aircraft

WARNING Group H04W 4/42 is incomplete pending reclassification of documents from groups H04W 4/04 and H04W 4/046.
Groups H04W 4/04, H04W 4/046 and H04W 4/42 should be considered in order to perform a complete search.

4/44 for communication between vehicles and infrastructures, e.g. vehicle-to-cloud [V2C] or vehicle-to-home [V2H]

WARNING Group H04W 4/44 is incomplete pending reclassification of documents from groups H04W 4/04 and H04W 4/046.
Groups H04W 4/04, H04W 4/046 and H04W 4/44 should be considered in order to perform a complete search.

4/46 for vehicle-to-vehicle communication [V2V]

WARNING Group H04W 4/46 is incomplete pending reclassification of documents from groups H04W 4/04 and H04W 4/046.
Groups H04W 4/04, H04W 4/046 and H04W 4/46 should be considered in order to perform a complete search.
4/48  . . . for in-vehicle communication

**WARNING**

Group H04W 4/48 is incomplete pending reclassification of documents from groups H04W 4/04 and H04W 4/046.

Groups H04W 4/04, H04W 4/046 and H04W 4/48 should be considered in order to perform a complete search.

4/50  . Service provisioning or reconfiguring
4/60  . Subscription-based services using application servers or record carriers, e.g. SIM application toolkits

4/70  . Services for machine-to-machine communication [M2M] or machine type communication [MTC]
4/80  . Services using short range communication, e.g. near-field communication [NFC], radio-frequency identification [RFID] or low energy communication
4/90  . Services for handling of emergency or hazardous situations, e.g. earthquake and tsunami warning systems [ETWS]

8/00  **Network data management**

8/005  . [Discovery of network devices, e.g. terminals]
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
8/04  . . Registration at HLR or HSS [Home Subscriber Server]
8/06  . Registration at serving network Location Register, VLR or user mobility server
8/065  . . . [involving selection of the user mobility server]
8/08  . . Mobility data transfer
8/082  . . . [for traffic bypassing of mobility servers, e.g. location registers, home PLMNs or home agents]
8/085  . . . [involving hierarchical organized mobility servers, e.g. hierarchical mobile IP [HMIPv6]]
8/087  . . . [for preserving data network PoA address despite hand-offs]
8/10  . . between location register and external networks
8/12  . . between location registers or mobility servers
8/14  . . between corresponding nodes
8/16  . . selectively restricting mobility [data] tracking
8/18  . . Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data
8/183  . . . [Processing at user equipment or user record carrier]
8/186  . . . [Processing of subscriber group data]
8/20  . . Transfer of user or subscriber data
8/205  . . . [Transfer to or from user equipment or user record carrier]
8/22  . Processing or transfer of terminal data, e.g. status or physical capabilities
8/24  . . Transfer of terminal data
8/245  . . . [from a network towards a terminal]
8/26  . Network addressing or numbering for mobility support
8/265  . . . [for initial activation of new user]

8/28  . . Number portability [; Network address portability]
8/30  . Network data restoration; [Network data reliability; Network data fault tolerance]

12/00  Security arrangements, e.g. access security or fraud detection; Authentication, e.g. verifying user identity or authorisation; Protecting privacy or anonymity [; Protecting confidentiality; Key management; Integrity; Mobile application security; Using identity modules; Secure pairing of devices; Context aware security; Lawful interception]

**WARNING**

Group H04W 12/00 is impacted by reclassification into groups H04W 12/00.

Groups H04W 12/00 should be considered in order to perform a complete search.

12/001  . [Protecting confidentiality, e.g. by encryption or ciphering]

**WARNING**

Group H04W 12/001 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/02.

Groups H04W 12/00, H04W 12/02, and H04W 12/001 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.

12/004  . Number portability; [Network address portability]
12/006  . Network data restoration; [Network data reliability; Network data fault tolerance]
12/008  . Security arrangements, e.g. access security or fraud detection; Authentication, e.g. verifying user identity or authorisation; Protecting privacy or anonymity [; Protecting confidentiality; Key management; Integrity; Mobile application security; Using identity modules; Secure pairing of devices; Context aware security; Lawful interception]
12/0013  .  .  {of user plane, e.g. user traffic}

**WARNING**

Group **H04W 12/0013** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/0013** should be considered in order to perform a complete search.

---

12/0017  .  .  {of control plane, e.g. signalling traffic}

**WARNING**

Group **H04W 12/0017** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/0017** should be considered in order to perform a complete search.

---

12/002  .  .  {Mobile device security; Mobile application security}

**WARNING**

Group **H04W 12/002** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/002** should be considered in order to perform a complete search.

---

12/003  .  .  {Secure pairing of devices, e.g. bootstrapping a secure communication link between pairing terminals; Secure socializing}

**WARNING**

Group **H04W 12/003** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/003** should be considered in order to perform a complete search.

---

12/004  .  .  {using identity modules}

**WARNING**

Group **H04W 12/004** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/004** should be considered in order to perform a complete search.

---

12/00401  .  .  {using virtual identity modules}

**WARNING**

Group **H04W 12/00401** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/00401** should be considered in order to perform a complete search.

---

12/00403  .  .  {using shared identity modules, e.g. SIM sharing}

**WARNING**

Group **H04W 12/00403** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/00403** should be considered in order to perform a complete search.

---

12/00405  .  .  {using multiple identity modules}

**WARNING**

Group **H04W 12/00405** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/00405** should be considered in order to perform a complete search.

---

12/00407  .  .  {using near field communication [NFC], e.g. NFC tag, smart tag or radio frequency identification [RFID] module}

**WARNING**

Group **H04W 12/00407** is incomplete pending reclassification of documents from group **H04W 12/00**.

Groups **H04W 12/00** and **H04W 12/00407** should be considered in order to perform a complete search.
[using secure binding, e.g. securely binding identity modules to devices, services or applications]

**WARNING**

Group H04W 12/00409 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00409 should be considered in order to perform a complete search.

12/005 . . [Context aware security]

**WARNING**

Group H04W 12/005 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/005 should be considered in order to perform a complete search.

12/00502 . . [Time aware]

**WARNING**

Group H04W 12/00502 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00502 should be considered in order to perform a complete search.

12/00503 . . [Location or proximity aware, e.g. using proximity to other devices]

**WARNING**

Group H04W 12/00503 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00503 should be considered in order to perform a complete search.

12/00504 . . [Ambient aware, e.g. using captured environmental data]

**WARNING**

Group H04W 12/00504 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00504 should be considered in order to perform a complete search.

12/00505 . . [Risk aware, e.g. selecting security levels depending on risk profiles]

**WARNING**

Group H04W 12/00505 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00505 should be considered in order to perform a complete search.

12/00506 . . [Trust aware, e.g. using trust scores or trust relationships]

**WARNING**

Group H04W 12/00506 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00506 should be considered in order to perform a complete search.

12/00508 . . [Gesture or behaviour aware, e.g. device movements or behaviometrics]

**WARNING**

Group H04W 12/00508 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00508 should be considered in order to perform a complete search.

12/0051 . . [Identity aware]

**WARNING**

Group H04W 12/0051 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/0051 should be considered in order to perform a complete search.

12/00512 . . [Hardware identity]

**WARNING**

Group H04W 12/00512 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00512 should be considered in order to perform a complete search.

12/00514 . . [Subscriber identity]

**WARNING**

Group H04W 12/00514 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00514 should be considered in order to perform a complete search.

12/00516 . . [Access point logical identity]

**WARNING**

Group H04W 12/00516 is incomplete pending reclassification of documents from group H04W 12/00.
Groups H04W 12/00 and H04W 12/00516 should be considered in order to perform a complete search.
12/00518 . . . {Temporary identity}  
**WARNING**  
Group H04W 12/00518 is incomplete pending reclassification of documents from group H04W 12/00.  
Groups H04W 12/00 and H04W 12/00518 should be considered in order to perform a complete search.

12/0052 . . . {Group identity}  
**WARNING**  
Group H04W 12/0052 is incomplete pending reclassification of documents from group H04W 12/00.  
Groups H04W 12/00 and H04W 12/0052 should be considered in order to perform a complete search.

12/00522 . . . {Graphical identity}  
**WARNING**  
Group H04W 12/00522 is incomplete pending reclassification of documents from group H04W 12/00.  
Groups H04W 12/00 and H04W 12/00522 should be considered in order to perform a complete search.

12/00524 . . . {Radio fingerprint}  
**WARNING**  
Group H04W 12/00524 is incomplete pending reclassification of documents from group H04W 12/00.  
Groups H04W 12/00 and H04W 12/00524 should be considered in order to perform a complete search.

12/007 . . . {Lawful interception}  
**WARNING**  
Group H04W 12/0007 is incomplete pending reclassification of documents from group H04W 12/00.  
Groups H04W 12/00, H04W 12/02, and H04W 12/0007 should be considered in order to perform a complete search.

12/009 . . . {specially adapted for networks, e.g. wireless sensor networks, ad-hoc networks, RFID networks or cloud networks}  
**WARNING**  
Group H04W 12/0009 is incomplete pending reclassification of documents from group H04W 12/00.  
Groups H04W 12/00 and H04W 12/0009 should be considered in order to perform a complete search.

12/009 . . . {Protecting privacy or anonymity, e.g. protecting personally identifiable information [PII]}  
**WARNING**  
Group H04W 12/002 is impacted by reclassification into groups H04W 12/02, H04W 12/001, and H04W 12/0002.  
All groups listed in this Warning should be considered in order to perform a complete search.

12/009 . . . {Key management, e.g. by generic bootstrapping architecture [GBA]}  
**WARNING**  
All groups listed in this Warning should be considered in order to perform a complete search.

12/009 . . . {Key generation or derivation}  
**WARNING**  
Group H04W 12/00401 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/04.  
Groups H04W 12/00, H04W 12/04, and H04W 12/00401 should be considered in order to perform a complete search.

12/009 . . . {using a trusted network node as anchor}  
**WARNING**  
Group H04W 12/00403 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/04.  
Groups H04W 12/00, H04W 12/04, and H04W 12/00403 should be considered in order to perform a complete search.

12/009 . . . {Key distribution, e.g. key pre-distribution or key agreement}  
**WARNING**  
Group H04W 12/004031 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/04.  
Groups H04W 12/00, H04W 12/04, and H04W 12/004031 should be considered in order to perform a complete search.

12/009 . . . {Key management protocols, e.g. managing shared keys, group keys, multicast keys or rekeying}  
**WARNING**  
Group H04W 12/004033 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/04.  
Groups H04W 12/00, H04W 12/04, and H04W 12/004033 should be considered in order to perform a complete search.
WARNING
Group H04W 12/0407 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/04.
Groups H04W 12/00, H04W 12/04, and H04W 12/0407 should be considered in order to perform a complete search.

WARNING
Group H04W 12/04071 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/04.
Groups H04W 12/00, H04W 12/04, and H04W 12/04071 should be considered in order to perform a complete search.

WARNING
Group H04W 12/06 is impacted by reclassification into groups H04W 12/06, H04W 12/0602, H04W 12/0605, H04W 12/0608, H04W 12/0609.
All groups listed in this Warning should be considered in order to perform a complete search.

WARNING
Group H04W 12/0602 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/06.
Groups H04W 12/00, H04W 12/06, and H04W 12/0602 should be considered in order to perform a complete search.

WARNING
Group H04W 12/0605 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/06.
Groups H04W 12/00, H04W 12/06, and H04W 12/0605 should be considered in order to perform a complete search.

WARNING
Group H04W 12/0608 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/06.
Groups H04W 12/00, H04W 12/06, and H04W 12/0608 should be considered in order to perform a complete search.

WARNING
Group H04W 12/08 is impacted by reclassification into groups H04W 12/08, H04W 12/0802, H04W 12/0804, H04W 12/0806, H04W 12/0808.
All groups listed in this Warning should be considered in order to perform a complete search.

WARNING
Group H04W 12/0802 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/08.
Groups H04W 12/00, H04W 12/08, and H04W 12/0802 should be considered in order to perform a complete search.

WARNING
Group H04W 12/0804 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/08.
Groups H04W 12/00, H04W 12/08, and H04W 12/0804 should be considered in order to perform a complete search.

WARNING
Group H04W 12/0806 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/08.
Groups H04W 12/00, H04W 12/08, and H04W 12/0806 should be considered in order to perform a complete search.

WARNING
Group H04W 12/0808 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/08.
Groups H04W 12/00, H04W 12/08, and H04W 12/0808 should be considered in order to perform a complete search.
12/10 . Integrity

**WARNING**
Group H04W 12/10 is impacted by reclassification into groups H04W 12/10, H04W 12/1002, H04W 12/1004, H04W 12/1006, H04W 12/1008.
All groups listed in this Warning should be considered in order to perform a complete search.

12/1002 . . {Route integrity, e.g. using trusted paths}

**WARNING**
Group H04W 12/1002 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/10.
Groups H04W 12/00, H04W 12/10, and H04W 12/1002 should be considered in order to perform a complete search.

12/1004 . . {Location integrity, e.g. secure geo-tagging or trusted cell tagging}

**WARNING**
Group H04W 12/1004 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/10.
Groups H04W 12/00, H04W 12/10, and H04W 12/1004 should be considered in order to perform a complete search.

12/1006 . . {Packet or message integrity}

**WARNING**
Group H04W 12/1006 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/10.
Groups H04W 12/00, H04W 12/10, and H04W 12/1006 should be considered in order to perform a complete search.

12/1008 . . {Source integrity}

**WARNING**
Group H04W 12/1008 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/10.
Groups H04W 12/00, H04W 12/10, and H04W 12/1008 should be considered in order to perform a complete search.

12/12 . Fraud detection (or prevention)

**WARNING**
Group H04W 12/12 is incomplete pending reclassification of documents from group H04W 12/00.
Group H04W 12/12 is also impacted by reclassification into groups H04W 12/12, H04W 12/1201, H04W 12/1202, H04W 12/1204, H04W 12/1205, H04W 12/1206, H04W 12/1208.
All groups listed in this Warning should be considered in order to perform a complete search.

12/1201 . . {Wireless intrusion detection system [WIDS]; Wireless intrusion prevention system [WIIPS]}

**WARNING**
Group H04W 12/1201 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/12.
Groups H04W 12/00, H04W 12/12, and H04W 12/1201 should be considered in order to perform a complete search.

12/1202 . . {Protecting against rogue devices}

**WARNING**
Group H04W 12/1202 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/12.
Groups H04W 12/00, H04W 12/12, and H04W 12/1202 should be considered in order to perform a complete search.

12/1204 . . {Countermeasures against attacks}

**WARNING**
Group H04W 12/1204 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/12.
Groups H04W 12/00, H04W 12/12, and H04W 12/1204 should be considered in order to perform a complete search.

12/1205 . . {Protecting against power exhaustion attacks, e.g. power depletion, starvation attack or sleep deprivation attack}

**WARNING**
Group H04W 12/1205 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/12.
Groups H04W 12/00, H04W 12/12, and H04W 12/1205 should be considered in order to perform a complete search.

12/1206 . . {Anti-theft arrangements, e.g. protecting against device theft, subscriber identity module [SIM] cloning or machine-to-machine [M2M] displacement}

**WARNING**
Group H04W 12/1206 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/12.
Groups H04W 12/00, H04W 12/12, and H04W 12/1206 should be considered in order to perform a complete search.

12/1208 . . {Anti-malware arrangements, e.g. protecting against SMS fraud or mobile malware}

**WARNING**
Group H04W 12/1208 is incomplete pending reclassification of documents from groups H04W 12/00 and H04W 12/12.
Groups H04W 12/00, H04W 12/12, and H04W 12/1208 should be considered in order to perform a complete search.
Network traffic or resource management

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

16/02 . . Resource partitioning among network components, e.g. reuse partitioning
16/04 . . Traffic adaptive resource partitioning
16/06 . . Hybrid resource partitioning, e.g. channel borrowing
16/08 . . Load shedding arrangements
16/10 . . Dynamic resource partitioning
16/12 . . Fixed resource partitioning
16/14 . Spectrum sharing arrangements (between different networks)
16/16 . . for PBS [Private Base Station] arrangements
16/18 . Network planning tools
16/20 . . for indoor coverage or short range network deployment
16/22 . . Traffic simulation tools or models
16/225 . . (for indoor or short range network)
16/24 . . Cell structures
16/26 . . Cell enhancers (or enhancement), e.g. for tunnels, building shadow
16/28 . . using beam steering
16/30 . . Special cell shapes, e.g. doughnuts or ring cells
16/32 . . Hierarchical cell structures

Supervisory, monitoring or testing arrangements

24/02 . . Arrangements for optimising operational condition
24/04 . . Arrangements for maintaining operational condition
24/06 . . Testing, [supervising or monitoring] using simulated traffic
24/08 . . Testing, [supervising or monitoring] using real traffic
24/10 . . Scheduling measurement reports ; { Arrangements for measurement reports }

Network traffic or resource management

28/02 . . Traffic management, e.g. flow control or congestion control
28/0205 . . (at the air interface (dynamic wireless traffic scheduling H04W 72/12))
28/021 . . (in wireless networks with changing topologies, e.g. ad-hoc networks (self-organizing networks H04W 84/18))
28/0215 . . (based on user or device properties, e.g. MTC-capable devices (services for machine-to-machine communication [M2M] or machine type communication [MTC] H04W 4/70; wireless resource selection or allocation plan definition based on terminal or device properties H04W 72/048))
28/0221 . . [power availability or consumption]
28/0226 . . [based on location or mobility (handoff or reselection H04W 36/00; mobile application services making use of the location of users or terminals H04W 4/02)]
28/0231 . . [based on communication conditions (dynamic wireless traffic scheduling definition based on channel quality criteria H04W 72/1226)]
28/0236 . . [radio quality, e.g. interference, losses or delay]
28/0242 . . [Determining whether packet losses are due to overload or to deterioration of radio communication conditions]

NOTE
When classifying in this group, classification is also made in the appropriate groups under H04L 1/00.
Hand-off or reselection arrangements

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

WARNING
Group H04W 36/00 is impacted by reclassification into group H04W 36/03.
Groups H04W 36/00 and H04W 36/03 should be considered in order to perform a complete search.

36/0005 . [Control or signalling for completing the hand-off]

WARNING
Group H04W 36/0005 is impacted by reclassification into groups H04W 36/0007 and H04W 36/0009.
All groups listed in this Warning should be considered in order to perform a complete search.

36/0007 . . . [for multicast or broadcast services, e.g. MBMS (multicast or broadcast application services H04W 4/06; resource management for broadcast services H04W 72/005; connection management for selective distribution or broadcast H04W 76/40)]

WARNING
Group H04W 36/0007 is incomplete pending reclassification of documents from group H04W 36/0005.
Groups H04W 36/0005 and H04W 36/0007 should be considered in order to perform a complete search.

36/0009 . . . [for a plurality of users or terminals, e.g. group communication or moving wireless networks (user group management H04W 4/06; processing of subscriber group data H04W 8/186)]

WARNING
Group H04W 36/0009 is incomplete pending reclassification of documents from group H04W 36/0005.
Groups H04W 36/0005 and H04W 36/0009 should be considered in order to perform a complete search.

36/0011 . . . [for data session or connection]
36/0016 . . . [for hand-off preparation]
36/0022 . . . [for transferring sessions between adjacent core network technologies]
36/0027 . . . [for a plurality of sessions or connections, e.g. multi-call, multi-bearer connections]
36/0033 . . . [with transfer of context information]
36/0038 . . . [of transfer of context information]
36/0044 . . . [of quality context information]
36/005 . . . [involving radio access media independent information, e.g. MIH [Media independent Hand-off]]

WARNING
Group H04W 36/0055 is impacted by reclassification into groups H04W 36/0058, H04W 36/0069 and H04W 36/0079.
All groups listed in this Warning should be considered in order to perform a complete search.

36/0058 . . . [Transmission of hand-off measurement information, e.g. measurement reports]

WARNING
Group H04W 36/0058 is incomplete pending reclassification of documents from group H04W 36/0055.
Groups H04W 36/0005 and H04W 36/0058 should be considered in order to perform a complete search.

36/0061 . . . [of neighbor cell information]
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. CoMP, decoupled uplink/downlink or carrier aggregation (allocation of physical resources in CoMP or in carrier aggregation H04L 5/0035)]

WARNING
Group H04W 36/0069 is incomplete pending reclassification of documents from group H04W 36/0055.
Groups H04W 36/0005 and H04W 36/0069 should be considered in order to perform a complete search.

36/0072 . . . [of resource information of target access point]
36/0077 . . . [of access information of target access point]
36/0079 . . . [in case of hand-off failure or rejection]

WARNING
Group H04W 36/0079 is incomplete pending reclassification of documents from groups H04W 36/0053 and H04W 36/30.
Groups H04W 36/0053, H04W 36/30 and H04W 36/0079 should be considered in order to perform a complete search.

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 36/00835, H04W 36/0083 and H04W 36/0085.
All groups listed in this Warning should be considered in order to perform a complete search.
WARNING
Group H04W 36/00835 is incomplete pending reclassification of documents from group H04W 36/0083. Groups H04W 36/0083 and H04W 36/00835 should be considered in order to perform a complete search.

36/125 . . . [involving different types of service backbone] WARNING
Group H04W 36/125 is incomplete pending reclassification of documents from group H04W 36/12. Groups H04W 36/12 and H04W 36/125 should be considered in order to perform a complete search.

36/0037 . . . [Determination of triggering parameters for hand-off] WARNING
Group H04W 36/0037 is incomplete pending reclassification of documents from group H04W 36/003. Groups H04W 36/003 and H04W 36/0037 should be considered in order to perform a complete search.

36/0085 . . . [Hand-off measurements] WARNING
Group H04W 36/0085 is incomplete pending reclassification of documents from group H04W 36/008. Groups H04W 36/008 and H04W 36/0085 should be considered in order to perform a complete search.

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}
36/026 . . . . {Multicasting of data during hand-off}
36/03 . . . {Reselecting a link using a direct mode connection}

WARNING
Group H04W 36/03 is incomplete pending reclassification of documents from group H04W 36/00.
Groups H04W 36/00 and H04W 36/00 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
36/10 . . . Reselecting an access point controller
36/12 . . . Reselecting a serving backbone network switching or routing node

WARNING
Group H04W 36/12 is impacted by reclassification into group H04W 36/125.
Groups H04W 36/12 and H04W 36/125 should be considered in order to perform a complete search.

36/04 . . . based on wireless node resources
Access restriction (access security to prevent unauthorised access H04W 12/08); Network selection: Access point selection

Access restriction performed under specific conditions

Based on user or terminal location or mobility data, e.g. moving direction, speed

Based on traffic conditions

Access restriction or access information delivery, e.g. discovery data delivery (signalling during connection H04W 76/00)

Using broadcasted information

Using downlink control channel

Using user query [or user detection]

Discovering, processing access restriction or access information

[Selecting a data network PoA [Point of Attachment]]

Selecting a network or a communication service

Selecting an access point

Power management, e.g. TPC [Transmission Power Control], power saving or power classes ([gain control in transmitters or power amplifiers H03G 3/3042])

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

[In the radio access network or backbone network of wireless communication networks]

[In access points, e.g. base stations (access point devices per se H04W 88/08)]
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/Io}
52/242 . . . . {taking into account path loss}
52/243 . . . . {taking into account interferences}
52/244 . . . . {Interferences in heterogeneous networks, e.g. among macro and femto or pico cells or other sector / system interference [OSI]}
52/245 . . . . {taking into account received signal strength}
52/246 . . . . {where the output power of a terminal is based on a path parameter calculated in said terminal}
52/247 . . . . {where the output power of a terminal is based on a path parameter sent by another terminal}
52/248 . . . . {where transmission power control commands are generated based on a path parameter}
52/26 . . . . using transmission rate or quality of service QoS [Quality of Service]
52/262 . . . . {taking into account adaptive modulation and coding [AMC] scheme (AMC per se H04L 1/0001)}
52/265 . . . . {taking into account the quality of service QoS}
52/267 . . . . {taking into account the information rate}
52/28 . . . . using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle or non transmission
52/281 . . . . {taking into account user or data type priority}
52/282 . . . . {taking into account the speed of the mobile}
52/283 . . . . {Power depending on the position of the mobile}
52/285 . . . . {taking into account the mobility of the user}
52/286 . . . . {during data packet transmission, e.g. high speed packet access [HSPA]}
52/287 . . . . {when the channel is in stand-by}
52/288 . . . . {taking into account the usage mode, e.g. hands-free, data transmission, telephone}
52/30 . . . . using constraints in the total amount of available transmission power
52/32 . . . . TPC of broadcast or control channels
52/322 . . . . {Power control of broadcast channels}
52/325 . . . . {Power control of control or pilot channels}
52/327 . . . . {Power control of multicast channels}
52/34 . . . . TPC management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading
52/343 . . . . {taking into account loading or congestion level}
52/346 . . . . {distributing total power among users or channels}
52/36 . . . . with a discrete range or set of values, e.g. step size, ramping or offsets
52/362 . . . . {Aspects of the step size}
52/365 . . . . {Power headroom reporting}
52/367 . . . . {Power values between minimum and maximum limits, e.g. dynamic range}
52/38 . . . . TPC being performed in particular situations
52/383 . . . . {power control in peer-to-peer links}
52/386 . . . . {centralized, e.g. when the radio network controller or equivalent takes part in the power control}
52/40 . . . . during macro-diversity or soft handoff
52/42 . . . . in systems with time, space, frequency or polarisation diversity
52/44 . . . . in connection with interruption of transmission
52/46 . . . . in multi hop networks, e.g. wireless relay networks
52/48 . . . . during retransmission after error or non-acknowledgment
52/50 . . . . at the moment of starting communication in a multiple access environment
52/52 . . . . using AGC [Automatic Gain Control] circuits or amplifiers
52/54 . . . . Signalisation aspects of the TPC commands, e.g. frame structure
52/545 . . . . {modifying TPC bits in special situations}
52/56 . . . . Detection of errors of TPC bits
52/58 . . . . Format of the TPC bits
52/60 . . . . using different transmission rates for TPC commands

56/00 Synchronisation arrangements
56/0005 . . . . {synchronizing of arrival of multiple uplinks}
56/001 . . . . {Synchronization between nodes}
56/0015 . . . . {one node acting as a reference for the others}
56/002 . . . . {Mutual synchronization}
56/0025 . . . . {synchronizing potentially movable access points}
56/003 . . . . {Arrangements to increase tolerance to errors in transmission or reception timing}
56/0035 . . . . {detecting errors in frequency or phase}
56/004 . . . . {compensating for timing error of reception due to propagation delay}
56/0045 . . . . {compensating for timing error by altering transmission time}
56/005 . . . . {compensating for timing error by adjustment in the receiver}
56/0055 . . . . {determining timing error of reception due to propagation delay}
56/006 . . . . {using known positions of transmitter and receiver}
56/0065 . . . . {using measurement of signal travel time}
56/007 . . . . {Open loop measurement}
56/0075 . . . . {based on arrival time vs. expected arrival time}
Affiliation to network, e.g. registration; Terminating affiliation with the network, e.g. de-registration
60/00

Locating users or terminals (or network equipment) for network management purposes, e.g. mobility management
64/00

User notification, e.g. alerting and paging, for incoming communication, change of service or the like
68/00

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

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

Resource management for broadcast services
72/005

Selection of wireless resources by user or terminal
72/004

Wireless resource allocation
72/006

{involving control information exchange between nodes}
72/006

{in uplink direction of a wireless link, i.e. towards network}
72/013

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

{between access points}
72/0426

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

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

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

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

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

{detecting arrival of signal based on received raw signal}
56/008

{detecting a given structure in the signal}
56/0085

{Closed loop measurements}
56/009

{estimated based on signal strength}
56/0095

NOTE

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

H04W : Time division multiple access (TDMA)
74/003

{using a grant or specific channel}
72/14

{in the downlink, i.e. towards the terminal}
72/1289

{in the uplink, i.e. from terminal to network}
72/1284

{using a grant or specific channel}
72/1294

[Hybrid access techniques]
74/02

{Scheduled [or contention-free] access}
74/04

{using polling}
74/06

{Non-scheduled [or contention based] access, e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access]}
74/08
76/00 Connection management

**NOTE**
In this main group, the first place priority rule is not applied, i.e. the common rule is applied.

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 67/90])
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 (with 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 [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
adapted for operation in multiple networks, e.g. multi-mode access points
Access point controller devices
Backbone network devices
Gateway arrangements
Service support devices; Network management devices

[Transcoding devices; Rate adaptation devices]
(Network node acting on behalf of another network entity, e.g. proxy]
(Messaging devices, e.g. message centre]
(Selective call encoders for paging networks, e.g. paging centre devices]
(using digital or pulse address codes]
(using frequency address codes]

Interfaces specially adapted for wireless communication networks
Inter-networking arrangements
Interfaces between hierarchically different network devices
(between access point and backbone network device]
(between gateways and public network devices
(between user and terminal device
(between terminal device and access point, i.e. wireless air interface
(between access points and access point controllers
(between access point controllers and backbone network device
Interfaces between hierarchically similar devices
(between terminal devices
(between access points
(between access point controllers
(between backbone network devices

Subject matter not provided for in other groups of this subclass